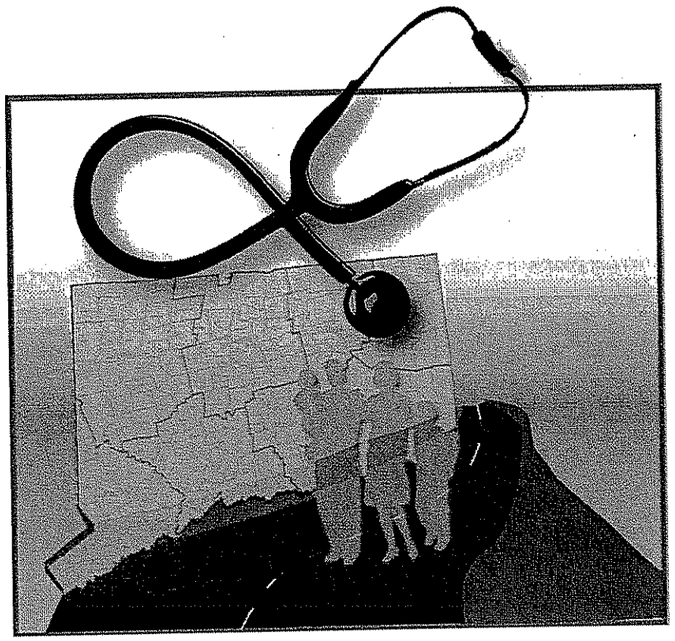
Assessment of Primary Care Capacity in Connecticut



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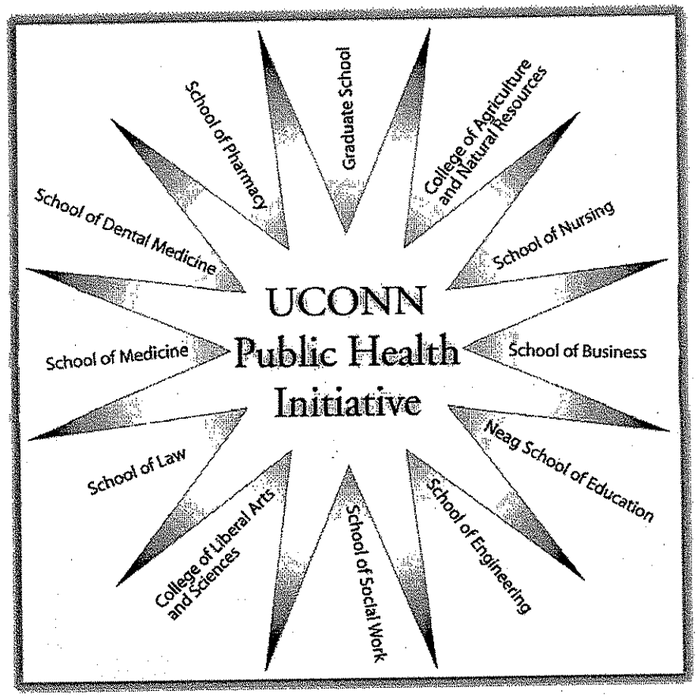

The Center for Public Health and Health Policy (CPHHP) was established as a University-wide center in 2004. It serves as "the central organizing and implementing force in public health for teaching, research, and service activities…that…will enable the University to speak with one voice to any and all interested agencies and other constituencies regarding established or new needs in public health education and research of significance for all of our citizens throughout the State and the region." (President Philip Austin, November, 2005)

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Assessment of Primary Care Capacity in Connecticut

Executive Summary

Introduction

The Institute of Medicine defines 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." In Connecticut and elsewhere, primary care clinicians include physicians, nurses, physician assistants, certified nurse midwives, and other health professionals working in accessible settings that allow provision of a wide range of personal health services and in an environment that supports active participation of patients and families in healthcare planning and decision making.

Recognizing that primary care is integral for a well-functioning health system, the Connecticut General Assembly in Public Act 07-185 established the statewide Primary Care Access Authority. The Primary Care Access Authority (Authority) was charged, among other things, to inventory the state's existing primary care infrastructure, including the number of primary care providers practicing in Connecticut. The Authority, through the Department of Public Health (DPH), contracted with the University of Connecticut Center for Public Health and Health Policy (CPHHP) to estimate the current capacity of the primary care provider workforce in Connecticut and to project the workforce required to meet increases in the demand for primary care services based on demographic trends and changes in insurance status.

Methods

National and Connecticut-specific data were used to estimate the number of primary care providers in Connecticut and to develop national and regional norms on the productivity and patient capacity of providers in the primary care physician specialties, homeopathic physicians, naturopathic physicians, nurse practitioners, licensed nurse midwives, and physician assistants. These norms were combined with data from the DPH licensure database to estimate the current capacity of the provider workforce in Connecticut and to describe primary care workforce levels necessary to meet the demand for primary care services based on changes in insurance status.

Summary of Findings

Based on the current population, estimated productivity norms, and estimated primary care provider capacity, it appears that Connecticut, like much of the Northeast, currently has an adequate supply of licensed primary care providers. However, Connecticut's geographic distribution of primary care resources resembles that of the nation as a whole, as the ratio of population-to-primary care provider is much higher in Connecticut's rural areas. Additionally,

families living in central cities are likely to continue to experience primary care access problems or rely on Federally Qualified Health Centers and hospital-based clinics due to their lower incomes and lack of health insurance coverage [most health professional shortage areas (HPSAs) designated by the Health Resources and Services Administration (HRSA) are located in Connecticut's larger cities.] Thus, Connecticut, particularly in its suburban areas, may be in better position than other states to absorb initial increases in demand for primary care services that would likely accompany increased insurance coverage as well as increased rates of reimbursement for participation in public insurance programs. The geographic distribution of providers will pose some challenges and may be exacerbated by expanded insurance coverage.

The count of unexpired primary care provider licenses issued by DPH most certainly overestimates the current supply of practicing primary care providers in Connecticut. There may be a large number of currently licensed primary care providers who are retired, reside in other states, or are not practicing in their respective fields. There may also be a large number of physicians licensed in primary care specialties that do not provide primary care services or split their clinical time between primary and specialty care. Conversely, there may be licensed primary care providers who choose not to practice primary care under the conditions of the current health care market who would be encouraged to re-enter primary care if structural changes in the market were enacted that made primary care practice more rewarding and profitable.

There is a growing concern about an impending shortage of physicians, including primary care physicians. Several factors contribute to these concerns, including population growth that is estimated to exceed growth in physician supply, an aging population that often requires frequent access to health care, the decrease in medical students pursuing primary care specialties, and the difficulties in quickly shifting priorities in medical education due to the length of time required for physician training. Thus, while Connecticut may be able to absorb near term increases in primary care services demand without any improvements in primary care workforce policy, this may not be the case in the future.

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INTRODUCTION

In 2007 the Connecticut General Assembly undertook a wide-ranging health care policy initiative with the goal of expanding health care access in Connecticut. It established the HealthFirst Connecticut Authority to examine and evaluate policy alternatives for providing quality, affordable and sustainable health care for all individuals residing in Connecticut (Public Act 07-185).[1]

The Connecticut General Assembly recognized that providing health insurance would not by itself guarantee access to care if there were not enough providers in the state to give such care. It also recognized that primary care providers provide initial points of access to the health care system for most people in the state. To address these issues, the General Assembly in the same legislation also established a statewide Primary Care Access Authority. The Primary Care Access Authority (Authority) was charged, among other things, to inventory the state's existing primary care infrastructure, including the number of primary care providers practicing in Connecticut.

The Authority, through the Department of Public Health (DPH), contracted with the University of Connecticut Center for Public Health and Health Policy (CPHHP) to estimate the current capacity of the primary care provider workforce in Connecticut and to project what workforce would be necessary to meet increases in the demand for primary care services based on demographic trends and changes in insurance status. This report sets out the findings of this study.

BACKGROUND

The Institute of Medicine defines 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."[2] In Connecticut and elsewhere, primary care clinicians include physicians, nurse practitioners, physician assistants, certified nurse midwives, and other health professionals working in accessible settings that allow provision of a wide range of personal health services and in an environment that supports active participation of patients and families in healthcare planning and decision making.

Primary care is integral for a well-functioning health system. Studies in the early 1990s showed that U.S. states with higher ratios of primary care physicians to population had better health outcomes, including lower rates of all-cause mortality; mortality from heart disease, cancer, and stroke; infant mortality; low birth weight; and lower rates of poor self-reported health, even after

[1] Available at: http://www.cga.ct.gov/2007/ACT/Pa/pdf/2007PA-00185-R00SB-01484-PA.pdf.
[2] Donaldson M, Yordy K, Vanselow N, eds. 1994. Defining Primary Care: An Interim Report. Committee on the Future of Primary Care, Institute of Medicine, National Academy Press: Washington, DC.

controlling for socio-demographic differences and lifestyle factors.[3] Later research confirmed the earlier findings, including studies showing that the supply of primary care physicians was associated with an increase in life span and with reduced low birth weight rates,[4] and with lower all-cause mortality, whereas a greater supply of specialty physicians was associated with higher mortality.[5] Adults in the U.S. who reported having a primary care physician rather than a specialist physician as their regular source of care had lower subsequent five-year mortality rates after controlling for initial differences in health status.[6]

Primary care researchers found six factors that may account for the beneficial impact of primary care on population health:

- Greater access to needed services
- Better quality of clinical care
- A greater focus on prevention
- Early management of health problems
- The cumulative effect of the main primary care delivery characteristics
- The role of primary care in reducing unnecessary and potentially harmful specialist care.[7]

Meanwhile, structural components of the U.S. health system undervalue primary care services relative to specialty services. For example, the predominant health care payment systems in the U.S. are geared toward paying for procedures (the focus of specialist providers) rather than ensuring good health and wellness in the population (the focus of primary care providers). Market-based responses to this problem have not produced measurable improvement. At the same time, the population is becoming more diverse and older. Many of the health needs of a diverse population and the health effects of aging are best managed in a primary care setting.

Against this backdrop, fewer medical students are pursuing primary care specialties due to financial and lifestyle factors, leading to predictions of a shortage of primary care physicians in the near future.[8,9] Fortunately for U.S. residents and the primary care system, an influx of a large number of foreign-trained physicians has for the moment stabilized the supply of primary care

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[3] Shi L. 1992. The relationship between primary care and life chances. Journal of Health Care for the Poor and Underserved 3: 321-35. Shi L. 1994. Primary care, specialty care, and life chances. International Journal of Health Services 24: 431-58.

[4] Vogel and Ackerman

[5] Shi L. 2003.

[6] Franks P, Fiscella K. 1998. Primary care physicians and specialists as personal physicians. Health care expenditures and mortality experience. Journal of Family Practice 47: 105-9.

[7] Starfield B, Shi L, Macinko J. 2005. Contribution of primary care to health systems and health. The Milbank Quarterly 83(3): 457-502.

[8] Dill MJ, Salsberg ES. 2008. The complexities of physician supply and demand: projections through 2025. Center for Workforce Studies. American Association of Medical Colleges. Available at: https://services.aamc.org/Publications/showfile.cfm?file=version122.pdf&prd_id=244&prv_id=299&pdf_id=122. Accessed December 5, 2008.

[9] Quinn G. 2008. Who will care for our patients? 2008 update: taking action to fight a growing physician shortage in Wisconsin. Wisconsin Council on Medical Education and Workforce. Available at: http://www.wha.org/pubArchive/special_reports/2008PhysicianReport.pdf. Accessed December 5, 2008.

physicians, and the number of primary care physician assistants and nurse practitioners has increased.[10]

Two of the reported effects of the Massachusetts health reform legislation mandating health insurance coverage are an increase in the wait times for appointments with primary care physicians[11] and an increase in emergency department visits by persons with insurance.[12] Connecticut is expanding health insurance coverage through its Charter Oak Health Plan, and other means of expanding coverage are likely to be considered by state and federal government leaders in the near future as health care costs continue to stress the economic system and grow at unsustainable levels. Consideration of the state's primary care capacity to meet an expected increase in demand is an important aspect of the overall success of plans for increased health insurance coverage and of an efficient and effective health system that serves patients well.

DATA SOURCES AND ANALYSIS PLAN

National and Connecticut-specific data were used to estimate the number of primary care providers in Connecticut and to develop national and regional norms for the productivity and patient capacity of providers in the primary care physician specialties, homeopathic physicians, naturopathic physicians, nurse practitioners, licensed nurse midwives, and physician assistants. Although the Authority has identified other types of primary care providers in addition to these, there was neither time nor resources to include them in this study.

Data sources include the National Ambulatory Medical Care Survey (NAMCS), National Hospital Ambulatory Medical Care Survey-Outpatient Department (NHAMCS-OPD), Physician Compensation and Production Survey data from the Medical Group Management Association, the Bureau of Primary Health Care-Section 330 Grantees Uniform Data System (Community Health Centers data), American Academy of Nurse Practitioners, and American Academy of Physician Assistants.

