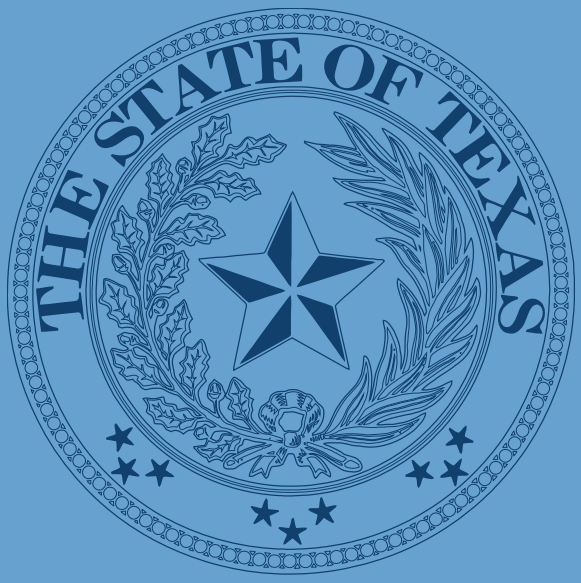

2015-16 Update to the State Health Plan

A Vision for Primary Care in
The State of Texas
&
Transforming Texas'
Mental Health Care System

Statewide Health Coordinating Council

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January 20, 2015

The Honorable Greg Abbott
Office of the Governor
P.O. Box 12428
Austin, Texas 78711-2428

Dear Governor Abbott,

On behalf of the members of the Texas Statewide Health Coordinating Council, we are pleased to forward the 2015-2016 Update to the Texas State Health Plan Update. The Council has chosen to focus this update on primary care and mental health care.

As legislators and healthcare policymakers consider crafting healthcare legislation and policy, the Council advances several ideas to improve our health system. In particular, new models of care are needed to extend the capability of the system in Texas. Some have been tested in academia and need expansion to the broader healthcare system and other ideas urge adoption of new payment models to drive the necessary change. The Council trusts these concepts will help drive improvements in the Texas healthcare system to better deliver services in an effective and economical manner.

Sincerely,

Mike Ragain, M.D., MSEd., FAAFP
Chair, Statewide Heath Coordinating Council

Enclosure

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This publication is issued by the Texas Department of State Health Services for the Texas Statewide Health Coordinating Council (SHCC) under the authority of the Texas Health and Safety Code, Chapter 104.

Publication #: 25-14502
EPublication #: E25-14502

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Organizational Overview

The following is a description of the organizations that were instrumental in the development and production of this report.

The Texas Statewide Health Coordinating Council

In accordance with Chapters 104 and 105 of the Texas Health and Safety Code (H.S.C.), the purpose of the Statewide Health Coordinating Council (SHCC) is to ensure health care services and facilities are available to all citizens through the development of health planning activities. The SHCC is a 17-member council, with 13 members appointed by the governor and four members representing the Department of Aging and Disability Services, the Department of State Health Services (DSHS), the Health and Human Services Commission, and the Texas Higher Education Coordinating Board. The SHCC meets quarterly and oversees the Health Professions Resource Center (HPRC), the Texas Center for Nursing Workforce Studies (TCNWS), and the Texas Center for Nursing Workforce Studies Advisory Committee (TCNWSAC). Information on the SHCC is available at the following website: http://www.dshs.state.tx.us/chs/shcc/.

As part of its duties under Chapter 104 and 105 of the Texas H.S.C., the SHCC directs the development of the State Health Plan and its updates. These documents, published in November of even-numbered years, identify major statewide health concerns, the availability and use of the state's health resources, and future health service, technology, and facility needs of the state.

The Health Professions Resource Center

The HPRC collects and analyses data pertaining to educational and employment trends for health professions in Texas, with particular interest on health professions demonstrating an acute shortage.

It is the mission of the HPRC to be the primary source of health care workforce information in the State of Texas. To accomplish this mission, the HPRC:

- Collects, analyzes, and disseminates data concerning the supply trends, geographic distribution, and demographics of health care professionals
- Studies health care workforce issues and prepares reports on the findings
- Designates health care delivery sites where mid-level providers can practice limited prescriptive authority
- Provides resources for primary care providers seeking collaborative practice opportunities through a clearinghouse program

Additional information on the HPRC, its data, and its reports can be found at http://www.dshs.state.tx.us/chs/hprc/.

The Texas Center for Nursing Workforce Studies

The TCNWS was established under the governance of the SHCC and serves as a resource for data and research on the nursing workforce in Texas. The TCNWS is charged to collect and analyze data and publish reports related to educational and employment trends of nursing professionals, the supply and demand of nursing professionals, nursing workforce demographics, migration of nursing professionals, and other issues concerning nursing professionals in Texas as determined necessary by the TCNWSAC and the SHCC.

The TCNWS collaborates and coordinates with other organizations that gather and use nursing workforce data to avoid duplication of efforts in gathering data, to avoid overloading employers and educators with completing a large number of duplicate surveys, to share resources in the development and implementation of studies, and to establish better sources of data and methods for providing data to legislators, policymakers, and key stakeholders. The TCNWS is currently working on several statewide studies that will provide current and pertinent supply and demand trends of the nursing workforce in Texas. For more information about the TCNWS and access to its reports visit: http://www.dshs.state.tx.us/chs/cnws/.

The Texas Center for Health Statistics

The Texas Center for Health Statistics (CHS) provides managerial oversight and administrative support to the HPRC and the TCNWS.

The CHS is the DSHS' focal point for the collection, analysis, and dissemination of health-related information used to evaluate and improve

public health in Texas.

The mission of the CHS is accomplished by:

- Evaluating existing data systems for availability, quality, and quantity;
- Defining data needs and analytic approaches for addressing these needs;
- Adopting standards for data collection, summarization, and dissemination;
- Coordinating, integrating, and providing access to data;
- Providing guidance and education on the use and application of data;
- Providing data analysis and interpretation; and
- Initiating participation of stakeholders while ensuring the privacy of the citizens of Texas.

Health-related data reports and other information produced through the CHS are available at the following website: http://www.dshs.state.tx.us/chs/.

Table of Contents

Executive Summary ix
Data & Sources xiii
A Vision for Primary Care in the State of Texas 1
The Need for Primary Care 3
Evidence for Primary Care 3
Supply of and Demand for the Primary Care Workforce 3
Policy Considerations 4
Primary Care and the Patient-Centered Medical Home 8
Role of the Patient-Centered Medical Home 8
Policy Considerations 8
Primary Care Physicians 11
Workforce Description 11
Policy Considerations 15
Physician Assistants in Primary Care 19
Competencies and Roles 19
Physician Assistant Contributions to Efficacy and Efficiency 20
Workforce Description 21
Policy Considerations 22
Advanced Practice Nurses in Primary Care 25
Competencies and Roles 25
APN Contributions to Efficacy and Efficiency 26
Workforce Description 27
Policy Considerations 29
Pharmacists as Providers 31
Competencies and Roles 31
Pharmacist Contributions to Efficacy and Efficiency 32
Policy Considerations 34
Community Health Workers 36
Competencies and Roles 36

CHW Contributions to Efficacy and Efficiency 37
Workforce Description 38
Policy Considerations 39
Review of Primary Care Policy Recommendations 41
Transforming Texas' Mental Health Care System 43
The Mental Health Delivery System 45
Innovation in Mental Health Delivery 45
Delivery and Payment Models 47
Patient-Centered Medical Home 47
Health Home 48
Accountable Care Organizations 48
Moving Forward 48
The Mental Health Workforce Shortage 51
Texas' Need for Mental Health Services 52
Children and Adolescents 52
Adults 52
Texas' Mental Health Workforce 52
Psychiatrists 53
Other Mental Health Professions 55
Psychiatric Nurses 55
Physician Assistants 56
Psychologists 57
Social Workers 59
Licensed Professional Counselors 61
Marriage and Family Therapists 62
Licensed Chemical Dependency Counselors 64
Peer Support Providers 65
Review of Mental Health Policy Recommendations 69
The Statewide Health Coordinating Council's Policy Recommendations for Addressing the Mental Health Workforce Shortage in Texas 69
References 73
List of Acronyms 83

Executive Summary

On a biennial basis, the Texas Statewide Health Coordinating Council (SHCC) directs and approves the development of the Texas State Health Plan or its updates. This plan, following the legislatively determined purpose of the SHCC, seeks to ensure that the State of Texas implements appropriate health-planning activities and that health care services are provided in a cost-effective manner throughout the state. With drastic changes being introduced to health care payment and delivery systems nationwide and throughout Texas, the 2015-2016 Update to the Texas State Health Plan provides guidance on how these changes can be implemented in a manner consistent with the goal of having a high quality, efficient health system that serves the needs of all Texans. Specifically, this Update identifies challenges in the State's adjustment to these systemic changes related to health care delivery and payment, the training of health care practitioners, and the introduction of technology to assess and improve health outcomes. In response to these challenges, the Update offers numerous strategies to improve the efficiency of our health care delivery system, address shortcomings in our payment system, produce more health care providers in critical areas of need, and heighten patient satisfaction with the health care system.

The 2015-2016 Update to the State Health Plan is organized into two chapters highlighting important areas where improvement is needed. The first chapter, A Vision for Primary Care in the State of Texas, details how a robust and accessible primary care system contributes to improved population health and cost efficiency. The second chapter, Transforming Texas' Mental Health Care System, considers needed changes in the organization of the system, how it engages patients, and the challenges posed by the mental health workforce shortage. These two topics, primary care and mental health, are essential to the SHCC's vision of a Texas in which all are able to achieve their maximum health potential. By outlining strategies to improve primary care and mental health in the state, the SHCC challenges policymakers, health care administrators, providers, and all Texans to embrace change and work together to improve the health of Texans.

A Vision for Primary Care in the State of Texas

Access to and appropriate use of primary care produces better quality health care, better health, greater equity, and lower cost for individuals and populations. Moreover, health systems oriented towards primary care serve to lower barriers to patient access, improve care coordination between providers, and encourage responsible patient choices in care-seeking behavior. Despite these benefits, the Institute of Medicine has stated that the US has not adequately invested in a robust primary care system. Given the positive impacts associated with greater integration of primary care services, the SHCC has identified several policy options that would improve Texas' primary care system.

With the full implementation of the Patient Protection and Affordable Care Act, changing demographics, and increases in chronic disease burden entail the need to increase the number of primary care providers, including physicians, advanced practice nurses, physician assistants, pharmacists, and community health workers.

- The number of primary care physicians should be increased through the support of primary care medical schools and graduate medical education slots, improved recruitment of students interested in practicing primary care, and the expansion of incentives that aid in the recruitment and retention of primary care physicians.
- The expansion of education programs for physician assistants, the institution of recruitment and retention incentives for physician assistants in primary care practice, and greater physician flexibility in supervising physician assistants should help ameliorate the shortage of primary care practitioners.
- The responsible integration of advanced practice nurses into the primary care delivery system can assist in addressing both workforce and quality of care issues.
- The use of pharmacists in medication therapy management (MTM) is an important means of adding capacity to the primary care workforce. The feasibility of expanding

physician-supervised MTM into more outpatient settings should be considered.

- Given their mastered competencies and variety of role capabilities, community health workers are well-positioned to facilitate timely access to primary and preventive care. However as they are more fully utilized throughout the state, greater evaluation of how and where community health workers can be best employed is needed.

The desired improvements in the cost-effectiveness and efficiency of the health care system will necessitate changes in the delivery and reimbursement of care.

- A common element for accountable care organizations and other innovative delivery and payment structures is the expansion of interdisciplinary team-based care, which is associated with fewer communication problems between providers, improved care, and greater patient satisfaction.
- Traditional fee-for-service payment is likely to exacerbate practitioner reluctance to embrace innovation in patient flow and team-based care. Current payment models should be supplemented with additional care management payments.
- The widespread implementation of patient-centered medical homes, accountable care organizations, and other innovative care models will require ongoing evaluation of best practices and among which populations they may be most successful.
- Payment practices should be altered to encourage advanced practice nurses and pharmacists to bill under their own provider number, allowing for better analyses of quality and performance measures.
- Community health workers must be integrated into payment systems in order to fully realize their benefits to health systems.

Delivery system changes will require changes in the content and manner in which health professionals are trained.

- Primary care providers of all types should be provided increased training and practice opportunities in team-based, collaborative environments during their education.
- Nursing faculty shortages that may act as barriers to the increased production of primary care providers should be addressed through targeted recruitment and retention practices.
- The standardization of community health worker education and career development systems is a prerequisite to the continued professionalization of the field.

Transforming Texas' Mental Health Care System

Recent studies, national and specific to Texas, have established the need for the transformation of the mental health care system to better meet patient needs. This need is especially pronounced given the expectation that the Patient Protection and Affordable Care Act will add millions of people with mental and behavioral health needs to the health insurance system. As with primary care, the SHCC has identified several strategies that address Texas' needs.

Team-based, collaborative and coordinated care is an essential component of transforming the mental health care system.

- Task-shifting, the adoption of disruptive innovations, the use of best buy interventions, and efforts aimed at modifying individual behavior are all potential elements in affecting improved mental health care delivery.
- The patient-centered medical home, health homes, and accountable care organizations may provide better delivery of care while addressing issues with the current mental health care reimbursement system.
- The successful incorporation of peer support providers into the mental health care system will require their incorporation into billing/payment systems.

In order for Texas to have a stable, productive, and efficient mental health care system, heightened efforts at recruiting and retaining mental health care providers are a necessity. The SHCC, in response to HB1023 (83rd Legislature), provided several recommendations aimed at expanding the state's educational capacity to produce mental health practitioners, increasing incentives for students and practitioners to choose mental health fields, and improving the distribution and diversity of mental health practitioners.

- The State of Texas must continue to support the education and practice of psychiatrists. Specifically, the State should ensure a robust future workforce of psychiatrists by identifying and expanding incentives to practice psychiatry.
- The State of Texas should more extensively incorporate advanced practice nurses and physician assistants into its mental health workforce.
- The State of Texas should remove barriers to the adoption and practice of telemedicine and telehealth.
- The State of Texas should encourage its relevant licensing boards to collect information on the linguistic competencies of its health professionals
- The State of Texas should encourage providers to meet relevant ethnic/cultural/linguistic competencies as part of their initial and continuing education.
- The State of Texas should seek to further incorporate interprofessional collaborative training as part of the preparation of new health professionals.
- The State of Texas should develop analytical and statistical models for workforce supply and demand and patient utilization that inform the mental health care needs of the State.
- The State of Texas should analyze the workforce impacts of the Texas Medicaid 1115 Waiver - Delivery System Reform Incentive Payment (DSRIP) program.

Data & Sources

The Texas workforce data included in this document are collected by various Texas licensing boards and processed by the Health Professions Resource Center under the direction of the Texas Statewide Health Coordinating Council as dictated by the Texas Health & Safety Code Ch. 104 and 105. All reported data represent the licensed health professionals actively practicing in Texas. Inactive or retired licensed professionals were excluded, except where noted. Texas population data were obtained from the Texas State Data Center population projections released in 2014.

Please note that the various licensing boards differ on how they collect address information. If available, the county totals for each profession are based on the practice address from licensure data, and from the mailing/residence address if the practice address is not available. Therefore, when the mailing/residence address is used, the county supply totals may not accurately reflect the actual number of health professionals working in a county since a provider may live in one county but practice in another. In 2007, the 80th Texas Legislature passed SB 29 which was directed towards the collection of a minimum dataset of information on health professionals including more complete data on practice address. Licensure boards vary in the extent to which they have implemented the minimum dataset.

Supply ratios are calculated by dividing the population in an area by the number providers in the area. This results in a ratio of population to provider that can be used to compare areas with different population sizes and over time.

Metropolitan and non-metropolitan county status was assigned based on the 2013 designations of the U.S. Office of Management and Budget. In Texas, 82 counties were designated as metropolitan and 172 were designated as non-metropolitan. The border/non-border designation relies on the definition of border areas used by the La Paz Agreement, which defines counties within 100 km of the U.S.-Mexico border as border counties.

A Vision for Primary Care in the State of Texas

The Need for Primary Care

"Our country would be better served if an adequate supply of primary care services were available" (Smith S. R., 2011).

In a recent comparative ranking of the United States' (U.S.) health care system with those of ten other industrialized nations, the U.S. ranked last overall and last in each of the following categories: cost-related problems in access to care, efficiency, equity, and healthy lives. Moreover, estimates of U.S. spending on health care per capita and as a percentage of Gross Domestic Product (GDP) were far higher than those seen in any of the other 10 countries. Despite this high spending, the U.S. ranked 5th overall (out of 11 countries) in the composite measure of quality of care, a ranking attributable to the effectiveness and patient-centeredness of care in the U.S. (Davis, Stremikis, Squires, & Schoen, 2014). Given the mediocre ranking of our nation's health care system, improvement is possible and necessary in many areas. As the Institute of Medicine (IOM) has pointed out, the US has established medical research and specialty care systems that are among the best in the world, yet it has "failed to balance its investments in primary care,[1] public health, prevention, and the broader determinants of health, a problem clearly demonstrated by its low rankings in overall health statistics" (Institute of Medicine, 2012). It has been consistently reported that patients with a usual source of care, of which primary care is the most economical, have access to preventive services, generally lower utilization rates and thus costs, greater patient satisfaction, and fewer emergency room (ER) visits (Freidberg, Hussey, & Schneider, 2010). There are numerous other advantages to a robust primary care system, to wit (Institute of Medicine, 2012):

- Areas with the highest numbers of primary care providers have the best health outcomes.
- People who consistently receive care from a primary care provider have better health outcomes than those who do not.
- Multiple elements of primary care provision are associated with good health.
- The availability of primary care services is associated with a reduction in health disparities.

Evidence for Primary Care

Following from the above, primary care should be considered as more than merely a specialty of medical providers, but should instead be considered as the preferred orientation of the health system. This distinction demands fewer and lower barriers for patient access to primary care services, greater communication and care transition between primary care providers and other specialists, and local norms that encourage the use of primary care for new health conditions. Such an orientation can lead to better outcomes and lower costs based on international comparisons and those between states having varying levels of primary care integration (Freidberg, Hussey, & Schneider, 2010). At the population level, primary care approaches provide better quality of health care, better health, greater equity, and lower cost for people and whole populations (Stange & Ferrer, 2009). Moreover, international comparisons reveal that the availability and use of primary care services is associated with enhanced access to health care services, better health outcomes, and a decrease in more costly hospitalization and ER visits (Shi, 2012). Within the US, it has been shown that generalists and specialists have comparable outcomes but that generalists achieve these outcomes at lower costs and thus provide greater value of care (Stange & Ferrer, 2009). As noted by Margolius and Bodenheimer (2010), "[e]vidence suggests that investment in primary care can save health care dollars by reducing unnecessary ED [emergency department] visits and hospitalizations".

Supply of and Demand for the Primary Care Workforce

The previous section outlines the potential benefits of a high functioning and widely implemented primary care system. However, there are currently multiple challenges deterring the successful provision of such a system, chief among them the need for greater numbers of primary care practitioners. Estimates show that there is currently a shortage of primary care providers in many areas of the nation and in Texas. For example in the nation's Health Resources and Services Administration (HRSA) designated shortage areas, there is an estimated existing deficiency of 17,122 primary care providers (Carrier, Yee, & Stark,

[1] The Institute of Medicine has defined primary care as "the provision of integrated, accessible health care services by clinicians who are accountable for addressing a large majority of personal health care needs, developing a sustained partnership with patients, and practicing in the context of family and community" (Institute of Medicine, 2012).

2011). The Robert Graham Center, a research center of the American Academy of Family Physicians, projected that Texas would need an additional 6,260 primary care physicians by 2030 (Petterson, Cai, Moore, & Bazemore, 2013). Further, the Centers for Disease Control and Prvention's (CDC) National Center for Health Statistics reported that, as of 2012, Texas had significantly fewer primary care physicians than the national average, controlling for population size (Hing & Hsiao, 2014).

HRSA produced a model of patient demand for primary care services that assumed Medicaid expansion in all states, a proxy for universal access to primary care services. This model incorporated the sizable challenges of an aging and growing population, as well as the effects of the Patient Protection and Affordable Care Act (PPACA). Notably, these demographic changes and not the PPACA are the primary drivers for future primary care provider shortages (Petterson, et al., 2012; National Center for Workforce Analysis, HRSA, 2013). These sources concluded that the demand for primary care services would grow more quickly than physician supply between 2010 and 2020 and would exacerbate the nationwide shortage of physicians. On the supply side, primary care physician growth is expected to be roughly 8% between 2010 and 2020, while the nurse practitioner (NP) and physician assistant (PA) workforces are expected to grow by 30% and 58%, respectively. Further integration of advance practice nurses (APNs) and PAs into the primary care system, itself incumbent on patient and health system acceptance and the broad adoption of new delivery models (for example, patient-centered medical homes (PCMH)), could reduce this projected primary care shortage appreciably (National Center for Workforce Analysis, HRSA, 2013).

However, a sheer increase in the number of providers alone will not address problems of access to primary care. It is known that the geographic distribution of primary care providers remains disparate, especially between urban and rural areas (National Center for Workforce Analysis, HRSA, 2013). Indeed, there is a direct relationship nationwide between the supply of primary care physicians relative to the population and the size of the local population. That is, physicians in smaller cities and towns often have to serve more patients than those in larger urban areas. Additionally, there is an indirect relationship between the percentage of primary care physicians' offices with a NP or PA and the size of the local population (Hing & Hsiao, 2014), meaning that primary care physicians' practices in smaller, rural areas are more likely to include an NP or PA in their practice as a means of meeting this relatively higher demand for services.

Access to providers can also depend on insurance status. For example, areas with high rates of uninsuredness have been shown to have lower levels of primary care capacity. This may be the result of primary care providers' patient panels being effectively reduced as the uninsured and poor fail to seek care (Ku, Jones, Shin, Bruen, & Hayes, 2011). From a study measuring access to primary care in ten states, including Texas, evidence showed that new patient access to primary care was limited for Medicaid and uninsured populations. In Texas specifically, privately insured patients were able to make a primary care appointment when calling private practices 90.3% of the time, while Medicaid patients were successful only 59.1% of the time, and uninsured patients seeking to pay $75 or less were successful only 15.0% of the time (Rhodes, et al., 2014). Indeed, a study of access found that Texas ranked third in the nation (behind Oklahoma and Georgia) in the challenges that primary care physician shortages would produce for the expansion of all insurance coverage brought on by the PPACA (Ku, Jones, Shin, Bruen, & Hayes, 2011).

Policy Considerations

- **Given the existing shortage of primary care physicians and future challenges in meeting the population's primary health care needs statewide and nationally, there is a need to responsibly increase the utilization of APNs, PAs, pharmacists, and community health workers (CHWs) in the collaborative provision of primary care services.**

Given the already existing shortage of primary care physicians, individual physician workload and their capacity to deliver high quality care may already be out of balance, leading to the introduction of two separate, innovative delivery models. First, concierge practices with extremely small panel sizes (200 to

600 patients) have grown in popularity in recent years. Unfortunately, there are insufficient numbers of physicians to meet population demand for such models. Second, the team model (similar to task shifting) distributes the responsibilities of primary care delivery across multiple disciplines and providers, and is likely preferable (Altschuler, Margolius, Bodenheimer, & Grumbach, 2012). Under this model "[t]asks should be allocated among staff to use highly trained physicians and nurses where their skills are needed, and to use supporting personnel where appropriate" (Ash & Ellis, 2012).

It has been estimated that it would require nearly 18 hours per day for a single primary care physician in the U.S. to provide all evidence-based chronic and preventive care to the average-sized patient panel of 2,300. Given this colossal challenge, it is clear that the team providing primary care must be expanded (Margolius & Bodenheimer, 2010; Bodenheimer & Smith, 2013). A review of high-performing primary care practices found shifted roles for many members of the primary care team. For example, physicians are shifting toward a model that empowers other caregivers to provide significant portions of chronic and preventive care (Ladden, et al., 2013). In fact, the diversion of as little as 20% of patient demand to non-physician professionals might alleviate the majority of the primary care shortage (Green, Savin, & Lu, 2013). In another study, it was estimated that shifting preventive care services to non-clinicians could save 10% of clinicians' time, an equivalent of a 10% increase in clinician supply. Likewise, 25% of chronic care could be reallocated to non-clinicians, saving 9% of physician time. Finally, 10% of acute care could be transferred to non-clinicians, saving 5% of a physician's time. In all, 24% of physician time could be saved (Bodenheimer & Smith, 2013).

There will obviously be a need for well-defined roles between providers from different disciplines as tasks are shifted. For example, the expansion of roles for APNs and PAs should be accompanied by specific delimitation of what care they may best provide and which types of patients would benefit from direct physician care (Carrier, Yee, & Stark, 2011; Margolius & Bodenheimer, 2010). Likewise, it has been suggested that increasing the role of pharmacists, for example through medication management and counseling (Dow, Bohannon, Garland, Mazmanian, & Retchin, 2013) and community health workers (Ricketts & Fraher, 2013) would be a productive pursuit. Among other professions, medical assistants (MAs) can be used to review patient records to identify care gaps, order and administer vaccinations following care protocols, make outreach calls to patients, and coach patients to set self-management goals; registered nurses (RNs) can provide uncomplicated acute care treatment, chronic care management, and hospital-to-home transitions; and behavioral health elements can be collocated with primary care services (Ladden, et al., 2013; Sinsky, et al., 2013).

Shipman and Sinsky (2013) argued that inefficiency and waste in primary care delivery can address the primary care workforce shortage. Specifically, the use of team-based care, substituting MAs, RNs, or health coaches to handle administrative tasks can substantially reduce clinicians' workloads. Previsit planning and lab tests can reduce total work, save time, and improve care (Sinsky, et al., 2013). Additionally, the efficient physical layout of primary care space has been shown to save up to 30 minutes per day of a physician's time, while other process modifications regarding streamlining can add further time (Sinsky, et al., 2013; Ash & Ellis, 2012). Continued technological improvements in electronic health records (EHRs) could also improve workflow (Shipman & Sinsky, 2013).

- **Ongoing and forecasted changes in the delivery of primary care necessitate changes to the way that physicians and other primary care providers are reimbursed for their services.**

The PPACA sought to encourage more primary care services by temporarily increasing rates for some primary care services billed to Medicare and Medicaid (Carrier, Yee, & Stark, 2011). In order to improve the primary care system in the U.S., permanent changes to the payment system will be necessary. In addition to education and training to operate in a collaborative environment, changes must be made to the payment system to account for the benefits of team-based care. As noted by Bodenheimer and Smith (2013), the potential addition of new employees to practices must make financial sense. For example, capitated payments may incentivize high quality care and encourage team-based practice (Carrier, Yee, & Stark, 2011). Carrier, Yee, and Stark (2011) have noted

that the inclusion of shared savings and accountable care organizations (ACOs) in the PPACA are aimed at increasing capacity and efficiency through team-based care. Specifically, the Report of the National Commission on Physician Payment Reform supported, among other proposals, a shift away from fee-for-service payments and towards the eventual adoption of value-based care through bundled payments, capitation, or risk sharing (National Commission on Physician Payment Reform, 2013).

Carrier, Yee, and Stark (2011) have suggested that practices receive risk-adjusted monthly payments for each patient as part of 'comprehensive payment for comprehensive care' and that additional payments be linked to outcomes. The Centers for Medicare and Medicaid Services' (CMS) Comprehensive Primary Care Initiative and Center for Medicare and Medicaid Innovation program, which both incorporated private payers, successfully utilized a combination of fee-for-service, monthly per-person care management fees, and rewards for quality performance, shared savings, or both (Baron & Davis, 2014). In fact, Ash and Ellis (2012) reported that "existing data can support the risk-adjusted bundled payment calculations and performance assessments needed to encourage desired transformations in primary care." They devised a primary care activity level (PCAL) that indicated the amount of care that should be provided to a given population and recommended risk-adjusted outcomes that could be used to reward practices with better than expected patient outcomes. This PCAL might be generated for different subgroups based on multiple needs-based delivery systems, allowing primary care practices to focus on subgroups whose needs they were most equipped to meet (Porter, Pabo, & Lee, 2013).

- **Changes in the primary care delivery system will mandate changes, both systemic and content-based, to the training of health professionals.**

Furthermore, in the movement toward task shifting and interprofessional collaboration, the need for changes to the training of health care providers has been noted (Ricketts & Fraher, 2013; Dow, Bohannon, Garland, Mazmanian, & Retchin, 2013). After all, the effective use of team-based care may provide greater benefit to the health care workforce by providing primary care clinicians with greater career satisfaction and improved quality of patient care and satisfaction. This is achieved through the remediation of primary care practice away from a hurried and chaotic work environment (Willard-Grace, et al., 2014), which could remove the high risk for primary care physician burnout. The difficult work life has been identified as the most influential factor in discouraging medical students from pursuing careers in primary care (Sinsky, et al., 2013).

According to Carrier, Yee, and Stark (2011), policymakers may also want to consider the consequences of capping the number of graduate medical education (GME) residencies and reducing Medicare GME funding. According to these authors, the Council on Graduate Medical Education has recommended increasing residency positions in selected specialties with shortages, such as adult primary care and psychiatry. The PPACA sought to achieve this end by supporting additional primary care training in academic settings through financial support for the medical programs, faculty, and trainees and the use of targeted recruitment of individual students likely to practice in primary care. Similarly, the National Health Service Corps (NHSC) currently offers loan repayment to primary care practitioners working in designated health professional shortage areas. Participation in NHSC programs has roughly tripled since 2008 because of increased funding. In Texas, the Physician Education Loan Repayment Program (PELRP) is a valuable tool for incentivizing primary care and psychiatric practice in underserved areas and for indigent populations. Likewise, until 2012 the Texas Statewide Primary Care Preceptorship Program provided students experiences in community-based primary care settings, including in rural areas. Lamentably, funding for this program was withdrawn in 2012. Scholarships for students planning to practice primary care might likewise remove barriers for increasing medical students from underserved areas. Such targeted efforts may better align distribution of providers with need, both geographically and by specialty. Constraining residency slots might preclude longer-term policies for increasing the supply of primary care physicians.

