



2005 Colorado Physician Workforce Survey: Key Findings and Technical Notes

Colorado Health Institute
1576 Sherman Street, Suite 300
Denver, CO 80203-1728
July 2007

Introduction

Over the past several decades, federal and state policymakers have become increasingly concerned about the supply of primary care physicians and whether it will adequately meet the demands of a rapidly growing aging population coupled with overall population growth. Adding to this concern, the health workforce literature suggests that the majority of physicians prefer to practice in urban or suburban settings, leaving large numbers of rural communities without an adequate supply of primary health care providers.

To better understand the dynamics of Colorado's physician workforce, the Colorado Health Institute (CHI) is collecting, analyzing and disseminating Colorado physician workforce data with funding provided by The Colorado Trust through its Health Professions Initiative. One source of information about the supply and demand of physicians is a survey of doctors licensed to practice in Colorado that CHI will administer biennially. In April 2005 CHI included a one-page questionnaire in the packet mailed to all physicians renewing their license to practice in Colorado. A dataset derived from this initial survey is available at http://www.coloradohealthinstitute.org/resourceHotissues/workforce_MD.htm to researchers who submit a data use agreement.

This summary of findings describes the survey administration methods and response rate and reports on data limitations associated with survey administration. In addition, the summary discusses survey findings for a number of select demographic characteristics of the physicians who responded to the survey. While many opportunities exist for analyzing the responses provided by 7,715 licensed physicians to the 63 questions posed, this summary highlights key findings as they relate to workforce policy issues of high relevance in Colorado.

In particular, the paper discusses factors that are associated with the availability of Colorado's physician workforce including:

- Age distribution of responding physicians
- Factors associated with practice location
- Primary care availability
- Reported time spent in direct patient care.

For this analysis, responding physicians were classified into two broad specialty groups, "primary care" and "other specialists." Primary care specialties include pediatrics, general medicine, internal medicine and family medicine.¹

In addition, respondents were categorized as either graduates of schools of allopathic medicine with an earned degree of doctor of medicine (MD) or schools of osteopathic medicine with an earned degree of doctor of osteopathy (DO). The primary differentiation between the two training programs is that osteopathic medicine primarily focuses on the relationship between anatomical structure and physiological function.

¹ Some primary care classification schemes include obstetrics/gynecology (OB/GYNs), while others characterize them as specialists. To be consistent with the Council of Graduate Medical Education, this paper classifies OB/GYNs as "other specialists."

SURVEY ADMINISTRATION AND RESPONSE RATE

In every odd-numbered year, all physicians licensed to practice medicine in Colorado are required to renew their license. As noted above, during the 2005 licensure renewal cycle, the physician survey questionnaire was included with the licensure renewal form. Of the 16,138 physicians who renewed their license, 7,715 (48%) returned the questionnaire.

Around 27 percent of the physicians who responded to the survey reported having a primary practice location in another state. This analysis includes only those 5,158 respondents who indicated their primary practice in 2005 was located in Colorado.

DATA LIMITATIONS

The respondents to this survey are not necessarily representative of all Colorado physicians. This caveat to generalizing the survey to all physicians is due to two factors. First, this population survey produced a convenience sample rather than a random sample of licensed Colorado physicians. Second, because the survey form was mailed with the state's licensure renewal form and not by CHI, CHI could not identify who received the mailing but did not respond. Not being able to identify non-responders made it impossible to adjust ("weight") for non-response.

To minimize this limitation in subsequent surveys, the next Colorado Physician Workforce Survey will be sent to a stratified, random sample of physicians licensed to practice in Colorado. CHI anticipates that the smaller sample size will allow for more rigorous follow up and result in a higher overall response rate. Also, the new survey administration design should allow for weighting to adjust for non-responder bias and improve the representativeness of the sample.