These norms were combined with data from the DPH licensure database to estimate the current capacity of the provider workforce in Connecticut and to describe primary care workforce levels necessary to meet the demand for primary care services based on changes in insurance status. The estimates are thus based on national data applied to licensed Connecticut providers. Additional information about primary care physicians in Connecticut was obtained from the Health Resources and Services Administration Geospatial Data Warehouse and "Physician Characteristics and Distribution in the U.S., 2008 Edition" published by the American Medical Association. American Medical Association contractual requirements, including indemnification and hold harmless clauses that the University of Connecticut cannot agree to as a state agency

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[10] Steinwald AB. 2008. Primary care professionals: Recent supply trends, projections, and valuation of services. GAO-08-472T. United States Government Accountability Office: Washington, DC.
[11] Sack K. 2008. In Massachusetts, universal coverage strains care. The New York Times, April 5, 2008.
[12] Auerbach JM. 2008. Universal Health Care in Massachusetts: New opportunities for public health. Connecticut Public Health Association Annual Meeting and Conference.

prohibited purchase of the American Medical Association Masterfile. The 2007-2008 Connecticut State Medical Society (CSMS) physician directory was reviewed; it was determined that the CSMS directory would not provide any information beyond that available from the DPH licensure database.

NAMCS and NHAMCS-OPD are part of the ambulatory component of the National Health Care Survey, a family of surveys that measures health care utilization across various types of providers. NAMCS and NHAMCS-OPD use a multistage sampling procedure to produce unbiased national estimates of ambulatory health care. NAMCS targets non-federally employed, office-based physicians listed in the American Medical Association and American Osteopathic Association master files who provide office-based patient care sites that are non-federally operated facilities or hospital-based outpatient departments.[13] NHAMCS-OPD targets outpatient departments of non-federal short stay hospitals listed in the Verispan Hospital Database.[14]

Databases and data file documentation for the NAMCS and NHAMCS-OPD were downloaded from the National Center for Health Statistics (NCHS) website. The primary unit of analysis for these databases is a patient visit to a physician in an ambulatory care setting. The NAMCS dataset includes 427 variables and the NHAMCS-OPD dataset includes 385 variables; all of which were downloaded and converted to statistical software (SPSS, version 16.0) databases for purposes of analysis. Data selected for analysis in this report was limited to visits to the patient's primary care physician in Northeast States (Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, and Pennsylvania).

The first stage of sampling is the selection of a group of PSUs (primary sampling units). These are geographic segments composed of counties, groups of counties, towns and townships or minor civil divisions, or metropolitan statistical areas. They may cross State lines and will not necessarily be selected in every State. In fact, the surveys are not designed to sample ambulatory care visits in every State, and meaningful estimates cannot be made on a State-level basis.[15] Geographic region (Northeast, Midwest, South, and West) and metropolitan statistical area status (a yes/no field indicating whether the visit took place in an urban or rural area) are the only geographic designations in the databases.

The Connecticut State Department of Public Health (DPH), Information Technology Section provided licensure data for Advanced Practice Registered Nurses, Homeopathic Physicians, Licensed Nurse Midwives, Naturopathic Physicians, Physician Assistants, and Physicians & Surgeons/Osteopaths. Physician & Surgeon/Osteopath specialties included in the dataset were limited to Family Practice, Homeopathic Medicine, Internal Medicine, Naturopathy, Obstetrics

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[13] Cherry DK, Hing E, Woodwell DA, et al. 2008. National Ambulatory Medical Care Survey: 2006 summary. National health statistics reports; no 3. Hyattsville, MD: National Center for Health Statistics.

[14] Hing E, Hall MJ, Xu J. 2008. National Hospital Ambulatory Medical Care Survey: 2006 outpatient department summary. National health statistics reports; no 4. Hyattsville, MD: National Center for Health Statistics.

[15] More information about the National Health Care Surveys can be found at the National Center for Health Statistics (NCHS) website: http://www.cdc.gov/nchs/about/major/ahcd/ahcd1.htm.

and Gynecology, and Pediatrics. DPH Licensure data was preferred over the Connecticut State Medical Society (CSMS) physician directory and the American Medical Association (AMA) physician directory as it is more comprehensive since the CSMS and AMA directories contain only physician and osteopath data. DPH licensure database data elements include license type, license number, name, address, city, state, zip, country, professional title, license renewal date, license granted date, license reinstatement date, license expiration date, status code, specialty code, and sub-specialty code.

Several other sources of data were considered but are not included in this study. Among these is the Veterans Affairs (VA) health system. While it is an important provider of primary care in Connecticut and a model for effective and efficient primary care service delivery, the VA health system is also a closed system. It serves a specific population, primarily veterans that served during times of war, veterans receiving pension benefits, veterans with service-connected disabilities, and low-income veterans.[16] One of the primary considerations of the type of data to include in this study is the effect of an increase in health insurance coverage among the Connecticut population. It is anticipated that such an increase might have little effect on the VA system.

Types of providers included

NAMCS and NHAMCS report data on "physicians," which includes both doctors of medicine (MDs) and doctors of osteopathy (DOs) practicing in offices and hospital outpatient departments in the following primary care specialties:

- Adolescent Medicine
- Adolescent Medicine (Internal Medicine)
- Family Practice
- Family Practice (Geriatric Medicine)
- Geriatric Medicine (Internal Medicine)
- Internal Medicine
- Internal Medicine (Pediatrics)
- Maternal & Fetal Medicine
- General Practice, Gynecology
- Obstetrics & Gynecology
- Obstetrics
- Pediatrics
- Sports Medicine (Family Practice)
- Sports Medicine (Pediatrics)

The DPH Licensure data also includes both doctors of medicine and doctors of osteopathy in the definition of "physician." It reports licensed physicians in the following primary care specialties:

- Family Practice
- Homeopathic Medicine
- Internal Medicine
- Pediatrics
- Naturopathy
- Obstetrics & Gynecology

DPH also maintains licensure data on Advanced Practice Registered Nurses, Licensed Nurse Midwives, and Physician Assistants.

AMA data include doctors of medicine and osteopathy in the following primary care specialties:

- Family Medicine
- Internal Medicine
- General Practice
- Obstetrics & Gynecology
- Pediatrics

[16] Department of Veterans Affairs. Federal Benefits for Veterans and Dependents, 2008 Edition. Washington, DC: Superintendent of Documents, U.S. Government Printing Office.

RESULTS

Physicians

Physicians practicing in Connecticut are required to be licensed by the Connecticut Department of Public Health (DPH). As of October 24, 2008, there are 6201 physicians with home or work addresses[17] in Connecticut with active licenses in the following primary care specialties: family practice, internal medicine, obstetrics and gynecology, pediatrics, homeopathic medicine, and naturopathy. The distribution of the number of physicians in primary care specialties in Connecticut with unexpired licenses is listed in Table 1.

Table 1: Number of physicians with unexpired licenses in Connecticut by Medical Specialty

Specialty	Number of physicians with unexpired licenses*	Percentage
Family Practice	619	9.9
Internal Medicine	3652	58.2
Obstetrics and Gynecology	674	10.7
Pediatrics	1155	18.4
Homeopathic Medicine	3	< 0.1
Naturopathic Physicians	168	2.7
Total	6271	100.0

NOTE: Numbers may not add to totals because of rounding.

*Seventy physicians (1.2 percent) are licensed in more than one primary care specialty. Sixty-one in Internal Medicine and Pediatrics, five in Family Medicine and Internal Medicine, three in Family Medicine and Pediatrics, and one in Internal Medicine and OB/GYN.

Licensed Nurse Midwives

Licensed Nurse Midwives practicing in Connecticut are considered to be primary care providers and are required to be licensed by the Connecticut DPH. As of October 24, 2008, there are 177 Licensed Nurse Midwives with Connecticut home or work addresses with unexpired licenses.

Advanced Practice Registered Nurses (APRNs)

There are over 125,000 nurse practitioners (NPs) in the United States, and 66 percent of NPs practice in at least one primary care setting.[18] In Connecticut, NPs are licensed as Advanced Practice Registered Nurses (APRNs) and are required to be licensed by the Connecticut DPH in order to practice. As of October 24, 2008, there are 2526 APRNs with Connecticut home or work addresses with unexpired licenses. The DPH licensure database does not list APRN

[17] The Department of Public Health allows physicians to register under either home or work address and does not distinguish between the two in the licensure database.

[18] American Association of Nurse Practitioners, National Nurse Practitioner database, 2007.

specialties. Applying AANP Nurse Practitioner database data to the population of licensed APRNs in Connecticut yields an estimate of 1667 (66 percent of 2526) APRNs (who if in practice are) in primary care settings.

Physician Assistants (PAs)

Physician Assistants practicing in Connecticut are required to be licensed by the Connecticut DPH. As of October 24, 2008, there are 1248 PAs with Connecticut home or work addresses with unexpired licenses. The DPH licensure database does not list PA specialties.

The American Academy of Physician Assistants (AAPA) is the only national organization representing physician assistants (PAs) in all medical specialties. It conducts an annual census survey of PAs, including members and non-members of the AAPA. Survey results are published on the AAPA website and data reports are available by state. The most recent data available is for the survey conducted in 2008. Survey respondents included 537 PAs with Connecticut work or mailing addresses, which was 1.9 percent of the total number of survey respondents and 43 percent of total PAs with active licenses in Connecticut.[19]

All Connecticut respondents reported to be clinically practicing PAs, 528 of which reported a clinical specialty. Primary care specialties represent 21.6 percent of total respondents.[20] Applying the AAPA survey results to the population of licensed PAs in Connecticut yields an estimate of 268 PAs practicing in primary care specialties (21.6 percent of 1248 licensed PAs in Connecticut). It should be noted that compared with the national survey results, far fewer Connecticut respondents reported practicing in primary care specialties. Nationally, 37 percent of respondents reported practicing in a primary care specialty.[21] A similar disparity occurred in the 2007 survey, where 24.4 percent of Connecticut respondents and 38 percent of total respondents practiced in primary care specialties.[22]

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[19] 2008 AAPA Physician Assistant Census Report for Connecticut. Available at: http://www.aapa.org/research/StateReports08/CT08c.pdf. Accessed December 4, 2008.
[20] 2008 AAPA Physician Assistant Census Report for Connecticut. Available at: http://www.aapa.org/research/StateReports08/CT08c.pdf. Accessed December 4, 2008.
[21] Ibid.
[22] 2007 AAPA Physician Assistant Census Report for Connecticut. Available at: http://www.aapa.org/research/StateReports07/CT07c.pdf. Accessed December 4, 2008.

The distribution of AAPA survey respondents from Connecticut in primary care and other specialties is as follows:

Table 2: Physician Assistants in Connecticut by Medical Specialty
(based on AAPA survey results)

Specialty	Number of respondents	Percentage	Estimated number of PAs in CT
Family/general medicine	37	7.0	87
General internal medicine	46	8.7	109
General pediatrics	26	4.9	61
Obstetrics and gynecology	5	0.9	11
Sub-total: Primary care specialties	114	21.6	268
Non-primary care specialties	357	67.6	844
Other	57	10.8	135
Total	528	100.0	1248

NOTE: Numbers may not add to totals because of rounding.

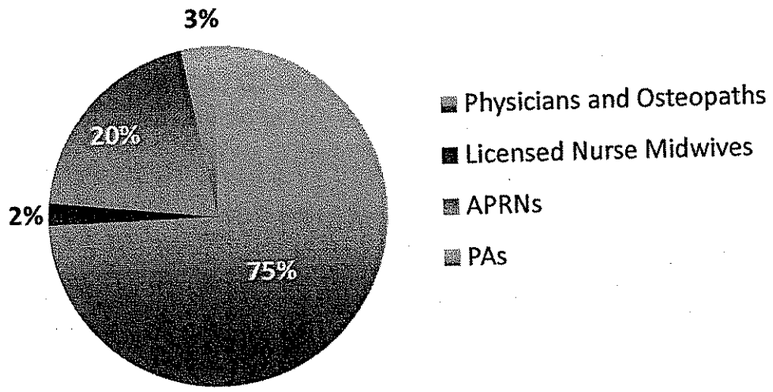
PRIMARY CARE PROVIDERS IN CONNECTICUT

The total estimated number of primary care providers in Connecticut with unexpired licenses based on available existing data sources is as follows:

Table 3: Number of Primary Care Providers in Connecticut by Provider Type

Type of Provider	Number of Providers
Physicians, Osteopaths, Homeopathic Physicians, Naturopathic Physicians	6201
Licensed Nurse Midwives	177
APRNs	1667
PAs	268
Total	**8313**

Figure 1: Primary Care Providers by Percent



These numbers represent the total number of unexpired licenses issued to primary care providers by the Department of Public Health. As such, they are likely an overestimation of current primary care capacity since a percentage of persons with active licenses may be retired, have moved to other states, or are not providing primary care services for various reasons. Additionally, for primary care physicians, it is not possible to distinguish between general practice and subspecialty practice using the DPH licensure database. Approximately 30 percent of Connecticut physicians who list a primary care specialty as their primary specialty also list a non-primary care subspecialty on their license.

It is likely that some percentage of non-practicing licensed primary care physicians choose not to practice due to specific aspects of the current practice environment (e.g., documentation requirements, insurance issues, rushed patient visits, medical liability concerns, etc.), thus improving the practice environment may increase the supply of primary care physicians by simultaneously bringing currently licensed practitioners back into active care provision and making primary care careers more appealing to medical school students and residents (physicians-in-training).

DISCUSSION

Primary Care Providers

Estimating primary care capacity through a scientific survey of providers has advantages including validity and reliability of data acquired. Use of existing research and data to estimate primary care capacity also has advantages, such as lower costs and a shorter time period required to complete the research. Perhaps the most important issue that arises through the non-use of survey methodology is the difference between the number of licensed providers and the number of practicing providers. Some existing research exists that may provide a basis for comparison, but only for certain types of primary care providers.