Finally, in imagining a better functioning primary care system in the US, Dow, et al. (2013) proposed a three platform system for addressing the population's needs. For the healthiest patients, those whose have

the lowest burden of chronic disease and require care largely for acute medical problems, a basic primary care system with a strong referral network in place is likely sufficient. For patients with higher needs, for example those with chronic illnesses or comorbidities, medical homes staffed by interprofessional health teams would be likely to reduce the use and subsequent cost of care in other settings. Finally, the most difficult chronic cases should be provided care that works to directly manage their cases and engages in patient outreach. The implementation of this system requires recognition of the need to alter the current delivery system as noted throughout this chapter.

Primary Care and the Patient-Centered Medical Home

The previous chapter has made clear that a shift is needed in the nation's delivery of healthcare, especially primary care. It has been estimated that roughly 30% of healthcare spending is unnecessary (Nielsen, Langner, Zema, Hacker, & Grundy, 2012). As a means of addressing this issue and others, changes to the payment and delivery systems are needed. Thus far, many physicians remain tied to a fee for service payment model that ignores the increasing burden of chronic disease in the population, a declining access to health care for many, and workforce challenges related to recruiting and retaining primary care physicians, all while the PPACA is expected to drive demand for these services even higher (Goldberg, Beeson, Kuzel, Love, & Carver, 2013).

Role of the Patient-Centered Medical Home

One commonly-cited, potential solution for these challenges is the PCMH. Despite dating back to the 1960s, the idea of the PCMH has evolved over time (Roby, et al., 2010) and is in fact innovative because it challenges primary care physicians and practices to go beyond improving existing strategies for healthcare delivery and pushes these practices toward envisioning and implementing new and better strategies (Nutting, Crabtree, & McDaniel, 2012). The PCMH is best defined as "a model of primary care that is patient-centered, comprehensive, team-based, coordinated, accessible, and focused on quality and safety" (Nielsen, Langner, Zema, Hacker, & Grundy, 2012). This concept has been embraced, to varying degrees, by a number of physician groups, specifically the American Academy of Family Physicians, American Academy of Pediatrics, American College of Physicians, and the American Osteopathic Society, who developed the Joint Principles for the PCMH. These principles, which were later endorsed by at least 18 additional physician groups (Nielsen, Langner, Zema, Hacker, & Grundy, 2012), identified the following as attributes of the PCMH (Roby, et al., 2010):

- There should be a personal physician for each patient.
- Care should be physician-directed and delivered by a multidisciplinary team.
- Care should be oriented toward the whole person, with case management and other services provided as needed.
- Evidence-based practice and the use of health information technology (HIT) will be used to improve the quality and safety of patient care.
- Enhanced access to care will be available through open scheduling, expanded hours, and new forms of communication with patients.
- Appropriate implementation of the PCMH is reliant upon adequate reimbursement to support innovative components, including HIT and team-based care.

Policy Considerations

It follows from these attributes that the PCMH must be part of larger delivery system reform and integration efforts (Nielsen, Olayiwola, Grundy, & Grumbach, 2014). Indeed in a recent review of PCMH proposals by five think tanks, the Patient-Centered Primary Care Collaborative (Shalijan & Gibson, 2013) identified three themes for needed changes: payment reform incentives, new delivery models, and patient/consumer engagement strategies. Each of the five proposals recommended new payment systems involving ACOs and PCMHs. Three such plans mentioned the need to revise scope of practice in an effort to empower multi-disciplinary teams, and all addressed improvements in HIT though specific aspects varied.

- **Improvements in the delivery of team-based, collaborative care will be instrumental in the success of new delivery and payment systems.**

The ACO, which seeks to bundle payments based on outcomes and savings, is consistently linked to PCMHs, and in fact PCMHs will likely continue to gain prominence as the number of ACOs increase (Nielsen, Langner, Zema, Hacker, & Grundy, 2012). One common element deployed for potential cost-savings in ACOs and aligned with PCMH goals is team-based care, which a pilot project in Virginia identified as a core element of primary care practice transformation (Goldberg, Beeson, Kuzel, Love, & Carver, 2013). Key elements of team-based care include: shared responsibility for care, mutual respect among team members for their diversity and skills,

an open environment in which team members are comfortable sharing concerns, patient-centered care, and the willingness of team members to take on additional roles and responsibilities (Goldberg, Beeson, Kuzel, Love, & Carver, 2013). A true challenge of this approach is to overcome tradition, reinforced by training, that has deeply ingrained physician centricity into practice models and the psyches of multiple practitioner types (Nutting, Crabtree, & McDaniel, 2012). Within the PCMH, the team-based care model includes many clinicians who participate and communicate with one another about a defined panel of patients. The use of these interdisciplinary teams has been associated with fewer communication problems and medication errors, better medication adherence, fewer inpatient hospital days, increased productivity and patient visits by staff, more comprehensive care for patients, and improved patient experience (Goldberg, Beeson, Kuzel, Love, & Carver, 2013). In addition to these benefits, the team-based model in the PCMHs may also help ameliorate the impacts of potential primary care physician shortages (RAND Corporation, 2013).

- **Continued expansion and utilization of HITs will increase the efficiency of the health care system.**
- **Robust networks linking primary care and specialist providers that readily deliver coordinated care will improve system efficiency and patient satisfaction.**

In addition to team-based care, two core necessities of successful PCMHs are the adoption of HIT and the creation and maintenance of relationships with specialty providers (Goldberg, Beeson, Kuzel, Love, & Carver, 2013). In order for a PCMH to receive National Committee for Quality Assurance (NCQA) certification, it must adopt HIT components including disease registries, electronic communication, and electronic prescribing (Rich, Lipson, Libersky, Peikes, & Parchman, 2012). Moreover, PCMH efforts at HIT should be focused more towards making EHRs more clinically useful, rather than acting merely as billing documentation (Crabtree, et al., 2010), allowing providers to identify and proactively manage at-risk patients (Rich, Lipson, Libersky, Peikes, & Parchman, 2012). HIT efforts may also improve efficiency by reducing face-to-face patient-provider visits (Nielsen, Olayiwola, Grundy, & Grumbach, 2014) through the use of electronic health care portals. At the same time, high-functioning PCMHs should be committed to engaging a wide range of providers, including specialists, hospitals, long-term care, and community partners, among others (Nielsen, Olayiwola, Grundy, & Grumbach, 2014). These 'health neighborhoods' ensure the efficient coordination of care (Nutting, et al., 2011) and should be included in the development of HIT networks.

- **Ongoing evaluations of PCMHs, ACOs, and other innovative models will provide important best practice data on how these models should be implemented and for what populations.**

In their assessment, Bertakis and Azari (2011) found that patient-centered care was associated with decreased annual patient visits for specialty care, less frequent hospitalizations, fewer laboratory and diagnostic tests, and decreased total medical charges and specialty charges. A UnitedHealthcare estimate indicated that its PCMH efforts would save twice as much as they cost, while WellPoint predicted that PCMH programs could reduce projected medical costs by up to 20% in 2015 (Nielsen, Langner, Zema, Hacker, & Grundy, 2012). Within Texas, a Blue Cross Blue Shield of Texas pilot PCMH program showed 23% lower readmission rates and $1.2 million in estimated cost savings (Nielsen, Langner, Zema, Hacker, & Grundy, 2012). Likewise, WellMed Inc. of San Antonio showed improved disease management outcomes and screening rates in its PCMH trial. More broadly, a 2 year, 8 practice project in Virginia showed that the PCMH, characterized by team-based care, improved quality of care according to performance measures and patient satisfaction (Goldberg, Beeson, Kuzel, Love, & Carver, 2013). A trial program in Orange County, CA's safety net-based system of care found that PCMHs, characterized by their team-based care, case management, and provision of increased access to primary care and specialty services, demonstrated reduced ER utilization among patients consistently engaged with their PCMHs. This success is likely attributable to increased access to primary care, improved care coordination, and delivery of case management and patient education (Roby, et al., 2010). Given the available evidence, early reviews of PCMH results indicate that the Triple Aim of improving population health, reducing costs,

and improving patient satisfaction is being met and that PCMHs are providing both short and long term savings for patients, employers, health plans, and policymakers (Nielsen, Langner, Zema, Hacker, & Grundy, 2012).

Despite these promising reviews, Friedberg et al. (2014) recently found no reductions in healthcare utilization and improvement in only one of 11 chronic disease management measures, indicating there may be some limitations to the PCMH in certain circumstances. Thus far, the impacts of PCMHs have been fairly positive, but with the most success being shown when they are implemented in highly integrated health care systems and single-payer community-based practices. And while the PCMH has been presented for widespread adoption, researchers should continue to consider its potential impacts on targeted high-risk populations as well as which features or combination of features most contribute to PCMH success (Schwenk, 2014). Similarly, the best means of integrating ACOs and PCMHs should be tested further (Crabtree, et al., 2010). Specifically, the PCMH may currently be best deployed to serve those patients consuming high amounts of care (Schwenk, 2014), especially the elderly or working age adults with disabilities (Rich, Lipson, Libersky, Peikes, & Parchman, 2012).

- **Innovative practices that improve efficiency and patient satisfactions must be supported through revisions to the current health care payment systems.**

With ongoing changes in the health care delivery system, new forms of payment for team-based care are needed (Goldberg, Beeson, Kuzel, Love, & Carver, 2013). Nutting, Crabtree, and McDaniel (2012) have noted that the traditional fee-for-service structure is likely to exacerbate practitioners' reluctance to embrace innovation in patient flow and team-based care. For these reasons, traditional fee-for-service models should be supplemented with additional care management payments (Nielsen, Olayiwola, Grundy, & Grumbach, 2014), most commonly a per-member per-month fee (Rich, Lipson, Libersky, Peikes, & Parchman, 2012). However, bundled payments (Nutting, Crabtree, & McDaniel, 2012), capitation, or some combination thereof (Crabtree, et al., 2010) are more likely to incentivize involvement of other provider types and full PCMH commitment.

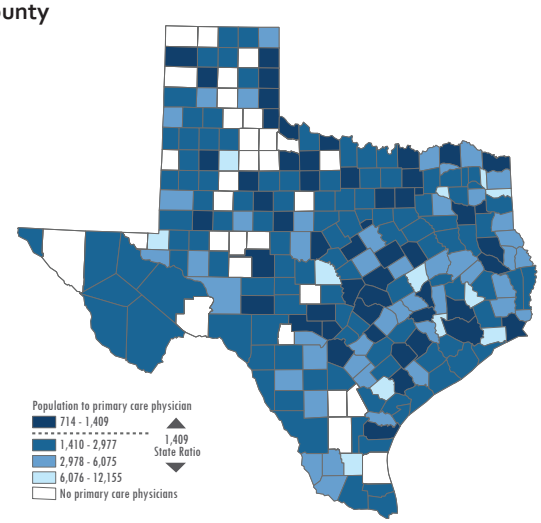
Primary Care Physicians

As previous chapters have made clear, many health workforce planners have previously reported and forecast future shortages of primary care physicians. The full implementation of the PPACA, in addition to changes in demographics and disease burden, is expected to intensify these shortages. Specifically, the American Association of Medical Colleges (AAMC) has estimated current shortages of primary care physicians of around 30,000 to 45,000 (Jacobson & Jazowski, 2011; Chen & Mehrotra, 2014) with an increase to 66,000 by 2025 (Chen & Mehrotra, 2014). Moreover, the profound maldistribution of providers continues to negatively impact the availability of primary care services (Okie, 2012; Eden, Berwick, & Wilensky, 2014). The IOM has further reported that there is a mismatch between the population's health needs and the specialty makeup of the physician workforce, insufficient diversity among physicians, a gap between new physicians' knowledge and skills and competencies required for practice, and a lack of fiscal transparency (Eden, Berwick, & Wilensky, 2014). In this recent IOM report on GME, the authors describe how although the GME system has been producing more physicians, it has not been producing an increasing proportion of physicians who choose to practice primary care. Goodman & Robertson (2013), citing the population's needs for additional primary care services and practitioners, more stridently ask whether the publicly funded GME system should be used to accommodate medical student choice or perhaps constrain choice to support production of primary physicians, especially in light of federal legislative reluctance to increase funding for medical training.

Workforce Description

In September 2014, there were 19,277 primary care physicians[2] actively licensed and providing direct patient care in the State of Texas according to the Health Professions Resource Center within the Department of State Health Services. With a projected 27,161,944 citizens of Texas, the state has a population to primary care provider ratio of 1,409:1, however the distribution of primary care physicians is not equal across the state. Indeed, 9,889 of the state's primary care physicians (51.3%) were located in Texas' five most populous counties (Bexar, Dallas, Harris, Tarrant, and Travis). By comparison, 45.5% of the state's population was located in these counties.

Ratio of Texas population to primary care physicians, by county



Geographic Designation[5]	Ratio of population to primary care physician
Metropolitan	1,358
Non-metropolitan	1,975
Border	1,999
Non-border	1,362
Texas	**1,409**

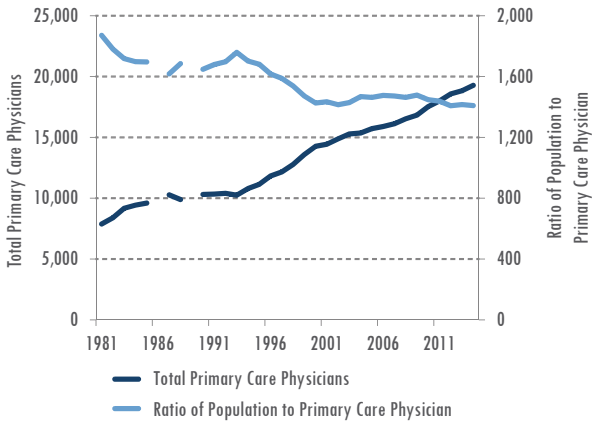
In 2004, there were 15,360 actively licensed primary care physicians providing direct patient care in Texas. By 2009, this number was 16,830. These numbers indicate that the primary care physician workforce has grown 2.6% annually since 2004 and 2.9% since 2009. When considering population to provider ratios, the state has improved by 0.4% annually since 2004 and 0.9% since 2009.

Among the 19,270 primary care physicians for whom data were available, 58.1% were male. However the table below shows that for each age category up to age forty, the majority of primary care physicians were female.

Of the 19,274 primary care physicians for whom ethnicity data were available, 58.1% were white, 10.3% were Hispanic, and 7.1% were African

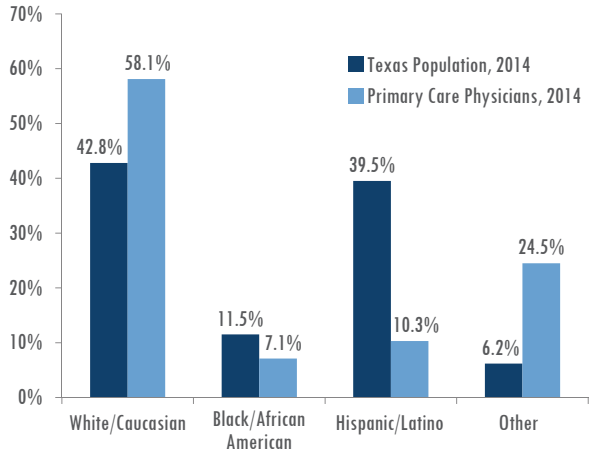
[2] The Health Professions Resource Center's definition of a primary care physician is one who has indicated a primary specialty in one of the following areas: adolescent medicine, family practice, general practice, geriatrics, gynecology, internal medicine, obstetrics, pediatrics.

Primary care physician growth trends



Age Group	Female	Male	Total
26-30	125	61	**186**
31-35	1,176	589	**1,765**
36-40	1,493	1,098	**2,591**
41-45	1,636	1,447	**3,083**
46-50	1,215	1,497	**2,712**
51-55	966	1,464	**2,430**
56-60	701	1,560	**2,261**
61-65	441	1,422	**1,863**
>65	320	2,059	**2,379**
Total	**8,073**	**11,197**	**19,270**

Ethnicity of the Texas population and primary care physicians



American. The rest indicated some other ethnicity. By comparison, the composition of Texas' population was estimated to be 42.8% whites, 39.5% Hispanics, 11.5% African-Americans, and 6.2% from other ethnicities.

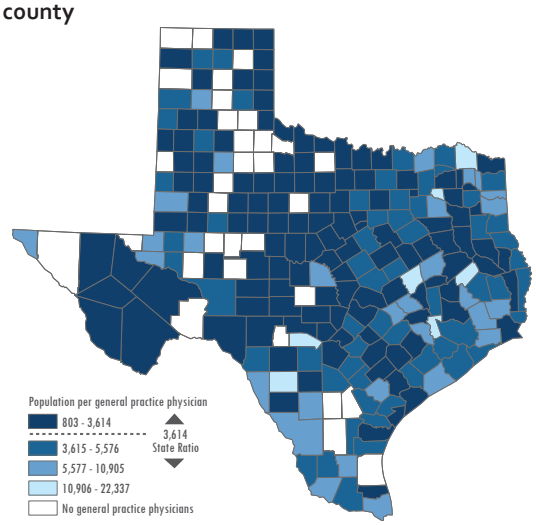
In 2014, 14% of primary care physicians were aged 65 years or older and 36.3% were 55 or older, indicating that over a third of the state's primary care physicians had reached or were approaching retirement age. The median age of primary care physicians was 49 years and the mean age was 50.6 years.

Primary Care Physicians – General Practice

In 2014 there were 7,515 primary care physicians indicating a primary specialty of general practice, including family medicine and adolescent medicine. Precisely 45.0% of these were located in Texas' five most populous counties, which have 45.5% of the state's population. Thus unlike for primary care physicians at-large, non-metropolitan areas had relatively better population to provider ratios than did metropolitan areas.

Among general practitioners, 65.4% were male. Similar to all primary care physicians, younger cohorts have greater percentages of females.

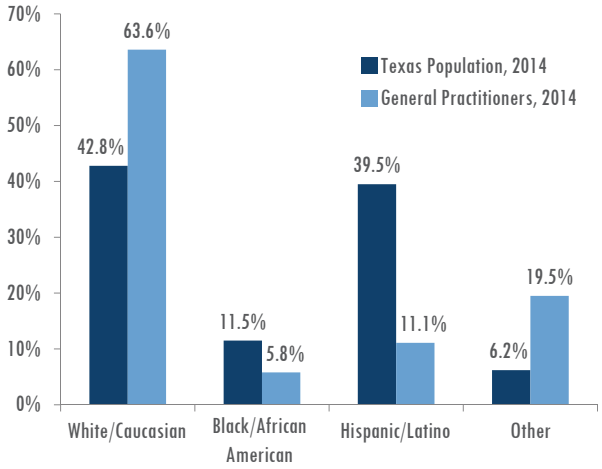
Ratio of Texas population to general practice physicians, by county



Geographic Designation	Ratio of population to general practice physician
Metropolitan	3,675
Non-metropolitan	3,207
Border	5,371
Non-border	3,128
Texas	**3,614**

Age Group	Female	Male	Total
26-30	44	22	**66**
31-35	335	244	**579**
36-40	468	480	**948**
41-45	535	646	**1181**
46-50	381	571	**952**
51-55	323	618	**941**
56-60	259	686	**945**
61-65	144	648	**792**
>65	113	998	**1,111**
Total	**2,602**	**4,913**	**7,515**

Ethnicity of the Texas population and general practitioners



Of the 7,513 general practitioners for whom data were available, 63.6% were white, 11.1% were Hispanic, and 5.8% were African-American.

Finally, 16.3% of general practitioners were aged 65 years or older while 40.6% were 55 or older. The median age among general practitioners was 51 years and the mean age was 51.8 years.

Primary Care Physicians – Internal Medicine

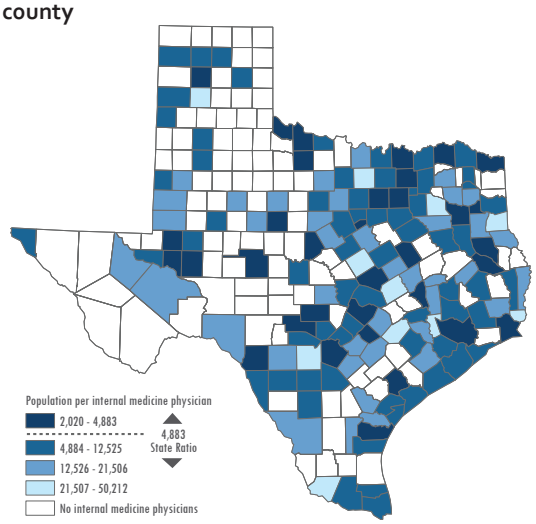
There were 5,563 primary care physicians indicating a primary specialty of internal medicine in 2014. 57.0% of these were located in Texas' five most populous counties.

Among the 5,558 internal medicine physicians for whom data were available, 65.0% were male. Similar to all primary care physicians, younger cohorts have greater percentages of females.

Of the 5,563 internal medicine physicians for whom data were available, 47.2% were white, 8.7% were Hispanic, and 7.2% were African-American. The remainder reported another ethnicity.

Finally, 11.2% of internal medicine physicians were aged 65 years or older while 31.9% were 55 or older. The median age of internal medicine physicians was 48 years and the mean age was 49.5.

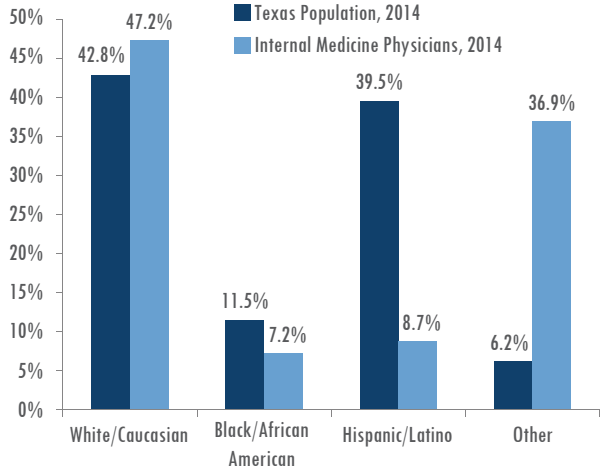
Ratio of Texas population to internal medicine physicians, by county



Geographic Designation	Ratio of population to internal medicine physician
Metropolitan	4,592
Non-metropolitan	9,946
Border	7,698
Non-border	4,684
Texas	**4,883**

Age Group	Female	Male	Total
26-30	32	25	**59**
31-35	264	245	**509**
36-40	389	423	**813**
41-45	398	495	**895**
46-50	343	569	**913**
51-55	224	507	**731**
56-60	143	483	**627**
61-65	93	385	**478**
>65	52	486	**538**
Total	**1,940**	**3,618**	**5,558**

Ethnicity of the Texas population and internal medicine physicians



Primary Care Physicians – Pediatrics

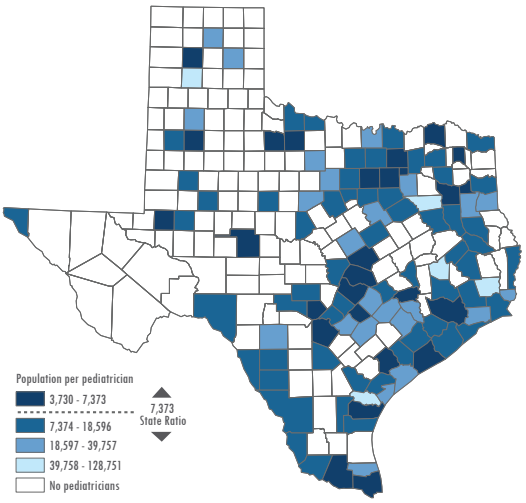
There were 3,684 pediatricians (excluding those indicating a pediatric subspecialty as a primary specialty) in 2014. 54.2% of these were located in Texas' five most populous counties, which have 45.5% of the state's population.

Among the 3,683 pediatricians for whom data were available, 38.1% were male, a number far lower than that seen among general practice and internal medicine physicians. Similar to all primary care physicians, younger cohorts have greater percentages of females.

Of the 3,683 pediatricians for whom data were available, 55.8% were white, 11.7% were Hispanic, and 7.1% were African-American.

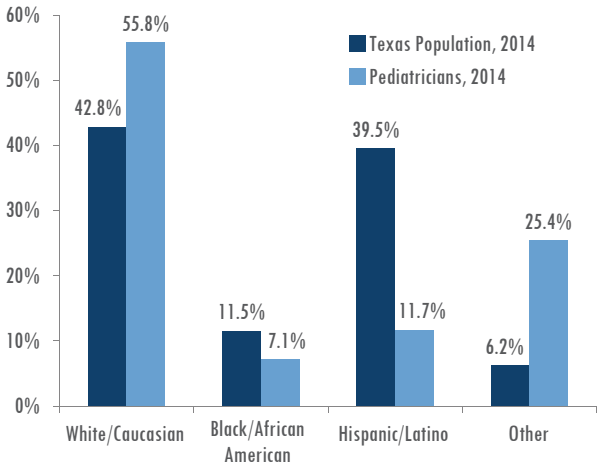
Finally, 12.2% of pediatricians were aged 65 years or older while 31.8% were 55 or older. The median age of pediatricians was 47 years and the mean age was 49.

Ratio of Texas population to pediatricians, by county



Geographic Designation	Ratio of population to pediatrician	Ratio of population under 18 to pediatrician
Metropolitan	6,791	1,825
Non-metropolitan	21,464	5,209
Border	8,359	2,564
Non-border	7,273	1,896
Texas	**7,373**	**1,959**

Ethnicity of the Texas population and pediatricians

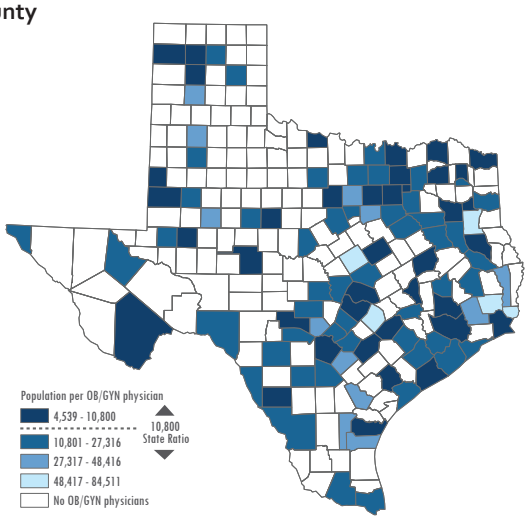


Age Group	Female	Male	Total
26-30	41	12	**53**
31-35	384	74	**458**
36-40	403	121	**524**
41-45	439	184	**623**
46-50	305	209	**514**
51-55	261	164	**425**
56-60	193	189	**383**
61-65	139	184	**323**
>65	114	267	**381**
Total	**2,279**	**1,404**	**3,683**

Primary Care Physicians – Obstetrics and Gynecology

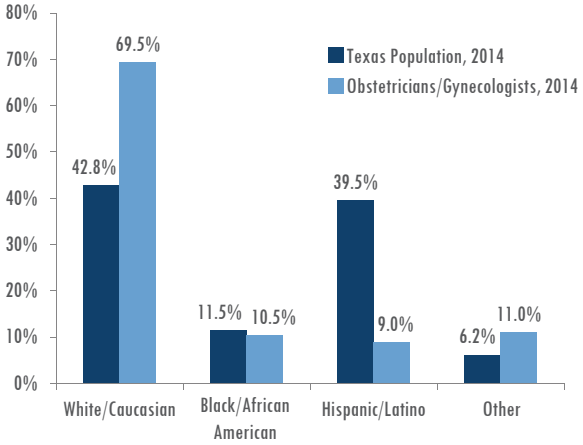
There were 2,515 physicians indicating a primary specialty of gynecology (224 physicians) or obstetrics and gynecology (2,291 physicians) in 2014. 53.2% of these were located in Texas' five most populous counties.

Ratio of Texas population to obstetrician/gynecologist, by county



Geographic Designation	Ratio of population to OB/GYN physician	Ratio of female population 15-44 to OB/GYN physician
Metropolitan	10,092	1,825
Non-metropolitan	23,386	2,565
Border	15,524	2,565
Non-border	10,432	1,896
Texas	**10,800**	**2,033**

Ethnicity of the Texas population and obstetricians/ gynecologists



Among the 2,514 physicians specializing in obstetrics and/or gynecology for whom data were available, 50.2% were male. Similar to all primary care physicians, younger cohorts have greater percentages of females.

Of the 2,515 physicians specializing in obstetrics and/or gynecology, 69.5% were white, 9.0% were Hispanic, and 10.5% were African-American. The remainder reported another ethnicity.

Age Group	Female	Male	Total
26-30	6	2	**8**
31-35	193	26	**219**
36-40	233	74	**307**
41-45	264	122	**386**
46-50	186	148	**335**
51-55	158	175	**333**
56-60	106	202	**308**
61-65	65	205	**270**
>65	41	308	**349**
Total	**1,252**	**1,262**	**2,514**

Finally, 15.7% of physicians specializing in obstetrics and/or gynecology were aged 65 years or older while 39.6% were 55 or older. The median age in this cohort was 51 years and the mean age was 51.4 years.

Policy Considerations

Data that evaluate how well residency programs are performing in meeting the needs of the population (i.e., program outcomes and performance measures) are not available (Eden, Berwick, & Wilensky, 2014; Goodman & Robertson, 2013). An entity similar to the unfunded National Health Care Workforce Commission might oversee the process that worked toward innovation and could, for example, measure early physician practice outcomes, like settings and specialties in which residents went on to practice. Equally innovative, these same authors have proposed the phased introduction of performance based GME funding that rewarded programs meeting preferred outcomes (Eden, Berwick, & Wilensky, 2014; Goodman & Robertson, 2013). Both of these initiatives seek to address what is otherwise a lack of persuasive incentives for residency programs to embrace innovative practices in the development of the physician workforce (Goodman & Robertson, 2013).

While there have been many efforts aimed at reducing shortages of primary care physicians, many are not supported by the empirical literature. In truth, such efforts should run the gamut from

targeting students prior to their consideration of medical school through to post-residency choices made by physicians (Bennett & Phillips, 2010). The literature shows that policymakers, educators, residency programs, and others should strive to make primary care a more attractive and accessible option to those interested in its practice. Second, these same actors should make a concerted effort to identify, as early as possible, individuals likely to enter primary care practice, and guide them along their way toward this goal. Finally, the education, training, and re-training of primary care physicians must shift to mirror changes in care delivery, such as team-based care and process efficiencies.