SUPPLY/DEMAND FACTORS

According to analysis conducted by the Council on Graduate Medical Education (COGME) and based on current practice patterns, the supply of active physicians (measured on an FTE basis) in the United States² is anticipated to increase by 24 percent between 2000 and 2020.³ Using demand projections, however, COGME estimates a national shortage of around 85,000 physicians by 2020.⁴

One factor driving the physician shortage is the aging of the population. Between 2005 and 2020 the population 65 years and older, which tends to require a higher intensity of services, is projected to increase by around 50 percent.⁵ Based on prevailing practice patterns, a potential shortage is expected to be most acutely felt in geographic locations that are currently underserved, that is, rural and inner-city areas. It has been suggested that the demand for primary care physicians could be moderated by increasing the supply of other primary care health professionals, namely physician assistants and nurse practitioners.⁶ Research has demonstrated that these allied health professions are well trained to assume many primary care functions.

² One FTE corresponds to a full-time position. For example, 1.0 FTE is typically associated with 40 hours of work per week, while 0.5 FTE is associated with 20 hours of work per week.

³ Council on Graduate Medical Education (COGME). January 2005. *Physician Workforce Policy Guidelines for the United States, 2000-2020*, p. xv.

⁴ COGME, January 2005, p. xvi.

⁵ Health Resources and Services Administration. October 2006. *Physician Supply and Demand: Projections to 2020*, p. 19.

⁶ COGME, January 2005, p. xvii.

The number of physicians practicing in Colorado relative to the state's population closely mirrors that of national trends. In 2000, the physician-to-100,000 population ratio in Colorado was 199 compared to 198 for the entire U.S. population.⁷ The Colorado Department of Labor and Employment has estimated that retirement, turnover and increased demand will require 50 new family medicine/general medicine physicians annually to maintain the current workforce. Approximately 20 new OB/GYNs will be needed each year to maintain the current workforce and meet the estimated increased demand, the department estimates.⁸ Overall, the state's need for family physicians and OB/GYNs will increase by around 28 percent between 2004 and 2014.

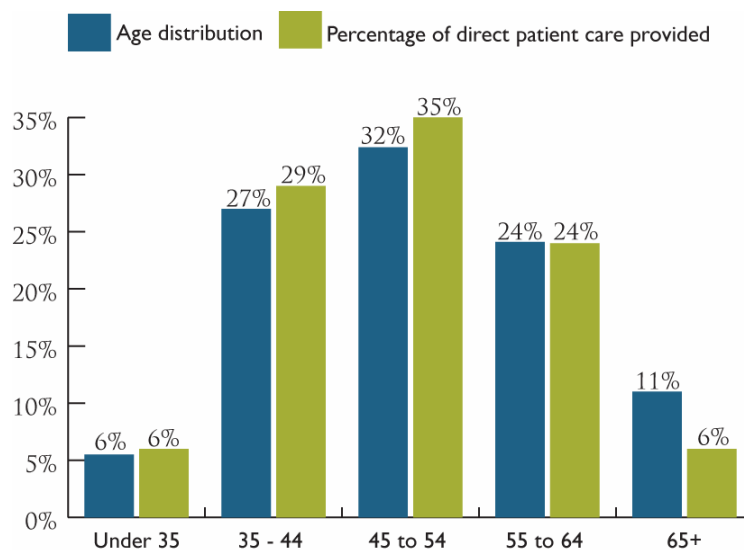
Survey findings

AGE DISTRIBUTION

The aging of the physician workforce is cause for concern, both in Colorado and nationally. Approximately 35 percent of respondents to the 2005 Colorado Physician Workforce Survey were 55 years of age or older. To assess the impact of this phenomenon on the volume of direct patient care available in Colorado, CHI examined the amount of time responding physicians reported spending in direct patient care by various factors including age.

As noted in Graph I, respondents in the three age groups under 55 tended to provide a greater percentage of direct patient care than their representativeness in the overall sample. Conversely, respondents age 65 and over made up 11 percent of respondents but provided only 6 percent of all direct patient care hours.

Graph I. 2005 Colorado Physician Survey: Age distribution of respondents and percentage of direct care services provided by age group



⁷ Health Resources and Services Administration (HRSA), 2000. *HRSA State Health Workforce Profiles: Colorado*, p. 22.

⁸ Colorado Department of Labor, Occupational Employment Projections, 2004-2014. Available at <http://www.coworkforce.com/lmi/oeo/0414coswocc.xls> (accessed from the Web, February 6, 2007).