For physicians, the New York Physician Licensure Re-registration Survey, 2007 may provide a useful point of reference to estimate the number of practicing primary care physicians in Connecticut rather than the number of unexpired licenses. In New York in 2007, 79 percent of licensed physicians were active in providing patient care, and each licensed primary care physician represented .91 FTE primary care physicians.[23]

Applying the New York State estimates to the Connecticut population of licensed primary care physicians yields an estimate of 4,337 FTE primary care physicians in Connecticut (6033 licensed primary care physicians X 79 percent X .91 FTE). Using 4,337 FTE primary care physicians and the Connecticut population of 3,502,309[24] yields an estimated 124 primary care physician FTEs per 100,000 persons. The equivalent number in New York is 106 FTEs per 100,000 persons.[25]

The American Medical Association publishes "Physician Characteristics and Distribution in the U.S." annually. All data are derived from the AMA's Physician Masterfile, which is compiled through an annual census survey of approximately one-quarter of the physician population on a rotating basis. The AMA Masterfile is widely considered to be the most complete and extensive source of physician-related information in the U.S.

The 2008 Edition of "Physician Characteristics and Distribution in the U.S." includes information on primary care MDs and osteopaths by State. The total number of active primary care MDs and osteopaths in Connecticut in Family Medicine, General Practice, Internal Medicine (excluding internal medicine subspecialties), Obstetrics & Gynecology, and Pediatrics is 4679.[26] The New York State survey estimates that physicians in these primary care specialties represent .91 FTE. Applying the New York survey FTE estimate to the AMA actively practicing primary care total estimate results in an estimated 4258 actively practicing primary care

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[23] Armstrong DP and Forte GJ. 2007. Annual New York Physician Workforce Profile, 2007 Edition. Rensselaer, NY: Center for Health Workforce Studies, School of Public Health, SUNY Albany.
[24] Available at http://www.ct.gov/dph/lib/dph/hisr/hcqsar/population/pdf/pop_towns2007.pdf.
[25] Armstrong and Forte. 2007.
[26] Smart DS, Sellers J. 2008. Physician Characteristics and Distribution in the U.S., 2008 Edition. American Medical Association Press.

physician FTEs in Connecticut. The resulting ratio based on the Connecticut population is 122 FTE primary care physicians per 100,000 persons, a ratio very similar to the result using the DPH licensure database and New York State survey (124 FTE primary care physicians per 100,000 persons).

With the enactment of the Massachusetts health reform, availability of primary care physicians for newly insured residents has become a serious concern, particularly in rural areas. This concern is occurring in the state with the highest number of primary care physicians per 100,000 population (Connecticut ranks sixth).[27] Applying the New York survey results to the number of primary care physicians with unexpired licenses in Massachusetts and the state population yields an estimate of 137 primary care physician FTEs per 100,000 persons.[28,29] Thus, should Connecticut achieve near universal health insurance coverage comparable to that achieved in Massachusetts, there may be an accompanying shortfall of primary care capacity, particularly in rural areas, potentially to a greater degree than that being experienced in Massachusetts.

For the other types of primary care providers, it is likely that the number of current licenses overestimates supply for similar reasons as the number of currently licensed physicians overestimates the supply of physicians. There appears to be a lack of research regarding the differences between the numbers of licensed and practicing primary care APRNs, PAs, naturopathic physicians, and licensed nurse midwives. A survey similar to the New York survey of physicians would be required to estimate differences between the number of licensed and the number of practicing primary care providers for these provider types. Thus, unless otherwise noted, the following discussion is based on the number of primary care providers with active licenses, and should be considered a high estimate of current capacity.

Geographic Distribution of Primary Care Providers

For the purposes of this study, primary care providers include physicians and osteopaths in primary care specialties, homeopathic physicians, naturopathic physicians, primary care APRNs, primary care PAs, and licensed nurse midwives. The statewide ratio of population-to-primary care provider of all types is 421, which is based on the July 1, 2007 state population estimate of 3,502,309.[30] Figure 2 shows a breakdown of population per primary care provider by county in Connecticut. (While counties do not function as political entities in Connecticut they are often used as regional subdivisions, and towns within each county share many similarities.)

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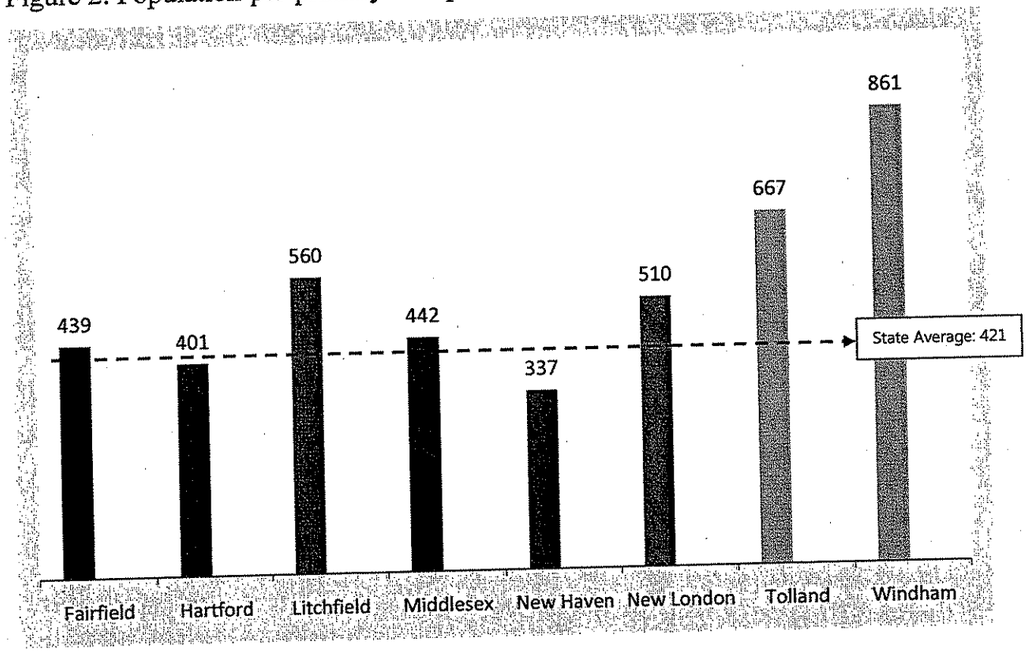
[27] American Medical Association. 2008. Physician Characteristics and Distribution in the United States, 2008 Edition. Chicago, IL,

[28] The number of licensed primary care physicians in Massachusetts is 12,251. Primary care specialties include Family Medicine, General Practice, Gynecology, Internal Medicine, Obstetrics, Obstetrics and Gynecology, and Pediatrics. Data collected from the Massachusetts Board of Registration in Medicine, available at: http://profiles.massmedboard.org/MA-Physician-Profile-Find-Doctor.asp. Accessed December 3, 2008.

[29] Based on the July 1, 2007 US Census population estimate for Massachusetts of 6,449,755.

[30] Available at http://www.ct.gov/dph/lib/dph/hisr/hcqsar/population/pdf/pop_towns2007.pdf.

Figure 2: Population-per-primary care provider ratio by county



Hartford and New Haven counties have the lowest population per primary care provider, perhaps reflecting the presence of teaching hospitals in the larger cities in these counties and the population density of cities and towns in these counties. Windham County has the highest population per primary care provider, more than double the state average. The ratios in Windham, Tolland, and Litchfield counties reflect the relative scarcity of medical providers serving in rural areas that is common throughout the United States.

Clearly, there are limitations that must be accounted for in any analysis of this data. Since licensees may list either home or work addresses on licensure applications, actual location of service provision is not possible using these data. It is likely that some providers list their home address on licensure documentation while their actual work location is in a different county than their home address. For Physician Assistants, it may be that respondents to the AAPA Survey differ substantially from the general population of PAs in Connecticut, therefore there may be more, or fewer PAs in primary care specialties than those represented in the survey. This issue is even more significant for APRNs, since the estimated percentage of APRNs in primary care settings is based on a national survey.

Geographic Distribution of Primary Care Physicians and Lack of Health Insurance
The Health Resources and Services Administration (HRSA) Geospatial Data Warehouse includes data on primary care physicians and health insurance status by county. It does not report similar accessible data for non-physician primary care providers. For counties in Connecticut the data are as follows:

Table 4: Uninsured rate and primary care physicians per 100,000 population by county in Connecticut

County	Uninsured rate[31]	Primary Care physicians per 100,000 population[32]	Ratio of uninsured rate to PCPs per 100,000 population
Fairfield	9.80	129.93	0.0754
Hartford	10.91	130.04	0.0839
Litchfield	7.75	77.34	0.1002
Middlesex	6.96	93.74	0.0742
New Haven	10.97	143.84	0.0763
New London	8.85	75.01	0.1180
Tolland	7.55	69.09	0.1093
Windham	9.90	57.85	0.1711

Assuming that persons currently lacking health insurance have limited access to primary care physicians, the ratio of uninsured rate to primary care physicians per 100,000 population shows which counties in Connecticut might be relatively better prepared in terms of primary care for increases in health insurance coverage. Counties with a lower ratio would be better positioned to absorb an increase in insured lives into the existing system, while a higher ratio indicates areas where increased health insurance coverage might further stress existing primary care capacity. In this case, Hartford and New Haven counties, while currently having the highest rates of uninsured, also have relatively high numbers of primary care physicians per 100,000 population. In Windham County, the low rate of primary care physicians per 100,000 population combined with a relatively high rate of uninsured might compound access problems if affordable health insurance coverage was made available or mandated.

The high rates of uninsured in urban/suburban counties likely reflect pockets of urban low-income families and individuals who are uninsured due to low-wage jobs that do not offer affordable health insurance benefits, immigration status, or ineligibility for public insurance programs. In fact, most of the primary care Health Professional Shortage Areas (HPSAs) in Connecticut are located its larger cities.[33]

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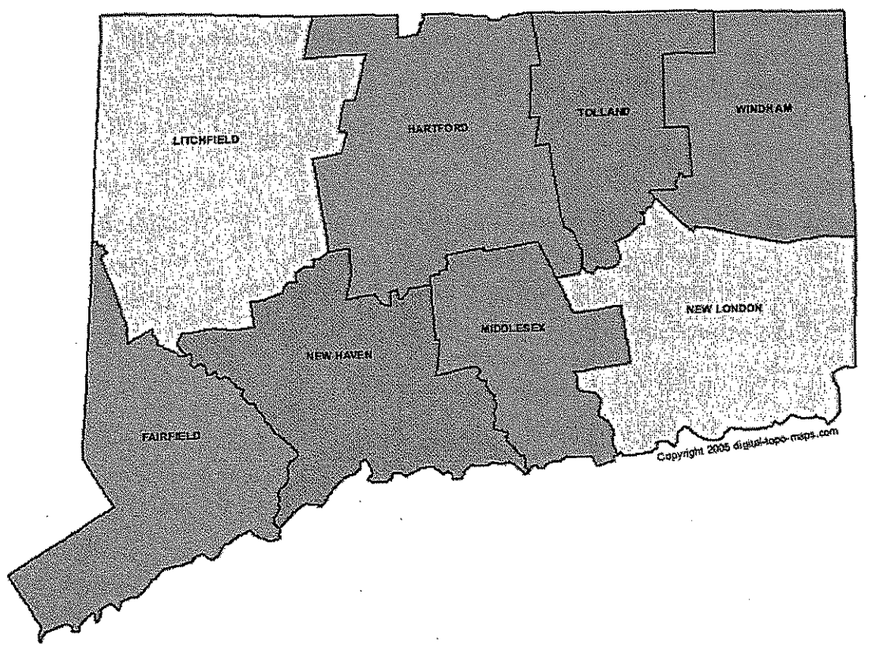
[31] Health Resources and Services Administration. HRSA Geospatial Data Warehouse. Community Fact Sheet. Source: U.S. Census Bureau, Small Area Health Insurance Estimates Program, 2000.
[32] Health Resources and Services Administration. HRSA Geospatial Data Warehouse. Community Fact Sheet. Source: HRSA Area Resource File, 2004 Primary Care Physicians, Time Period: 2005.
[33] Available at http://datawarehouse.hrsa.gov/. Accessed December 15, 2008.

Figure 3: Connecticut Counties



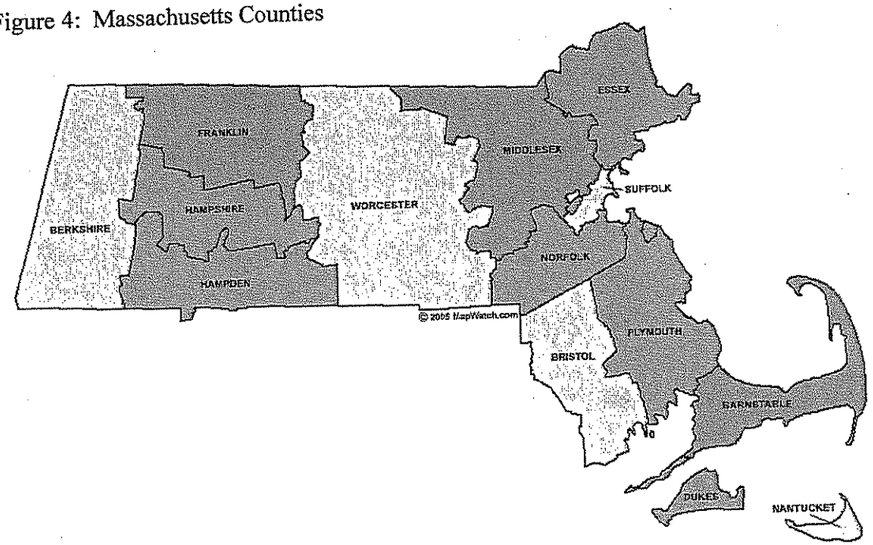
For comparison, Massachusetts data on primary care physicians and health insurance status by county prior to Massachusetts enactment of health reform (including an individual insurance mandate) is shown in Table 5. Once again, the ratio shows the potential impact of an increase in insured lives on primary care at the county level.