- **Nationally and locally, there is a need to increase the number of primary care physicians. Such an increase should be accomplished through the expanded support of primary care medical school programs and GME slots, improved recruitment of students interested in practicing in primary care, and the expansion of incentives that aid in the recruitment and retention of primary care physicians.**

A benchmark for primary care practitioners has been set at 40% of all physicians, yet resident interest in primary care has been falling for over ten years, and data from 2010 show that only 16-18% of National Resident Matching Program participants were likely to ultimately practice primary care (Iglehart, 2010). In terms of capacity, there was a 12.8% increase in the number of radiology slots nationwide from 2002 to 2007 but just a 2.3% increase in those for primary care specialties (Goodman & Robertson, 2013). Additionally, modelling suggests that incremental changes to primary care payment systems or lessening educational debt burden will do little to change this result (Vaughn, DeVrieze, Reed, & Schulman, 2010). Rather, a multifaceted policy that addresses student debt incurred, practice incomes, and supply side considerations, such as increasing medical school enrollment or greater funding of primary care residency training, will be necessary.

With an eye toward the nation's GME system, the PPACA redistributed 900 existing but unused residency positions to primary care and general surgery, seeking to redress some of the impacts of the budget freeze on new residency positions. This however pales in comparison to the 8,000 new residency positions that teaching hospitals have created since this time, with most of these being in subspecialty and not primary care posts (Iglehart, 2010). In 2009, Medicare provided $9.5 billion to teaching hospitals - $3 billion to cover a share of resident stipends and $6.5 billion to cover the added costs in patient care associated with training (Iglehart, 2010). Critics have contended that these GME residency slots, consistently in hospital settings, are not ideal for the training of primary care practitioners who will be in ambulatory or community-based settings (Eden, Berwick, & Wilensky, 2014; Goodman & Robertson, 2013; Smith S. R., 2011).

A number of innovative medical education and GME programs have been established in the state. Programs found only in Texas, such as the Family Medicine Accelerated Track at the Texas Tech University Health Sciences Center in Lubbock, and The University of Texas' Transformation in Medical Education (TIME) initiative, are producing increased numbers of physicians, including primary care physicians, in less time, while still meeting rigorous national accreditation standards. The 83rd Texas Legislature established a new grant program, Primary Care Medical Education pipeline program, to promote additional innovations in preparing more primary care physicians for Texas.

Physicians, generally, have greater earning potential in specialty practice than in primary care. It has been posited that residency fill rate is associated with expected income and that student perceptions and not actual facts drive their specialty choices (Bennett & Phillips, 2010). Thus, students' medical school experiences can affect final specialty preference. For similar reasons, Smith (2011) recommended that schools make a concerted effort to present primary care in a positive light and that educators mentor potential primary care-oriented students. Broadly, there is a need to identify and target individuals who are likely to enter primary care practice by recruiting more diverse medical students, reforming the training system, and expanding the settings in which physicians are trained (Okie, 2012). Medical school and residency training, Okie continues, should reflect providers' interests – for example, potential rural practitioners should not be prepared in urban clinics.

In order for programs to attract students interested in practicing primary care, the following student traits identified in a systematic review are important. First, students who have an established interest in primary care entering medical school are far more likely to practice primary care than those who did not have preexisting preferences. To encourage more of these students to enter medical school, policies focused on strengthening of the premedical education pipeline and academic supports should be considered. Second, analysis has shown that medical students who are rural born, come from lower socioeconomic status (SES) backgrounds, or are older or married are more likely to select primary care (Bennett & Phillips, 2010). The Joint Admission Medical Program (JAMP) was created by Texas legislators to improve diversity among the state's physician workforce. Finally, students with higher 'social consciousness' (Bennett & Phillips, 2010) or who demonstrate altruism, have a desire to serve in underserved areas, or are committed to social responsibility (Smith S. R., 2011) are more likely to practice primary care. In order to increase the numbers of students with the above traits being accepted into medical schools, programs dedicated to the education of primary care providers may wish to lessen their reliance on grade point average (GPA) and Medical College Admission Test (MCAT) scores and rather adopt a score-blind admissions process once competent scores are achieved (Smith S. R., 2011; Bennett & Phillips, 2010).

In addition to these broad student traits, certain segments of practitioners may be appropriately targeted to address primary care needs. For example, comprehensive medical school rural programs have been shown to be an efficient approach to impact the supply of rural family physicians and primary care physicians (Rabinowitz, et al., 2012). In fact, all three programs profiled by Rabinowitz et al. (2012) target students with backgrounds and career plans that make them likely to practice in rural settings. Likewise, many colleges of osteopathic medicine have emphasized service in rural and underserved communities, resulting in many graduates becoming primary care providers and practicing in these areas (Fordyce, Doescher, Chen, & Hart, 2012). Finally, given their numbers, International Medical Graduates (IMGs) are sizable contributors to the rural workforce (Rabinowitz, et al., 2012; Van Zanten & Boulet, 2013) and are more likely than the physician population at-large to be primary care physicians and practice in underserved areas (Van Zanten & Boulet, 2013; Fordyce, Doescher, Chen, & Hart, 2012).

- **The education of primary care physicians and other primary care providers must continue to be realigned with innovative team-based, collaborative care.**

In addition to the need to produce more primary care physicians, the physician education system will be challenged to produce primary care physicians adept at working within a system of team-based care. The experience of Massachusetts during the implementation of its health reform law is likely to indicate a similar challenge for the rest of the nation: with greater numbers of insured people, the number of primary care physicians accepting new patients dropped and patients' wait times for appointments increased (Jacobson & Jazowski, 2011). There will continue to be a need for greater incorporation of non-physician primary care providers, an argument made in the previous and subsequent chapters.

As Jacobson and Jazowski (2011) point out, the PPACA provides an opportunity for organized medicine to take the lead in shaping the nation's response to the primary care shortage. In doing so, physicians should accept non-physician practitioners as primary care providers and seek to shift routine care to these providers. In fact, given the lack of appreciable differences in patient health outcomes, self-reported health status, treatment options, utilization of services, and resource use when non-physician providers address primary care needs, the expansion of non-physician practitioners is likely the fastest route to addressing our population's needs (Jacobson & Jazowski, 2011). Indeed, given the training and experience of primary care physicians, these generalists ought to be involved in the development of guidelines for practice by non-physician practitioners and audit the quality of care provided (Jacobson & Jazowski, 2011).

Okie (Okie, 2012) includes an anecdote in which the health care team operates like a NASCAR team, with the physician as driver and other team members as the pit crew. For this team to operate efficiently and effectively, training in interprofessional collaboration is needed throughout physician preparation (Okie, 2012; Smith S. R., 2011). Innovative practices have utilized nurses and medical assistants to conduct

administrative tasks and prepare prescriptions and patient instructions, allowing the physician to focus on direct patient needs (Okie, 2012). Colorado, for example, has begun training new physicians by having them collaborate with mental health professionals and pharmacists. Still, the full integration of team-based care into medical education has been lacking (Goodman & Robertson, 2013).

By engaging in team-based care, primary care physicians can focus their own attentions on overseeing complex patients and providing oversight in this emerging model (Jacobson & Jazowski, 2011; Chen & Mehrotra, 2014). In fact, it is estimated that primary care physicians could increase the panel size of their practices up to 50% by properly implementing team-based care. Existing primary care physicians can further improve productivity by adopting new modes of communication and technology in their everyday practice (Chen & Mehrotra, 2014). By applying these principles to interactions with patients, primary care physicians can improve efficiency and provide true patient-centered care. For example, by having another provider or employee handle the entry of case information into the EHR, the doctor is able to focus on the patient and not the computer (Okie, 2012).

In reviewing other needed changes in physician education, a number of themes emerged. Jacobson and Jazowski (2011) have proposed that the transformation of primary care and the PPACA would allow physicians an opportunity to fully implement population health approaches into their practices. Goodman and Robertson (2013) noted that given the shift in disease burden toward chronic disease, there may be a need for primary care physicians to spend more training time away from the acute care setting. With primary care physicians focusing on difficult and chronic cases under the team-based care model, this is a visionary proposal. These same authors also call for training of physicians in microsystem (office-level) process improvement as addressed in the previous chapter.

The majority of this chapter has focused on proposed changes in the production of physicians and the training of new physicians. However, these changes are also applicable to existing practitioners. In other words, the existing workforce should be re-trained to function in this new practice environment. According to the Center for Medicare and Medicaid Innovation the entire workforce should be trained in prevention, care coordination, care process reengineering, dissemination of best practices, continuous quality improvement, and the use of data (Fraher, Ricketts, Lefebvre, & Newton, 2013). Indeed, a survey by the American Board of Family Medicine has noted a narrowing of primary care physician scope of practice, with shifts away from pre- and post-operative care, maternity care, office surgery, mental health, and the treatment of children (Okie, 2012). Okie (a professor of family medicine at Georgetown University) describes some doctors conducting 'early referrals', rather than maintaining/expanding their knowledge and cultivating relationships with specialists who they can receive advice from before referral. It has been established that primary care physicians can adequately attend to the vast majority of cases with which they are confronted. In a robust and fully functioning primary care system in which primary care physicians have more reasonable panel sizes, these providers are able to better limit referrals and improve delivery system efficiency.

Physician Assistants in Primary Care

As indicated in previous chapters, the HRSA within the US Department of Health and Human Services has estimated that the nation's current health care workforce needs an additional 16,000 primary care providers to meet the population's needs. This number is expected to increase to a shortage of 52,000 physicians alone due to the expanded access to care expected as a consequence of the PPACA, the aging of baby boomers who will consume more care, and continued changes in the practice patterns of physicians (Glicken & Miller, 2013). A second source indicates that the country will be 46,000 primary care full-time equivalents (FTEs) short by 2025 (Cawley & Hooker, 2013).

PAs were a workforce idea created in the 1960s by physicians as a means of addressing workforce shortages and uneven distributions of primary care physicians (Cawley & Hooker, 2013). Until relatively recently, the majority of PAs served in primary care settings. In 1996 50.8% of PAs did so, yet by 2010 this proportion was down to just 31% (Coplan, Cawley, & Stoehr, 2013). One potential explanation for this movement away from primary care by PAs is that federal funding for PA education, generally targeted toward primary care programs and the deployment of PAs to underserved areas, has decreased (Hooker & Everett, 2012). Another explanation relates to potential PA salary discrepancies between primary care and specialist settings. The net number of PAs moving out of family practice and into specialty practice exceeds the number moving in the other direction, and each year a smaller percentage selects family medicine upon graduation (Hooker, Cawley, & Leinweber, 2010). Finally, over the last decade some other countries have seen growth in the PA supply and are now exploring how PAs can contribute to their health workforces, occasionally hiring US-trained PAs (Halter, et al., 2013).

Despite the decreasing proportion of PAs serving in primary care, the profession remains important to the adequate provision of primary care services. In 2010, the American College of Physicians and the American Academy of Physician Assistants committed to reversing the declines in primary care practice for both groups. It has been estimated that PAs account for 10% of the U.S. primary care workforce (Glicken & Miller, 2013). Further, while PAs and NPs together attended to 10% of hospital outpatient department visits in 2001, that number had increased to 15% by 2008 and 2009 (Cawley J. , 2012). Indeed, nearly 60% of member physicians surveyed by the American Board of Family Medicine indicated that they routinely worked with a PA or a NP/certified nurse-midwife (CNM) (Glicken & Miller, 2013).

Additionally, there are significant gaps in knowledge on how PAs contribute to primary care (Hooker & Everett, 2012). Despite the initial intent of the workforce, PAs generally practice in urban settings. However, the vast majority of PAs in rural practice do serve in primary care settings (Hooker & Everett, 2012). Further, evidence suggests that PAs see greater proportions of Medicaid, CHIP, or uninsured patients (Glicken & Miller, 2013; Hooker & Everett, 2012; Cawley & Hooker, 2013), are more likely to be located in underserved areas (Glicken & Miller, 2013; Hooker & Everett, 2012), and to be working in open access practices (Hooker & Everett, 2012). Patients of PAs are also more likely to be women (Hooker & Everett, 2012) and younger (Cawley & Hooker, 2013).

As policymakers seek to attract more PAs to primary care, more data on the individual characteristics indicating a potential predilection to primary care are needed (Coplan, Cawley, & Stoehr, 2013). National analyses have indicated that primary care PAs are significantly more likely to be female, non-white, slightly older and have slightly more practice experience (Coplan, Cawley, & Stoehr, 2013).

As the PPACA and other factors drive demand for primary care services, the growth of the primary care PA workforce should be considered as a part of the solution. Data have suggested that consumers are more than willing to utilize the services of a PA, especially if faced with wait times for physicians (Dill, Pankow, Erikson, & Shipman, 2013). Additionally, the growing number of ACOs, PCMHs, and internists selecting to limit their patient panels in concierge medicine arrangements will only strengthen the need for a multifaceted approach to workforce planning (Cawley & Hooker, 2013).

Competencies and Roles

A review of the literature on PAs reveals that they are well-suited to meet the goals of primary care

and to work as highly adaptable providers within integrated health care teams (Hooker & Everett, 2012; Hooker, Cawley, & Leinweber, 2010). Generally, PAs work under the supervision of physicians to perform the diverse functions of conducting physical exams, assessing and treating illnesses, ordering and interpreting tests, counseling on preventive services, assisting in surgery, and writing prescriptions (Brock, et al., 2013; Cawley J. , 2012). PAs may also conduct research, document cases, perform administrative data collection, educate patients, and dispense medication and specialist referrals (Halter, et al., 2013; Cawley J. , 2012). When allowed to perform to their full scope of practice within a physician-led team, PAs can serve an important role in the delivery of primary care (Glicken & Miller, 2013).

Given the history of the profession and its continued supervision by physicians, the interdependent relationship between individual PAs and their supervising physicians has been described as 'negotiated performance autonomy' (Cawley & Hooker, 2013) through which roles and expectations are defined. It is understood that it is neither necessary nor efficient for every patient to be seen by a physician (Hooker & Everett, 2012). As such, the roles of PAs might be dichotomized as either substitutive or complementary, depending on the division of labor between the physician and PA and the level of autonomy the PA receives. A purposeful review of the literature found that PAs with greater experience, more years spent in practice with the supervising physician, and other correlates were more likely to be practicing in a substitute role. By comparison, some primary care physicians prefer to assign their supervised PAs to acute or preventative care (Hooker & Everett, 2012). For example, a systematic review found that doctors employed in the same practice as PAs may choose to see more patients with chronic or complex illnesses while PAs are assigned acute cases or those of younger, relatively simpler, patients (Halter, et al., 2013).

Physician Assistant Contributions to Efficacy and Efficiency

A recent systematic review concluded that family practice physicians generally support the use of PAs, citing their ability to assist with patient caseload (functionally reducing that of the supervising physician), improve care by reducing patient waiting times, increase measures of practice productivity including the number of patients seen, increase the amount of time doctors have for attending to complex tasks, and increase patient satisfaction (Halter, et al., 2013). Also, physicians in solo practice have indicated that the employment of PAs or NPs increased their numbers of patient visits per week, allowed physicians to work fewer weeks per year, and provided greater net income to their practices (Hooker & Everett, 2012). Moreover, specialists indicated that PAs generally make appropriate and timely referrals (Hooker & Everett, 2012). In all, supervising physicians consult on roughly 12% of PA cases, according to an observational study (Halter, et al., 2013). In sum then, PAs are trusted by physicians to provide efficacious care in a timely manner.

A potential, and likely targeted, outcome of the use of PAs in primary care is that physician productivity is expected to increase and physician resources may be allocated to more pressing needs (Halter, et al., 2013). It has been estimated that PAs can perform roughly 85%-90% of services provided by the standard primary care physician (Hooker & Everett, 2012), supporting the notion that physicians supervising PAs can also dedicate time to their most challenging cases. Indeed, in-depth analysis indicates that a primary care PA in a large practice may be equivalent to between .73 and .96 family practice physician full-time equivalents (FTE) or .7 to .85 FTEs if treating the more complex cases potentially seen by internal medicine and geriatrics physicians (Cawley J. , 2012). Equally as important, results indicate that patients may be just as satisfied with treatments provided by PAs as they are with those provided by physicians (Hooker & Everett, 2012). At the same time, an analysis of a large health maintenance organization's (HMO) expenses indicated that for every condition managed by PAs, PAs provided lower total cost per visit than that of cases managed by physicians in the same department, without a difference between PAs and physicians in rate of return visits for a diagnosis. Another study conducted on HMO labor costs revealed that PAs and NPs provided cost-efficient care, standardized for case mix. These results encouraged Hooker and Everett (2012) to conclude that PAs are cost-effective from a labor standpoint and are also cost beneficial to employers (Hooker & Everett, 2012). One potential reason for this success is the salary differential between PAs and physicians, which has remain fixed at roughly 45% over the past

decade. Indeed, PAs have among the highest annual compensation to production ratios among all health professions and can generate multiples of their salaries (Cawley & Hooker, 2013). This benefit is most likely to be realized when PAs are performing as a substitute in emergency medicine, family medicine (a form of primary care), and dermatology.

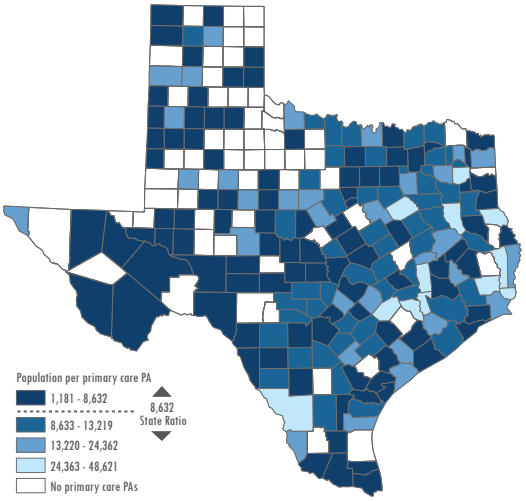
Workforce Description

In 2014 there were 3,147 licensed and active PAs in Texas who were associated with physicians indicating a primary care specialty. This is the first year that the HPRC was able to match PAs with the physicians with whom they practiced, so longitudinal data is not yet available. However, future years' data is expected to shed light on trends among this group.

Geographically, 11.8% of PAs were in border counties and 88.8% were in metropolitan counties. Of those in non-metropolitan counties, a proportionally higher amount (18.1%) were located in border areas.

Among the 3,141 PAs for whom demographic data was available, 64.7% were female. With respect to ethnicity, 20.5% self-identified as Hispanic, 6.3% as African-American, and 64.2% as white.

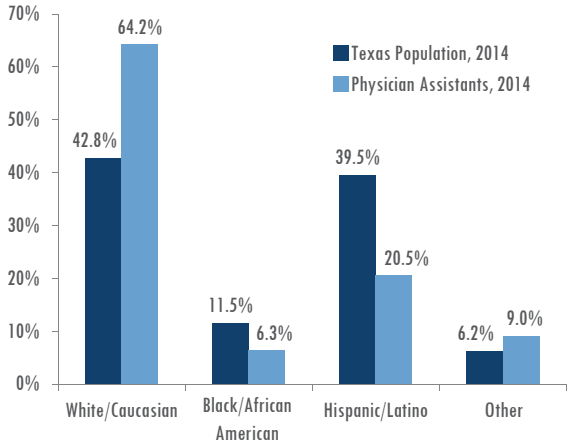
Ratio of Texas population to primary care physician assistant, by county



Geographic Designation	Ratio of population to PA
Metropolitan	8,600
Non-metropolitan	8,877
Border	7,594
Non-border	8,770
Texas	**8,632**

Of the 3,147 PAs for whom age was available, just 4.2% of primary care PAs were aged 65 or more years and 18.2% were 55 years of age or older. The mean age was 42.1 years old and the median age was 40.

Ethnicity of the Texas population and physician assistants

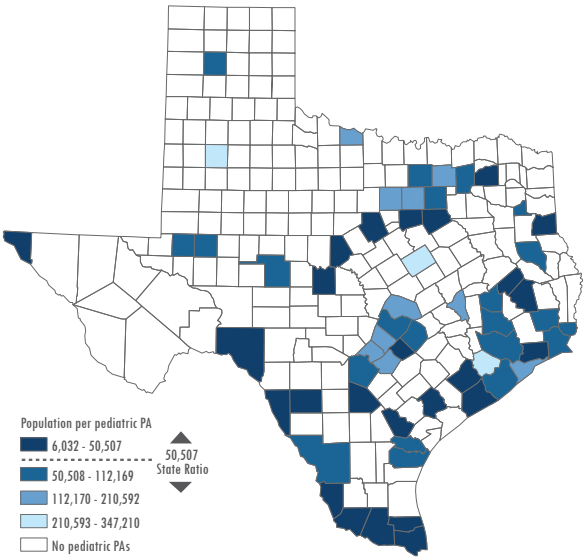


PAs in Pediatrics

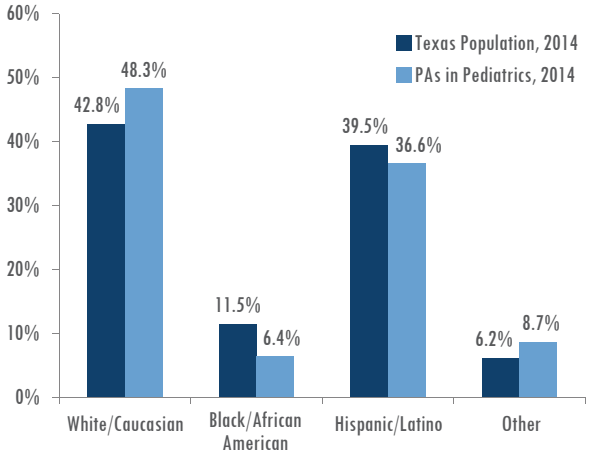
Of the 3,218 primary care PAs, 358 had supervision agreements with pediatricians. Overall, 34.1% of pediatric PAs were in border counties and 90.5% were in metropolitan counties. More notable, of the pediatric PAs in non-metropolitan counties 50% were in border counties.

Of the 358 for whom demographic data were available, 70.9% were female. Additionally, 36.6% were Hispanic, 6.4% were African-American, and 48.3% were white.

Ratio of Texas population to pediatric physician assistant, by county



Ethnicity of the Texas population and pediatric physician assistants



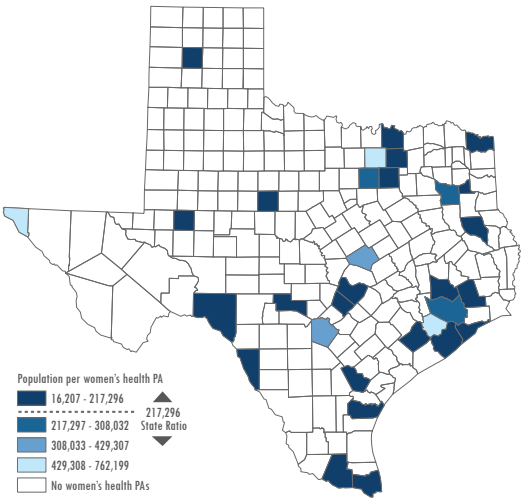
Only 2.2% of these 358 PAs were 65 years of age or older and only 9.5% were 55 or older. The mean age was 39.1 years old and the median age was 36.

PAs in Women's Health

Of the 3,218 primary care PAs, 221 had supervision agreements with gynecologists and/or obstetricians. Overall, 10.5% of gynecological/obstetrical PAs were in border counties and 95.4% were in metropolitan counties. Of note, 50% of these PAs in non-metropolitan counties were located in border counties.

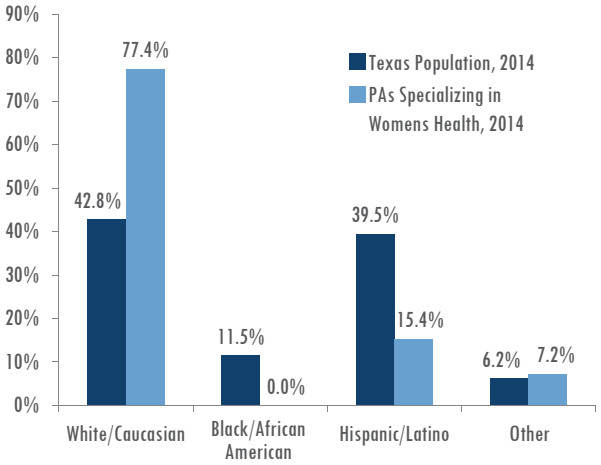
Of the 219 for whom demographic data were available, 92.7% were female. Additionally, 15.4% were Hispanic, 77.4% were white, and none were African-American.

Ratio of Texas population to women's health physician assistant, by county



Only 2 of the 218 (0.9%) women's health PAs were 65 years of age or older and 19.6% were 55 years of age or older. The mean age was 40.4 years old and the median age was 37.

Ethnicity of the Texas population and women's health physician assistants



Policy Considerations

- **As with primary care physicians, there is a need to increase the number of PAs practicing in primary care. This can be accomplished through expansion of education programs and recruitment and retention incentives.**
- **Amelioration of the PA shortage will be aided by allowing physicians greater flexibility in their supervision of and delegation to PAs.**

As noted in the introduction to this chapter, rising demand for primary care and an insufficient workforce of primary care physicians will heighten the demand for well-trained PAs (Hooker & Everett, 2012). Unfortunately, there is a nationwide capacity shortage among PA programs with 3.5 qualified candidates for each slot in existing programs, a limited number of clinical spots spread across the many health professions, and a paucity of faculty (as seen among other health professions (Glicken & Miller, 2013)). If these issues are addressed, educational programs still may wish to consider factors associated with a student's likelihood of primary care practice when recruiting and selecting applicants, an issue in need of more research (Coplan, Cawley, & Stoehr, 2013). Additionally, incentives like educational

grants might be created to encourage individuals and institutions to work in primary care, as well as in rural and underserved areas. Such approaches have been successful in the past, and so they may be deployed to solve current and future problems (Hooker, Cawley, & Leinweber, 2010).

Policymakers may be able to increase the effective use of PAs by allowing physicians greater flexibility in determining how to best supervise and delegate responsibilities to PAs (Glicken & Miller, 2013). Policymakers might also spur greater interest of PAs in primary care by incentivizing physician practice in primary care. Given that PAs are dependent on physicians for supervision, programs to encourage physicians to serve in primary care - especially in underserved areas - like loan repayment, increased reimbursement rates, and the national expansion of funding for Title VII, Section 747 of the Public Health Service Act, may produce multiplicative benefits (Coplan, Cawley, & Stoehr, 2013).

Military Veterans as PAs

- **The State of Texas should engage in a concerted effort to attract military veterans with a background in health care into the primary care workforce, specifically as PAs.**

In addition to the issues discussed in this chapter, the literature review conducted for PAs revealed two potential policy considerations for the involvement of military veterans in improving the PA workforce, and subsequently the health delivery system, in Texas. Generally, military training instills leadership, crisis management, and critical thinking skills. For those who serve in health care roles while enlisted, clinical skills such as assessment, treatment, care coordination, record management, detecting adverse events, managing incipient epidemics, and rapid risk assessment of health-compromising exposures may be obtained (Brock, et al., 2013). There are over 52,000 enlisted personnel with health care experience who left military service between 2006 and 2010, representing a large number of potential health care providers nationally.

The first potential policy challenge for Texas is to integrate military-trained PAs into its civilian PA workforce. Beginning in 1996, all US military PA training was consolidated into a single training program at Fort Sam Houston, Texas. This program remains the largest PA program in the nation in terms of annual enrollment (Jones & Hooker, 2013). In 2012, 254 of the 425 military PA graduates licensed in Texas were engaged in full-time clinical practice in Texas. 148 (58.3%) of these reported practicing in primary care settings. Using national productivity data, it is estimated that military-trained veteran PAs in Texas provide over 436,000 annual outpatient visits per year. Such graduates have an average of a 16-year post-military career and serve as a benefit to the state in the form of skilled health professionals whose training was federally underwritten, and thus less costly to the state than standard PA education (Jones & Hooker, 2013).

Second, recruiting and training veterans with prior health care experience, considerable skills, and an interest in primary care to become civilian PAs may help alleviate anticipated workforce shortages (Brock, et al., 2013). However, barriers such as PA programs not accepting credits earned for military training, having misunderstandings of the GI bill, or harboring concerns about veterans and PTSD may exist. To address these barriers, the Obama administration announced the Helping Veterans Become Physicians Assistants initiative in 2011. This effort aimed to make it easier for veterans to use the training they have acquired while in the military to become PAs. In 2011 and 2012, HRSA held public webinars to identify and disseminate strategies for better adapting curricula for veterans and implementing successful veteran recruiting, retention, and mentoring services. Of veteran applicants to PA programs, only 17% reported being able to obtain most or all of their civilian health care training prerequisites while in the service. Also, 54% reported needing to obtain an academic degree before applying to PA education. In an effort to address these challenges, the American Council on Education and the Defense Activity for Non-Traditional Education Support provide assessments of college credit equivalency for military training. When PA programs participate, such equivalencies can be used to decrease additional credits and thus time delay between discharge and entry into PA school. Thus far, there have been no initiatives in Texas to implement these programs.

Advanced Practice Nurses in Primary Care

As noted in the chapter on PAs, the U.S. health care system is expected to be challenged in the coming years by greater demand for primary care services. This demand can be attributed to a multitude of causes, chief among them, the expanded access to care provided by the PPACA, the aging baby boomer population, and the rise of chronic diseases (Poghosyan, Nannini, Stone, & Smaldone, 2013; Liu, Finkelstein, & Poghosyan, 2014).

In reaction to this projected shortage of primary care providers, health workforce analysts have worked to evaluate how interprofessional collaboration with non-physician clinicians could reduce its impacts. The working hypothesis of those supporting the greater involvement of APNs, PAs, and pharmacists is that the inclusion of these professions can enhance the quality of physician care through collaborative practice, substitute and thus reduce demand for physicians in certain circumstances, and potentially reduce health expenditures given the lower salary costs of these non-physician clinicians (Laurant, et al., 2009). Indeed, in its 2010 report, The Future of Nursing: Leading Change, Advancing Health, the IOM echoed numerous other proposals to expand the use of NPs in the provision of primary care, an effort aimed at addressing both workforce shortage and quality of care issues (Poghosyan, Nannini, Stone, & Smaldone, 2013).