RURAL VERSUS URBAN PRACTICE LOCATIONS

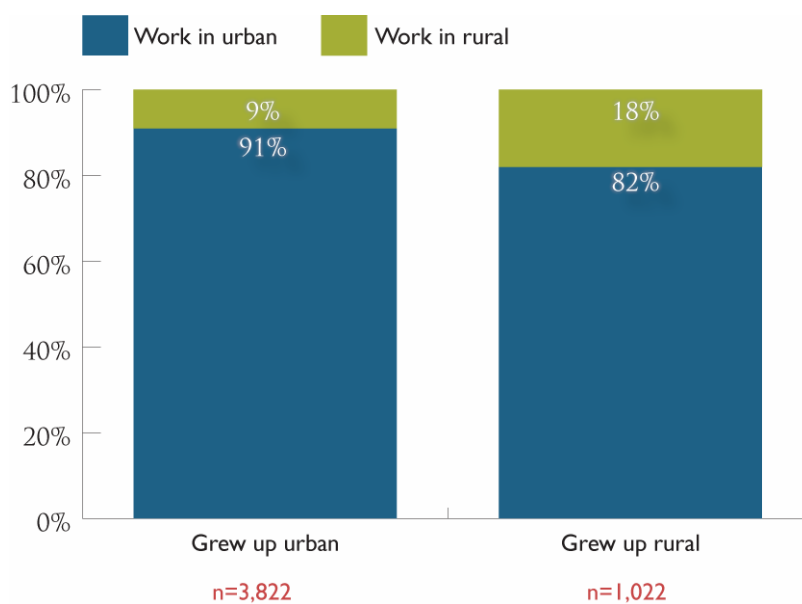
While there is significant debate as to the ideal physician-to-population ratio, some health professions experts believe that physicians disproportionately practice in urban and suburban areas compared to rural areas in both the United States and Colorado.⁹

Of physicians responding to the CHI survey, 89 percent reported practicing in an urban setting compared to 11 percent who reported practicing in a rural Colorado community.¹⁰ To put this in perspective, 85 percent of Coloradans live in an urban area compared to 15 percent who live in a rural area.

Survey results found an association between the geographic area in which a physician grew up and her or his current practice location as well.¹¹

CHI found that a large majority of respondents who grew up in both urban and rural areas practice in urban areas. Those who grew up in rural areas, however, were more likely to practice in a rural community (18%) than respondents growing up in urban areas (9%) (see Graph 2).

Graph 2. Respondents' primary practice location by where they grew up



While slightly more DO physicians reported practicing in a rural area (15%) as compared to MDs (11%), DOs represented only seven percent of respondents (Graph 3). It is anticipated that the August 2008

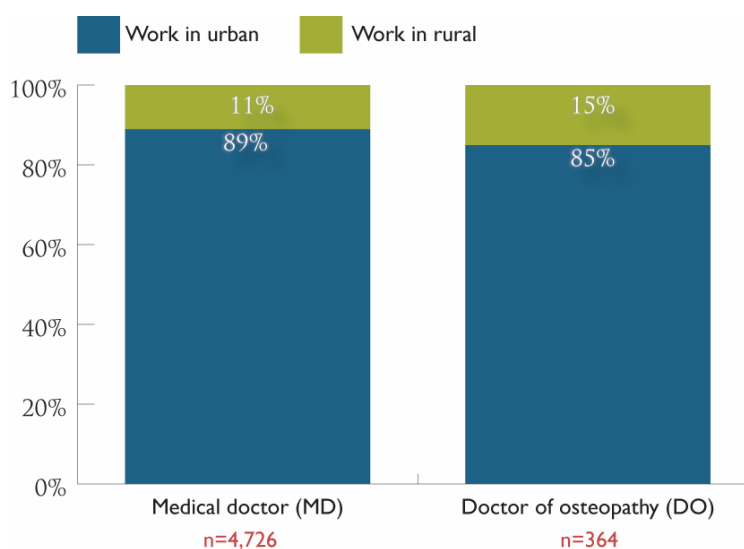
⁹ U.S. General Accounting Office, October 2003. *Physician Workforce: Physician Supply Increased in Metropolitan and Nonmetropolitan Areas but Geographic Disparities Persisted*, p.5.