The primary care landscape prior to health reform in Massachusetts appears to be similar to that found currently in Connecticut. Relatively rural counties (e.g., Bristol, Essex, and Hampden) have a higher ratio of uninsured rate to primary care physicians per 100,000 population, while in urban/suburban counties (e.g., Middlesex, Norfolk, and Suffolk), the ratio is lower.

Table 5: Uninsured rate and primary care physicians per 100,000 population by county in Massachusetts

County	Uninsured rate[34]	Primary Care physicians per 100,000 population[35]	Ratio of uninsured rate to PCPs per 100,000 population
Barnstable	8.11	101.54	0.0799
Berkshire	8.91	129.68	0.0687
Bristol	8.94	55.09	0.1623
Dukes	9.38	115.44	0.0813
Essex	10.18	80.05	0.1272
Franklin	8.60	70.51	0.1220
Hampden	13.00	88.61	0.1467
Hampshire	8.26	157.82	0.0523
Middlesex	7.65	158.74	0.0482
Nantucket	5.95	49.17	0.1210
Norfolk	6.16	173.81	0.0354
Plymouth	7.85	64.78	0.1212
Suffolk	12.93	293.69	0.0440
Worcester	9.72	130.86	0.0743

Figure 4: Massachusetts Counties



[34] Health Resources and Services Administration. HRSA Geospatial Data Warehouse. Community Fact Sheet. Source: U.S. Census Bureau, Small Area Health Insurance Estimates Program, 2000.
[35] Health Resources and Services Administration. HRSA Geospatial Data Warehouse. Community Fact Sheet. Source: HRSA Area Resource File, 2004 Primary Care Physicians, Time Period: 2005.

PRODUCTIVITY MEASURES

There are several measures that can be used to estimate the productivity of primary care providers, including encounters, panel size, services provided/billed, and patient visits. For reasons including data availability and comparability, productivity measures discussed herein will focus on encounters and patient visits. Also included is a brief discussion of panel size, which is the total number of patients enrolled with an individual primary care provider.

Encounters

Medical Group Management Association: Ambulatory encounters are one of several measures of productivity used by MGMA in its physician compensation and productivity report. MGMA defines an encounter as a "documented, face-to-face contact between a patient and a provider who exercises independent judgment in the provision of services to the individual in an ambulatory or hospital setting."[36] As demonstrated in Table 6, ambulatory encounters can be further broken down into average encounters per clinical service hour—a measure of productivity that provides some insight into operational capacity for individual physicians in a group practice.

Table 6: MGMA Ambulatory Encounters in 2007

	Median ambulatory encounters/year	Median clinical service hours/wk	Median weeks worked/year	Average encounters/clinical service hour
Internal medicine (Ambulatory only)	3480	40	47	1.85
Pediatrics	4130	40	48	2.15
Family practice (Ambulatory only)	4340	40	47	2.31
OB/GYN-general	2940	40	47	1.56

Note: Includes MGMA member group practices only. National data.

For MGMA member group practices, family practice physicians average the highest number of encounters and OB/GYNs average the fewest encounters per clinical service hour compared to other primary care specialties. OB/GYN data could be interpreted as a function of excess supply or a higher level of care required per encounter for gynecological and obstetrical services.

Federally-Qualified Community Health Centers (FQHCs/Section 330 Grantees): Community Health Centers are important providers of care for many Connecticut residents insured by Medicaid, SCHIP, and other public programs, as well as people who are uninsured and privately insured. They are required to report various staffing, patient, and financial information to the US Department of Health and Human Services, Health Resources and Services Administration,

[36] Medical Group Management Association. 2008. Physician compensation and production survey: 2008 report based on 2007 data.

Bureau of Primary Health Care (BPHC) via its Uniform Data System (UDS). The BPHC defines an encounter as "a documented, face-to-face contact between a patient and a provider who exercises independent professional judgment in the provision of services to the patient. To be included as an encounter, services must be documented in a chart in the possession of the grantee" (i.e., FQHC).[37]

Ten FQHCs are included in the Connecticut Rollup Report (a statewide summary of FQHC data) for Calendar Year 2007.[38] The report lists personnel serving in the ten FQHCs by major service category in full-time equivalents (FTEs) and their patient encounters as follows:

Table 7: FQHC Primary Care Provider FTEs and Encounters

Personnel type	FTEs	Encounters	Encounters per FTE per year
Physicians			
Family Practitioners	33.76	123,262	3,651
General Practitioners	1.68	8,053	4,793
Internists	29.94	108,515	3,624
Obstetrician/Gynecologists	9.77	29,360	3,005
Pediatricians	28.22	102,453	3,631
Nurse Practitioners	47.68	122,278	2,565
Physician Assistants	16.66	45,554	2,734
Certified Nurse Midwives	10.39	25,937	2,496
Total	178.10	565,412	3,175

As safety net providers, Community Health Centers provide important primary care and other health and social services to underserved and vulnerable populations in Connecticut. The UDS data report shows that income for two thirds of patients is at the 100 percent poverty level or below, and 96 percent of patients have incomes under the 200 percent poverty level; over 38 percent of patients are best served in a language other than English; 43 percent of patients are Hispanic or Latino and 24 percent are Black or African American; 26 percent are uninsured and over 50 percent are insured by Medicaid or SCHIP. For most types of primary care physicians in FQHCs in Connecticut, encounter/productivity is comparable to that in other types of offices and clinics, despite the increased level of services that underserved and uninsured populations often require. The ten FQHCs in Connecticut provided medical services to 158,865 patients in 2007.

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[37] Bureau of Primary Health Care. 2008. Uniform Data System Manual. Rockville, MD: U.S. Department of Health and Human Services.

[38] Grantees included in the referenced report include: Fair Haven Community Health Clinic, Inc., New Haven; Hill Health Corporation, New Haven; Generations Family Health Center, Inc., Willimantic; Southwest Community Health Center, Bridgeport; Community Health Services, Inc., Hartford; Optimus Health Care, Inc., Bridgeport; Charter Oak Health Center, Inc., Hartford; Community Health Center, Inc., Middletown; Staywell Health Care, Inc., Waterbury; East Hartford Community Health Center, Inc., East Hartford.

As is the case for the MGMA data, OB/GYNs at Community Health Centers have the lowest rate of encounters and general practitioners and family practitioners have the highest. Encounters per FTE for non-physician primary care providers at Community Health Centers are lower than for physicians. It would appear that the nature of encounters is different between physician and non-physician primary care providers. Perhaps non-physician primary care providers spend more time with patients per visit in instructing patients about their care, facilitating disease management programs, or managing care details for complex sets of conditions. Regardless, non-physician primary care providers are responsible for a large number of encounters at community health centers each year. In terms of raw numbers of encounters, nurse practitioners had effectively the same number of patient encounters as family physicians, and Certified Nurse Midwives had nearly as many patient encounters as OB/GYNs in 2007.

Visits

Physician Assistants: The AAPA survey collects information about visits to PAs. In 2008, for Connecticut PAs who see outpatients exclusively, the mean number of visits per week was 92.[39] Nationally, mean visits per week to PAs in the following primary care specialties were as follows:

Table 8: Estimated Number of Patient Visits to Physician Assistants, 2008

Specialty	Mean visits to each PA per week
Family/General Medicine	88.8
General Internal Medicine	71.7
General Pediatrics	94.2
Ob/Gyn	69.4

Based on a 48-week work year.

Physicians: NAMCS and NHAMCS report total patient visits and patient visits per 100 persons in the population; which can be used as a measure of estimating productivity. Based on NAMCS and NHAMCS documentation, visits are very similar to MGMA and BPHC encounters as defined. Estimated ambulatory medical care utilization in 2006 based on NAMCS and NHAMCS data in Northeast States include a total of 96,366,000 office visits to a primary care physician and a total of 11,019,000 outpatient department visits to a primary care physician. Of the total primary care physician visits in Northeast States, 89.7 percent were made to physician offices and 10.3 percent were made to hospital outpatient departments.

According to the NAMCS and NHAMCS, there were an estimated 178.7 office visits per 100 persons to a primary care physician and an estimated 20.9 outpatient department visits per 100

[39] AAPA Information Update. Number of Patient Visits to and Medications Prescribed by PAs in 2008. Available at: http://www.aapa.org/research/InformationUpdates08/IU08VisitsandRx.pdf. Accessed December 5, 2008.

persons to primary care physicians, or a total of 199.6 primary care physician visits per 100 persons in Northeast States in 2006.[40]

Using this visit data and on a simple population basis, each licensed primary care physician in Connecticut would have to accommodate 1159 patient visits per year.[41] Using the estimate of 4337 FTE primary care physicians in Connecticut (based on the New York re-licensure survey data), each FTE primary care physician in Connecticut would have to accommodate 1612 patient visits per year, roughly half the number of patient encounters per physician reported by MGMA member offices and FQHCs.

If estimated patient visit data from the national surveys and encounter data from the FQHCs and MGMA are used as measures of productivity, and assuming the New York survey information is generally applicable to Connecticut, there would seem to be excess capacity in the primary care system in Connecticut. There may be excess supply of primary care physicians in Connecticut, or there may be a large number of currently licensed primary care physicians who are retired, have moved to a different state, or are not practicing medicine. There may also be a large number of physicians licensed in primary care specialties that do not provide primary care services or split their clinical time between primary and specialty care. For example, 30 percent of physicians licensed in a primary care specialty also list a medical or surgical subspecialty on their license. There may also be a number of primary care practices that are operating inefficiently, practice styles that value relatively longer patient visits, or administrative responsibilities or other barriers that limit capacity in general in primary care physician offices and outpatient departments in the Northeast. An actual survey of Connecticut physicians and other primary care providers would be required to answer these questions.

A recent survey of primary care physicians included questions regarding patient panels, or the number of patients under the care of the physician for the past 12-18 months. Surveyors used the AMA Masterfile as its sampling frame, but did not include OB/GYNs, homeopathic physicians, or naturopathic physicians in the sample. The reported mean panel size for the surveyed "nonretainer" primary care physicians is 2303 (median = 2000).[42] On a simple population basis, Connecticut would need 1521 FTE primary care physicians, each with a panel size of 2303 (or 1751 FTE primary care physicians, each with a panel size of 2000) to cover the state population. Using the DPH Licensure database and the New York physician survey data, there are an estimated 3850 FTE primary care physicians (not including OB/GYNs, homeopathic physicians, or naturopathic physicians) in Connecticut.

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[40] Schappert SM, Rechsteiner EA. 2008. Ambulatory medical care utilization estimates for 2006. National Health Statistics Reports; No. 8. Hyattsville, MD: National Center for Health Statistics.

[41] 199.6 patient visits per 100 persons equals 1.996 visits per person per year. Using the current Connecticut population of 3,502,309 and 1.996 visits per person yields a total of 6,990,609 visits. Total visits divided by the total number of licensed primary care physicians in Connecticut (6033) yields a total of 1159 visits per licensed primary care physician.

[42] Alexander GC, Kurlander J, Wynia MK. 2005. Physicians in retainer ("concierge") practice: a national survey of physician, patient, and practice characteristics. Journal of General Internal Medicine 20: 1079-1083.

Visit and physician characteristics

Published analyses of NAMCS and NHAMCS-OPD national data provide models for analysis at the primary care physician and regional level. Many of these data tables, modified to allow comparisons between the national results and primary care providers in Northeastern states, are provided as appendices to this report. All data are based on visits.

Physicians participating in the NAMCS complete an induction interview prior to participation in the NAMCS. The physician induction interview includes practice-related questions such as revenue sources and patient volume as well as questions related to physician demographics. One set of questions relates to whether or not physicians are accepting new patients by source of payment. During 2005-2006, 92 percent of physicians were accepting new patients, but this was a 3 percent decrease since 2001.[43] From 2001 to 2006, for all sources of payment, the percentage of physicians not accepting new patients increased, and the largest percentage increase was for physicians not accepting new "no charge/charity" patients, which increased 23 percent (from 36.5 to 44.8 percent) and was statistically significant.[44] (Primary care specialists not accepting new "no charge/charity" patients also increased 23 percent, from 39.8 percent in 2001 to 49.0 percent in 2006.)

The percentage of physicians not accepting new self-pay patients also increased over this time period; however, only 8.7 percent of physicians were not accepting new self-pay patients in 2005-2006.[45] The equivalent number for non-capitated private insurance is 12.4 percent; for Medicare, 16.3 percent; and for Medicaid, 28.3 percent.[46] This data suggests that the majority of physicians in the United States have capacity and is willing to accept newly insured patients if the health plan is designed to adequately reimburse physicians.