NPs emerged in the 1960s during a period of projected physician shortages amid the introduction of Medicare and Medicaid. By 2011 there were an estimated 180,233 NPs nationwide (Donelan, DesRoches, Dittus, & Buerhaus, 2013) with estimates ranging from 30% to 80% working in primary care (Donelan, DesRoches, Dittus, & Buerhaus, 2013; Naylor & Kurtzman, 2010). More authoritatively, the American Academy of Nurse Practitioners has indicated that 89% of NPs are trained in primary care and more than 75% practice in primary care settings (Yee, Boukus, Cross, & Samuel, 2013). Moreover, the per capita supply of NPs is expected to grow by 9% nationally in the coming years (Naylor & Kurtzman, 2010). Research has, in fact, already demonstrated that the US is experiencing rapid growth in the number of NPs in the workforce and in the number of patients seeing NPs. For example, from 1998 to 2010, the growth of outpatient Medicare patients being seen by NPs grew roughly tenfold and the percentage of Medicare beneficiaries having an NP as their primary care provider grew by roughly fifteen-fold (Kuo, Loresto, Rounds, & Goodwin, 2013)

This strong growth in the NP and, to a lesser extent, the PA workforces relative to primary care physicians is expected to cause the share of primary care providers who are physicians to drop from 71% in 2010 to 60% by 2025 (Auerbach, et al., 2013). As a means of making efficient use of this workforce and to combat the expected growing shortage of primary care physicians, some entities have proposed expanding the supply and scope of practice of NPs and other types of APNs. Currently, physicians and APNs do not agree on the respective potential and ideal roles of each in the delivery of future primary care services (Donelan, DesRoches, Dittus, & Buerhaus, 2013). The National Council of State Boards of Nursing has proposed allowing NPs to practice independently in a responsible and accountable manner that recognizes the limits of their knowledge and experience and the need to consult professionals in other fields as appropriate. The National Governors Association and the American Association of Retired Persons have also indicated support for the modification of scope of practice laws and expanded roles for NPs in primary care provision. Conversely, the American Medical Association, the American Osteopathic Association, the American Academy of Pediatrics, and the American Academy of Family Physicians have all voiced support for regulations requiring NPs to be directly supervised by physicians (Fairman, Rowe, Hassmiller, & Shalala, 2011).

Competencies and Roles

Per Texas Board of Nursing rules, an APN nurse works within the specialty and role conferred upon them by their training to assess and treat patients or to counsel them on health promotion and maintenance. The APN may act independently or in collaboration with a health care team in performing these duties. Specific to primary care, APNs nationwide (mostly NPs) often provide preventive services, diagnose and manage many acute illnesses, assist the patient in the management of chronic illness, and write prescriptions (Hansen-Turton, Ware, Bond, Doria, & Cunningham, 2013). In Texas, APNs (and PAs) may prescribe drugs under a prescriptive authority agreement with a physician.

Broadly, evidence has indicated that primary care services, such as those listed above, can be provided by APNs in a manner at least as safe and effective as those provided by physicians (Fairman, Rowe, Hassmiller, & Shalala, 2011). Indeed, while scope of practice laws limit the extent to which nurses can provide primary care services in some states, it has been estimated that NPs can provide between 50%-90% of those services offered by a primary care physician with comparable quality (Auerbach, 2012). Of those services more likely to be addressed by physicians, both NPs and physicians cited more complex cases, specific diagnoses or disease groups, and procedures and postoperative care (Donelan, DesRoches, Dittus, & Buerhaus, 2013). This division of labor is further supported by Yee, Boukus, Cross, & Samuel (2013) who noted that NPs usually focus on chronic and preventive care management rather than complex diagnoses.

In describing the potential success of NPs providing primary care services, data have suggested that consumers are more than willing to utilize the services of NPs, especially if faced with wait times for physicians (Dill, Pankow, Erikson, & Shipman, 2013). Physicians, meanwhile, have indicated that the success of NPs on the health team is established as trust of NPs' professional judgment and clinical decisions evolve over time (Poghosyan, Nannini, Stone, & Smaldone, 2013). Finally, a survey of NPs revealed that NPs found it important that the NP-physician relationship be characterized by communication, support, trust/rapport, respect, collaboration and teamwork, and collegiality (Poghosyan, Nannini, Stone, & Smaldone, 2013).

APN Contributions to Efficacy and Efficiency

In its 2010 report, the IOM concluded that APNs could independently provide core primary care services as effectively as physicians (Hansen-Turton, Ware, Bond, Doria, & Cunningham, 2013). This conclusion is based on the repeated studies that find no decline in outcomes dependent on NPs or physicians as the source of care. Most broadly, when NPs, PAs, or pharmacists were playing a complementary role in addition to physician care, clinical outcomes were generally positive or neutral compared to a physician working alone. Moreover, the involvement of either NPs or pharmacists was associated with improved measures of patient outcomes, improved process of care, and decreased resource utilization (Laurant, et al., 2009).

In substitutive roles, the outcomes were similarly impressive for those services provided by NPs. In fact, Laurant et al. (2009) report in their systematic review that NPs achieved equivalent clinical outcomes, greater patient satisfaction, improved processes of care (including better outcomes in terms of patient education and advice, record keeping, and speed of access), and no differences in the number of patient visits, prescriptions written or hospital admissions. Similar results of greater satisfaction, longer consultative times, and more tests, with no differences in patient outcomes, processes of care, or resource use have been reported elsewhere (Naylor & Kurtzman, 2010). This conclusion is supported by Poghosyan, Lucero, & Rauch (2012) who described the equivalent quality of care NPs provide in primary care settings relative to physicians as 'reported across studies' and Fairman, Rowe, Hassmiller, and Shalala (2011) who conclude that NPs can provide the same quality of basic primary care services as physicians without the additional training that physicians receive. One potential explanation of patient satisfaction is that all reviews showed NPs having longer consultation times than physicians (Laurant, et al., 2009).

It has been reported that an increased availability of primary care providers may reduce overall health costs (Kuo, Loresto, Rounds, & Goodwin, 2013). From an economic perspective, the efficiency of NPs, or more broadly APNs, is generally positive. In an analysis by the RAND Corporation following Massachusetts' health reform, the average cost of a NP or PA visit was estimated to be 20-35% lower than for a physician, indicating potential statewide savings of $4.2-8.4 billion over a decade through substitution (Naylor & Kurtzman, 2010). Additionally, the expansion of retail clinics, staffed by NPs, was characterized as providing potential savings of an additional $6 billion over a decade, mostly by private insurers. These savings are predicated, in part, on the fact that NPs command lower salaries than physicians. Additionally, society bears lower costs in training an APN versus a physician due to the public cost of APN education (Yee, Boukus, Cross, & Samuel, 2013) being between a third to a twelfth as expensive per student (Fairman, Rowe, Hassmiller, & Shalala, 2011). Despite these generally positive economic indications, Donelan,

DesRoches, Dittus, and Buerhaus (2013) have stated that more information is needed on potential cost savings of NPs. Laurant, et al. (2009) found that evidence of lower costs for NPs is weak, citing their greater use of resources, such as tests, in some studies, a conclusion supported by a study at the Mayo Clinic (Lohr, et al., 2013).

Workforce Description

Conceptualizations of primary care APNs are commonly limited to NPs and CNMs. However, many clinical nurse specialists (CNSs) have sufficient training to serve in a primary care capacity and some already do. For the purpose of describing the capacity of Texas' APN primary care workforce, all CNMs are included as are NPs and CNSs with training in population-based specialties. Specific to NPs, this includes NPs certified in women's health, pediatrics, family nursing, gerontology, adult nursing, and adult care/gerontological nursing. Among CNSs, those certified in community health, maternal and child health, gerontology, pediatrics, adult nursing, women's health, and adult/gerontological nursing are included. In total, there were 11,302 individual APNs classified as part of the primary care workforce in 2014 according to this definition. Among them were 420 individual CNMs, 10,449 NPs, and 610 CNSs.[3]

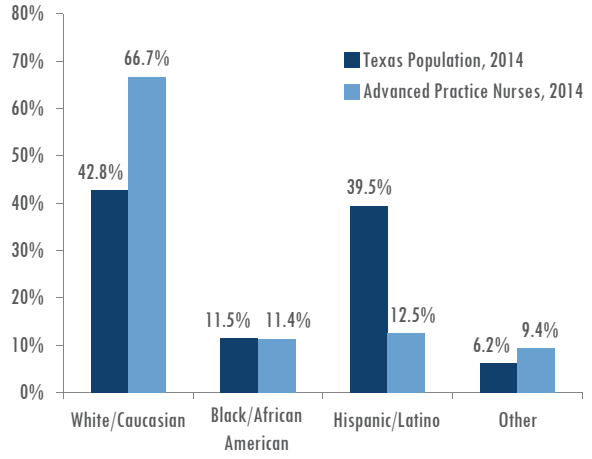
With a projected 27,161,944, Texas has a population to primary care APN ratio of 2,403:1. Due to the compact licensure agreement, the geographical location was not available for some APNs who were licensed as RNs in states other than Texas. Thus, data on the geographical distribution of APNs were incomplete.

Among the 10,778 primary care APNs for whom data were available, only 9.9% were male. This trend holds across age categories.

Of the 10,787 primary care APNs for whom ethnicity data were available, 66.7% were white, 12.5% were Hispanic, and 11.4% were African American. The rest indicated some other ethnicity.

Finally, in 2014 6.1% of primary care APNs were aged 65 years or older and 29.3% were 55 or older.

Ethnicity of the Texas population and primary care advanced practice nurses

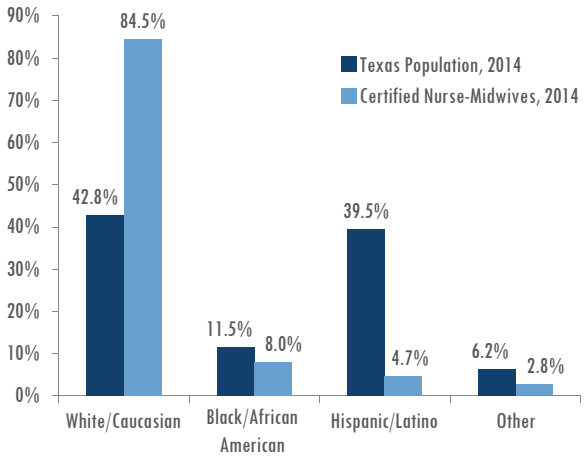


Certified Nurse-Midwives

As noted above, there were 420 individual CNMs in the Texas workforce in 2014, yielding a population to CNM ratio of 64,671:1. There was a ratio of 12,173 females between 15 and 44 years of age in Texas for every CNM. As noted above, geographical distribution data were unavailable.

Among the 387 CNMs for whom data were available, only 1 (0.3%) was male. Of the 387 CNMs for whom ethnicity data were available, 84.5% were white, 4.7% were Hispanic, and 8.0% were African American. The rest indicated some other ethnicity. Finally, the median age of all 420 CNMs was 51 years and the mean age was 49.7, with 10.2% being at least 65 years old and 39% being over 55 years old.

Ethnicity of the Texas population and certified nurse-midwives



Primary Care Nurse Practitioners

As noted above, there were 10,449 individual NPs

[3] These numbers sum to more than the 11,302 primary care APNs because an individual APN can be certified as more than one type of APN.

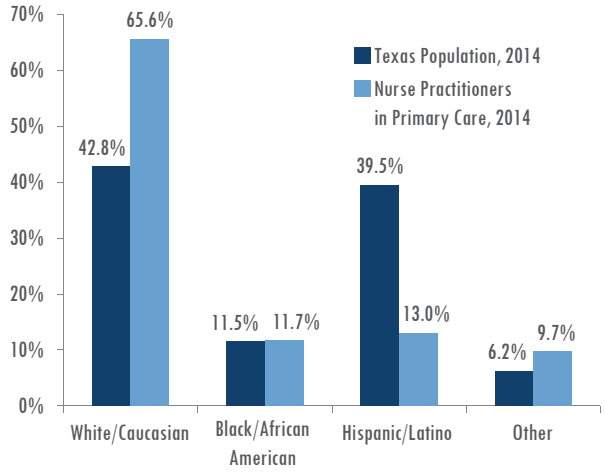
in the Texas workforce in 2014 with a certification in a primary care specialty. This number yielded a population to primary care NP ratio of 2,599:1. Geographical distribution data were unavailable.

With the recognition that a NP can be certified in more than one specialty, the following table outlines the number of certifications in each primary care NP specialty (10,725) rather than the number of NPs (10,449).

Nurse Practitioner Certification Type	Number of Certifications	Percent of Certifications
Family NP	6,990	65.2%
Pediatric NP	1,312	12.2%
Women's Health NP	1,000	9.3%
Adult NP	981	9.1%
Gerontological NP	313	2.9%
Adult Care/Gerontological NP	129	1.2%
Total	**10,725**	**100%**

Among the 9,966 primary care NPs for whom gender data were available, 10.4% were male. Of the 9,975 primary care NPs for whom ethnicity data were available, 65.6% were white, 13.0% were Hispanic, and 11.7% were African American. The rest indicated some other ethnicity.

Ethnicity of the Texas population and primary care nurse practitioners



Finally, the median age of all 10,449 primary care NPs was 45 years and the mean age was 46.5, with 5.7% being at least 65 years old and 28.5% being over 55 years old.

Primary Care Clinical Nurse Specialists

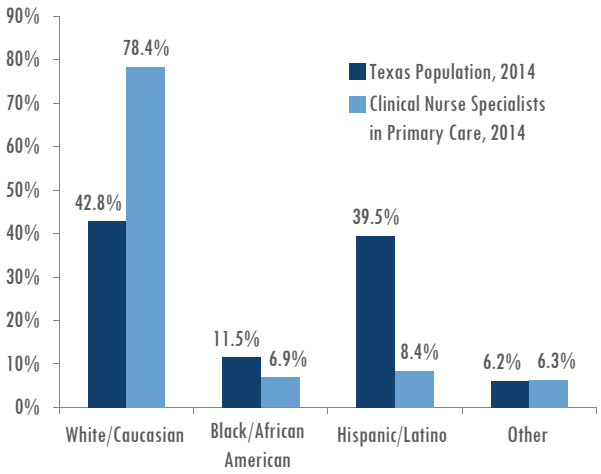
There were 610 individual CNSs in the Texas workforce in 2014 with a certification in a primary care specialty, yielding a population to primary care CNS ratio of 44,528:1. Geographical distribution data were unavailable.

Like NPs, CNSs can be certified in more than one specialty. Thus, the following table outlines the number of certifications in each primary care specialty (612) rather than the number of individual primary care CNSs (610).

Clinical Nurse Specialist Certification Type	Number of Certifications	Percent of Certifications
Adult Nursing CNS	333	54.4%
Maternal & Child Health CNS	116	19.0%
Pediatric CNS	62	10.1%
Community Health CNS	55	9.0%
Gerontological CNS	24	3.9%
Adult/Gerontological CNS	17	2.8%
Women's Health CNS	5	0.8%
Total	**612**	**100%**

Among the 598 primary care CNSs for whom gender data were available, 93.0% were female. Of the 598 primary care CNSs for whom ethnicity data were available, 78.4% were white, 8.4% were Hispanic, and 6.9% were African American. The rest indicated some other ethnicity. Finally, the median age of all 610 primary care CNSs was 54 years and

Ethnicity of the Texas population and primary care clinical nurse specialists



the mean age was 51.6, with 14.3% being at least 65 years old and 47.7% being over 55 years old.

Policy Considerations

- **Barriers to the full integration of APNs into the primary care delivery system should be responsibly reduced.**

Expanding the role of non-physician clinicians does not obviate the need to produce more physicians, both in primary care and across specialties. It is clear from the data presented above that non-physician clinicians have neither the training nor the desire to serve patients across the full spectrum of care that physicians provide. However, as Laurant, et al. (2009) have stated, "[t]he revision of professional roles between physicians and non-physicians is a viable strategy for improving the quality of care and outcomes for patients. It also may be an effective strategy for increasing service capacity in the context of medical shortages of rising demand for care." Buerhaus, DesRoches, Dittus, and Donelan (2014) have written that the future likely holds an increased number of NPs, their expanded scope of practice, and patient utilization of their services, while primary care physicians focus their efforts on more complex cases, promote true collaborative practice, and use technology to expand the reach and capacity of clinicians. Indeed, "[t]he available evidence suggests that role revision between physicians and non-physician clinicians does not jeopardize patient care and may sometimes improve its quality" (Laurant, et al., 2009). Within practices, this literature review identified two specific avenues for improvement in the delivery and payment system with respect to APNs. First, research showed that NPs often had less access to resources, especially MAs and administrative personnel. It may be worth noting that the efficient use of time and quality care is, in part, made possible by support from ancillary staff, especially MAs (Poghosyan, Nannini, Stone, & Smaldone, 2013). The underutilization of NPs' capacities or a lack of administrative support may cause delays in patient processing and increase patient wait times. When NPs are granted greater access to these resources, productivity and thus cost efficiency may improve significantly, with an average cost savings per patient of 9%-12% (Liu, Finkelstein, & Poghosyan, 2014).

- **Payment practices should be revised to encourage APNs to bill under their own provider number, allowing for improved analyses of nurses' performance and quality measures.**

Second, current billing policy allows and may encourage practices to utilize incident-to billing through which the medical services of an APN are billed using a physician's provider number. This practice makes it impossible to monitor which services were provided by physicians and which were provided by APNs (Buerhaus, DesRoches, Dittus, & Donelan, 2014), removing the ability of health providers, researchers, and policymakers to monitor quality care indicators by provider for delivered care. Such performance measures are key to ACOs and can be used to measure the quality, efficiency, and cost-effectiveness of care provided by APNs across practices and payers (Poghosyan, Nannini, Stone, & Smaldone, 2013; Poghosyan, Lucero, & Rauch, 2012). Additionally, research on the contributions of APNs to the efficient delivery of health care should continue to be studied. The results reviewed above were obtained by studying nurses in the current model of delivery and changes to the health care process may impact these results for better or worse (Auerbach, 2012).

- **Efforts at addressing nursing faculty shortages should be redoubled, especially as delivery system changes enhance the need for APNs trained in team-based care.**

In addition to the need to monitor APNs' continued contributions to the provision of primary care, there is a need to consider potential changes to the system used to educate nurses. From a capacity perspective, the State of Texas and the nation are facing and will continue to face a lack of nursing faculty, partially due to high median faculty age and expected retirements of current faculty. As Naylor and Kurtzman (2010) point out, there will be a need to consider greater incentives aimed at the recruitment and retention of nursing faculty. There is also the need to prepare this faculty to deliver innovative curriculum to nursing students. As described above, the role of interprofessional collaboration and team-based care is a necessity of modern health care delivery. This will require nurse educators to consider how curriculum content, training, and demonstration of competencies can be best aligned to meet these needs (Donelan, DesRoches, Dittus, & Buerhaus, 2013). For example,

faculty sharing or the utilization of faculty members across professional schools may help institutions meet this need (MacLean, et al., 2014).

Finally, it is worth noting that the American Association of Colleges of Nursing proposed in 2004 that schools of nursing begin instituting doctoral requirements for the education of APNs (Cronewett, et al., 2011). This requirement stemmed, in part, from the IOM's 2003 report, Keeping Patients Safe: Transforming the Work Environment of Nurses, that called for the preparation of nurse executives and managers that would prepare nurse leaders to participate within executive leadership of healthcare organizations (Cronewett, et al., 2011). However, this proposed requirement would potentially act as a barrier to new APN enrollees in the short-term (Auerbach, 2012), hampering expected growth in primary care APNs by increasing the duration of training and increasing costs (Yee, Boukus, Cross, & Samuel, 2013).

Pharmacists as Providers

Often attempts to mitigate primary care workforce shortages focus solely on increasing the numbers of physicians, APNs, and PAs, yet the oft-used expansion of these practitioner types' education programs is no guarantee of future primary care practice (Smith M. A., 2012). Indeed, an increasing burden of chronic disease in the United States and the ongoing shift toward newer health delivery approaches present the need and opportunity to integrate more practitioner types, especially pharmacists, into the primary care workforce (Kennie-Kaulbach, et al., 2012). While the PPACA mentions pharmacists throughout, it does not directly link them to the implementation of medical homes or ACOs. Yet because these models rely heavily on interdisciplinary collaboration and communication, they are ideal for implementing an increasingly team-based role for pharmacists (Smith, M. A., 2012; Kennedy, Chen, Corriveau, & MacLean, 2014; Kucukarslan, Hagan, Shimp, Gaither, & Lewis, 2011). Further, with a rise in the use of retail clinics, pharmacists are in an ideal place to aid in chronic disease management in a team-based interdisciplinary model (Smith M. A., 2012).

Evidence suggests that pharmacy practice can be appropriately transformed toward a more clinical, patient-centered role, treating patients through a collaborative approach with physicians and other providers (Santschi, Chiolero, Burnand, Colosimo, & Paradis, 2011). The IOM recommended in 1999 that pharmacists should be involved when prescribing decisions are being made (Kucukarslan, Hagan, Shimp, Gaither, & Lewis, 2011), and in 2011 the US Surgeon General publicly supported the greater involvement of pharmacists in patient care teams (Hirsch, et al., 2014). In preparing future pharmacists to fill these roles, many pharmacy schools have reoriented their curricula to enhance pharmacists' patient communication skills, their patient assessment and monitoring skills, their knowledge of pharmacotherapeutics for common chronic disease treatment, approaches to public health, and drug-therapy problem-solving skills (Smith M. A., 2012). Moreover, pharmacists are already highly trained in pharmacology, pharmacokinetics, and pharmacoeconomics compared to other health professionals, and many have advanced clinical training or board certification in pharmacy specialties (Smith M. A., 2012). For these reasons, the integration of pharmacists into primary care can help meet the Triple Aim (Kennedy, Chen, Corriveau, & MacLean, 2014).

Competencies and Roles

Of the most important ways that pharmacists can add to workforce capacity is to serve in medication therapy management (MTM) roles (Smith M. A., 2012). MTM can be defined as reviewing patient medications to identify potential problems and educating patients about drug therapy, identifying potential barriers to adherence, and assisting patients in managing health conditions (Kucukarslan, Hagan, Shimp, Gaither, & Lewis, 2011). Depending on the level of autonomy in the MTM role, pharmacists can provide medication assessment, development of the care plan, follow-up, and personnel and resources to better treat the patient and improve outcomes. Specific to medication assessment, pharmacists engage in a systematic process of reviewing medication regimens, patient information, and laboratory results to identify potential problems. Pharmacists also work with patients and providers to develop care plans, provide relevant education and adherence counseling to patients, and track outcomes associated with these efforts. Finally, pharmacists may directly follow-up with patients regularly and continuously work with both patients and providers to assess potential medication problems (Moczygemba, et al., 2011).

The meta-analysis by Santschi et al. (2011), however, differentiated between pharmacist-directed care and pharmacist-provider collaborative care.[4] Together, these two models have been implemented in a variety of ways, including pharmacists providing patients with educational interventions, participating in medication reminder and adherence initiatives, performing medication management through the review of patient medical records, providing other health care professionals with information on potential drug-related problems, measuring risk factors for cardiovascular disease, and educating health care professionals. Given these expanded roles and interactions with both patients and other health care providers, pharmacists working in primary care settings must have excellent skills in communication, collaboration, and professionalism (Kennie-Kaulbach,

[4] Currently in Texas, pharmacists can provide MTM in certain settings and only in collaboration with a physician.

et al., 2012).

For example in Canada, professional organizations and educational providers agreed that competencies for primary health care pharmacists should include patient advocacy, care provision, collaboration, communication, management, professionalism, and scholarly contributions. Specifically, the pharmacists should use their knowledge and skills to advance the health of populations, patients, and communities. This can be fulfilled by providing pharmaceutical care and medication management in response to patient health needs through effective collaboration with other practitioners, team members, and patients. (Kennie-Kaulbach, et al., 2012)

Pharmacist Contributions to Efficacy and Efficiency

It has been reported that 75% of primary care visits include prescribing medications or continuing prescriptions and that nearly 40% of patients older than 65 have five or more medications (Kennedy, Chen, Corriveau, & MacLean, 2014). This statistic demonstrates the potential for pharmacists to remove some burden on other primary care practitioners through the effective use of MTM. Broadly, evidence from ambulatory settings indicates that the involvement of pharmacists in MTM reduces hospital and ED admissions, decreases nonscheduled health services, decreases the number and costs of drugs, and improves prescribing. Pharmacists have also been shown to improve patient outcomes such as blood pressure, cholesterol, diabetes and smoking cessation. Finally, pharmacists may improve patient safety by reducing medication errors, improving laboratory monitoring for medications, adjusting doses for renal dysfunction, stopping medications, reducing inappropriate prescribing, improving adherence, and reducing costs (Kennedy, Chen, Corriveau, & MacLean, 2014). Furthermore, the PPACA increases financial accountability for rehospitalization within 30 days of discharge, an outcome that may be addressed with pharmacist intervention during posthospitalization care transitions. Specifically, researchers found a significant reduction in the primary composite outcome of 30-day rehospitalization and ED visits for pharmacist post-hospitalization interventions versus usual care, resulting in savings on treatment costs and rehospitalization penalties. Telephone efforts have estimated cost savings from similar efforts at $35,000 per 100 patients, but face-to-face interventions such as the one described here require further monetary evaluation (Hawes, Maxwell, White, Mangun, & Lin, 2014).

A systematic review and meta-analysis of pharmacist care in the management of chronic diseases found that pharmacist care was associated with significantly reduced CVS risk factors, specifically systolic/diastolic blood pressure, total and LDL cholesterol, and smoking risk, and that most studies favored the addition of pharmacist care over usual care (Santschi, Chiolero, Burnand, Colosimo, & Paradis, 2011). Equally of note, a review of randomized controlled trials found that MTM can provide measureable improvements for patients with newly diagnosed conditions, who have yet to achieve their therapeutic goals, or who have low health literacy (Kucukarslan, Hagan, Shimp, Gaither, & Lewis, 2011).

In a pilot study in Vermont, pharmacists working one day per week in five primary care clinics identified over 700 drug therapy problems. These problems were identified through the provision of direct patient care, patient education, and population-based strategies (chart review). Furthermore, 86% of their recommendations were accepted by prescribers. These recommendations resulted in cost avoidance of $2.11 for every $1 spent on pharmacist cost (Kennedy, Chen, Corriveau, & MacLean, 2014). Likewise, evidence indicates that primary care providers can refer patients to pharmacists for medication review, information, and follow-up with success. Thus, continued collaboration between providers can further improve patient outcomes.

In another example, a randomized pragmatic trial conducted in a California university's general internal medicine clinic found significantly greater reductions in both systolic and diastolic blood pressures among patients engaged in collaborative pharmacist-physician MTM. Overall, almost half of all patients had at least one identified problem in their medication regimen and one-third had their medication changed at the initial MTM pharmacist visit (Hirsch, et al., 2014). In fact, in their review of other published studies on MTM's effects on hypertension, the authors noted that 84% of published studies showed positive results for MTM. In this review, the authors further noted greater success when patients saw pharmacists separately rather than as a part of their general primary care visit and when the pharmacist had autonomy to

make changes in a patient's medications rather than just making these recommendations to the regular primary care provider. The authors noted that pharmacists reduced patients' time spent with more costly primary care providers and helped patients achieve better control of hypertension. Finally, MTM with pharmacists initiating and changing medications at separate office visits holds potential for cost-effective management of hypertension (Hirsch, et al., 2014)

In a third study at a clinic located within a patient-centered medical home in Virginia and offering mental health services, pharmacists engaged in mental health medication therapy management identified an average of two medication-related problems per patient. Furthermore, 85% of their recommended changes in medication were accepted by the prescriber and/or the patient. In the medical clinic alone, there were an average of 5.1 medication problems per patient with 89% of recommendations being accepted by the prescriber and/or the patient (Moczygemba, et al., 2011).

Rather broadly, the potential for pharmacists to make positive impacts in the provision of primary care and other services is well-established. A review of randomized controlled trials described above indicates that results are especially beneficial for patients with specific therapeutic problems and when the pharmacist is able to communicate with the primary care provider in a timely fashion. Additionally, benefits are maximized if MTM is provided by the pharmacist on an ongoing basis involving the pharmacist, primary care provider, and patient and can improve patient adherence following changes in medication when accompanied by direct patient follow-up on behalf of the provider (Kucukarslan, Hagan, Shimp, Gaither, & Lewis, 2011).

Pharmacist Roles in Patient Care

Beginning in 2010, the American Pharmaceutical Association Foundation's Project IMPACT: Diabetes has sought to improve the health of underserved populations that are disproportionately affected by diabetes and have limited access to quality care. The Centro de Salud Familiar La Fe in El Paso has participated in this program by employing collaborative care teams, including a physician, a pharmacist, a social worker, and a health educator, to assist patients in managing their diabetes.

"Pharmacists play an important role on the collaborative diabetes care team at La Fe. Patients who would benefit from individual diabetes management are referred to the pharmacist by physicians and other providers at the clinic. During appointments, pharmacists use their medication expertise to review medication therapy and diabetes standards of care (e.g., foot exams, immunizations) with each patient. As part of the healthcare team, pharmacists tailor education to each patient's needs and assess potential barriers that may limit the patient's adherence to medication or treatment recommendations. Based on the pharmacist's interactions with the patient, appropriate referrals/recommendations may be made to specialty services (e.g., social work, health education, dental, optometry). Pharmacists work together with the health education team to provide group classes covering topics such as exercise, healthy nutrition, stress management, depression, medication management, glucometer training, and self-management. The pharmacist also attends the grocery store tours at local markets where the patient purchases food for a family of four with a budget of only $5.00. This holistic, collaborative approach to diabetes care has been well received by the patients and shown significant improvements in key clinical outcomes." (American Pharmacists Association Foundation, 2014)

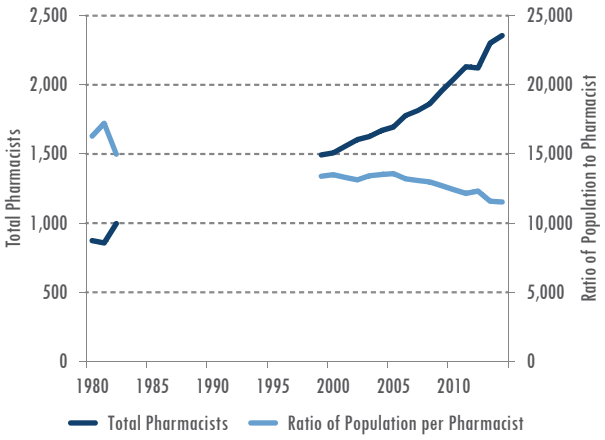
An evaluation of the nationwide program indicates a statistically significant and clinically relevant decrease in patient A1C levels (Bluml, Waton, Skelton, Manolakis, & Brock, 2014).