¹⁰ For practice setting, CHI used the Rural-Urban Commuting Area (RUCA) classification system to classify survey respondents' ZIP Codes as rural or urban based on population size, density and commuting patterns. For more information on RUCAs, see <http://depts.washington.edu/uwruca/>.

¹¹ For the analysis about where they grew up, respondents self-reported a rural, urban or suburban area. Suburban and urban responses were consolidated and classified as urban. Note: Unlike the RUCA classification method referred to in footnote 10, self-reported data is based on perception and lacks the precision of a ZIP Code-based classification system.

opening of a new college of osteopathic medicine in the state will lead to an increase in the supply of DOs practicing in Colorado.

Graph 3. Respondents' primary practice location by medical degree



Previous physician workforce research has found that female physicians are less likely to practice in a rural area compared to their male counterparts.^{12, 13} Analysis of the 2005 Colorado Physician Workforce Survey, however, did not find this gender difference: 10 percent of female and 11 percent of male survey respondents reported practicing in a rural area. CHI survey results also found no association between age and the propensity to practice in a rural versus an urban area.

PRIMARY CARE COMPARED TO SPECIALIST PHYSICIANS

Of the responding physicians, 61 percent reported practicing as an “other specialist,” while 39 percent reported primary care¹⁴ as their specialty. This specialty distribution closely corresponds to COGME’s national estimates.¹⁵ Historically, COGME has recommended a 50/50 split between primary care and other specialists, although more recently it stated that “a single national goal is inappropriate” and recommended that physician specialty distribution should reflect demand factors at the sub-state level.¹⁶

As illustrated in Graph 4, a greater proportion of male physician respondents practice a specialty compared to women, while a greater proportion of women reported working in a primary care practice. Because there was a disproportionate number of male respondents to the CHI survey, a greater absolute number of men identified themselves as primary care physicians (n=1,168) compared to women (n=690).

¹² Council on Graduate Medical Education. February 1998. *Physician Distribution and Health Care Challenges in Rural and Inner-City Areas*, p.17.

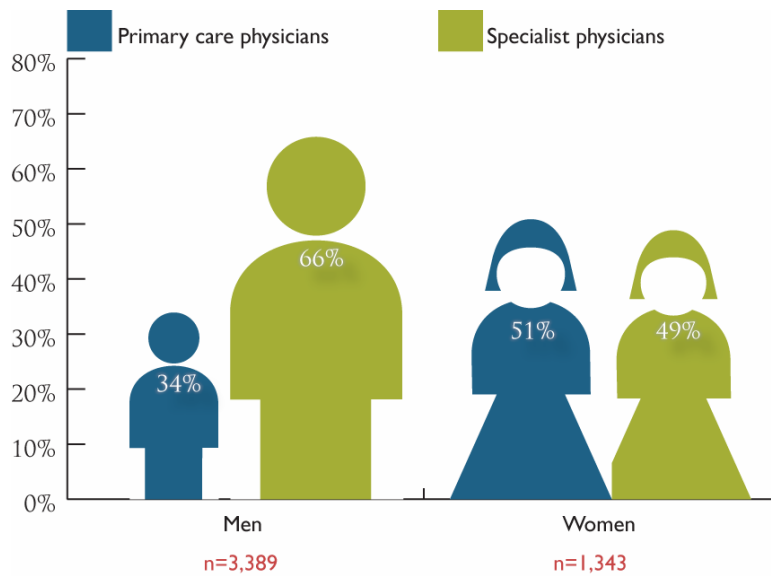
¹³ Colwill, Jack M., and James Cultice. 2000. “Increasing Numbers of Family Physicians—Implications for Rural America.” Council on Graduate Medical Education, *Update on the Physician Workforce*, August 2000, p.29. Available at http://www.cogme.gov/00_8726.pdf (accessed from the Web February 6, 2007).

¹⁴ Primary care services are defined as preventive care, routine physical exams or treatment of common ailments.

¹⁵ COGME, January 2005, p. xvii.