Physician induction interview data is not publicly available; therefore it is not possible to analyze the data on a regional basis as was done for NAMCS and NHAMCS survey data.

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[43] Hing E, Burt CW. 2008. Characteristics of office-based physicians and their medical practices: United States, 2005-2006. National Center for Health Statistics. Vital Health Stat 13(166).
[44] Ibid.
[45] Ibid.
[46] Ibid.

CONCLUSION

Based on the current population, primary care visit/encounter data, and the current number of licensed providers, it appears that Connecticut, like the rest of the Northeastern United States, has an abundant supply of health care resources and an adequate overall supply of licensed primary care providers. Thus, Connecticut may be in better position than other states to absorb initial increases in demand for primary care services that would likely accompany increased insurance coverage as well as increased rates of reimbursement for participation in public insurance programs. However, the geographic distribution of primary care providers currently poses some challenges in rural and inner-city areas, which are likely to be exacerbated by expanded insurance coverage.

The count of active primary care physician licenses most certainly overestimates the supply of practicing primary care physicians in Connecticut. Although it is difficult to estimate the degree to which this is the case, a New York study provides an acceptable estimator for primary care physicians. For other types of primary care providers, no similar measure was found, but the count of active licenses likely overestimates the supply of these primary care providers as well. Conversely, there may be licensed primary care providers who choose not to practice primary care under the conditions of the current health care market who would be encouraged to re-enter primary care if structural changes in the market were enacted that made primary care practice more rewarding and profitable.

There is a growing concern about an impending shortage of physicians, including primary care physicians. Several factors contribute to these concerns, including population growth that is estimated to exceed growth in physician supply, an aging population that often requires frequent access to health care, the decrease in medical students pursuing primary care specialties, and the difficulties in quickly shifting priorities in medical education due to the length of time required for physician training. Thus, while Connecticut may be able to absorb near term increases in primary care services demand, this may not be the case in ten to fifteen years.

One of the goals of universal coverage should be increased efficiency of the health system and improved delivery of preventive services which are often most effectively provided in primary care settings. As noted above, Massachusetts has seen an increase in the number of insured residents receiving care in hospital emergency departments. This could be indicative of either difficulty finding a primary care provider in an office setting or that the newly insured are continuing to go to places where they received care while uninsured as a matter of habit or convenience. In either case, the newly insured population in Massachusetts may not be accessing preventive care and missing opportunities for early detection of disease and other benefits of prevention. Health reform in Connecticut should anticipate similar effects and attempt to avoid them through program planning and patient education.

Health status and outcomes in Connecticut are among the best in the nation,[47] which reflects the strengths of our current primary care system and the quality of the health care system at large. However, Massachusetts leapfrogged Connecticut in the 2008 state rankings, the likely result of its top rankings in primary care physician-to-population ratio and rate of health insurance coverage.[48] Health care costs are also higher in Connecticut than in most other states, and economic recovery and growth will require addressing health costs as well as health access for all residents. Consideration of primary care capacity and distribution should be an essential part of the planning process for expansion of health insurance coverage and a healthy primary care system is critical for the well-being of state residents and an efficient health care system.

Note about the Appendices

Published analyses of NAMCS and NHAMCS-OPD national data provide models for analysis at the primary care physician and regional level. These reports include comprehensive data tables, and many of these tables have been modified to allow comparisons between the national results and primary care providers in Northeastern states (Appendices 1-15). The tables provide a general summary of services provided and patient demographics in primary care physician offices and hospital outpatient departments. Appendices 16-20 provide information on primary care providers at the county level. Appendix 21 shows the distribution of HRSA designated Health Professional Shortage Areas in Primary Health in the United States.

[47] United Health Foundation. 2008. America's Health Rankings, 2008 Edition: A Call to Action for Individuals & Their Communities. Minnetonka, MN: United Health Foundation.
[48] Ibid.

Appendix 1: Characteristics of office-based physicians and their practices, 2006

Office type	Percentage of visits to office-based physicians-US	Percentage of visits to primary care physicians-US	Percentage of visits to primary care physicians-Northeast States[1]
	Percentage		
Private solo or group practice	78.5	66.5	65.6
Free standing clinic	5.6	4.6	2.2
Community health center	13.0	26.9	32.3
Does physician see patients in the office during the evening or weekends?			
Yes	31.3	44.0	67.7
No	67.6	55.1	32.3
During the last normal week of practice, did the physician make any home visits?			
Yes	8.1	13.0	23.4
No	89.0	83.4	68.2
During the last week of practice, did physician do any telephone consults with patients?			
Yes	49.2	53.3	66.6
No	42.5	37.6	23.5
During the last week of practice, did physician do any internet/e-mail consults with patients?			
Yes	6.1	6.4	8.7
No	88.3	87.6	80.5
Does this practice use electronic medical records?			
Yes	28.4	25.7	18.4
No	71.2	74.0	81.6

[1]Includes Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont.

NOTE: Numbers may not add to 100.0 because of rounding.

Appendix 2: Number and percent distribution of office visits to primary care physicians by the 20 leading primary diagnosis groups, 2006

Primary diagnosis group	ICD-9-CM code range[1]	Northeast States[2], Primary Care Physician visits only		NAMCS	
		Number of visits in thousands	Percent distribution	Number of visits in thousands	Percent distribution
All visits		77,078	100.0	901,954	100.0
Routine infant or child health check	V20	9,249	12.0	39,298	4.4
Essential hypertension	401	5,473	7.1	35,784	4.0
Acute upper respiratory infections, excluding pharyngitis	460-461, 463-466	4,625	6.0	30,916	3.4
Diabetes mellitus	250	3,006	3.9	23,779	2.6
General medical exam	V70	2,312	3.0	13,594	1.5
Specific procedures and aftercare	V50-V59.9	2,312	3.0	22,875	2.5
Spinal disorders	720-724	1,850	2.4	23,760	2.6
Arthopathies and related disorders	710-719	1,696	2.2	27,736	3.1
Asthma	493	1,542	2.0	10,590	1.2
Otitis media and Eustachian tube disorders	381-382	1,464	1.9	13,784	1.5
Ischemic heart disease	410-414.9	1,233	1.6	10,859	1.2
Disorders of lipoid metabolism	272	1,156	1.5	-	-
General symptoms	780	1,156	1.5	-	-
Allergic rhinitis	477	1,156	1.5	12,150	1.3
Malignant neoplasms	140-208, 230-234	1,079	1.4	20,923	2.3
Anxiety, dissociative and somatoform disorders	300	1,079	1.4	-	-
Chronic sinusitis	473	1,079	1.4	12,971	1.4
Gynecological exam	V72.3	1,079	1.4	15,630	1.7
Viral and chlamydial infection in conditions classified elsewhere and of unspecified site	079	1,002	1.3	-	-
Rheumatism, excluding back	725-729	1,002	1.3	16,221	1.8
All others	-	32,450	42.1	-	-

[1]Based on the International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM); however, certain codes have been combined in this table to better describe the utilization of ambulatory care services.
[2]Includes Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont.

NOTE: Numbers may not add to totals because of rounding.

Appendix 3: Number and percent distribution of office visits to primary care physician related to injury, poisoning, or adverse effects of medications, by intent, 2006

Intent	Northeast States,[1] Primary care physician visits only		NAMCS	
	Number of visits in thousands	Percent distribution	Number of visits in thousands	Percent distribution
All injury-related visits	6,223	100.0	81,243	100.0
Unintentional injuries	3,808	61.2	49,199	60.6
Adverse effect of medical or surgical care or adverse effect of medicinal drug	280	4.5	5,897	7.3
Intentional injuries[2]	0	0.0	*	0.8
Injuries of undetermined effect	1,145	18.4	18,924	23.3
Blank[3]	989	15.9	6,543	8.1

*Figure does not meet standards of reliability or precision.

[1]Includes Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont.
[2]Includes assault, self-inflicted, and other causes of violence.
[3]Includes illegible entries and blanks.

NOTE: Numbers may not add to totals because of rounding.

Appendix 4: Number and percent distribution of office visits to primary care physicians by primary diagnosis classified by major disease category, 2006

Major Disease category	Diagnosis code range[1]	Northeast States,[2] Primary Care Physician visits only		NAMCS	
		Number of visits in thousands	Percent distribution	Number of visits in thousands	Percent distribution
All visits		77,078	100	901,954	100.0
Infectious and parasitic diseases	001-139	3,083	4.0	22,214	2.5
Neoplasms	140-239	1,542	2.0	29,021	3.2
Endocrine, nutritional, metabolic diseases, and immunity disorders	240-279	5,935	7.7	45,914	5.1
Mental disorders	290-319	3,854	5.0	41,573	4.6
Diseases of the nervous system and sense organs	320-389	3,468	4.5	85,182	9.4
Diseases of the circulatory system	390-459	8,247	10.7	72,151	8.0
Diseases of the respiratory system	460-519	11,330	14.7	103,969	11.5
Diseases of the digestive system	520-579	2,312	3.0	35,887	4.0
Diseases of the genitourinary system	580-629	2,081	2.7	38,404	4.3
Diseases of the skin and subcutaneous tissue	680-709	2,775	3.6	37,434	4.2
Diseases of the musculoskeletal and connective tissue	710-739	4,779	6.2	72,528	8.0
Symptoms, signs, and ill-defined conditions	780-799	4,779	6.2	54,999	6.1
Injury and poisoning	800-999	2,621	3.4	48,343	5.4
Supplementary classification[3]	V01-V85	18,653	24.2	181,679	20.1
All other diagnoses[4]		1,002	1.3	23,808	2.6
Unknown[5]		694	0.9	8,850	1.0

[1]Based on the *International Classification of Diseases, Ninth Revision, Clinical Modification* (ICD-9-CM).
[2]Includes Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont.
[3]Includes general medical examination, routine prenatal examination, health supervision of an infant or child, and other diagnoses not classifiable to injury or illness.
[4]Includes diseases of the blood and blood-forming organs (280-289); complications of pregnancy, childbirth, and the puerperium (630-676); congenital anomalies (740-759); certain conditions originating in the prenatal period (760-779); and entries not codable to ICD-9-CM (e.g., illegible entries, left against medical advice, transferred, entries of "none," or "no diagnoses") (V99).
[5]Includes blank diagnoses.

NOTE: Numbers may not add to totals because of rounding.

Appendix 5: Number and percent distribution of office visits to primary care physician by major reason for visit, according to selected patient and visit characteristics, Northeast States,[1] 2006

Patient and visit characteristics	Total number of visits in thousands	New problem	Chronic problem, routine	Chronic problem, flare-up	Pre- or post-surgery	Preventive care[2]	Unknown or blank
		Percentage					
All visits	77,078	39.2	26.5	5.2	1.0	26.1	2.1
Age							
Under 15 years	22,584	46.6	3.7	1.8	0.2	44.8	2.9
15-24 years	6,783	52.4	10.7	5.2	0.0	28.6	3.2
25-44 years	14,414	43.5	25.9	7.3	1.5	20.3	1.5
45-64 years	19,732	34.2	39.1	7.1	1.2	17.2	1.1
65-74 years	6,397	24.9	54.0	3.0	2.5	14.3	1.3
75 years and over	7,168	21.1	55.1	7.9	1.1	11.3	3.4
Sex							
Female	42,470	40.3	25.8	5.2	1.2	25.3	2.2
Male	34,608	37.8	27.3	5.1	0.7	27.0	2.0
Race[3]							
White	59,427	39.9	28.4	5.9	1.2	22.1	2.4
Black	11,485	37.8	23.5	3.3	0.2	34.3	0.9
Other	6,089	34.8	13.2	1.3	0.0	49.3	1.3
Ethnicity[3]							
Hispanic or Latino	12,178	44.4	19.8	2.9	1.3	29.8	1.8
Not Hispanic or Latino	64,899	38.2	27.7	5.6	0.9	25.4	2.2
Expected source of payment[4]							
Private insurance	35,148	41.9	22.0	5.8	0.7	26.9	2.6
Medicare	10,328	26.4	53.8	6.3	1.3	11.0	1.3
Medicaid or SCHIP[5]	21,659	41.7	18.9	4.9	0.9	31.8	1.9
No insurance[6]	4,008	49.3	17.8	1.4	0.7	30.8	0.0
Other[7]	5,935	29.6	38.6	2.7	2.7	23.8	2.7

[1]Includes Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont.
[2]Preventive care includes routine prenatal, general medical, well-baby, screening, and insurance examinations.
[3]Other race includes Asian, Native Hawaiian or Other Pacific Islander, American Indian or Alaska Native, and multiple races. All race categories include persons of Hispanic and non-Hispanic origin. Persons of Hispanic origin may be of any race.
[4]Combined total of individual sources may exceed "All visits" because more than one may be reported per visit.
[5]SCHIP is State Children's Health Insurance Program.
[6]"No insurance" is defined as having only self-pay, no charge, or charity as payment sources.
[7]"Other" includes workers compensation, unknown or blank, and sources not classified elsewhere.

NOTE: Numbers may not add to totals because of rounding.

Appendix 6: Number and percent distribution of office visits to primary care physician in Northeast States, 2006, by patient characteristics; annual rate of office visits to all categories of physicians by patient characteristics, U.S., 2006.