Workforce Description

The enhanced integration of pharmacists into the primary care workforce is thought to provide multiple beneficial aspects. First, there is a presumption that pharmacists handling MTM will provide other primary care practitioners with greater time to treat more difficult patients through the pharmacist's reduction of medication problems and ability to manage changes in medication (Hirsch, et al., 2014). Furthermore, the Texas Pharmacy Congress has identified the potential addition that pharmacists can make to the primary care workforce in rural and border areas, effectively reducing the shortage or absence of primary care providers in these areas. Thus in producing future workforce projections, there will be a need to incorporate scenarios where many pharmacists may be involved in non-dispensing roles (Smith M. A., 2012).

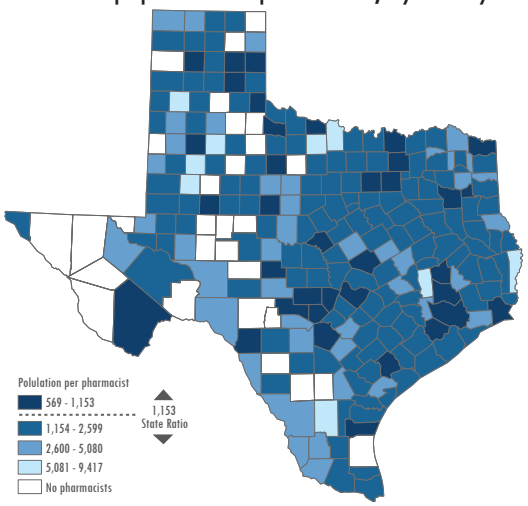
In Texas there were 23,561 actively licensed pharmacists in 2014. This is a 41.2% increase in the number of pharmacists in Texas since 2004. Additionally, the population to pharmacist ratio has decreased by 14.7% over the same period. Geographically, 5.8% of pharmacists were in border counties and 92.4% were in metropolitan counties.

Pharmacist growth trends



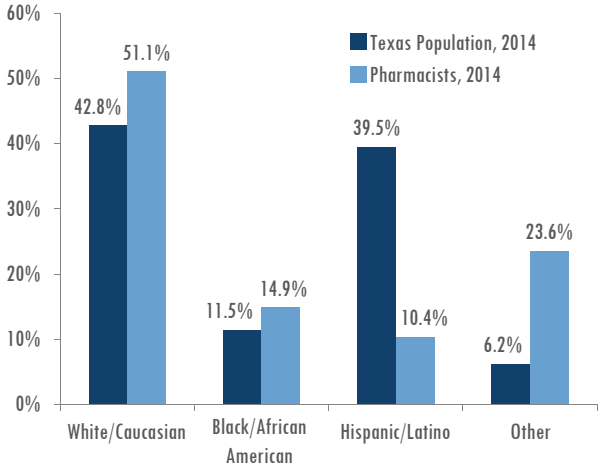
Of the 22,999 pharmacists for whom ethnicity data were available, 51.1% were white, 10.4% were Hispanic, and 14.9% were African American. The rest indicated some other ethnicity. By comparison, the composition of Texas' population was estimated to be 42.8% whites, 39.5% Hispanics, 11.5% African-Americans, and 6.2% from other ethnicities.

Ratio of Texas population to pharmacist, by county



Geographic Designation	Ratio of population to pharmacist
Metropolitan	1,103
Non-metropolitan	1,757
Border	2,050
Non-border	1,097
Texas	**1,153**

Ethnicity of the Texas population and pharmacists



Among pharmacists, 11.2% were 65 years old or older and 29.7% were 55 years of age or older. The mean age of pharmacists was 46.2 years old and the median age was 44.

Policy Considerations

- **The feasibility of expanding physician-supervised MTM into more outpatient settings should be considered as a means to efficiently and effectively incorporate**

pharmacists' skills into the primary care workforce.

- **Pharmacists should be recognized as primary care providers able to directly bill for their MTM services.**

As noted above, a possible example of direct patient care roles for pharmacists can be to provide patients with appointments for comprehensive medication therapy review, with the treating physician receiving a summary of the encounter (Smith M. A., 2012). However, primary care physicians with an interest in engaging pharmacists in this role may currently refrain from doing so because of a lack of reimbursable services for pharmacist-provided medication management services (Smith, M. A., 2012; Moczygemba, et al., 2011). For this reason, the Texas Pharmacy Congress' recent Vision to Enhance Patient Care document called for pharmacists to be recognized as health care providers for billing and reimbursement purposes. In March 2014, the administrator of the CMS ruled that the work of pharmacists in face-to-face visits may be billed as 'incident-to' treatments provided they are allowed under the scope of the pharmacists' state licenses. Further MTM billing codes are acceptable for use in the Medicare Advantage Plan and Medicare Part D.

In addition to the need for reimbursement systems to be improved, many pharmacy schools have revised their curricula to enhance skills on patient communication, patient assessment and monitoring, pharmacotherapeutics for common chronic diseases, public health, and drug-therapy problem-solving skills. At the same time, academia and employers should work together to ensure that innovative applied training programs are available to pharmacy students interested in providing primary care (Smith M. A., 2012).

Finally, there are 30 active projects addressing medication management as part of the Texas Medicaid 1115 Waiver Delivery System Reform Incentive Payment (DSRIP) Program. The outcomes of these projects should be monitored closely for lessons learned regarding impacts on the primary care workforce and access to care.

Community Health Workers

CHWs, or promotoras as they are often called in Spanish-speaking border regions, have existed in the U.S. since the 1960s (Ingram, et al., 2011). In 2010, estimates indicated that there were more than 120,000 CHWs in the United States (Rosenthal, et al., 2010). Approximately 75% of the U.S.' CHW workforce are paid for their services while the remainder serve as volunteers (Cherrington, et al., 2010). As the field has grown, CHWs have been increasingly incorporated into administrative and regulatory considerations of health care delivery. For example, in the late 1990s several states, including Texas, began to regulate CHWs and incorporate them into the health workforce (Rosenthal, et al., 2010). Currently, Texas and Ohio certify all paid CHWs, and Indiana and Alaska have begun certifying CHWs who practice in specific settings. Still other states are considering increased regulation and certification of practitioners (Gilkey, Garcia, & Rush, 2011). At the federal level, CMS approved a state plan amendment in 2008 authorizing payment for CHWs working under Medicaid-approved providers: physicians, nurses, dentists, and mental health providers (Martinez, Ro, Villa, Powell, & Knickman, 2011). The PPACA also included funding mechanisms for the integration of CHWs into the broader health provider workforce. (Ingram, et al., 2011). In 2010, the U.S. Department of Labor's Bureau of Labor Statistics recognized CHWs as a distinct profession, defining their roles as assisting individuals and communities with adopting health behaviors, conducting outreach, and advocating for individual and community health needs (Martinez, Ro, Villa, Powell, & Knickman, 2011).

Competencies and Roles

Early in the emergence of community health workers as a growing provider type, the national Community Health Advisory Survey (CHAS) sought to define the field through the roles that CHWs filled and the competencies they have mastered. These competencies, widely cited, are as follows:

- Bridging/cultural mediation between communities and health care systems
- Providing culturally appropriate and accessible health education information
- Assuring that people get the services they need
- Providing informal counseling and social support
- Advocating for individual and community needs
- Providing direct services
- Building individual and community capacity (Ingram, et al., 2011)

Equally important, CHWs perform these competencies synergistically, recognizing that patient needs often demand multiple of these skills (Ingram, et al., 2011). Thus, CHWs operate under current models of peer support in health care - specifically as a variant on the employment of consumers as providers within clinical and rehabilitative settings - acting as roles models, complementary support, and potential gateways to the health system (Spencer, Gunter, & Palmisano, 2010). Like recovery coaches in the mental health setting, CHWs serve to eliminate or minimize the barriers of language, education, citizenship, and life experience (Rosenthal, et al., 2010).

Specific to Texas, Chapter 48 of the Health and Safety Code defines a CHW as one who "provides a liaison between health care providers and patients through activities such as assisting in case conferences, providing patient education, making referrals to health and social services, conducting needs assessments, distributing surveys to identify barriers to health care delivery, making home visits, and providing bilingual language services." This legislative definition covers many aspects of the CHAS competencies but does not explicitly highlight the CHWs' efforts with communities, as noted in CHAS competencies #1, #5, and #7. However, public health researchers have posited that the social determinants of health may be best addressed by engaging communities in solving their health problems (Balcazar, et al., 2011). Furthermore, disease management may best be achieved through partnerships between health systems and communities (Cherrington, et al., 2010). Taken together, these last points may highlight the importance of CHWs to improving health in certain areas of the state.

Multiple recent surveys have demonstrated that CHWs across the U.S. work in diverse settings and in various types of agencies both within and external to clinical environments (Ingram, et al., 2011). Indeed, Cherrington, et al. (2010) report that researchers and clinicians are increasingly seeking to improve health

outcomes in community interventions through the use of CHWs. Elsewhere, CHWs have been proposed as a means of improving outcomes for underserved populations and helping people manage chronic disease (Rosenthal, Wiggins, Ingram, Mayfield-Johnson, & Guernsey de Zapien, 2011). Ingram, et al. (2011) provide data indicating that among all CHWs, 57% practice in chronic disease, 42% provide preventive services, and 38% deal with issues of health care access. Additionally within community health centers, 36% are involved in maternal and child health programs.

Given their mastered competencies and variety of role capabilities, CHWs are well-positioned to facilitate timely access to primary and preventive services by improving the coordination, quality, and cultural competence of medical care (Martinez, Ro, Villa, Powell, & Knickman, 2011). With such a wide range of skills and a focus on community outreach, CHWs often function as the first point of contact for people who have previously lacked access to primary care and preventive health services (Martinez, Ro, Villa, Powell, & Knickman, 2011). In doing so, the CHW can assist the primary care provider in identifying a patient's health needs and considering the cultural relevance of treatments provided (Waitzkin, et al., 2011). Most broadly, CHWs can increase access to health care and health education, promote community empowerment, improve quality of care and compliance with prescribed care, and reduce the costs of care (Rosenthal, Wiggins, Ingram, Mayfield-Johnson, & Guernsey de Zapien, 2011).

CHW Contributions to Efficacy and Efficiency

Generally, studies of CHW intervention efficacy have shown favorable results (Waitzkin, et al., 2011). For example, an evaluation study of CHW effects on treatment experiences in New Mexico revealed notable results for all parties (Waitzkin, et al., 2011). Patients perceived that CHWs spent more time with them and listened more attentively than did physicians. CHWs also stressed their ability to spend more time with the patient and thus generate greater rapport than physicians might. Importantly, primary care providers also celebrated the additional time CHWs could spend with patients, the ability of CHWs to remove cultural and linguistic barriers, and an increased perception of patient comfort.

From a cost perspective, the AHRQ was unable to assemble sufficient data to conclude that CHW practice was cost-effective. While this issue is discussed further below, it is worth noting that AHRQ reviewers did find several notable demonstrations of cost savings or reductions (Martinez, Ro, Villa, Powell, & Knickman, 2011). According to the AHRQ, the five most costly diseases in the US between 1996 and 2006 were heart disease, trauma-related disorders, cancer, asthma, and mental health disorders, with the largest increase in cost being for mental health and trauma-related disorders (Ngo, et al., 2013). Recalling the majority of CHWs work with issues of chronic disease, CHWs stand to lessen the cost impacts of these health problems. For example, CHWs have had widespread success assisting users of EDs find more appropriate

CHWs and Diabetes Care

In Dallas, Baylor Scott & White Health North's Diabetes Equity Project employs CHWs in community clinics to provide clients with a structured diabetes education curriculum. In seven lessons, this curriculum targets barriers in diabetes management that Hispanics often face. Specifically, the CHWs help patients to overcome a lack of knowledge about diabetes, address poor dietary and physical activity behaviors, and identify a means to access necessary social support and appropriate care. Results from this program indicate that participating patients experienced a decrease in mean A1C levels and systolic blood pressure readings after one year (Collinsworth, Vulimiri, Schmidt, & Snead, 2013).

In a similar University of Texas Community Outreach program using CHWs to target Hispanics at the Mercy Clinic in Laredo, estimates indicated a cost effectiveness ratio of a lifestyle modification program to be between $10,995 to $33,319 per quality-adjusted life year gained as compared to usual care. The intervention was particularly effective among those patients with high glycemic levels (A1C >9%) (Brown, et al., 2012).

care, and they can follow recent hospital discharges of patients with serious conditions (heart attack, stroke, diabetes complications, etc.) as a part of postdischarge planning, with an eye toward reducing readmissions (Balcazar, et al., 2011). Furthermore, Waitzkin, et al.'s (2011) study showed that "[a]ll interviewed PCPs [primary care practitioners] favorably assessed the value of [CHW] services for depression". Also on mental health, a growing literature suggests that lay health care workers can be effective especially when providing screening, psycho-education, and brief behavioral interventions (Ngo, et al., 2013).

According to Martinez, et al. (2011), CHWs are ideal for the ongoing movement toward outcome-driven, value-based care. In their article, these authors outline how CHWs can contribute to effective cost savings in full and partial capitation models, bundled payment arrangements, shared savings agreements, and pay-for-performance initiatives. Specific to full and partial capitation models, which the authors describe as most ideal for the deployment of CHWs, preventive health care that improves care quality and reduces cost is an expected CHW contribution. In a bundled payment system, CHWs might assist in care coordination and health management. For shared savings arrangements, CHWs would act to improve access to primary and preventive care services, identify community health issues, serve as community liaisons for providers, and tailor and deliver interventions for patients with complex health and social needs. Finally, within a pay-for-performance model, CHWs would work to tailor interventions for patients in greater need of care management and service coordination (Martinez, Ro, Villa, Powell, & Knickman, 2011).

In addition to contributions to the treatment of chronic disease and in evolving payment systems, CHWs can be integrated into broader discussions of improving efficiency in the health care delivery system. Recently, policymakers' attention has been focused on potential delivery system innovations to reduce cost. Two popular concepts, accountable care organizations and health homes, have been described as an "ideal context for integrating CHWs" into the health care workforce (Martinez, Ro, Villa, Powell, & Knickman, 2011). Specific to the PCMH, CHWs are expected to be an essential element of proper implementation given their close ties to communities, their ability to foster cultural awareness and sensitivity among the treatment team, and the role they can play in ensuring PCMHs are culturally and linguistically appropriate for a population (Balcazar, et al., 2011).

Within collaborative care models such as PCMHs, tasks can be shifted and shared with specialists allowing primary care providers and community health workers to identify patients who need care, assess patient risk factors, educate patients about their illnesses, risk factors, and treatment, intervene with a combination of brief evidence-based pharmacological and psychosocial treatments, teach self-management skills, monitor patients' progress and adherence to treatment, and follow-up over the long-term (Ngo, et al., 2013). As described above, the full integration of the CHW in the health care team relies on the CHW to go beyond mere patient recruitment to the full exercise of their range of roles and responsibilities (Balcazar, et al., 2011). After all, CHWs add value to the health care team by providing contextual data about patients' attitudes, behavior, and environment that can inform development of an effective care plan (Martinez, Ro, Villa, Powell, & Knickman, 2011).

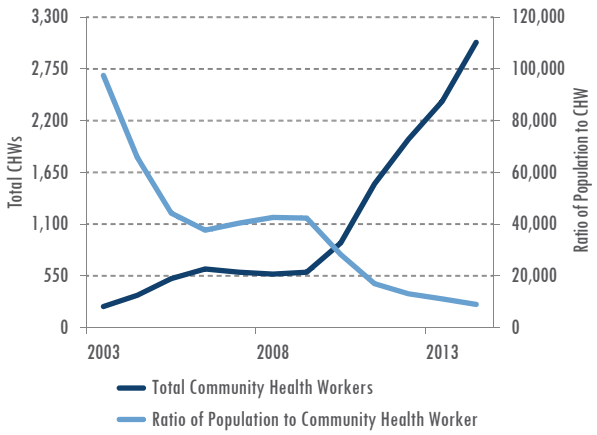
Workforce Description

In a nationwide survey covering 22 states and the District of Columbia, results indicated that 83% of CHWs had the same ethnicity as the people they served (Ingram, et al., 2011). National surveys of CHWs, meanwhile, have found that roughly 35-54% of CHWs are Hispanic/Latino and between 7.4% and 19% were African-American/black (Rosenthal, Wiggins, Ingram, Mayfield-Johnson, & Guernsey de Zapien, 2011). These higher end percentages are greater than the percentage of Hispanic and African-American providers in many other health professions and the general population. There is a need for more data on CHW ages to inform further recruitment efforts (Rosenthal, Wiggins, Ingram, Mayfield-Johnson, & Guernsey de Zapien, 2011).

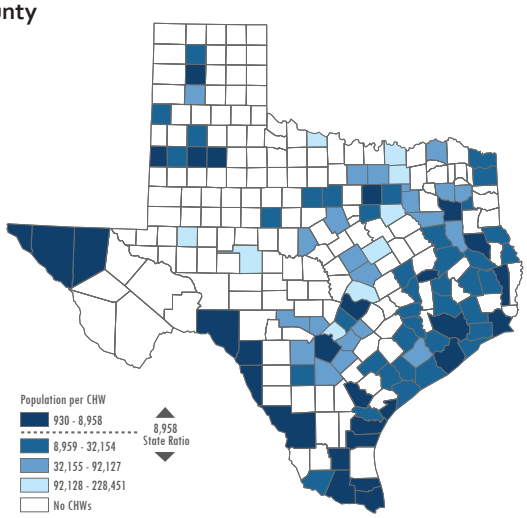
In terms of geographical distribution, CHWs are often distributed along the U.S.-Mexico border (Ingram, et al., 2011). Further, data from national surveys indicate that 18-27% of CHWs worked in rural areas at the time of surveys, and another 10-38% reported that they worked in both urban and rural areas (Rosenthal, Wiggins, Ingram, Mayfield-Johnson, & Guernsey de Zapien, 2011).

In Texas there were 3,032 certified community

CHW growth trends



Ratio of Texas population to community health worker, by county

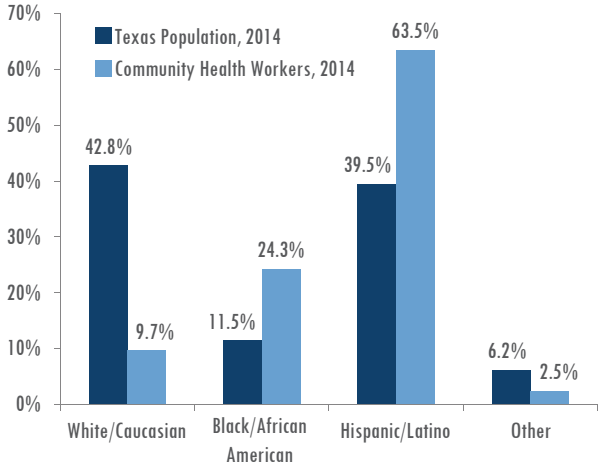


Geographic Designation	Ratio of population to CHW
Metropolitan	8,337
Non-metropolitan	20,891
Border	4,725
Non-border	9,999
Texas	**8,958**

health workers in 2014. This is 784% of the 2004 CHW workforce. Moreover, the population to CHW ratio has decreased by 86.4% over the same period.

Geographically, 19.7% of CHWs were in border counties and 95.1% were in metropolitan counties. Of those in border counties, a full 10% of CHWs were located in non-metropolitan areas, compared to just 3.7% in non-metropolitan areas among non-border counties.

Ethnicity of the Texas population and community health workers



The majority of these CHWs, 87.4%, were female. With respect to ethnicity, 63.5% self-identified as Hispanic, 24.3% as African-American, and 9.7% as white.

Among CHWs, 5.1% were 65 years of age or older while 22.4% were aged 55 years or older. The mean age was 44.9 years old and the median age was 45.

Policy Considerations

- **The full integration of CHWs into the health care payment system is necessary for them to meet their potential as primary care providers.**

As the nation's workforce of CHWs continues to develop, several policy considerations have been raised. First, CHWs are not yet fully integrated into the country's health care payment system, a fact that keeps CHW programs from reaching their full potential for impact (Spencer, Gunter, & Palmisano, 2010). Thus the literature has consistently recommended that sustainable financing for CHWs be implemented through Medicaid and Children's Health Insurance Program (CHIP) programs (Rosenthal, et al., 2010), direct care reimbursement strategies, managed care organizations, 1115 waiver projects (Spencer, Gunter, & Palmisano, 2010), and commercial insurers and public funds (Martinez, Ro, Villa, Powell, & Knickman, 2011).

- **The standardization of education and career development systems is imperative for the continued professionalization of the field.**

Second, the CHW workforce does not yet have well-defined training and career development systems (Rosenthal, et al., 2010; Balcazar, et al., 2011), often resulting in CHWs not being recognized as legitimate providers (Spencer, Gunter, & Palmisano, 2010). Third, states and CHWs should continue to work together to develop standards for training and regulation of the field (Rosenthal, et al., 2010; Balcazar, et al., 2011). Combining these two points, Spencer, Gunter, & Palmisano (2010) propose that the creation and institution of systematic skill sets and credentials recognized across work settings and usable for higher education would improve the field and its standing within the broader health system.

- **Greater efforts must be made at systematic evaluation of CHWs in order to better understand where, when, and how they may be best deployed.**

Finally, the evaluation of CHWs does not lend itself to the randomized controlled experiments generally preferred by the health industry. This expectation has contributed to the AHRQ being unable to identify conclusive data on CHW efficacy but ignores the complex social systems, with evolving communities, in which CHWs perform their work (Balcazar, et al., 2011). Rather, evaluations of CHW programs should incorporate qualitative and ecological, as well as quantitative, analyses. These evaluations should further strive to generate common measures to be used in evaluating CHWs (Rosenthal, et al., 2010; Balcazar, et al., 2011). As Waitzkin et al. (2011) note, due to continuing unmet health needs, the further assessment of innovative roles for CHWs is needed (Waitzkin, et al., 2011).

Review of Primary Care Policy Recommendations

As previous chapters have outlined, the nation's health care system is undergoing rapid changes at a time when it also faces great challenges. With existing shortages of primary care providers and expected increases in the demand for care that accompany the increasing prevalence of chronic disease, the aging of the baby boomer population, and the implementation of the Patient Protection and Affordable Care Act, the Texas Statewide Health Coordinating Council supports the promotion of a robust primary care system within Texas and has identified multiple means by which the state can meet these challenges. As the innovative payment and delivery systems discussed herein continue to evolve, it is important the state's health care policymakers, providers, and consumers continue to strive towards an efficient and accessible health care system that promotes the timely use of primary care services.

A core part of the transformation of the health care delivery system, for both primary care and mental health care, is the ongoing transition to team-based, collaborative care that empowers multiple providers with the autonomy necessary to work together. As the preceding chapters have made clear, **the successful employment of such an approach will be dependent on the efficient and appropriate use of many types of primary care providers**. The stark need for a larger number of primary care physicians in the workforce is clear, though it is just as essential that these physicians be prepared to serve as leaders of care teams and delegate appropriately to team members. Likewise, providers from other professions, namely advanced practice nurses, physician assistants, and pharmacists, should be further incorporated into the primary care workforce and their skills utilized to meet the varying needs of the Texas population. Finally, community health workers should be recognized for their service as liaisons between providers and patients, bridging cultural and linguistic gaps, improving patient satisfaction, and serving as vital links between communities and the health care system.

With the ongoing shift toward team-based care and the increased incorporation of multiple provider types into the primary care setting, changes to the payment system will be needed. Primary care practices must be able to recoup the expenses incurred in the employment of additional providers, especially since these providers offer substantial potential to reduce the overall cost of care. Further, alternate reimbursement models, such as accountable care organizations, varying levels of capitation, or shared savings, should be oriented in a manner that maximizes the potential contributions of primary care and primary care providers.

Finally as the health care system continues to evolve, policymakers and stakeholders should continue to evaluate and reevaluate the multiple components of these systems. For example, quality of care by provider type, the efficacy and cost-effectiveness of patient-centered medical homes for different populations, and potential improvements in the collaboration of care and utilization of health information technologies are but a few of the issues on which data should be collected and analyzed.

Changes in the state's health system have already begun and the Texas Statewide Health Coordinating Council is committed to ensuring that these changes result in efficient, accessible, and responsive care. A chief component of achieving this goal is through the support of and innovation in Texas' primary care system.

Transforming Texas' Mental Health Care System

The Mental Health Delivery System

According to Kazdin & Rabbitt (2013), "[a] critical aspect to reducing the burden of mental illness is the ability of effective interventions to reach those in need of services." In 2006, the national mental health workforce was estimated at 430,000 clinicians, including psychiatrists, psychologists, psychiatric nurses, social workers, and counselors, enough to treat the needs of all Americans with serious psychological distress. Yet just three years earlier the President's New Commission on Mental Health concluded that the nation's mental health system was fragmented and in need of drastic transformation (Delaney, Carlson-Sabelli, Shephard, & Ridge, 2011).

In fact, as many as two-thirds of patients with significant behavioral conditions receive no mental health treatment and those who receive treatment often receive their care in the medical, not the behavioral health, sector (Kathol, deGruy, & Rollman, 2014). Moreover, the PPACA is estimated to add 3.7 million people with serious mental illness and many more with less severe behavioral health needs to the health insurance system (Bao, Casalino, & Pincus, 2013). It may be generally accepted that adequate primary care reduces health inequities (deGruy & Etz, 2010), but the application of this view to mental health will require considerable dedication.

The core of the emerging model of the PCMH relies on the known strengths of primary care, while incorporating aspects of the chronic care model and improving health information technologies in practice (Dickinson & Miller, 2010). An advantage of primary care is its comprehensiveness, defined as the availability of a wide range of services, and this same approach has been proposed as a possible solution for addressing issues in the nation's mental health system. Considering that primary care is where most people already receive their health care, and it is known that mental/behavioral conditions are related to physical conditions, integrating the delivery of physical and mental health care appears an appealing solution. The PCMH providing mental health care ensures comprehensiveness and continuity of care (Dickinson & Miller, 2010; deGruy & Etz, 2010; Kearney, Post, Zeiss, Goldstein, & Dundon, 2011). Preferably, behavioral health interventions should be provided on-site (Dickinson & Miller, 2010; Kearney, Post, Zeiss, Goldstein, & Dundon, 2011) to improve patient experience, decrease barriers to treatment, and address potential stigma of going to a mental health provider (Dickinson & Miller, 2010). Given that primary care physicians already struggle to meet National Guidelines Clearinghouse standards for patients with a singular diagnosis of depression, such an integration may additionally improve the provision of medical primary care services as well (deGruy & Etz, 2010).

Innovation in Mental Health Delivery

> **"It is inconceivable that whole person care can occur absent attention to and incorporation of the full psychosocial dimension of health and healthcare – mental healthcare, family and community contexts, substance abuse, and health behavior change" (deGruy & Etz, 2010).**

This quote supports the conclusions of the President's New Commission on Mental Health, which called for a transformation of the nation's mental health system. The current dominant treatment model is one-to-one in-person therapy, but in this transformation there is a need to identify and utilize additional approaches to the delivery of mental health services. On the one hand, these can be derivative of the dominant model, for example the use of telepsychiatry to address workforce distribution problems or self-help and computer-based interventions using the same mechanisms present in currently ubiquitous therapies (Kazdin & Rabbitt, 2013). On the other hand, there are truly innovative models, described by Kazdin & Rabbitt (2013), which have been shown effective. For example, peer-led therapies have been shown to be as efficacious as face-to-face therapies with a mental health professional in some cases (deGruy & Etz, 2010), and internet and mobile health technologies might be increasingly applicable to the elderly (Bartels & Naslund, 2013). Other categories of innovative delivery include:

Task shifting – Kazdin and Rabbitt (2013) define task shifting as a method to expand the health care workforce by redistributing the delivery of services to a broader range of providers with possibly less training and fewer qualifications than traditional health workers. Research has indicated that existing practitioners should be deployed to use the best of their abilities and that each profession should be granted a

maximum amount of reasonable responsibility. One essential attribute of future health workers will be the ability to recognize and employ suitable innovations, even if this causes a personal role change (Gorman & Brooks, 2009). The utilization of team-based care, collaborative care organizations, and medical homes have been cited as ideal models for improving outcomes and efficiency (Kirch, Henderson, & Dill, 2012). Medical, or health, homes have been presented as an appealing opportunity to offer integrated medical and behavioral health services (Beacham, Kinman, Harris, & Masters, 2011) while also potentially offering social service and housing programs (Mechanic, 2011).

Specifically, physicians might delegate some of the simpler tasks and practice 'at the top' of their training, allowing other professions to fill in the gaps through role extension. Physicians may then provide leadership while working as members of health care teams, with well-specified and defined tasks for each profession (Gorman & Brooks, 2009). For example, the increased use of NPs and PAs has great potential to significantly address health care workforce shortages (Kirch, Henderson, & Dill, 2012). Such task shifting is designed to provide interventions on a large scale and to reach individuals who otherwise would not receive services (Kazdin & Rabbitt2013). Typically successful models incorporate redefinition of staff roles and duties, including those of primary care providers (physicians, NPs, and PAs), nurses, pharmacists, physical and occupational therapists, care managers and others (Croghan & Brown, 2010; Kearney, Post, Zeiss, Goldstein, & Dundon, 2011).

Well-designed task shifting may improve the practice environment for the many primary care providers who report feeling as though they lack sufficient training in the diagnosis and treatment of mental disorders (Croghan & Brown, 2010). Additionally, these providers may also have concern about the amount of time required for thoroughly counseling, educating, and monitoring patients; a lack of access to mental health specialists for advice and consultation; and their inability to obtain outpatient mental health services for their patients (Croghan & Brown, 2010; Cunningham, 2009).

While task shifting is no cure-all, it can be a useful extension of available mental health services when lower-cost but lesser-trained clinicians are trained to support the application of evidence-based approaches to treatment (Kathol, deGruy, & Rollman, 2014). At the same time, more difficult patients should likely continue to see experienced psychiatrists or psychologists.