Patient characteristics	Northeast States,[1] Primary care physician visits only		United States, primary care offices
	Number of visits in thousands	Percent distribution	Number of physician office visits per 100 persons per year[2]
All visits	77,078	100	178.7
Age			
Under 15 years	22,584	29.3	227.3
15-24 years	6,783	8.8	129.8
25-44 years	14,414	18.7	138.6
45-64 years	19,732	25.6	168.5
65-74 years	6,397	8.3	253.5
75 years and over	7,168	9.3	280.2
Sex and age			
Female	42,470	55.1	216.4
Under 15 years	10,483	13.6	
15-24 years	3,854	5.0	
25-44 years	9,249	12.0	
45-64 years	11,022	14.3	
65-74 years	3,623	4.7	
75 years and over	4,316	5.6	
Male	34,608	44.9	139.3
Under 15 years	12,101	15.7	
15-24 years	2,929	3.8	
25-44 years	5,164	6.7	
45-64 years	8,710	11.3	
65-74 years	2,775	3.6	
75 years and over	2,852	3.7	
Race and age			
White	59,427	77.1	184.7
Under 15 years	14,336	18.6	
15-24 years	5,704	7.4	
25-44 years	11,639	15.1	
45-64 years	15,878	20.6	
65-74 years	5,473	7.1	
75 years and over	6,397	8.3	
Black or African American	11,485	14.9	154.7
Under 15 years	4,393	5.7	
15-24 years	694	0.9	
25-44 years	2,081	2.7	
45-64 years	3,083	4.0	
65-74 years	694	0.9	
75 years and over	540	0.7	
All other races[3]			
Asian	5,473	7.1	187.8

Patient characteristics	Northeast States,[1] Primary care physician visits only		United States, primary care offices
	Number of visits in thousands	Percent distribution	Number of physician office visits per 100 persons per year[2]
Native Hawaiian or Other Pacific Islander	231	0.3	*359.8
American Indian or Alaska Native	77	0.1	151.7
Multiple races	308	0.4	33.7
Ethnicity			
Hispanic or Latino	12,178	15.8	178.3
Not Hispanic or Latino	64,899	84.2	178.7

*Figure does not meet standards of reliability or precision.
[1]Includes Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont.
[2]Visit rates for age, sex race, and ethnicity are based on the July 1, 2006 set of estimates of the civilian non-institutional population of the United States as developed by the Population Division, U.S. Census Bureau.
[3]The race categories, White, Black or African American, Asian, Native Hawaiian or Other Pacific Islander, American Indian or Alaska Native, and multiple races, include persons of Hispanic and not Hispanic origin. Persons of Hispanic origin may be of any race. The percentage of visit records with multiple races indicated is small and lower than what is typically found for self-reported race in household surveys.

NOTE: Numbers may not add to totals because of rounding.

Appendix 7: Number and percent distribution of preventive care office visits to primary care physician, according to selected patient and visit characteristics, 2006

Patient and visit characteristics	Northeast States,[1] preventive care visits to primary care physician		NAMCS, preventive care visits		
	Number of visits in thousands	Percent distribution	Number of visits in thousands	Percent distribution	Number of visits per 100 persons per year[2]
Preventive care visits[3]	20,117	100.0	173,342	100.0	58.9
Age					
Under 15 years	10,149	50.3	47,613	27.5	78.4
15-24 years	1,957	9.7	22,225	12.8	53.6
25-44 years	2,926	14.5	42,163	24.3	51.4
45-64 years	3,410	16.9	36,082	20.8	48.5
65 years and over	928	4.6	25,258	14.6	70.9
Sex					
Female	10,775	53.4	114,696	66.2	76.4
Male	9,402	46.6	58,646	33.8	40.7
Race[4]					
White	13,196	65.4	143,579	82.8	60.8
Black	3,955	19.6	18,949	10.9	51.2
Other	3,027	15.0	10,814	6.2	51.2
Ethnicity[4]					
Hispanic or Latino	3,632	18.0	29,733	17.2	67.9
Not Hispanic or Latino	16,545	82.0	143,609	82.8	57.4
Expected source of payment[5]					
Private insurance	9,483	47.0	109,020	62.9	57.5
Medicare	1,130	5.6	23,685	13.7	61.1
Medicaid or SCHIP[6]	6,901	34.2	30,701	17.7	87.5
Self-pay or no charge or charity[7]	1,231	6.1	8,846	5.1	20.2
Other[8]	1,412	7.0	12,621	7.3	N/A

[1]Includes Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont.
[2]Visit rates for age, sex, race, and ethnicity are based on the July 1, 2006, set of estimates of the civilian non-institutional population of the United States as developed by the Population Division, U.S. Census Bureau. Visit rates by source(s) of payment are based on the 2006 National Health Interview Survey estimates of health insurance.
[3]Preventive care includes routine prenatal, well-baby, screening, insurance, and general medical examinations.
[4]Other race includes Asian, Native Hawaiian or Other Pacific Islander, American Indian or Alaska Native, and multiple races. All race categories include persons of Hispanic and non-Hispanic origin. Persons of Hispanic origin may be of any race.
[5]Combined total of individual sources exceeds "All visits" because more than one may be reported per visit.
[6]SCHIP is State Children's Health Insurance Program.
[7]The visit rate was calculated using "uninsured" as the denominator from the 2006 estimates of health insurance coverage from the National Health Interview Survey.
[8]Other includes workers compensation, unknown or blank, and sources not classified elsewhere.

NOTE: Numbers may not add to totals because of rounding.

Appendix 8: Number and percent distribution of office visits to primary care physician by the 20 principal reasons for visit most frequently mentioned by patients, 2006

Principle Reason for Visit[1]	RVC code[1]	Northeast States,[2] primary care physician visits		NAMCS	
		Number of visits in thousands	Percent distribution	Number of visits in thousands	Percent distribution
All visits		77,078	100.0	901,954	100.0
General Medical Examination	3100.0	13,180	17.1	66,389	7.4
Progress visit, NOS	4800.0	3,700	4.8	51,296	5.7
Cough	1440.0	3,237	4.2	26,738	3.0
Well baby examination	3105.0	2,852	3.7	13,555	1.5
Medication	4115.0	1,773	2.3	19,034	2.1
Fever	1010.0	1,696	2.2	12,167	1.3
Sore throat	1455.1	1,696	2.2	13,309	1.5
Skin rash	1860.0	1,464	1.9	10,068	1.1
Back pain, ache, soreness, discomfort	1905.1	1,387	1.8	13,346	1.5
Gynecological exam	3225.0	1,233	1.6	19,379	2.1
Other and unspecified test results	6700.0	1,233	1.6	13,077	1.4
Breast examination	3320.0	1,156	1.5	-	-
Urinary tract disease except cystitis	2705.0	1,156	1.5	-	-
Nasal congestion	1400.0	1,002	1.3	9,448	1.0
Hypertension	2510.0	925	1.2	11,604	1.3
Headache, pain in head	1210.0	925	1.2	10,243	1.1
Earache, pain	1355.1	925	1.2	11,366	1.3
Head cold	1445.0	925	1.2	-	-
Blank entry	9000.0	925	1.2	-	-
Knee pain, ache, soreness, discomfort	1925.1	848	1.1	14,957	1.7
All others		34,993	45.4	-	-

[1]Based on *A Reason for Visit Classification for Ambulatory Care* (RVC).
[2]Includes Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont.

NOTE: Numbers may not add to totals because of rounding.

Appendix 9: Number and percent distribution of outpatient department visits by the 20 leading primary diagnosis groups, 2006

Primary diagnosis group	ICD-9-CM code range[1]	Northeast States,[2] Primary Care Physician visits only		NHAMCS	
		Number of visits in thousands	Percent distribution	Number of visits in thousands	Percent distribution
All visits		7,129	100.0	102,208	100.0
Routine infant or child health check	V20.2	756	10.6	3,654	3.6
Normal pregnancy	V22	613	8.6	3,045	3.0
Essential hypertension	401	421	5.9	3,892	3.8
Diabetes mellitus	250	328	4.6	4,342	4.2
Gynecological exam	V72.3	328	4.6	1,245	1.2
Acute upper respiratory infections, excluding pharyngytis	460-461, 463-466	250	3.5		
General symptoms	780	135	1.9	-	-
General medical exam	V70	135	1.9	1,265	1.2
Specific procedures and aftercare	V50-V59.9	128	1.8	1,768	1.7
Complications of pregnancy, childbirth, and the puerperium	630-677	121	1.7	1,405	1.4
Arthopathies and related disorders	710-719	121	1.7	2,562	2.5
Potential health hazards related to communicable diseases	V01-V09	121	1.7	1,786	1.7
Human immunodeficiency virus (HIV) infection	042	114	1.6	-	-
Asthma	493	107	1.5	-	-
Follow up examination	V67	100	1.4	-	-
Other symptoms involving abdomen and pelvis	789	93	1.3	-	-
Potential health hazards related to personal and family history	V10-V19	93	1.3	1,252	1.2
Spinal disorders	720-724	86	1.2	2,255	2.2
Otitis media and Eustachian tube disorders	381-382	86	1.2	1,562	1.5
Contact dermatitis and other eczema	692	78	1.1	-	-
Observation and evaluation for suspected conditions not found	V71	78	1.1	-	-
All others		2,844	39.9		

[1]Based on the International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM). However, certain codes have been combined in this table to better describe the utilization of ambulatory care services.
[2]Includes Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont.

NOTE: Numbers may not add to totals because of rounding.

Appendix 10: Number and percent distribution of outpatient visits related to injury, poisoning, or adverse effects of medications, by intent, 2006

Intent	Northeast States,[1] Primary care physician visits only		NHAMCS	
	Number of visits in thousands	Percent distribution	Number of visits in thousands	Percent distribution
All injury-related visits	574	100.0	9,882	100.0
Unintentional injuries	140	24.4	6,416	64.9
Adverse effect of medical or surgical care or adverse effect of medicinal drug	20	3.6	588	5.9
Intentional injuries[2]	5	0.8	262	2.6
Injuries of undetermined effect	405	70.6	1,696	17.2
Blank[3]	3	0.5	921	9.3

[1] Includes Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont.
[2] Includes assault, self-inflicted, and other causes of violence.
[3] Includes illegible entries and blanks.

NOTE: Numbers may not add to totals because of rounding.

Appendix 11: Number and percent distribution of outpatient department visits by primary diagnosis classified by major disease category, 2006

Major Disease category	Diagnosis code range[1]	Northeast States,[2] Primary Care Physician visits only		NHAMCS	
		Number of visits in thousands	Percent distribution	Number of visits in thousands	Percent distribution
All visits		7,129	100.0	102,208	100.0
Infectious and parasitic diseases	001-139	307	4.3	3,892	3.8
Neoplasms	140-239	71	1.0	4,311	4.2
Endocrine, nutritional, metabolic diseases, and immunity disorders	240-279	549	7.7	7,086	6.9
Mental disorders	290-319	178	2.5	7,337	7.2
Diseases of the nervous system and sense organs	320-389	356	5.0	6,189	6.1
Diseases of the circulatory system	390-459	585	8.2	6,633	6.5
Diseases of the respiratory system	460-519	528	7.4	10,784	10.6
Diseases of the digestive system	520-579	185	2.6	3,151	3.1
Diseases of the genitourinary system	580-629	257	3.6	4,356	4.3
Diseases of the skin and subcutaneous tissue	680-709	228	3.2	3,548	3.5
Diseases of the musculoskeletal and connective tissue	710-739	292	4.1	7,161	7.0
Symptoms, signs, and ill-defined conditions	780-799	492	6.9	6,700	6.6
Injury and poisoning	800-999	64	0.9	5,882	5.8
Supplementary classification[3]	V01-V85	2,745	38.5	20,744	20.3
All other diagnoses[4]		214	3.0	3,909	3.8
Unknown[5]		86	1.2	524	0.5

[1]Based on the *International Classification of Diseases, Ninth Revision, Clinical Modification* (ICD-9-CM).
[2]Includes Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont.
[3] Includes general medical examination, routine prenatal examination, health supervision of an infant or child, and other diagnoses not classifiable to injury or illness.
[4] Includes diseases of the blood and blood-forming organs (280-289); complications of pregnancy, childbirth, and the puerperium (630-676); congenital anomalies (740-759); certain conditions originating in the prenatal period (760-779); and entries not codable to ICD-9-CM (e.g., illegible entries, left against medical advice, transferred, entries of "none," or "no diagnoses") (V99).
[5] Includes blank diagnoses.

NOTE: Numbers may not add to totals because of rounding.

Appendix 12: Number and percent distribution of outpatient department visits to primary care physician by major reason for visit, according to selected patient and visit characteristics, Northeast States,[1] 2006

Patient and visit characteristics	Total number of visits in thousands	New problem	Chronic problem, routine	Chronic problem, flare-up	Pre- or post-surgery	Preventive care[2]	Unknown or blank
		Percentage					
All visits	7,129	29.1	23.9	4.1	2.8	39.5	0.5
Age							
Under 15 years	1,818	37.2	7.2	2.1	.07	52.3	0.4
15-24 years	991	25.1	7.8	2.1	0.3	64.5	0.3
25-44 years	1,711	26.9	19.4	5.2	3.6	44.5	0.3
45-64 years	1,697	28.2	41.0	6.5	5.4	18.6	0.3
65-74 years	549	23.3	51.2	3.3	3.7	17.2	1.4
75 years and over	356	22.9	52.1	4.3	3.6	15.0	2.1
Sex							
Female	4,734	27.0	22.3	3.9	3.3	43.0	0.5
Male	2,395	33.3	27.2	4.5	1.9	32.7	0.4
Race[3]							
White	4,655	30.4	24.4	4.4	2.5	37.8	0.4
Black	2,010	27.3	23.1	3.2	3.3	42.6	0.5
Other	470	24.2	22.5	4.9	3.8	43.4	1.1
Ethnicity[3]							
Hispanic or Latino	2,410	23.3	21.4	3.4	2.3	49.3	0.3
Not Hispanic or Latino	4,719	32.1	25.2	4.5	3.1	34.5	0.5
Expected source of payment[4]							
Private insurance	1,269	36.8	23.9	4.9	2.0	31.6	0.8
Medicare	634	26.7	51.8	3.2	2.8	14.6	0.8
Medicaid or SCHIP[5]	3,358	28.0	22.3	3.8	2.1	43.4	0.4
No insurance[6]	1,404	28.7	16.1	4.4	5.3	45.2	0.4
Other[7]	471	20.8	27.9	4.4	2.7	49.7	0.6

[1]Includes Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont.
[2]Preventive care includes routine prenatal, general medical, well-baby, screening, and insurance examinations.
[3]Other race includes Asian, Native Hawaiian or Other Pacific Islander, American Indian or Alaska Native, and multiple races. All race categories include persons of Hispanic and non-Hispanic origin. Persons of Hispanic origin may be of any race.
[4]Combined total of individual sources exceeds "All visits" because more than one may be reported per visit.
[5]SCHIP is State Children's Health Insurance Program.
[6]"No insurance" is defined as having only self-pay, no charge, or charity as payment sources.
[7]"Other" includes workers compensation, unknown or blank, and sources not classified elsewhere.

NOTE: Numbers may not add to totals because of rounding.

Appendix 13: Number and percent distribution of outpatient department visits to primary care physicians in Northeast States, 2006, by patient characteristics; annual rate of outpatient department visits by patient characteristics, U.S., 2006.

Patient characteristics	Northeast States, Primary care physician visits only		United States
	Number of visits in thousands	Percent distribution	Number of outpatient department visits per 100 persons per year[2]
All visits	7,129	100.0	34.7
Age			
Under 15 years	1,818	25.5	32.7
15-24 years	991	13.9	29.0
25-44 years	1,711	24.0	30.6
45-64 years	1,697	23.8	38.6
65-74 years	549	7.7	47.8
75 years and over	356	5.0	44.8
Sex and age			
Female	4,734	66.4	41.2
Under 15 years	870	12.2	32.5
15-24 years	834	11.7	41.8
25-44 years	1,333	18.7	40.3
45-64 years	1,062	14.9	44.3
65-74 years	385	5.4	54.2
75 years and over	257	3.6	45.3
Male	2,395	33.6	28.0
Under 15 years	948	13.3	33.0
15-24 years	157	2.2	16.5
25-44 years	385	5.4	20.6
45-64 years	634	8.9	32.6
65-74 years	171	2.4	40.3
75 years and over	100	1.4	44.1
Race and age			
White	4,655	65.3	31.3
Under 15 years	1,005	14.1	30.5
15-24 years	663	9.3	25.7
25-44 years	1,183	16.6	27.1
45-64 years	1,162	16.3	33.4
65-74 years	364	5.1	44.2
75 years and over	271	3.8	41.3
Black or African American	2,010	28.2	63.5
Under 15 years	656	9.2	49.5
15-24 years	285	4.0	52.6
25-44 years	421	5.9	60.0

Patient characteristics	Northeast States,[1] Primary care physician visits only		United States
	Number of visits in thousands	Percent distribution	Number of outpatient department visits per 100 persons per year[2]
45-64 years	449	6.3	85.0
65-74 years	128	1.8	84.0
75 years and over	71	1.0	80.2
All other races[3]			
Asian	228	3.2	20.4
Native Hawaiian or Other Pacific Islander	50	0.7	*90.1
American Indian or Alaska Native	7	0.1	*14.0
Multiple races	185	2.6	29.7
Ethnicity			
Hispanic or Latino	2,410	33.8	40.2
Not Hispanic or Latino	4,719	66.2	33.8

[1] Includes Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont.
[2]Visit rates for age, sex race, and ethnicity are based on the July 1, 2006 set of estimates of the civilian non-institutional population of the United States as developed by the Population Division, U.S. Census Bureau.
[3]The race categories, White, Black or African American, Asian, Native Hawaiian or Other Pacific Islander, American Indian or Alaska Native, and multiple races, include persons of Hispanic and not Hispanic origin. Persons of Hispanic origin may be of any race. The percentage of visit records with multiple races indicated is small and lower than what is typically found for self-reported race in household surveys.

NOTE: Numbers may not add to totals because of rounding.

Appendix 14: Number and percent distribution of preventive care outpatient department visits to primary care physician, according to selected patient and visit characteristics, 2006

Patient and visit characteristics	Northeast States,[1] preventive care visits to primary care physician		NHAMCS-OPD		
	Number of visits in thousands	Percent distribution	Number of visits in thousands	Percent distribution	Number of visits per 100 persons per year[2]
Preventive care visits[3]	2,816	100.0	19,786	100.0	6.7
Age					
Under 15 years	951	33.8	4,934	24.9	8.1
15-24 years	639	22.7	4,182	21.1	10.1
25-44 years	761	27.0	5,662	28.6	6.9
45-64 years	316	11.2	3,310	16.7	4.5
65 years and over	127	5.3	1,698	30.8	4.8
Sex					
Female	2,036	72.3	14,468	73.1	9.6
Male	783	27.8	5,318	26.9	3.7
Race[4]					
White	1,760	62.5	12,762	64.5	5.4
Black	856	30.4	5,853	29.6	15.8
Other	204	7.2	1,171	5.9	5.5
Ethnicity[4]					
Hispanic or Latino	1,188	42.2	5,204	26.3	11.9
Not Hispanic or Latino	1,628	57.8	14,582	73.7	5.8
Expected source of payment[5,7]					
Private insurance	401	14.2	6,666	33.7	3.5
Medicare	93	3.3	1,688	8.5	4.4
Medicaid or SCHIP[6]	1,457	51.8	8,178	41.3	23.3
No insurance[7]	635	22.5	2,637	13.3	6.0
Other[8]	234	8.3	1,600	8.1	N/A

[1]Includes Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont.
[2]Visit rates for age, sex, race, and ethnicity are based on the July 1, 2006, set of estimates of the civilian non-institutional population of the United States as developed by the Population Division, U.S. Census Bureau. Visit rates by source(s) of payment are based on the 2006 National Health Interview Survey estimates of health insurance.
[3]Preventive care includes routine prenatal, general medical, well-baby, screening, and insurance examinations.
[4]Other race includes Asian, Native Hawaiian or Other Pacific Islander, American Indian or Alaska Native, and multiple races. All race categories include persons of Hispanic and non-Hispanic origin. Persons of Hispanic origin may be of any race.
[5]Combined total of individual sources exceeds "All visits" because more than one may be reported per visit.
[6]SCHIP is State Children's Health Insurance Program.
[7]No insurance is defined as having only self-pay, no charge, or charity as payment sources. The visit rate was calculated using "uninsured" as the denominator from the 2006 estimates of health insurance coverage from the National Health Interview Survey.
[8]Other includes workers compensation, unknown or blank, and sources not classified elsewhere.

NOTE: Numbers may not add to totals because of rounding.

Appendix 15: Number and percent distribution of outpatient department visits to by the 20 principal reasons for visit most frequently mentioned by patients, 2006

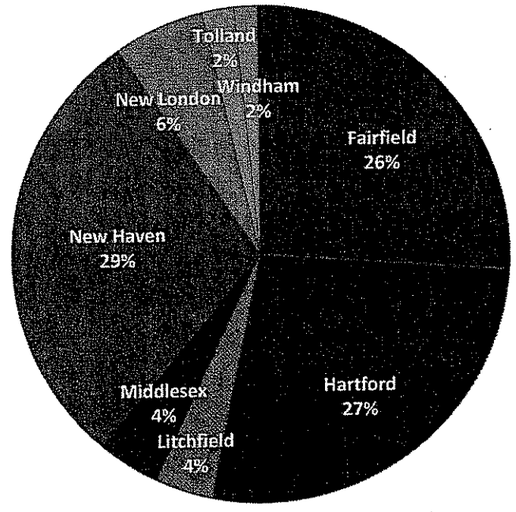
Principle Reason for Visit[1]	RVC code[1]	Northeast States,[2] primary care physician visits		NHAMCS-OPD	
		Number of visits in thousands	Percent distribution	Number of visits in thousands	Percent distribution
All visits		7,129	100.0	102,208	100.0
General Medical Examination	3100.0	841	11.8	5,105	5.0
Prenatal exam, routine	3205.0	613	8.6	3,519	3.4
Progress visit, NOS	4800.0	563	7.9	7,542	7.4
Well baby examination	3105.0	406	5.7	1,551	1.5
Gynecological exam	3225.0	221	3.1	1,306	1.3
Medication	4115.0	200	2.8	2,306	2.3
Cough	1440.0	157	2.2	3,137	3.1
Other and unspecified test results	6700.0	157	2.2	-	-
Skin rash	1860.0	100	1.4	1,120	1.1
Hypertension	2510.0	100	1.4	1,387	1.4
Diabetes mellitus	2205.0	93	1.3	2,416	2.4
Headache, pain in head	1210.0	93	1.3	1,124	1.1
Stomach and abdominal pain, cramps and spasms	1545.1	86	1.2	1,508	1.5
Breast examination	3320.0	86	1.2	-	-
Earache, pain	1355.1	86	1.2	1,373	1.3
Nasal congestion	1400.0	86	1.2	-	-
Fever	1010.0	71	1.0	1,278	1.3
Sore throat	1455.1	71	1.0	2,291	2.2
Postoperative visit	4205.0	71	1.0	1,528	1.5
Prophylactic inoculations	3400.0	64	0.9	1,055	1.0
All others	-	2,987	41.9	-	-

[1]Based on *A Reason for Visit Classification for Ambulatory Care* (RVC).
[2]Includes Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont.

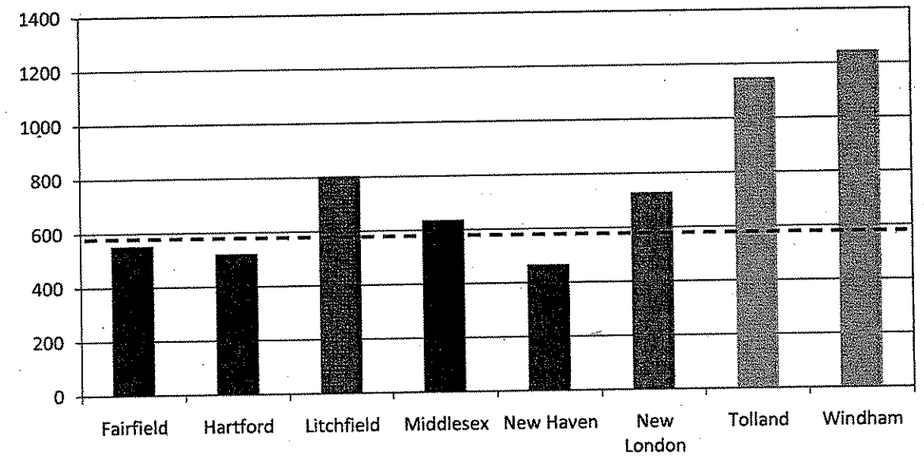
NOTE: Numbers may not add to totals because of rounding.

Appendix 16

Distribution of primary care physicians by county



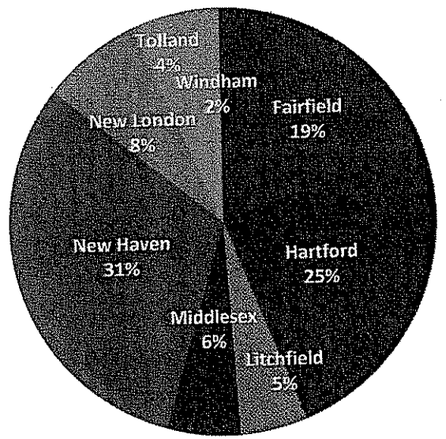
Population-to-primary care physician ratio by county



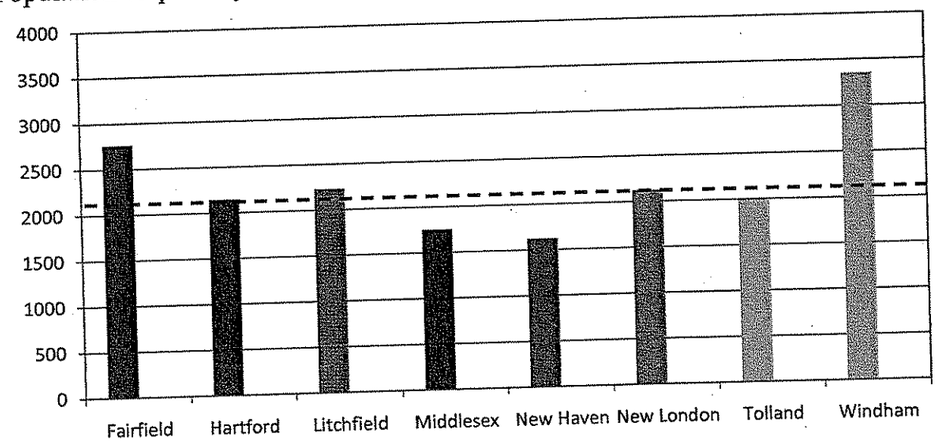
Based on the total number of physicians with a current license to practice in Connecticut as of October 24, 2008 in the following specialties: Family Practice, Internal Medicine, Obstetrics and Gynecology, Pediatrics, Homeopathic medicine, and Naturopathy. The statewide population-to-primary care physician ratio is 565 (indicated by dashed line in figure). Based on the DPH estimated population of Connecticut as of July 1, 2007 (3,502,309).