Disruptive innovations – Disruptive innovations have been defined as those innovations which expand care beyond the traditional locales for services and into everyday settings where people regularly attend or spend time (Kazdin & Rabbitt, 2013). Examples of non-traditional settings used to reach out to people otherwise not served by the mental health system have included schools, workplaces, homes, neighborhoods, prisons and detention centers, churches, hair salons, and barbershops. For example, an existing program described by Kazdin and Rabbitt (2013) trains hair stylists to assess anxiety and depression and assists them in providing appropriate referral services to clients.

Likewise, Bartels and Naslund (2013) similarly proposed the use of such disruptive innovations to meet the needs of elderly patients with mental health issues. Generally the advantage of these innovations is that they bring care to patients, rather than relying on the patient to present for treatment (Kazdin & Rabbitt, 2013).

Best buy interventions – Kazdin and Rabbitt (2013) define best buy interventions as those for which compelling cost-effectiveness has been established, but that are also feasible, low-cost, and appropriate to implement within the constraints of the existing mental health system. An example these authors offer is the use of generically produced antidepressant medication, brief psychotherapy, and treatment in primary care settings as best buys for the treatment of clinical depression. Likewise for psychoses, antipsychotic drugs and psychosocial support are identified as best buys (Kazdin & Rabbitt, 2013).

Lifestyle change – In addition to treatments aimed directly at mental health issues, efforts that modify high-risk behaviors and reduce disease morbidity and mortality should be considered as potentially improving the medical and mental health delivery systems. Indeed, improved nutrition, exercise, and spiritual/religious activities, among others, have been associated with favorable impacts on symptoms of depression, anxiety, schizophrenia, eating disorders, and other mental health ailments (Kazdin & Rabbitt,

Barbershop Health Programs

Between 2006 and 2008, the University of Texas – Southwestern Medical Center conducted a pilot study in Dallas seeking to engage African-Americans in blood pressure monitoring and health education. This intervention, which was delivered in community barbershops, provided customers with increased monitoring for hypertension with results indicating that such interventions can be successful loci for the detection, referral, and follow-up of health problems (Hess, et al., 2007).

Currently, the Texas Tech University Health Sciences Center (TTUHSC) offers a similar program, The Barbershop Blood Pressure Program. Students from the TTUHSC provide outreach by approaching and enrolling local barbershops to take blood pressure readings and talk with patrons about high blood pressure and diabetes. Barbers in the shops are supplied with a scale, BMI chart, automated blood pressure cuff, and pamphlets with information about high blood pressure and diabetes for the patrons to use on a daily basis. One night each month, TTUHSC students also go to the Salvation Army during dinner and perform blood pressure and blood glucose screenings. In the 2014-2015 academic year, there will also be a media day where students will be out at the barbershops for an extended period to help get the community more involved in this program and help raise awareness about high blood pressure and diabetes.

Additional research and pilot studies are needed on how such approaches can be used to successfully engage communities and individuals on relevant mental health topics.

2013). The need for professionals in this approach stems from the truth that many patients may lack the sufficient motivation, skills, knowledge, or support and reinforcement necessary to make sustainable change (deGruy & Etz, 2010).

Delivery and Payment Models

Overall, mental health care costs have lagged behind growth in medical health care costs. While the share of national spending on medical care costs (currently about 17%) has been steadily growing, the share going to mental health held steady at about 1% of national spending for the thirty years prior to 2002. In 2006, per capita spending for mental health care in one sample was estimated to be $148.56; spending for medical care (excluding mental health) was $2,631.64. Notably, drug spending accounted for 26% of total per capita health care spending and a full 51% of spending on mental health care. Additionally, inpatient care in mental health, historically a large part of mental health spending, accounted for only 16% of all mental health care spending in 2006, further indicating the relative inexpensiveness of counseling services (Frank, Goldman, & McGuire, 2009). Indeed, a study by the Texas Department of Insurance found that a state law requiring insurers to reimburse for the services of licensed professional counselors (LPCs) did not significantly increase coverage costs. Claims costs for services provided by LPCs accounted for less than 0.1% of total claims for the insurers surveyed. A similar survey conducted by the Commonwealth of Virginia found that in 1996, claims for counselors' services amounted to 0.26% of insurers' total claims (American Counseling Association, 2011).

Recently, the PPACA and other sources have referenced three health care delivery models (the PCMH, the health home, and the ACO) that seek to control mental health costs. Bao, Casalino, and Pincus (2013) have outlined how each might be used to serve specific sets of patients in need of mental health services. Interestingly, these authors described a lack of quality standards for each. Indeed for ACOs, only one of the quality standards prescribed by CMS is directly related to behavioral health (screening for depression).

Patient-Centered Medical Home

The PCMH model has been described as being built on the known strengths of primary care (see previous chapters) (Dickinson & Miller, 2010). A key advantage of primary care is its comprehensiveness, defined as the availability of a wide range of services.

A truly effective PCMH should include the provision of mental health services. Primary care is where most people already receive their health care, and it is known that mental/behavioral conditions are related to physical conditions. As such, PCMHs providing mental health care ensure comprehensive and continuous care (Dickinson & Miller, 2010; deGruy & Etz, 2010).

For PCMHs, NCQA standards require routine screening of patients for behavioral health conditions and the implementation of evidence-based guidelines for the management of one health behavior or mental health/substance abuse condition, in addition to two chronic medical conditions deemed important to the practice. Given the need for mental health or lifestyle changes to be incorporated into the PCMH, the proposed integration of mental health services seems sensible.

More broadly, Bao, Casalino, and Pincus (2013) describe PCMHs as offering the greatest potential to treat patients' mild to moderate behavioral health conditions, regardless of payer. However, these authors note, unless the PCMH is very large, it may lack sufficient capacity to deal with patients with serious behavioral health conditions.

Health Home

For Medicaid patients, the health home is aimed at care management, coordination, and use of clinical information technologies. Designated health home providers have been identified as physicians, clinical practices or clinical group practices, rural health clinics, community health centers, community mental health centers, and home health agencies. The health home differs from the PCMH as it seeks to build linkages to other community and social supports, and to enhance coordination of medical and behavioral health. Following from this second goal, enrolled patients must have two or more chronic conditions, have one chronic condition and be at risk for another, or have a serious mental health condition (Bao, Casalino, & Pincus, 2013).

The Medicaid health home is described as the best solution (of those listed here) for Medicaid patients with mild-to-moderate mental health conditions. Health homes with a large number of patients with serious mental illness, the authors advise, should develop a referral and care coordination system with external behavioral health and social service providers (Bao, Casalino, & Pincus, 2013).

One key advantage of the health home is that additional federal Medicaid funding may be available in the first two years of a health home's establishment. Also, the PPACA allows great flexibility to states in the rule-making process for designating providers as health homes (Bao, Casalino, & Pincus, 2013).

Accountable Care Organizations

Finally, ACOs seek to incorporate the full continuum of care and are accountable for overall costs and quality of care for a defined population. Shared savings mechanisms between the payer and the ACO provide incentives for providers to coordinate behavioral and mental health, as associations between treatment non-adherence, adverse health events, and increased total costs with behavioral health conditions are well-established (Bao, Casalino, & Pincus, 2013). According to these same authors, ACOs offer the greatest potential to patients with mild-to-moderate behavioral health conditions and either private insurance or Medicare. This fit is attributed to ACOs likely having the scale and resources to ensure access to and coordination with high quality behavioral health specialists. Some states, for example Colorado and New Jersey, are instituting regional ACOs for their Medicaid populations, but these solutions are best for geographic areas with high Medicaid patient density (Bao, Casalino, & Pincus, 2013).

Moving Forward

As a means of addressing the nation's mental health system problems, President George W. Bush convened the President's New Freedom Commission in 2002. The Commission's 2003 report called for the large scale transformation of the U.S. mental health care system into a consumer-centered system focusing on recovery and delivering excellent care without disparities. Such a transformation demands the vast expansion of the workforce through training and initiatives aimed at the redistribution of duties among providers (Thomas, Ellis, Konrad, Holzer, & Morrissey, 2009).

This chapter has reviewed just some of the important transformations in mental health services being implemented in Texas and across the nation. Still it is clear that the utilization of mental health services, regardless of model of delivery, will require

a better understanding of the need for, benefits of, and access points to these services, a domain referred to as health literacy, on behalf of policymakers and the public (Kazdin & Rabbitt, 2013). Additionally, innovative interventions must be evaluated rigorously so that they can be scaled to reach individuals in need and expand the workforce as possible (Kazdin & Rabbitt, 2013).

Paris, Jr. and Hoge (2009) have identified the need for relevant and effective education and training covering innovation in prevention, treatment, and recovery-oriented services for mental health professionals as one of the core concerns facing the field. Indeed, the Annapolis Coalition advocated for a foundation of core competencies for mental health delivery skills that would apply to the five core mental health professions: nursing, psychiatry, social work, marriage and family counselors, and psychology (Delaney, Carlson-Sabelli, Shephard, & Ridge, 2011). These competencies, which should be included in both the initial education/training of health professionals and their continuing education/retraining, should follow the best practices suggested by the medical and mental health literature: assuring continued contact and reinforcement of newly acquired skills (Lyon, Stirman, Kerns, & Bruns, 2011). The adoption of these competencies is unlikely in the traditional educational setting and in cases where the provider fails to recognize the need for change in service delivery. Thus just as innovation must be used in service delivery, innovation will be equally important in the delivery of trainings, as traditional workshop models or any other single strategy are unlikely to be successful (Lyon, Stirman, Kerns, & Bruns, 2011).

- **As with the delivery of primary care, team-based, collaborative and coordinated care is an essential component of transforming the mental health delivery system.**

Chief among the changes discussed above is the need for mental health care professionals to operate collaboratively within the primary care practice and in teams providing integrated care. Specifically, issues of language, control, role definition, and others must be addressed prior to the successful function of the team (Dickinson & Miller, 2010). In preparing current and future professionals for administering team-based care, interprofessional education can be used to improve providers' reactions, attitudes, and knowledge, while also improving service delivery and patient care outcomes (Lyon, Stirman, Kerns, & Bruns, 2011; Delaney, Carlson-Sabelli, Shephard, & Ridge, 2011).

- **Improving efforts at recruiting and retaining mental health care providers is an absolute necessity.**

Another pressing concern stems from difficulties recruiting and retaining staff in mental health service settings (Paris Jr. & Hoge, 2009). High turnover rates compromise continuity of care and create organizational instability, financially draining the system due to the costs of employee separation and the recruitment and training of new employees. For social workers, high job demands have been associated with emotional exhaustion (employee burnout). Among psychologists, emotional exhaustion was correlated with long working hours and time spent on administrative and paperwork tasks. Given the high rate of turnover in the mental health professions, there exists a compelling need to better understand and mitigate high levels of distress among providers of mental health services (Paris Jr. & Hoge, 2009).

In implementing reform efforts, policymakers and practitioners should consider which models might best serve which populations (Bao, Casalino, & Pincus, 2013). Another important consideration is the incorporation of evidence-based guidelines for behavioral health into PCMHs, specifically through NCQA and other tiering systems and risk adjustment payment methods (Bao, Casalino, & Pincus, 2013; Croghan & Brown, 2010). Furthermore, relevant to innovations in the mental health delivery system, greater information is needed on the cost to implement versus pay-offs (Bao, Casalino, & Pincus, 2013). Finally, it has been suggested that current payment mechanisms do not provide sufficient resources for full implementation of team-based care and care coordination activities (Croghan & Brown, 2010).

Newer access models for education, delivery, and treatment are beginning to improve our nation's access to mental health services. Distance learning is increasing the availability of mental health education to citizens throughout the country. Entire degree programs are now being offered via distance learning for aspiring mental health practitioners, not simply supplemental or elective course work. Telemental health therapy is increasing access to mental health

care, with hospital-based specialists connected as a hub to multiple small auxiliary (usually rural) locations. The internet has given rise to sites like the popular Oprah-sponsored www.Breakthrough.com, allowing anyone to gain access to a mental health professional from their own home. Biopharmaceutical research companies are developing more than one hundred new medicines to treat schizophrenic depression, attention-deficit/hyperactivity disorder, addiction and substance abuse, and even autism spectrum disorders (Pharmaceutical Researchers and Manufacturers of America, 2014). These developments are a major force for future change in mental health care as prescription drug spending is a key driver of spending growth in mental health care.

- **The mental health delivery and payment systems must undergo drastic transformation.**

The future of mental health care also raises its share of concerns. The PPACA, for example, brings a number of changes to health care delivery. Its principal promise – more citizens covered – may pose a risk to independent mental health practice. While more Texas citizens will be insured for coverage for health services, there will be a greater expectation to use the coverage. The extent then to which people are willing to purchase services beyond those for which they have already "pre-paid" remains to be seen (Herz, 2014).

The Mental Health Workforce Shortage

Nationally, 46.4% of adults experience mental illness at least once in their lifetime and 26.2% of adults experience mental illness annually. On an annual basis, 5.8% of adults in the U.S. experience a serious mental illness (Hogg Foundation for Mental Health, 2011). Moreover, the aging of the U.S. population requires behavioral health service providers with special knowledge and skills (Hoge, et al., 2013).

In 2013, an estimated 43.8 million adults aged 18 or older in the U.S. had experienced mental illness in the past year, while an estimated 21.6 million individuals aged 12 or older had experienced a substance use disorder in the past year (Center for Behavioral Health Statistics and Quality, 2014). One estimate puts the total economic costs of mental, emotional, and behavioral disorders among youths in the United States at approximately $247 billion (O'Connell, Boat, & Warner, 2009).

Nationwide, 39% of persons with mental illness and 10.8% of persons with substance abuse issues receive the mental health treatment they need (Hoge, et al., 2013). A national study conducted by the Center for Studying Health System Change found that 66.8% of primary care physicians were unable to refer their patients to high quality mental health specialists. This is a far higher rate of unavailability than those seen for other specialty referrals, nonemergency hospital admissions, or high quality imaging services (between 17% and 34%). The study attributed unavailability to either inadequate health insurance coverage or a shortage of mental health providers (Cunningham, 2009).

Mental and behavioral health treatment is one of many methods facilitating recovery for patients in need. Treatment and counseling have the potential to decrease the risk of relapse and promote recovery and remission of mental disorders (Emsley, Chiliza, Asmal, & Lehloenya, 2011). According to the 2013 National Survey on Drug Use and Health, 34.6 million adults aged 18 or older received treatment or counseling for mental health issues during the past 12 months. With regard to adolescents, 38.1% of adolescents with major depressive episode (MDE) within the past year and 45.0% of those who had MDE with severe impairment received treatment or counseling for depression. Also, 22.7 million individuals aged 12 or older needed treatment for an illicit drug or alcohol use problem. Outside of the clinic and community health centers, school-based preventive and treatment interventions for children and adolescents have become commonplace. They are used routinely to provide services that focus on diverse clinical issues, including conduct problems, depression, stress, substance use, and suicidality. However, 20.2 million individuals in this group did not receive treatment at a specialty facility in the past year (Center for Behavioral Health Statistics and Quality, 2014).

Workforce-based explanations for a lack of mental health and substance abuse providers at-large generally focus on insufficient numbers of mental health providers, high turnover (a national average of 18.5% annually), low compensation, minimal diversity, and the need for accelerated adoption of new evidence-based treatments (Hoge, et al., 2013).

Describing these shortages quantitatively can be problematic as relevant data have not been universally collected and there is no consensus regarding what constitutes adequate supply. However, efforts to describe the mental health workforce shortage should consider both the population's need for mental health services and the number of practitioners available to provide these services (Thomas, Ellis, Konrad, Holzer, & Morrissey, 2009). Finally, despite the PPACA's effort at expanding access to medical care, populations living in areas affected by a mental health workforce shortage will likely continue to have insufficient access (Cunningham, 2009). This is in part due to the expectation that PPACA will raise demand for services and thus exacerbate the practitioner shortage (Kirch, Henderson, & Dill, 2012).

Most individuals who experience mental illness do not receive psychological services. The dominant model for delivering individual therapy with a highly trained mental health professional can provide effective evidence-based treatment, but is greatly limited as a means of identifying and reaching the larger population in need of treatment (Kazdin & Rabbitt, 2013). According to the National Bureau of Labor Statistics, there are 104,480 Clinical, Counseling, and School Psychologists in the US, with Texas ranking 4th highest in employment at 5,580. In 2012, 63,090 children and youths were served in

Texas' public mental health system. Among adults served in Texas' public mental health system in 2012, 60.3% of those between the ages of 18 and 20, 67.1% of those between 21 and 64, and 90.5% of those aged 65 or older were not in the labor force (Substance Abuse and Mental Health Services Administration, 2013).

Texas' Need for Mental Health Services

As noted above, one part of describing a workforce shortage involves demonstrating the needs of the population for mental health services. A standard definition of mental health need is not available locally or nationally.

Children and Adolescents

As of February 2014, no reliable statewide survey data on mental health needs existed for children younger than high school age. However, data demonstrate conduct/oppositional defiant disorder (13%) and depression (11%) were among the most common diagnoses among children receiving services from DSHS' Mental Health and Substance Abuse Division.

Data from the DSHS Texas Youth Risk Behavior Surveillance System's (YRBSS) representative sample of 9th through 12th graders provide a baseline for establishing adolescent need for mental health services in Texas. Results from 2013 indicate that 28.3% of Texas' public and charter high school students reported feeling sad or hopeless almost every day for a two week period within the 12 months prior to being surveyed, similar to the national level. The proportion of females (36.8%) reporting these feelings was significantly higher than that of males (20.2%). Moreover, 16.7% of teens reported seriously considering a suicide attempt and 15.6% had a plan for how they would commit suicide. Rates for both of these measures were significantly higher among females than males. Finally, 10.1% of teens reported attempting suicide in the past year and 3.5% of teens had required medical intervention after doing so, with no significant differences between males and females. None of the above measures show any significant differences by race/ethnicity or grade level (Texas Center for Health Statistics, 2013).

Adults

With respect to adults, DSHS' Texas Behavioral Risk Factor Surveillance System (BRFSS) reports that in 2013, 17.5% of adults reported having poor mental health for five or more days in the past 30 days. Additionally, the percentage of females (21.1%) reporting five or more days of poor mental health was significantly higher than that of males (13.8%). Significantly fewer college graduates reported poor mental health for five or more days (13.4%) than did those with some college education (20.2%), high school graduates (17.8%), and those with some high school education (18.2%). Likewise, the proportion of people with five or more poor mental health days was lower among those making more than $50,000 annually (13.2%) than those making less than $25,000 (23.8%) (Texas Center for Health Statistics, 2013).

Texas' Mental Health Workforce

In addition to patient need, a shortage of providers determines the insufficiency of the mental health workforce. The mental health workforce in the US has evolved significantly over the last 35 years both in terms of licensed providers and organization. Demographic shifts, increases in the number of new doctorates in the health service subfields, and an altered regulatory environment are but a few of the factors shaping the mental health workforce.

The supply of providers can be conceptualized as being composed of two broad determinants. The first is the entire number of practitioners qualified to serve in mental health and the second is the number of these committed to providing patient care and the percentage of their productive time committed to doing so (Murphy, et al., 2012). The state's shortage of supply is expected to worsen as many of the most skilled practitioners are nearing retirement age. At the same time, educational institutions in the state and the nation are not producing enough new graduates to meet predicted demand. Given the nationwide shortage, it is unlikely that Texas can meet its staffing needs by recruiting practitioners from other states (Thomas, Ellis, Konrad, & Morrissey, 2012) and the extent of the mental health shortage is expected to worsen as the workforce continues to age (Hogg Foundation for Mental Health, 2011).

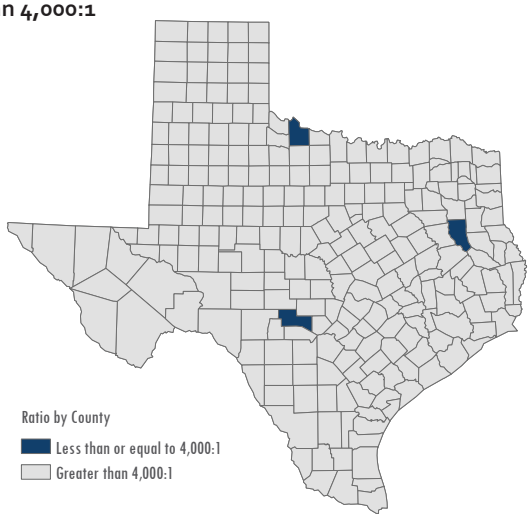
In addition to a shortage of providers, other sociodemographic factors contribute to the state's inadequate mental health workforce. For example,

providers are not distributed evenly across the state, resulting in differential access to care by region, especially in rural areas and along the border. Further, the provider workforce does not reflect the state's growing ethnic diversity resulting in the continued need for culturally competent mental health care.

Psychiatrists

The most common method for measuring health workforce adequacy is to compare the size of the population and the number of health care providers. Cunningham (2009) has noted that the greater the ratio of population to psychiatrists, the less likely it is that a patient can obtain a quality psychiatric referral. Further, Cunningham suggests that a population-to-psychiatrist ratio of greater than 4,000:1, a threshold met by only three counties in Texas, would likely impact the availability of mental health care.

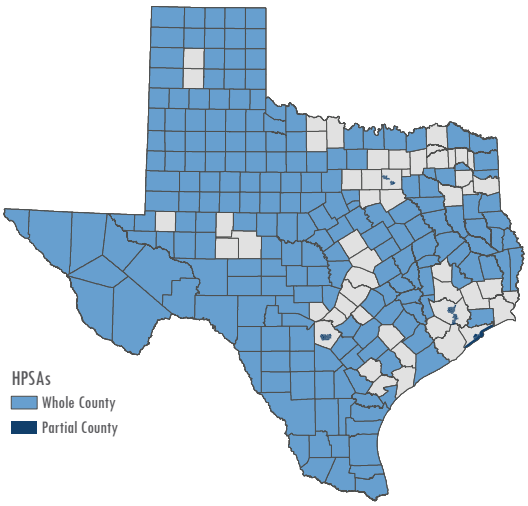
Counties with population to psychiatrist ratios of less than 4,000:1



A statistical model accounting for patient need estimated that a national ratio of persons per psychiatrist not exceeding 3,681:1 was ideal, though provider need specific to Texas was not calculated (Konrad, Ellis, Thomas, Holzer, & Morrissey, 2009).

In comparison to these models which directly consider patient need, HRSA's threshold for designation of a geographic area as a Health Professional Shortage Area (HPSA) for mental health is a ratio of 30,000 people to one psychiatrist. HPSA designations allow doctors and facilities to receive incentives meant to attract practitioners. In high needs areas (defined by HRSA as areas with high proportions of youth, elderly, low-income, or people with alcohol/substance abuse problems) the ratio required for federal designation is 20,000 people to 1 psychiatrist. The Primary Care Office within the DSHS currently uses these population-to-psychiatrist measures to apply for mental health HPSA designations.

Mental HPSAs in Texas



As of December 2014, 206 of Texas' 254 counties had whole or partial county Mental Health HPSAs and 224 counties had whole or partial county designation or at least one site-designated HPSA. Thus using the most lenient federal standard for HPSA designation, the vast majority of Texas counties lack a sufficient workforce of psychiatrists.

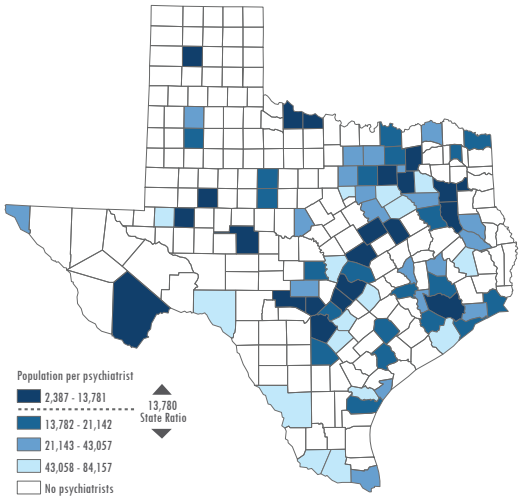
In addition to concern about the total number of psychiatrists, there is also a shortage of pediatric and geriatric psychiatrists. Only six states are considered to have an adequate supply of child and adolescent psychiatrists (Hoge, Stuart, Morris, Flaherty, Paris, & Goplerud, 2013), there is a national shortage of 22,000 child and adolescent psychiatrists and 2,900 geriatric psychiatrists, and only 325 new child psychiatrist graduates are produced nationally each year (Roberts, et al., 2013). The Institute of Medicine concluded that there was a major shortfall for professionals treating the mental health of aged populations. Currently, there are fewer than 1,800 geriatric psychiatrists in the US. By 2030, the national ratio of elderly persons with mental illness or substance abuse issues to geriatric psychiatrists is projected to be 6,000:1 (Hoge, Stuart, Morris, Flaherty, Paris, & Goplerud, 2013).

Workforce Description

As of September 2014, 1,971 psychiatrists were

actively licensed and offering direct patient care in Texas. Using 2014 population projections, this yields a ratio of 13,516 Texans per psychiatrist. However, Texas' five most populous counties (Harris, Dallas, Tarrant, Bexar, and Travis) had roughly 43.3% of the population and 63.9% of the state's psychiatrists, producing a population to psychiatrist ratio of 9,339:1 for these counties while the remainder of the state had a ratio of 21,634:1. Border and rural areas generally had far fewer psychiatrists per capita.

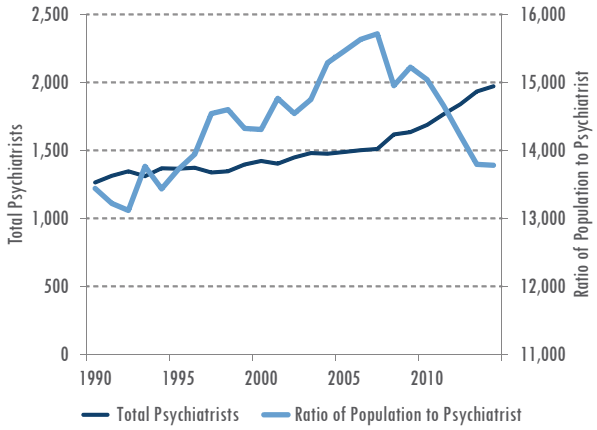
Ratio of Texas population to psychiatrist, by county



Geographic Designation	Ratio of population to psychiatrist
Metropolitan	12,740
Non-metropolitan	36,867
Border	33,239
Non-border	12,904
Texas	**13,781**

In 2014, over 2.8 million Texans (10.4% of the population) lived in counties with no psychiatrists, while over 3.3 million (12.2%) lived in counties eligible for designation under the most utilized federal guidelines as a mental health health professional shortage area (HPSA) (ratios of 30,000:1 or higher). By comparison, in 2014 99.6% of Texans lived in counties with ratios higher than those recommended by the academic literature (Cunningham, 2009; Thomas, Ellis, Konrad, Holzer, & Morrissey, 2009).[5] From 2009 to 2014, there was an average annual growth of 4.1% among Texas' active psychiatrists.

Psychiatrist growth trends

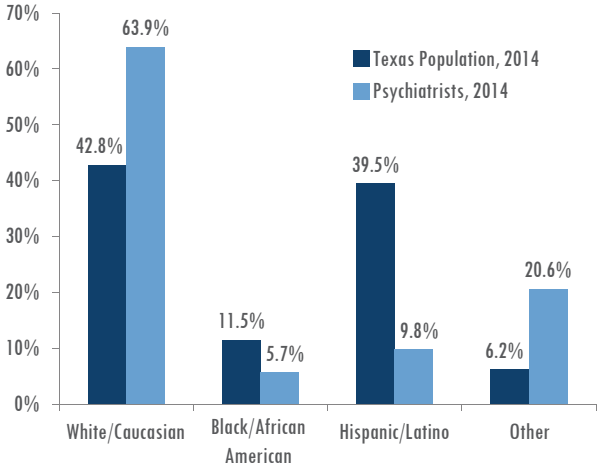


However because of the state's growing population, the ratio of population to psychiatrists improved by an average of 2.0% annually over these five years.

In addition to an overall shortage in 2014, the existing psychiatric workforce differed demographically from the population at-large. The composition of Texas' population was estimated to be 42.8% white, 39.5% Hispanic, 11.5% African-American, and 6.2% from other ethnicities. Yet 63.9% of the psychiatric workforce was white, with just 5.7% African-American and 9.8% Hispanic representation. 20.6% of the workforce was classified as being of another ethnicity, potentially through their status as an international medical graduate.

Texas faces the additional challenge of an aged psychiatric workforce. Nationwide, psychiatry is one of the top three specialties in terms of the number of practitioners over the age of 55 (Roberts, et al.,

Ethnicity of the Texas population and psychiatrists



[5] In May 2014 the Texas Medical Board endorsed the interstate compact for medical licensure. This compact could facilitate licensure for highly qualified physicians who may have an interest in practicing telepsychiatry.

2013). Texas' 2014 data indicate that 487 of the state's 1,971 active psychiatrists (24.7%) were 65 years of age or older. An additional 516 (26.2%) were between the ages of 55 and 64, meaning that over half of the workforce (50.9%) would be 65 or older and of retirement age by 2024. The median age of psychiatrists was 55 years and the mean age was 55.13 years.

In 2013, only 681 graduates from US medical schools matched into psychiatric residencies nationwide. This number represented roughly half of the filled psychiatric residencies, with the remainder being filled by international medical graduates (Roberts, et al., 2013). Given this current heavy reliance on international psychiatric residents, psychiatric care is expected to continue to rely on international medical graduates for the foreseeable future (Boulet, Cassimatis, & Opalek, 2012). In 2014, 29.6% of Texas psychiatrists reported graduating from a medical school outside of the US with the most prevalent source countries being India (8.3%), Pakistan (4.2%), and Mexico (3.9%). Compared with graduates of US and Canadian medical schools, a greater proportion of international medical graduates specialize in primary care, locate in areas of need, and care for poorer patients. Further, international medical graduates are more likely to live in areas with lower median incomes and greater proportions of people living in poverty, providing a gap-filling and safety net role (Boulet, Cassimatis, & Opalek, 2012).

2013 data from the Texas Higher Education Coordinating Board showed that there were 361 psychiatric residencies in the state. In 2008 there were 316, indicating a roughly 3.1% average annual growth over the past five years. Among specialties, there were 304 general psychiatric residencies, 53 child and adolescent psychiatry residencies, three addiction psychiatry residencies, and one geriatric psychiatry fellowship in 2013.