Appendix 17

Distribution of primary care APRNs by county



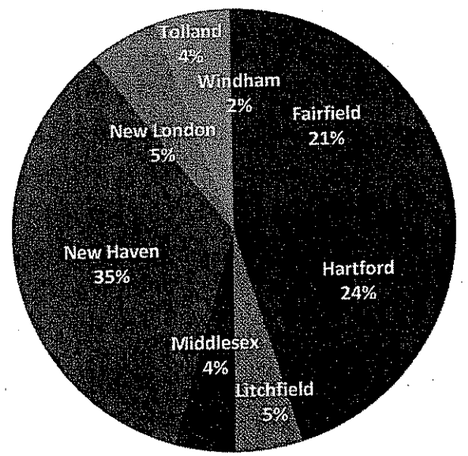
Population-to-primary care APRN ratio



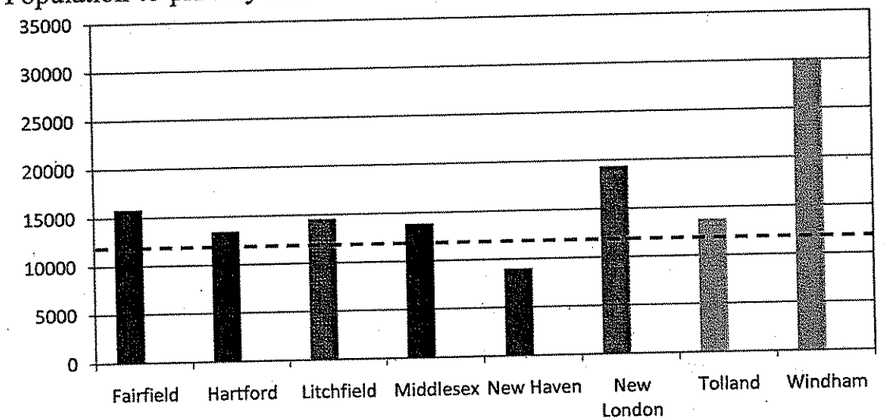
Based on the total number of APRNs with a current license to practice in Connecticut as of October 24, 2008 and the American Academy of Nurse Practitioners 2005 Practice Site Survey, which states that 66 percent of NPs practice in at least one primary care site. The statewide population-to-primary care APRN ratio is 2101 (indicated by dashed line in the figure). Based on the DPH estimated population of Connecticut as of July 1, 2007 (3,502,309).

Appendix 18

Distribution of primary care PAs by county



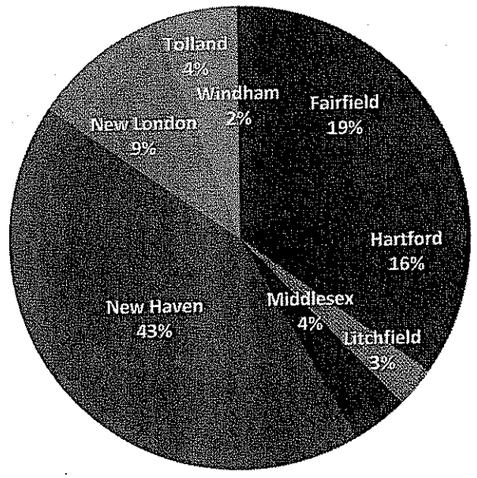
Population-to-primary care PA ratio



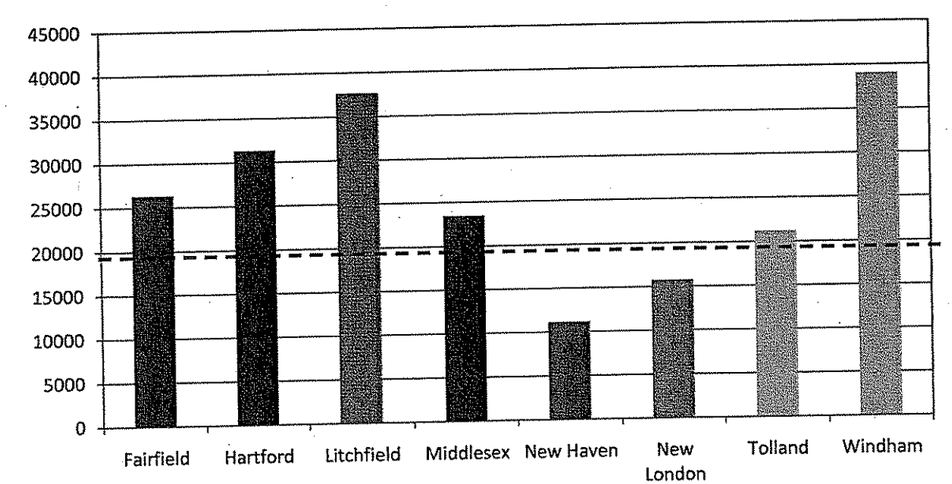
Based on the total number of PAs with a current license to practice in Connecticut as of October 24, 2008 and the 2008 American Academy of Physician Assistants PA Census Report for Connecticut, which found that 21.6 percent of clinically practicing PAs practice in one of the following specialties: Family/General Medicine, General Internal Medicine, General Pediatrics, or Obstetrics and Gynecology. The statewide population-to-primary care PA ratio is 12,992 (indicated by dashed line in the figure). Based on the DPH estimated population of Connecticut as of July 1, 2007 (3,502,309).

Appendix 19

Distribution of Licensed Nurse Midwives by county



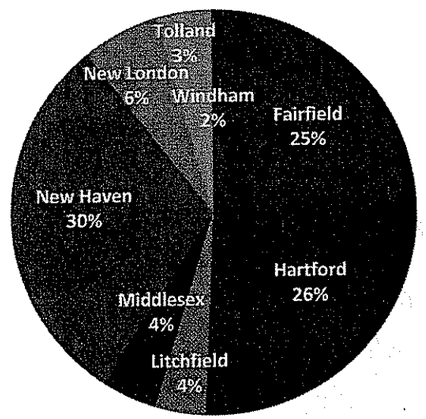
Population-to-licensed nurse midwives ratio



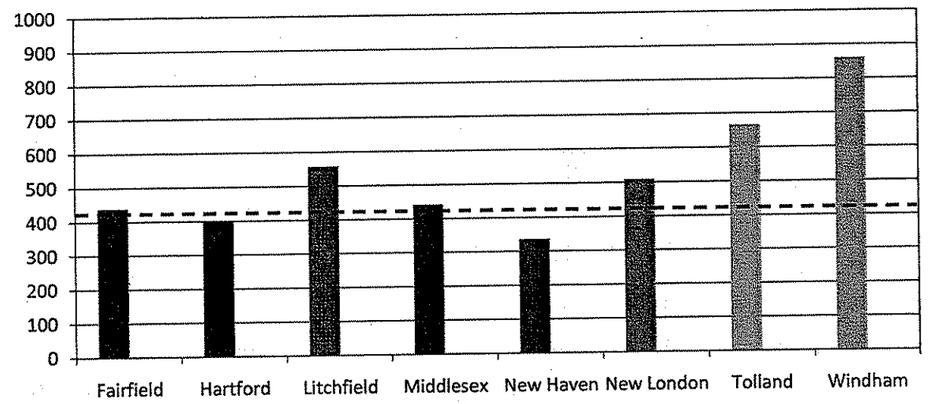
Based on the total number of licensed nurse midwives with a current license to practice in Connecticut as of October 24, 2008. The statewide population-to-LNM ratio is 19,787 (indicated by dashed line in the figure). Based on the DPH estimated population of Connecticut as of July 1, 2007 (3,502,309).

Appendix 20

Distribution of primary care providers by county

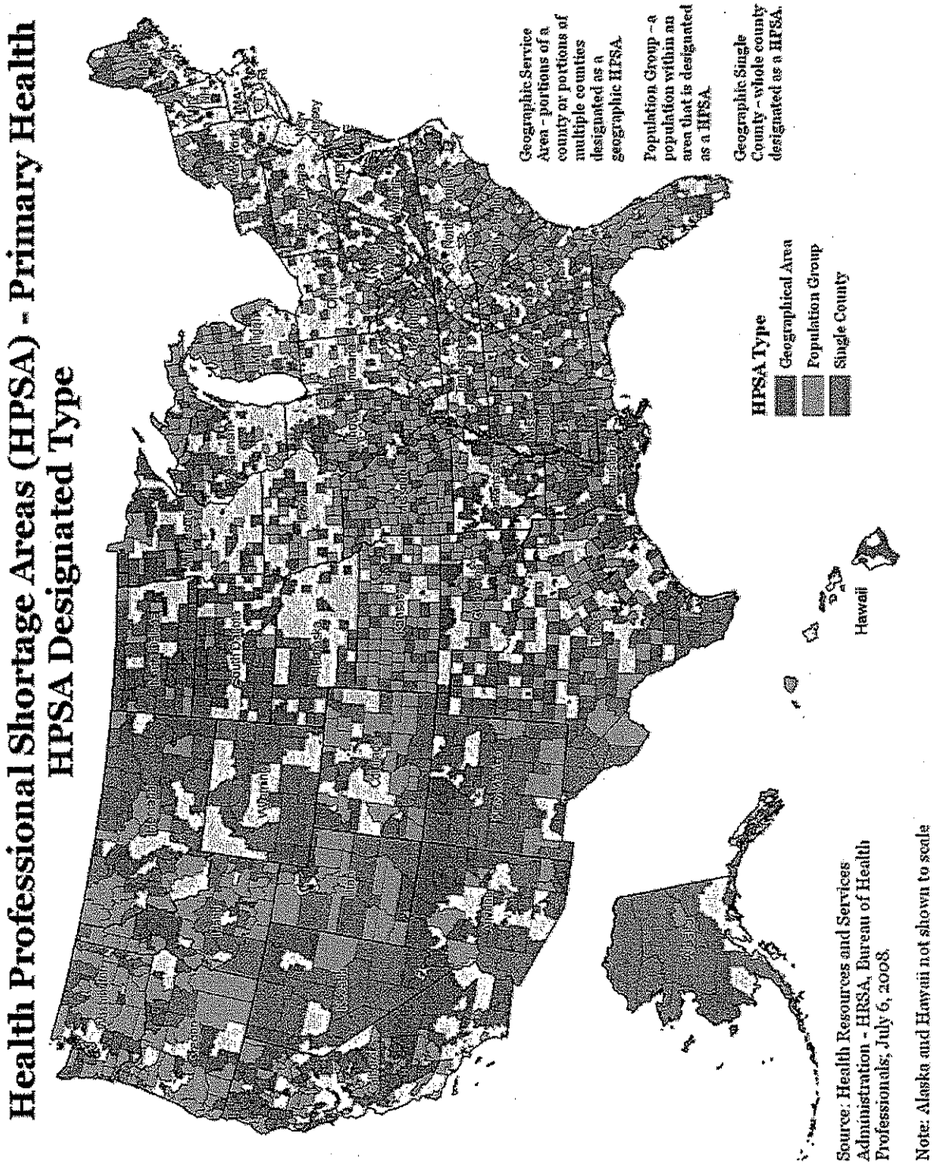


Population-to-primary care provider ratio



Based on the Connecticut Department of Public Health licensure database as of October 24, 2008 for the following: total number of physicians with a current license to practice in Connecticut in the following specialties: Family Practice, Internal Medicine, Obstetrics and Gynecology, Pediatrics, Homeopathic Medicine, and Naturopathy; total number of APRNs with a current license to practice in Connecticut; total number of PAs with a current license to practice in Connecticut; and total number of licensed nurse midwives with a current license to practice in Connecticut. Also based on the American Academy of Nurse Practitioners 2005 Practice Site Survey, which states that 66 percent of NPs practice in at least one primary care site, and the 2008 American Academy of Physician Assistants PA Census Report for Connecticut, which shows that 21.6 percent of clinically practicing PAs practice in one of the following specialties: Family/General Medicine, General Internal Medicine, General Pediatrics, or Ob/Gyn. The statewide population-to-primary care provider ratio is 421 (indicated by dashed line in figure). Based on the DPH estimated population of Connecticut as of July 1, 2007 (3,502,309).

Appendix 21


Health Professional Shortage Areas (HPSA) - Primary Health
HPSA Designated Type
Geographic Service Area - portions of a county or portions of multiple counties designated as a geographic HPSA
Population Group - a population within an area that is designated as a HPSA
Geographic Single County - whole county designated as a HPSA
HPSA Type
Geographical Area
Population Group
Single County
Hawaii
Source: Health Resources and Services Administration - HRSA, Bureau of Health Professionals, July 6, 2008.
Note: Alaska and Hawaii not shown to scale