Type of Psychiatric GME	2008	2013	% Change over 5 years
General	263	304	+15.6%
Child/adolescent	47	53	+12.8%
Addiction	1	3	+300%
Geriatric	5	1	-80%
Total	**316**	**361**	**+15.5%**

Other Mental Health Professions

The federal provider ratios listed above account only for the number of psychiatrists serving a population. However, an alternative federal means for designating shortages in the mental health professions is to consider psychiatrists and other HRSA-defined core mental health professionals (CMHPs). CMHPs are defined by HRSA as psychiatrists, clinical psychologists, psychiatric nurse specialists, clinical social workers, and marriage and family therapists (Thomas, Ellis, Konrad, Holzer, & Morrissey, 2009). The federal HPSA designations including these core mental health providers (CMHP) require a population to CMHP ratio of 9,000:1 including psychiatrists or 6,000:1 CHMP excluding psychiatrists and 20,000:1 for psychiatrists. Incorporating these definitions, 23.6% of the 2014 Texas population lived in 214 different counties with mental health workforce shortages.

Finally, areas with greater than 20% of their population at or below the federal poverty level, high proportions of underage or geriatric populations, or levels of alcohol/substance abuse in the top quartile of national, state, or regional prevalence may be designated HPSAs with unusually high needs for mental health providers. In these areas, a population to psychiatrist ratio of 20,000:1, a population to CMHP ratio of 6,000:1, or a 4,500:1 population to CMHP (excluding psychiatrists) ratio and a 15,000:1 population to psychiatrist ratio are eligible for designation. In 2013, this broader definition drew four more counties into the shortage, resulting in 230 counties and over 6.6 million Texans (24.9%) experiencing whole county shortages.

Psychiatric Nurses

Nationally, there has been a shortage of psychiatric/mental health nurses since the 1980s. The 2004 National Survey Sample of Registered Nurses showed that younger nurses preferred clinical over psychiatric/mental health settings, that fewer total younger nurses were entering the workforce, and that psychiatric/mental health nurses were older than the workforce at large (Delaney, 2012).

Workforce Description

Mental Health APNs

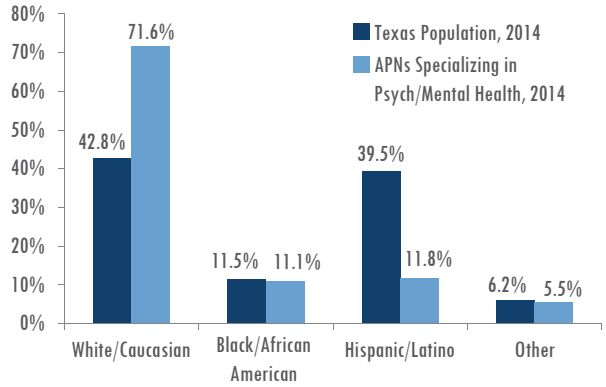
As of September 2014, there were 217 CNSs in Texas specializing in psychiatry/mental health. These 217 CNSs would be recognized as CMHPs for mental health HPSA designations. There were an additional 429 NPs with psychiatric/mental health specialties.

With a projected 27,161,944 citizens of Texas, the state has a population to mental health APN ratio of 43,951:1. Due to the compact licensure agreement, the geographical location was not available for some APNs who were licensed as RNs in states other than Texas. Thus, data on the geographical distribution of APNs were incomplete.

Among the 595 APNs specializing in psychiatry or mental health for whom data were available, 52.8% were aged 55 or more years and 17.6% were already 65 or older. The median age of psychiatric APNs was 55 years of age and the mean age was 53.1.

Among the 584 APNs for whom data were available, the vast majority of CNSs and NPs with a psychiatric focus were white (71.6%), with African-American (11.1%) and Hispanic (11.8%) the next most common categories.

Ethnicity of the Texas population and mental health APNs

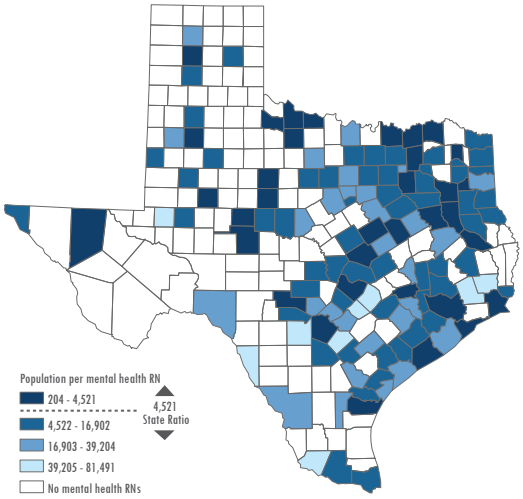


Mental Health RNs

There were a total of 6,008 registered nurses (RN), including CNSs and NPs, reporting psychiatric/mental health/substance abuse as their practice specialty.

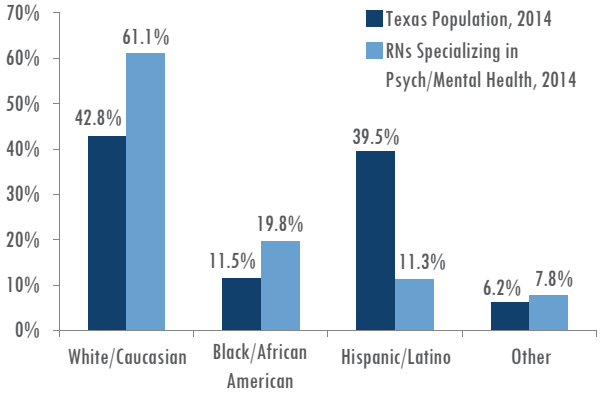
Among all registered nurses with psychiatric specialties, 45.6% were 55 or older and 13.6% were 65 or older. The median age among these RNs was 53 years and the mean age was 51.2 years.

Ratio of Texas population to mental health RN, by county



Geographic Designation	Ratio of population to mental health RN
Metropolitan	4,460
Non-metropolitan	5,054
Border	7,783
Non-border	4,311
Texas	**4,521**

Ethnicity of the Texas population and mental health RNs



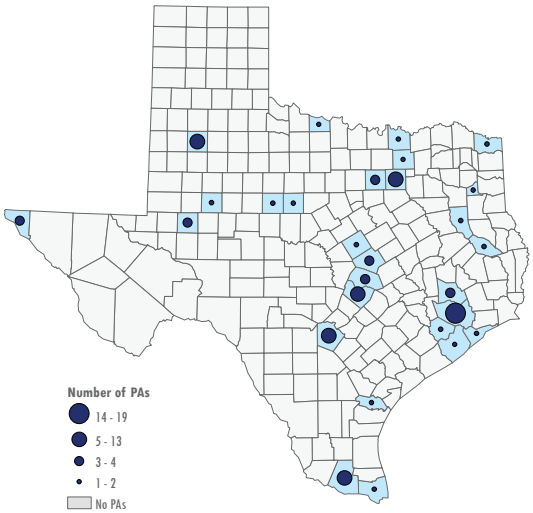
Among the 5,872 registered nurses with a psychiatric focus and available ethnicity data, 61.1% reported being white, 19.8% reported being African American, and 11.3% reported being Hispanic.

Physician Assistants

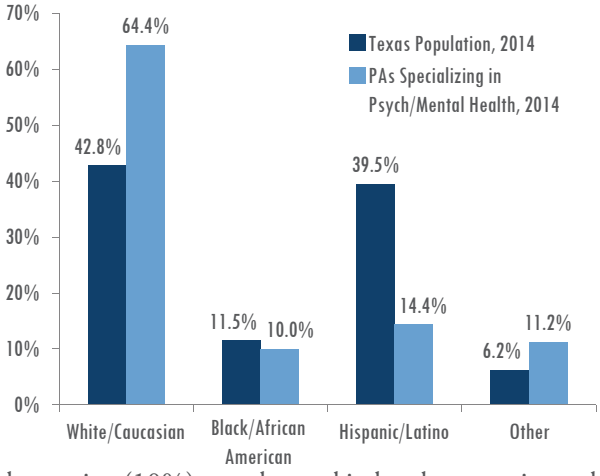
Workforce Description

In September of 2014 there were 90 PAs with supervisory agreements with psychiatrists. Among

PAs with supervisory agreements with psychiatrists, by county



Ethnicity of the Texas population and PAs with supervisory agreemehts with psychiatrists



these, nine (10%) were located in border counties and 82 (91.1%) were located in metropolitan counties. Exactly half were located in Texas' five most populous counties.

Among these 90 PAs, 54.4% were female. With respect to ethnicity, 64.4% were white, 14.4% were Hispanic, and 10% were black. PAs in agreements with psychiatrists had a mean age of 46 years and a median age of 43 years. 6.6% were 65 years of age or older and 27.7% were 55 or older.

Psychologists

Licensed psychologists are trained to work with all types of mental and behavioral issues. Psychologists typically help their patients manage chronic illnesses, learn to handle stressful situations, recover from addiction, deal with grief, and overcome other mental or behavioral problems that may be preventing them from achieving their goals. In order to assess a patient's mental state or behavioral condition, psychologists may talk to an individual, administer tests and surveys, or interpret prior assessments. With these results a psychologist can plan a treatment program that best suits the patient's needs.

Psychologists currently offer patients in primary care settings with mental health and behavioral medicine intervention services such as prevention, evaluation, assessment, treatment and management services. Typically, mental health providers design, implement, and evaluate behavioral interventions to address the patient's treatment compliance in the management of acute and chronic health conditions such as diabetes, heart disease, obesity, cancer, and depression. It is because of this unique role that the American Psychological Association (APA) stated that mental health professionals and related services should be fully integrated into any legislative initiative that strengthens the role of primary care in the health system (Beacham, Kinman, Harris, & Masters, 2011).

A 2008 survey by the APA confirmed that recent practitioners were a more diverse cohort in terms of degree (a mixture of PhDs and PsyDs) and demographics (gender, race, ethnicity, and age) when compared with the full workforce (Michalski, 2010). Regulatory changes, the expansion of managed care to include mental health, social and cultural demographic shifts, technology, growth in the other behavioral health fields, and the expanding relevancy of psychological science in practice have made integration of the mental health workforce a major priority (Michalski & Kohout, 2011).

Though primary care continues to be the foundation of the US health care system, changes to the system which integrate behavioral health services into primary care have presented psychologists with new workforce opportunities. An example of such an opportunity has been the advent of the PCMH. Two core principles of the PCMH that support the fundamental role of psychology are treatment of the whole person and care that is integrated across health care service disciplines. With the patient's personal physician acting as team leader and coordinating over all treatment, the mental health provider serves as

a behavioral health consultant and/or direct service provider on the team. The role of behavioral health in this model is considered inseparable from other aspects of a patient's care (Patient-Centered Primary Care Collaborative), in line with treating the patient as a "whole person."

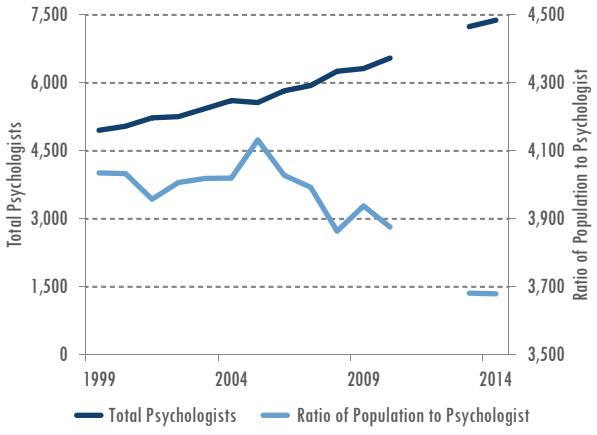
Several recent meta-analyses have concluded that collaborative care, the best-evaluated model for treating common mental disorders such as depression or anxiety in primary care settings, is consistently more effective than standard care (Thota, et al., 2012; Archer, et al., 2012; Gilbody, 2006). Indeed the demand for psychologists trained and integrated into primary care continues, for example the Veterans Administration (VA) requires that its medical centers and large community-based outpatient clinics (i.e., those that see more than 10,000 unique veterans each year) have integrated mental health services that operate full-time in their primary care clinics. These services utilize a blended model that includes co-located collaborative care and care management (Dundon, et al., 2011).

Workforce Description

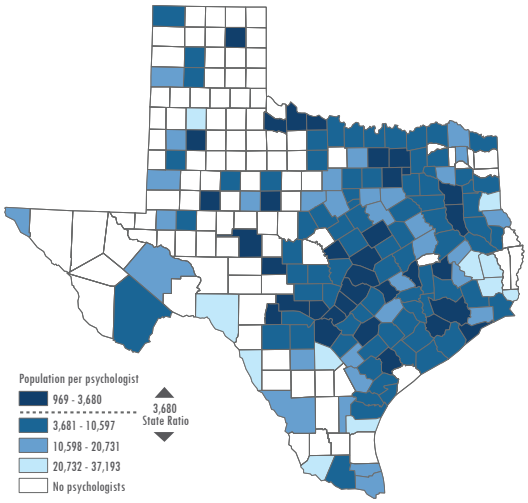
Psychologists (All)

There were 7,382 persons eligible to practice under at least one of the state's four license types in 2014. The total number of psychologists in Texas has grown 15.8% since 2009 with a decline of 4.7% in the population to provider ratio over this same five year period. These rates correspond with a 3.2% annual growth rate in the number of psychologists and a 0.9% annual improvement in the ratio of population to psychologists.

Psychologist growth trends



Ratio of Texas population to psychologists, by county



Geographic Designation	Ratio of population to psychologist
Metropolitan	3,428
Non-metropolitan	8,424
Border	11,438
Non-border	3,411
Texas	**3,679**

57.6% of psychologists were located in the state's five most populous counties.

Among those 6,315 psychologists for whom age was available, 17.6% were 65 years old or older and 23.2% were between 55 and 64 years of age. The median age of this group was 50 years and the mean age was 50.4 years. Reliable data on the race/ethnicity of psychologists were not available.

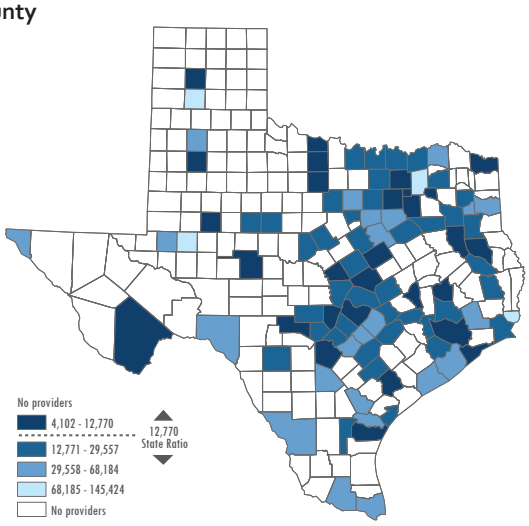
Clinical Psychologists

In 2014, there were 2,127 clinical psychologists (those indicating 'clinical' or 'child clinical' as their primary practice specialty) practicing in Texas. Of these, just 4.0% were located in non-metropolitan counties and 3.3% were in border counties. 63.4% were in Texas' five most populous counties.

Of the 2,079 clinical psychologists for whom data were available, 1,269 (59.7%) were females. Reliable data on race/ethnicity were not available.

Among clinical psychologists, 23.9% are 65 years of age or older and 50.9% are 55 years or older. The mean age of clinical psychologists was 53.8 years and the median age was 55 years.

Ratio of Texas population to clinical psychologists, by county



Geographic Designation	Ratio of population to clinical psychologist
Metropolitan	11,772
Non-metropolitan	36,438
Border	39,793
Non-border	11,837
Texas	**13,400**

Future Trends in Psychology

Electronic-mediated communication is being used by psychologists, psychiatrists, medical doctors, nurses, and social workers in hospitals, outpatient clinics, and private practices throughout the U.S. (Godleski, Nieves, Darkins, & Lehmann, 2008). Over the past 10 years, there has been an upsurge in access, use, and utility of electronic-mediated psychological services, also known as telepsychology, to meet demands (Colbow, 2013; McCrickard & Butler, 2005). The U.S. Department of Veterans Affairs (VA) is the current leader in the United States providing telepsychological services. From 2003 to 2012, the VA documented nearly 500,000 telemental health encounters; this number includes intakes, urgent care visits, medication management, individual therapy, group therapy, and family therapy conducted by video conferencing (Godleski, Darkins, & Peters, 2012). The VA's research on clinical outcomes for 98,609 patients demonstrates that telemental health can reduce psychiatric hospital admissions and average length of stay by approximately 25% for both men and women across a broad spectrum of age groups (Godleski, Darkins, & Peters, 2012). This research bolsters other findings that services delivered through electronic means can be satisfying for clients and practitioners, and that therapeutic relationships can develop successfully, can be used to treat a broad range of psychological disorders, and can be effective with diverse populations (Backhaus, et al., 2012). Other areas of increasing focus going forward will be related to the PPACA. For example, the establishing of community health teams to support the patient-centered medical home. The PPACA stresses the importance of an interprofessional approach to care because of the positive impact on cost savings and quality. To this end, grants and funding contracts for community-based interprofessional teams are described as able to include behavioral and mental health providers (including psychologists). Finally, a social trend directly affecting psychologists is the fact that the U.S. population is aging and demographically becoming more ethnically diverse. In addition, the number of people with at least one chronic illness is expected to increase from 133 million Americans in 2005 to 157 million by 2020 (Bodenheimer, Chen, & Bennett, 2009). Those with multiple chronic illnesses numbered 63 million in 2005, with a predicted 81 million in 2020 (24.6% increase).

Social Workers

Social workers help individuals, families, and groups restore or enhance their capacity for social functioning, and work to create societal conditions that support communities in need. The practice of social work requires knowledge of human development and behavior, of social, economic and cultural institutions, and of the interaction of all these factors. Social workers help people of all backgrounds address their own needs through psychosocial services and advocacy. Social workers assist people in overcoming many of life's most difficult challenges: poverty, discrimination, abuse, addiction, physical illness, divorce, loss, unemployment, educational problems, disability, and mental illness. They seek to prevent crises and counsel individuals, families, and communities to cope more effectively with the stresses of everyday life – identifying a clients' concerns; assessing their needs, situations, strengths, and support networks to determine their goals; developing plans to improve their clients' well-being; helping clients

adjust to changes and challenges in their lives, such as illness, divorce, or unemployment; researching and referring clients to community resources (food stamps, child care, health care, etc.); or even helping clients work with government agencies to apply for and receive benefits such as Medicare.

In other words, the role of a social worker is to guide and support people through difficult times and a confusing and sometimes overwhelming healthcare and support system. Social workers provide support to enable clients to help themselves. They maintain professional relationships with service users, acting as guides and advocates. Social workers sometimes need to use their professional judgment along with direction and advice from all health care providers involved to make difficult decisions regarding the health and well-being of those they serve. Social workers are active throughout the health community at all stages of life. Health care social workers help patients understand their diagnosis and make the necessary adjustments to their lifestyle, housing, or health care. For example, they may help people make the transition from the hospital back to their homes and communities. In addition, they may provide information on services, such as home health care or support groups, to help patients manage their illness or disease. Social workers help doctors and other healthcare professionals understand the effects that diseases and illnesses have on patients' mental and emotional health.

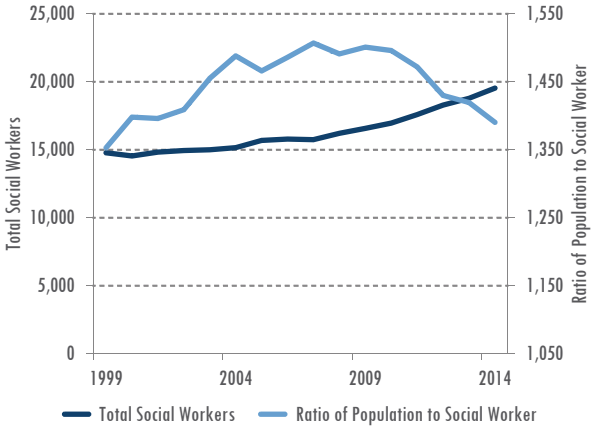
Some social workers work in private practice. In these settings, a social worker may have administrative and recordkeeping tasks such as working with insurance companies to receive payment for their services. Some work in a group practice with other social workers or mental health professionals. Social workers in hospitals also help patients and their families by linking patients with resources in the hospital and in their own community. They may work with medical staff to create discharge plans, make referrals to community agencies, facilitate support groups, or conduct follow-up visits with patients once they have been discharged. This profession is even found in schools where educational social workers work with teachers, parents, and school administrators to develop plans and strategies to improve students' academic performance and social development. Students and their families are often referred to social workers to deal with problems such as aggressive behavior, bullying, or frequent absences from school. Whatever their location, whether it be with a school, a hospital, a hospice or palliative care facility, or even private practice, a social worker is always involved with collaborative care. Social workers work holistically with people and families, agencies, insurance companies, and physicians in a complex social web to achieve the best possible outcomes for those whom they serve.

Workforce Description

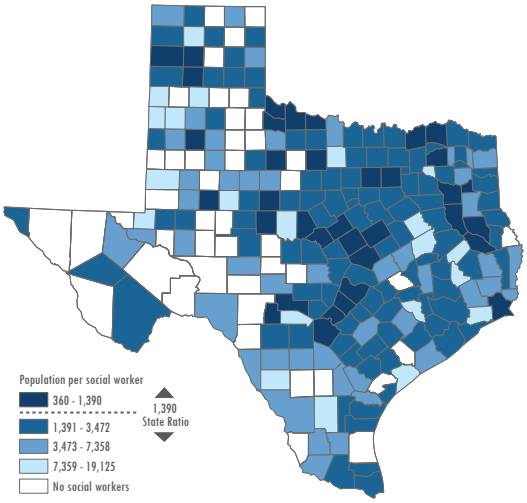
Social Workers (All)

There were 19,536 social workers in 2014, 56.3% of whom were in Texas' most populous counties. There has been 3.6% annual growth in the number of social workers since 2009 and 1.5% annual improvement in the population to social worker ratio over the same

Social worker growth trends



Ratio of Texas population to social workers, by county



Geographic Designation	Ratio of population to social worker
Metropolitan	1,322
Non-metropolitan	2,309
Border	2,206
Non-border	1,333
Texas	**1,390**

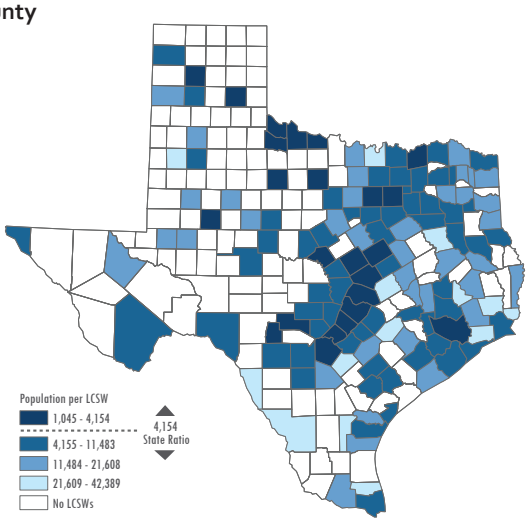
period.

When considering all social workers, 11.8% were 65 years old or older and 34.0% were between 55 and 64 years of age. These percentages are lower than those of clinical social workers. The median age of social workers was 47 years and the mean age was 47.4 years. Reliable data on the ethnicity and sex of social workers were not available.

Clinical Social Workers

In September 2014, there were 6,538 licensed clinical social workers (LCSWs) in Texas. 4,257 (65.1%) of these were in the state's five most populous counties while the remainder were in Texas' other 249 counties, with corresponding population-to-provider ratios of 2,906:1 and 6,484:1, respectively. Since 2009, there has been 4.7% annual growth in the number of LCSWs and yearly improvement of 2.3% in the population to clinical social worker ratio. In the case of LCSWs in 2014, 19.9% were 65 or older while 27.2% were between 55 and 64. Thus, 47.1% of clinical social workers will be of retirement age within the following decade. The median age of LCSWs was 53 years while the mean age was 52.4 years. Reliable ethnicity and gender data were not available for clinical social workers.

Ratio of Texas population to clinical social workers, by county



Geographic Designation	Ratio of population to clinical social worker
Metropolitan	3,830
Non-metropolitan	11,825
Border	10,702
Non-border	3,879
Texas	**4,154**

Emerging Trends in Social Work

The online delivery of social work education continues to become more commonplace. This approach has opened access to additional and supplemental education for many people, including those in rural areas and in underserved communities, those who are far along in their careers, and those who are financially strained. Social work courses that incorporate current technologies can offer new possibilities for teaching and learning. Recent developments include degree programs that are accredited by the Council on Social Work Education and delivered entirely via distance education. Some critics have contended that since online instruction does not offer direct face-to-face interaction with others, it does not offer the level of preparation and "practice with individuals" that the profession requires for culturally competent practitioners. However given the growing use of telehealth services, this model may become the new normal for a variety of social work education programs.

Licensed Professional Counselors

Licensed professional counselors (LPCs) (or in some states, "licensed clinical professional counselors" or "licensed mental health counselors") provide mental health and substance abuse care to millions of Americans. The practice of professional counseling includes the application of mental health, psychotherapeutic, and human development principles to facilitate human development and adjustment throughout life; prevent, assess, evaluate, and treat mental, emotional, or behavioral disorders and associated distresses that interfere with mental health; conduct assessments and evaluations to establish treatment goals and objectives; and plan, implement, and evaluate treatment plans using

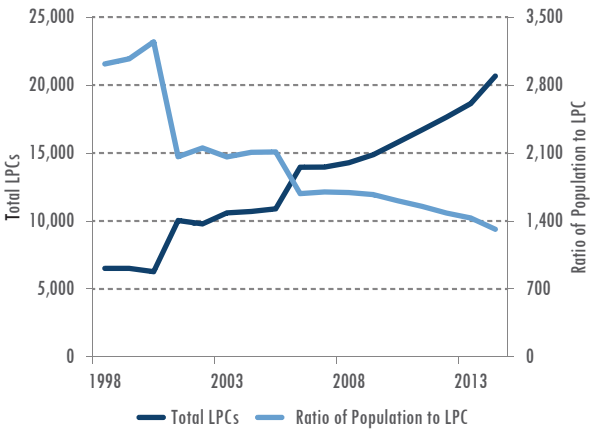
counseling treatment interventions that include counseling, assessment, consulting, and referral. With this in mind, LPCs perform a wide range of counseling services that utilize evidence-based methods and strategies to help clients achieve mental, emotional, physical, moral, social, educational, spiritual, and/or career development and adjustment.

LPCs are mental health care providers with Master's degrees, trained to work with individuals, families, and groups in treating mental, behavioral, and emotional problems and disorders. LPCs make up a large percentage of the workforce employed in community mental health centers, agencies, and organizations, and are employed within and covered by managed care organizations and health plans. LPCs also work with active duty military personnel and their families, as well as veterans. The practice of professional counseling includes, but is not limited to, the assessment and treatment of mental and emotional disorders, including addictive disorders; the use of psychoeducational techniques aimed at the prevention of such disorders; the provision of consultation to individuals, couples, families, groups, and organizations; and the conduct of research into more effective therapeutic treatment modalities. LPCs' training in the provision of counseling and therapy includes the etiology of mental illness and substance abuse disorders, and the provision of the well-established treatments of cognitive-behavioral, interpersonal, and psychodynamic therapy. LPCs' education and training are oriented toward the adoption of a client-centered, rather than a primarily illness-centered, approach to therapy. LPCs and members of the other non-physician mental health professions provide the large majority of mental health services in the US, where roughly one in four Americans suffer from a diagnosable mental disorder in a given year, and about one in five Americans experience a mood disorder such as depression at some point in the course of their life.

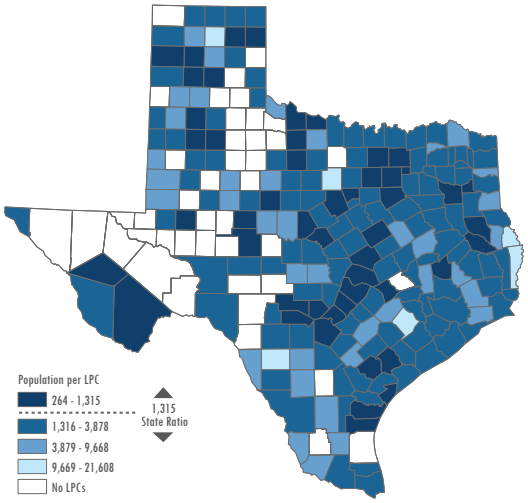
Workforce Description

In September 2014, there were 20,655 LPCs in the state, giving a population to provider ratio of 1,315. The five most populous counties had a population to provider ratio of 1,124 while the rest of Texas had a ratio of 1,472. This field has had annual growth of 7.8% from 2009 to 2014 and annual improvement in the ratio of population to LPC of 4.3%.

Licensed professional counselor growth trends



Ratio of Texas population to licensed professional counselor, by county



Geographic Designation	Ratio of population to licensed professional counselor
Metropolitan	1,251
Non-metropolitan	2,167
Border	2,585
Non-border	1,244
Texas	**1,315**

Moreover, 15.8% of the workforce was over 65 years old and 21.5% was 55 to 64 years of age, meaning 37.3% will be eligible for retirement by 2024. The median age of LPCs was 48 years and the mean age was 48.8 years. Reliable data on ethnicity and gender were not available.

Marriage and Family Therapists

Marriage and family therapists (MFTs) provide

professional therapy services to individuals, families, or married couples, alone or in groups, which involve applying family systems theories and techniques. The term includes the evaluation and remediation of cognitive, affective, behavioral, or relational dysfunction in the context of marriage or family systems. MFTs are highly trained mental health professionals who bring a relationship-oriented perspective to health care. MFTs evaluate and treat mental and emotional disorders and other health and behavioral problems and address a wide array of relationship issues, all within the context of marriage, couples, and family systems. They utilize brief, solution-focused, family-centered treatment, and their goal is to pinpoint problems and conclude treatment, as soon as specific, attainable therapeutic goals are met. MFTs broaden the traditional emphasis on the individual to attend to the nature and role of individuals in primary relationship networks such as marriage and the family. They are concerned with the overall, long-term well-being of individuals and their families, and they focus on treating people from an interpersonal perspective. They are trained to assess and treat individuals, couples, families, and groups to achieve a more adequate, satisfying and productive relationship, through family and social adjustment. The practice can also include premarital counseling, child counseling, divorce or separation counseling and other relationship counseling.

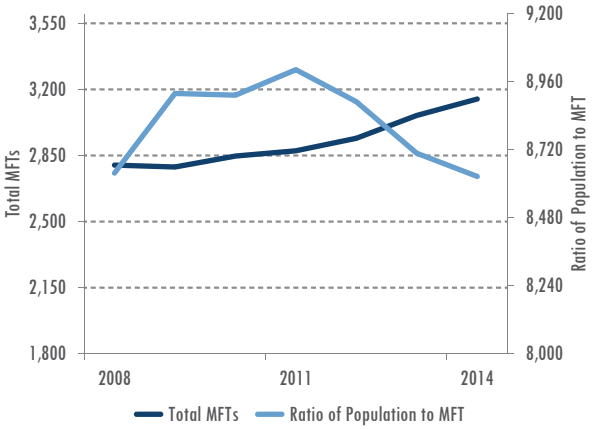
Effectiveness and Cost of Marriage and Family Therapists

In a summary report on the cost effectiveness of the profession and practice of marriage and family therapy (Crane & Christenson, 2012), 19 studies across different networks throughout the US detail the effectiveness of MFTs. The results of the study support the potential for a medical offset effect after family therapy, with the largest reduction coming from the highest percentage of health care users. The studies also show that covering family therapy as a treatment option and marriage and family therapists as a provider group was not associated with significantly higher treatment costs. According to Sprenkle (2012) and Stratton (2011), while there may be an overall consensus that family therapy interventions are effective for a wide range of presenting problems, unfortunately there is a shortage of research simultaneously evaluating cost and benefits of interventions. This is concerning for these practitioners given that the public and private discourse about the current health care market is dominated by cost considerations (Christenson, Crane, 2004; Cummings, et al., 2009). Unless there is a concerted effort through research to show that marriage and family therapists' services are cost-effective, the profession of marriage and family therapy will be at risk of being marginalized in the health care market, or even becoming irrelevant.

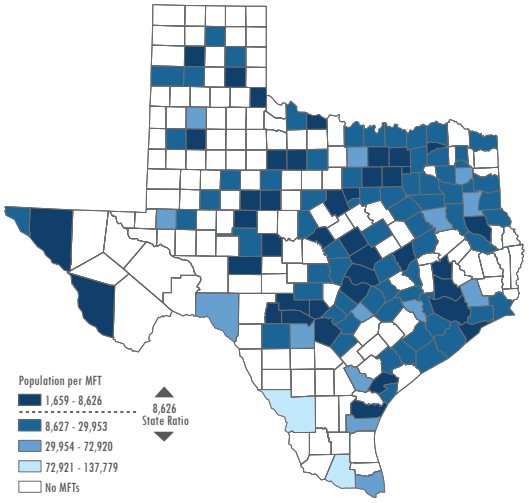
Workforce Description

There were 3,149 MFTs practicing in Texas as of September 2014, giving a ratio of 8,625.6 persons per MFT. Within the state's five most populous counties the population to MFT ratio was 6,489:1 while it was 11,520:1 in the rest of the state, comprising proportions of 42.5% and 57.5% of MFTs, respectively. Finally, average growth of the MFT

Marriage and family therapist growth trends



Ratio of Texas population to marriage and family therapist, by county



Geographic Designation	Ratio of population to marriage and family therapist
Metropolitan	7,972
Non-metropolitan	23,212
Border	35,136
Non-border	7,930
Texas	**8,626**

workforce in Texas has been 2.6% from 2009 to 2014, corresponding with a 0.7% yearly improvement in the ratio of population to MFTs.

In 2014, 31.5% of MFTs were 65 or older and another 28.4% were between 55 and 64 years old, meaning that 59.9% of the workforce will be of retirement age by 2024. The median age of MFTs was 59 years of age and the mean age was 55.2. Reliable data on race/ethnicity and gender were not available.

Licensed Chemical Dependency Counselors

Licensed chemical dependency counselors (LCDCs) use a diverse set of skills to help clients master both the physical and psychological elements of chemical dependency. Because substance abuse causes neurochemical and molecular changes in the brain, withdrawal creates distressing physical symptoms. Accompanying the physical manifestations of withdrawal are the psychological symptoms they promote. People often become drug dependent initially to help them cope with overwhelming feelings. Remove the mood-altering chemicals and the feelings may return, often built up by years of abuse. A chemical dependency counselor is sometimes the only lifeline available to someone suffering from drug dependency. LCDCs help those who are addicted to alcohol, narcotics, prescription medications and other drugs by determining the underlying causes of dependence, collaborating with the treatment team to create an individual rehabilitation plan, providing education and emotional support, delivering therapy and other interventions, involving the clients' loved ones in treatment, making referrals to treatment programs and healthcare providers, and creating rapport with their clients to understand the roots of the dependency. Many successful LCDCs are themselves recovering addicts who have earned the respect of their peers in the process of recovery and can draw on their own experiences to both help and inspire their clients. Once a therapeutic relationship is established, a LCDC and client work through the interventions prescribed by the client's treatment program, which vary depending upon the type of addiction and the nature of the program. Because recovery is often considered a lifelong process, not only must the chemical dependency be overcome, but changes in lifestyle, and patterns of thinking and interaction need to be made as well. This means that LCDCs can see clients for months or even years, creating a unique relationship based upon hope, recovery and belief in the possibility of ongoing self-improvement.

Role of Licensed Chemical Dependency Counselors

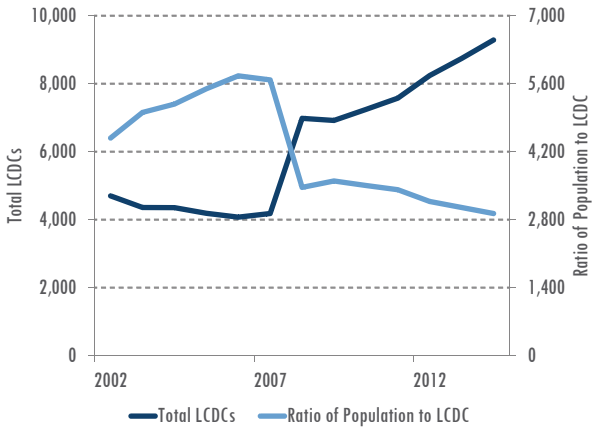
LCDCs provide clients with a planned, structured, and organized chemical dependency program designed to initiate and promote a person's chemical-free status or to maintain the person free of illegal drugs (Title 25, Texas Administrative Code, Chapter 140). For example, LCDCs will offer drug treatment during and after imprisonment for inmates battling addiction. Not only does this increase the number of people who are drug-free after release, but it also increases the number of people who remain arrest-free. In one study, 57% of former prisoners who received treatment and aftercare reported no recidivism after 42 months, in comparison with only 25% of the control group (Volkow, 2004). The efficacy of treatment for substance abuse disorders is well documented and has improved dramatically over the past 50 years (World Health Organization, 2001).

Workforce Description

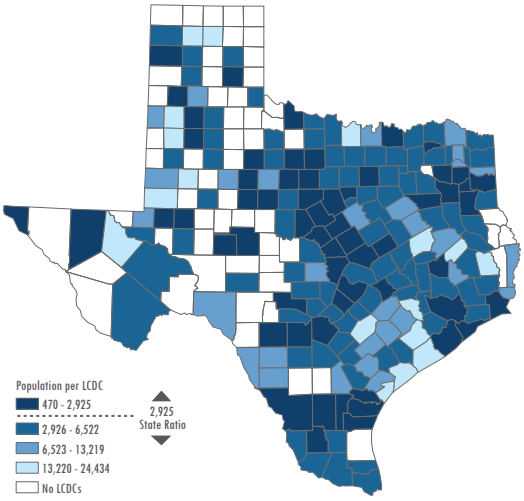
There were 9,285 LCDCs in Texas in September 2014, with 4,191 of these (45.2%) practicing in Texas' five most populous counties. The corresponding population-to-provider ratios were 2,805 in these most populous counties and 3,023 in the rest of the state. LCDCs have shown annual growth of 6.8% from 2009 to 2014 with growth above 4.5% each year

Geographic Designation	Ratio of population to licensed chemical dependency counselor
Metropolitan	2,867
Non-metropolitan	3,466
Border	3,112
Non-border	2,905
Texas	**2,925**

Licensed chemical dependency counselor growth trends



Ratio of Texas population to licensed chemical dependency counselor, by county



between 2010 and 2014. However, the population to LCDC ratio had lower annual improvement of 3.7% over this period.

In September 2014, 12.0% of the workforce was 65 years of age or older and 24.9% was between 55 and 64, totaling 36.9% eligible for retirement within ten years. The median age of LCDCs was 50 years and the mean age was 48.4 years. Reliable data for the ethnicity distribution of LCDCs were not available.

Peer Support Providers

Extensive research has shown that antidepressants can be quite effective at managing the symptoms of many people with mental illness. However in large effectiveness studies, two-thirds of patients failed to achieve remission after one medication trial and one-third experienced significant symptoms after four trials. Even among those who achieved remission, one-third relapsed within a year. These stark statistics demonstrate a need for additional services to help patients cope with continued symptoms while they receive the best current evidence-based treatments available (Pfeiffer, Heisler, Piette, Rogers, & Valenstein, 2011).

Recent approaches to mental health issues have focused on recovery, which can be defined as a personal and unique process of realigning one's attitudes, perceptions, and roles to live a satisfying and hopeful life despite any limitations caused by illness (Leamy, Bird, Le Boutillier, Williams, & Slade, 2011). This definition necessarily implies that the approach to and process of recovery is not universal and should not be standardized. Given the variable processes that patients may follow to recovery, the increased incorporation of peer support services, which are founded on principles of respect, shared responsibility, and mutual agreement about what is helpful (Repper & Carter, 2011), may be a valuable avenue for improving mental health outcomes.

Peer support services gained popularity in the 1970s in the form of self-help groups and have continued to develop since (Doughty & Tse, 2011). This approach assumes that people in recovery, who have had experiences similar to those of the patient, can better relate to the patient's illness and consequently offer more authentic empathy and validation (Repper & Carter, 2011). Indeed, the peer's previous experience with receiving mental health services allows them to better identify and understand the challenges faced in the patient's ongoing lived experience of mental illness, to encourage the utilization of available mental health services, and to facilitate changes in patient and societal attitudes toward mental illness (Doughty & Tse, 2011).

Given the potential value of peer support services, US government health commissions, including the President's New Freedom Commission on Mental Health (Sledge, et al., 2011), have called these approaches an integral and essential part of the transformation of mental health services into a recovery-based model (Pfeiffer, Heisler, Piette, Rogers, & Valenstein, 2011). Following this notion, it has been estimated that services run for and by people with serious mental health problems and their families now number more than double the traditional, professionally run, mental health organizations in

the US (Repper & Carter, 2011). Moreover, the number of peer support staff was estimated at over 10,000 in the US, with continued and persistent growth (Davidson, Bellamy, Guy, & Miller, 2012). Despite this focus on peer support services and their rapid incorporation into the country's mental health system, paid employment of peer specialists has been slow to develop (Repper & Carter, 2011).

Competencies and Roles

Peer support services and models for their delivery have yet to be defined by consensus. However, two reviews on the subject identified a means of categorizing these services into three types. First, there are the informal and naturally occurring peer support services that are conducted autonomously by those with experience in recovery. Second, there are growing partnerships between peer support organizations and programs and traditional mental health providers through which peer support services can be delivered. Finally, traditional mental health services have begun to employ peer providers within the traditional service delivery system (Repper & Carter, 2011;Doughty & Tse, 2011).

Regardless of the model under which they deliver service, the peer provider approach offers patients hope through positive self-disclosure, role modeling to include self-care, and relationships characterized by trust, acceptance, understanding, and the use of empathy (Davidson, Bellamy, Guy, & Miller, 2012). In doing so, peer providers can be especially effective in engaging people into care and acting as a bridge between clients and staff (Davidson, Bellamy, Guy, & Miller, 2012). Finally, peer services can remove barriers to care such as a potential patient's transportation and scheduling issues (Pfeiffer, Heisler, Piette, Rogers, & Valenstein, 2011).

In addition to peer support services being delivered directly to patients, peer services have also been shown useful for patients' families who navigate the mental health system and coordinate care on behalf of the patient. Often used for children's mental health issues, family peer providers share their experiences with acquiring needed services, serve as role models for the patient's family, and facilitate in the patient's family a sense of empowerment to successfully navigate and appropriately utilize the mental health system (Hoagwood, et al., 2010). Family education and peer support services are used by about one-third of families with children with mental health issues, often by parents experiencing high levels of stress and strain, a key driver of service access (Hoagwood, et al., 2010).

Peer Support Contributions to Efficacy and Efficiency

While the therapeutic benefits of peer services are not fully defined and understood, there is general consensus that peer support services are both effective and efficient. For example, a review of randomized controlled trials demonstrated that peer support staff functioned as well as non-peer staff and that usual care plus peer staff resulted in slightly improved outcomes (Davidson, Bellamy, Guy, & Miller, 2012). Another review indicated that most results showed either equivalency or greater recovery for patients in consumer-led interventions compared to traditional care (Doughty & Tse, 2011). Moreover, peer providers have elicited superior outcomes in the engagement of hard-to-reach clients, reduced rates of hospitalization and days spent as inpatient, and decreased substance abuse among those with co-occurring substance abuse disorders (Davidson, Bellamy, Guy, & Miller, 2012). Sledge et al. (2011) support this first claim anecdotally while describing a past intervention utilizing traditional services that failed to engage patients outside conventional mental health service delivery systems and describing peer services as a promising intervention for reducing recurrent psychiatric hospitalization for patients at risk of readmission. The second claim is echoed by Repper & Carter (2011) who described similar or better hospital admission rates and community tenure for patients served by peer providers versus professionally trained staff. Other studies reported greater patient satisfaction with personal circumstances (Doughty & Tse, 2011) and greater reduction of depressive symptoms (Pfeiffer, Heisler, Piette, Rogers, & Valenstein, 2011) among patients receiving peer services versus usual care.

In addition to the reduced burden on the broader health system, peer services provide additional benefits to patients and society at-large. For example, the raised measures of individual empowerment, independence, self-esteem, and confidence among those engaged with peer providers has been associated with increased stability in work, education, and training, which themselves further patient empowerment (Repper & Carter, 2011). Peer support relationships

allow participants to create relationships and practice a new, recovering identity, to create hope among patients, and to have greater feelings of acceptance, understanding, and being liked (Repper & Carter, 2011).

In addition to the broad potential benefits of peer services, family support services provide patients' support systems with needed assistance. For example, family peer providers were more able to recognize systemic barriers, such as availability of needed resources and services, provide basic information on the mental health care system and treatment options, and understand the nature of child mental health disorders and their impacts on families than were traditional providers. These actions increased family empowerment and may be particularly beneficial for low-income families (Hoagwood, et al., 2010).

A review of cost effectiveness analyses for peer support services provided information on cost savings estimates based on reduced hospital admission rates from three studies: $1,169 saved per patient over six months; $4,400 saved per patient over 12 months, and $22,000 saved per patient over six months (Doughty & Tse, 2011). Equally important, the low cost and scalability of peer services makes this approach attractive when other depression care interventions are unavailable, unaffordable, or unacceptable (Pfeiffer, Heisler, Piette, Rogers, & Valenstein, 2011).

Workforce Description

Certified Peer Specialists

A growing national and state trend involves people in recovery from mental illness acting as certified peer specialists (CPS) to provide support to others in treatment. DSHS has helped fund ViaHope, an organization that provides training and certification to CPSs. According to ViaHope, there were 431 CPSs in September 2014 and the organization had conducted trainings in Austin, Dallas-Fort Worth, San Antonio, Houston and one in East Texas.

Certified Family Partners

Similar to CPSs, certified family partners (CFP) are parents or guardians experienced in raising a child with mental or emotional issues who are certified to help other parents navigate the system of care. ViaHope also runs the CFP training and certification program. This program has produced 99 CFPs as of January 2014.

Substance Abuse Recovery Coaches

Serving as a recovery coach (RC) is a form of strengths-based support for persons with substance use disorders or in recovery from alcohol or other drugs and who may also have other mental health issues. These trained individuals offer shared living experiences to assist persons with active addictions as well as persons in recovery.

DSHS' Substance Abuse Program Services program developed the Recovery Coach Training of Trainers curriculum with the assistance of four non-profit organizations. These organizations assist trained individuals in obtaining paid or volunteer positions as RCs in places like treatment centers, hospital emergency rooms, and community and faith-based organizations. Using the DSHS curriculum and funding, these four organizations trained over 100 individuals in Fort Worth, San Antonio, Corpus Christi, and Beaumont. These 100 RC trainers have since trained over 300 individuals as recovery coaches as of February 2014. This ongoing training process provides a supportive workforce for the healthcare industry.

Through DSHS' Substance Abuse Program's Texas Recovery Initiative, RCs have the opportunity to become certified as a Substance Abuse Peer Recovery Support Specialist through the Texas Certification Board of Addiction Professionals (TCBAP) upon meeting TCBAP requirements.

Policy Considerations

- **Further evaluation of peer support programs is needed in order to better understand how such services can be best used in concert with professional care.**

Similar to the previous policy considerations listed for paraprofessional community health workers, there remains a need to further integrate peer providers into the mental health system and conduct additional scientific evaluations aimed at better defining the scope of their utility. Respective of the former, there exists a need to consider and more fully define reimbursable/billable time for peer providers (Repper & Carter, 2011). These services are currently billable in some states (Hoagwood, et al., 2010), but not in Texas – a point presented by multiple mental health stakeholders during DSHS' solicitation of feedback for its recent report on Texas' mental health workforce

shortage. When these providers have a better defined status for payment, they may be more easily integrated into the formal mental health system and care teams (Pfeiffer, Heisler, Piette, Rogers, & Valenstein, 2011; Repper & Carter, 2011).

- **The successful incorporation of peer support providers into the mental health care system will require their incorporation into billing/payment systems.**

In addition to better integration into the payment and delivery systems, there remains a need to standardize the outcomes and definitions for objective evaluations of peer services (Doughty & Tse, 2011), especially those delivered by peer family partners (Hoagwood, et al., 2010). Specifically, data is needed to define the ideal extent of integration of peer providers into the current mental health system and which patients may benefit most and least from peer services (Doughty & Tse, 2011; Pfeiffer, Heisler, Piette, Rogers, & Valenstein, 2011; Repper & Carter, 2011). Additionally, there is a need for research to evaluate the use of peer services in more ethnically diverse populations, at differing stages of recovery, and among patients experiencing different types of mental illness (Leamy, Bird, Le Boutillier, Williams, & Slade, 2011; Pfeiffer, Heisler, Piette, Rogers, & Valenstein, 2011). Finally, a need exists to understand how to best use peer services to enhance recovery while considering an individual's life context, the environment factors in which they exist, including opportunities for employment and community integration, and the interaction between the two (Pfeiffer, Heisler, Piette, Rogers, & Valenstein, 2011).

Review of Mental Health Policy Recommendations

The Texas Statewide Health Coordinating Council recognizes the changing mental health landscape and the need for the State of Texas to respond to such changes. As noted throughout this chapter, there is a need for policymakers, health care providers, and all other stakeholders to recognize the need for change in the mental health payment and delivery systems and to identify solutions for addressing these needed changes. The Texas Statewide Health Coordinating Council has made an attempt at starting the conversation on the latter in this publication.

As noted in the DSHS' HB1023 report on the mental health workforce shortage in Texas, t**he structure of the mental health care payment system is a barrier to the effective delivery of care and negatively impacts providers and patients**.

A core part of the transformation of the health care delivery system, in both mental health and primary care as noted above, is the ongoing transition to team-based, collaborative care that empowers multiple providers with the autonomy necessary to work together. **These practice-based innovations should be widely adopted, with changes to payment systems reflecting the new integration and coordination of services provided**. Within these efforts, **there must be recognition of the potential contributions made by peer support providers and community health workers and payment systems must reflect this recognition**.

Finally, there are numerous workforce-based recommendations addressed in this chapter, many aimed at expanding the state's educational capacity to produce mental health practitioners, increasing incentives for students and practitioners to choose mental health fields, and improving the distribution and diversity of mental health practitioners. These issues are also addressed by DSHS' report on the mental health workforce shortage and so the Texas Statewide Health Coordinating Council repeats its recommendations provided to the agency for inclusion in this report:

The Texas Statewide Health Coordinating Council's Policy Recommendations for Addressing the Mental Health Workforce Shortage in Texas

Workforce Recommendation 1: The State of Texas must continue to support the education and practice of psychiatrists. Specifically, the State should act through the THECB and the DSHS to ensure a robust future workforce of psychiatrists by identifying and expanding incentives to practice psychiatry.

Texas' current workforce of 1,933 psychiatrists is insufficient and will have to grow significantly over the coming years. In fiscal year 2014, the State had 469 approved and accredited psychiatric residency positions, but only 365 were filled and received funding. Given the large number of unfilled psychiatric residency positions, any immediate expenditure should be directed at attracting more potential practitioners to the specialty. The Legislature should direct the DSHS and the THECB to engage other relevant stakeholders in the research and analysis of factors discouraging current and future practitioners from selecting psychiatry as their medical specialty.

Additionally, the Legislature ought to revise the State's Physician Education Loan Repayment Program (PELRP) (Texas Education Code Title 3 §61.532) to prioritize awards to psychiatrists and primary care physicians serving in state-supported living centers and state hospitals and those involved in patients' care after transition to community-based care from these facilities. THECB should likewise implement rule changes (Texas Administrative Code (T.A.C.) Title 19 §21.251-21.262) that reflect this prioritization. By dedicating PELRP funds to practitioners in the state's mental health system, the state economically incentivizes new physician selection of mental health specialties, works to address the chronic recruitment and retention issues experienced by the state's public mental health system, and provides improved mental health care to those in the greatest need.

Workforce Recommendation 2: The State of Texas should more extensively incorporate advanced practice nurses and physician assistants into its mental health workforce. Specifically, the Legislature should alter T.A.C. Title 25 §411.472 to allow qualified advanced practice nurses and physician assistants to conduct initial and follow-up psychiatric evaluations.

As noted in a previous chapter, there are just 1,971 active and licensed psychiatrists engaged in direct patient care. Roughly half of this number will be

of retirement age by 2023. In addition to these psychiatrists, the Texas Board of Nursing (BON) has licensed 429 NPs and 217 CNSs to practice in psychiatric/mental health. These practitioners are currently permitted to perform psychiatric evaluations under BON rules. There are also 90 PAs currently being supervised by a physician indicating psychiatry or a psychiatric subspecialty as their primary specialization. TMB rules (T.A.C. §185.10) should be clarified or revised to expressly permit PAs to perform psychiatric evaluations.

Current Texas regulations (T.A.C. Title 25 § 411.472) require that a physician complete the initial psychiatric evaluation of the patient and see the patient once a day for five of the first seven days of inpatient hospitalization after the initial psychiatric evaluation. Changing this rule to include APNs and PAs to conduct psychiatric evaluations, under the delegation and with the concurrence of the supervising psychiatrist, would permit APNs and PAs to work as extenders in hospitals in a way that is similar to their roles in other medical settings. Furthermore, this change would ease psychiatrists' workload and allow them to cover more patients.

Workforce Recommendation 3: The State of Texas, through the HHSC and the TMB, should remove barriers to the adoption and practice of telemedicine and telehealth. Specifically, the Legislature should direct HHSC to revise T.A.C. Title 1 Rules §354.1432 and §355.7001 and the Texas Medical Board to revise T.A.C. Title 22 Rule §174.1-174.32.

Current telemedicine and telehealth rules require a new patient to present at an established medical or health site. For certain mental health provider-patient interactions, the use of an established medical/health site may be unnecessary. Moreover, a patient site presenter is required if telemedicine or health services in a provider/patient interaction are not solely limited to mental health. This requirement may serve to impede the expansion of telehealth/telemedicine and thus to limit access to both physical and mental health services. By removing these barriers, the state eases patient burden, allows for the more efficient use of health professionals currently serving as patient site presenters, and empowers the health professional and patient to determine the best course of treatment.

Additionally, the Legislature should allocate funds and direct the HHSC to implement rules allowing for adequate Medicaid reimbursement covering the costs of patient site presenters, when utilized by the provider, and facility use. Under current rules, only the facility fee is reimbursed. This change is intended to encourage the expansion of telemedicine and telehealth services by encouraging facilities to adopt telemedicine/telehealth technologies and incentivizing health professionals to act as patient site presenters.

Workforce Recommendation 4: The State of Texas should encourage its relevant licensing boards to collect information on the linguistic competencies of its health professionals. Specifically, the Legislature should amend the Health and Safety Code (H.S.C.), §105.003 to require the collection of data on the linguistic proficiencies of licensees of the health professions already impacted by this chapter.

Workforce Recommendation 5: The State of Texas should encourage providers to meet relevant ethnic/cultural/linguistic competencies as part of their initial and continuing education.

It is the legislative charge of the Texas Statewide Health Coordinating Council to "ensure that health care services and facilities are available to all citizens in an orderly and economical manner." Recognizing the changing demographics of the Texas population, there is a need to ensure that health care providers have the capacity to effectively communicate and interact with their patients. DSHS already collects information on race/ethnicity from the relevant licensing boards.

To assess the multilingual competencies of the health workforce, the State should allocate the necessary resources and amend the H.S.C., Chapter 105 to direct the Health Professions Council and the Texas Department of Information Resources to collect linguistic proficiency data for analysis by DSHS. Using the newly and previously collected data, DSHS, THECB, and impacted licensure boards should assess the need for greater linguistic and cultural proficiency in the health professions. Remediation of deficiencies might occur through the incentivization of linguistically and culturally competent practice or through the identification and development of linguistically proficient para-professionals.

Workforce Recommendation 6: The State of Texas, through the THECB, the licensing boards of health

professions, and institutions of higher education, should seek to incorporate interprofessional collaborative training as part of the preparation of new health professionals.

As policymakers, industry leaders, and health care professionals seek to better appropriate health resources, the use of collaborative health care teams and patient-centered medical homes has grown. This trend and underlying research have demonstrated a need for greater student preparation in interprofessional collaboration, specifically by providing students of the health professions with greater opportunities to interact in their coursework and clinical experiences, as appropriate.

To increase the availability of collaborative training, the State should appropriate funds and direct the THECB to work with institutions of higher education to identify and implement collaborative practice training programs. Concurrently, state licensing boards and regulatory agencies should amend any policies that may deter the full implementation of these efforts.

Workforce Recommendation 7: The State of Texas, through the efforts of the HHSC and the DSHS, and using data from the Texas Department of Criminal Justice, the Texas Juvenile Justice Department, and other relevant agencies, should develop analytical and statistical models for workforce supply and demand and patient utilization that inform the mental health care needs of the State.

As noted in the DSHS report on the mental health workforce shortage, there is a lack of data to define the Texas population's need for mental health services. Population need is dependent on prevalence of mental health illness, the distribution of risk factors, currently available social services, and other considerations. To fully define the state's workforce shortage and design effective policy solutions, the State should provide HHSC and DSHS access to data related to mental health services need and direct these agencies to develop statistical models to measure and predict workforce shortages.

Workforce Recommendation 8: The State of Texas, through the efforts of the HHSC and the DSHS, should analyze the workforce impacts of the Texas Medicaid 1115 Waiver - Delivery System Reform Incentive Payment (DSRIP) program.

The DSRIP program has been funded with over $11,000,000,000 covering almost 1,200 projects across the state. Approximately 400 of these projects are related to mental health, with many acting to enhance the mental health workforce within specific geographic regions of implementation. Federally-required outcome evaluations do not specifically address how these projects might affect, directly or indirectly, the state's mental health workforce. For this reason, the State should direct HHSC and DSHS to evaluate the potential long- and short-term impacts of these projects on the mental health workforce.

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List of Acronyms

AAMC: American Association of Medical Colleges

ACO: Accountable care organization

AHRQ: Agency for Healthcare Research and Quality

APN: Advanced practice nurse

BRFSS: Behavioral Risk Factor Surveillance System

CDC: Centers for Disease Control and Prevention

CFP: Certified family partner

CHAS: Community Health Advisory Survey

CHIP: Children's Health Insurance Program

CMHP: Core mental health provider

CMS: Centers for Medicare and Medicaid Services

CNM: Certified nurse midwife

CNS: Clinical nurse specialist

CPS: Certified peer specialist

DSHS: Texas Department of State Health Services

DSRIP: Delivery System Reform Incentive Payment

ED: Emergency department

EHR: Electronic health record

ER: Emergency room

FTE: Full-time equivalent

GDP: Gross domestic product

GME: Graduate medical education

GPA: Grade point average

HHSC: Texas Health and Human Services Commission

HIT: Health information technology

HMO: Health maintenance organization

HPRC: Health Professions Resource Center

HPSA: Health professional shortage area

HRSA: Health Resources and Services Administration

IOM: Institute of Medicine

JAMP: Joint Admission Medical Program

LCDC: Licensed chemical dependency counselor

LCSW: Licensed clinical social worker

LPC: Licensed professional counselor

MA: Medical assistant

MCAT: Medical College Admission Test

MDE: Major depressive episode

MFT: Marriage and family therapist

MTM: Medication therapy management

NCQA: National Committee for Quality Assurance

NHSC: National Health Service Corps

NP: Nurse practitioner

PA: Physician assistant

PCAL: Patient care activity level

PCMH: Patient-centered medical home

PCP: Primary care practitioner

PELRP: Physician Education Loan Repayment Program

PPACA: Patient Protection and Affordable Care Act

RN: Registered nurse

SES: Socioeconomic status

SHCC: Texas Statewide Health Coordinating Council

TAC: Texas Administrative Code

THECB: Texas Higher Education Coordinating Board

U.S.: United States

VA: U.S. Department of Veterans Affairs

YRBSS: Youth Risk Behavior Surveillance System

This publication is issued by the Texas Department of State Health Services for the Statewide Health Coordinating Council (SHCC)

under the authority of the Texas Health and Safety Code, Chapter 104.

Publication #: 25-14502

EPublication #: E25-14502