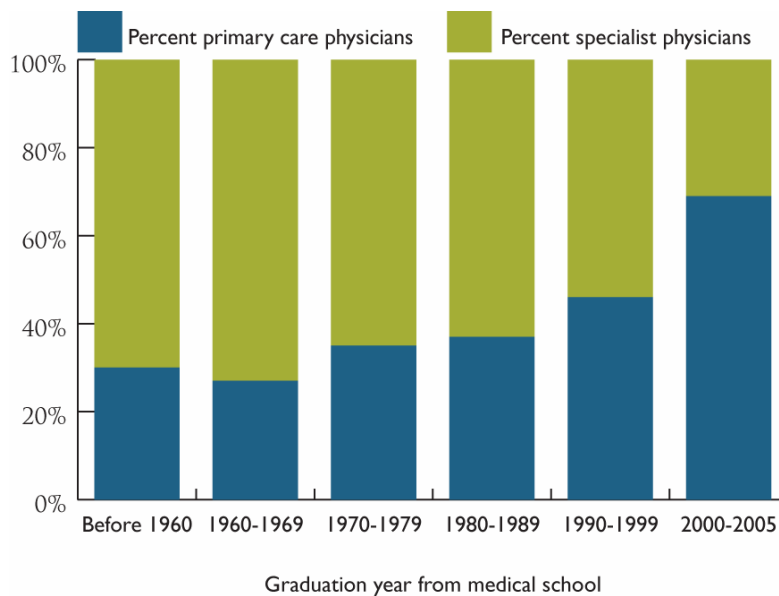
¹⁶ COGME, January 2005, p. xvii.

Graph 4. Proportion of primary care and specialist physicians by gender of responding physicians



Analysis of survey data suggests that an association may exist between the year a respondent graduated from medical school and whether she or he currently practices as an “other specialist” or as a primary care physician. Graph 5 shows that recent graduates were more likely to be practicing as a primary care physician at the time of the survey than earlier medical school graduates.

Graph 5. Percentage of primary care versus other specialists by year of graduation from medical school

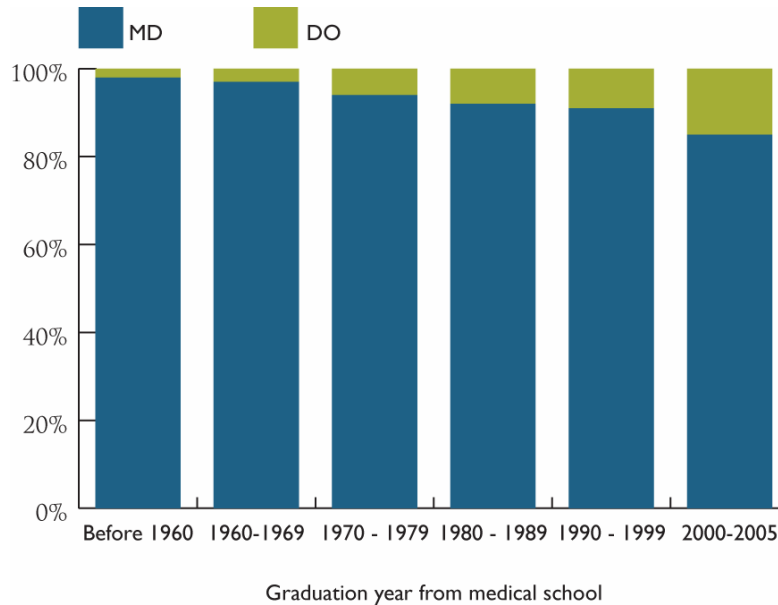


Nationally, the number of physicians practicing with primary care specialties and sub-specialties has increased. According to data from the American Medical Association, in 2004 there were approximately 359,000 active primary care physicians (including those with sub-specialties), compared to 153,000 in 1975. Because the total number of physicians in all specialties increased significantly during that period,

primary care physicians as a percentage of the total active physician workforce increased only moderately—from 42 percent to 45 percent.^{17, 18}

As noted earlier, physicians were categorized in the CHI survey as doctor of medicine (MD) or doctor of osteopathy (DO). Graph 6 suggests that in recent decades the number of osteopathic physicians licensed to practice medicine in Colorado has increased substantially. While only 2 percent of physician respondents reported graduating from medical school prior to 1960 with a DO degree, 15 percent of respondents graduating between 2000 and 2005 reported having an DO degree.

Graph 6. Percentage of respondents with an MD or DO degree based on graduation date

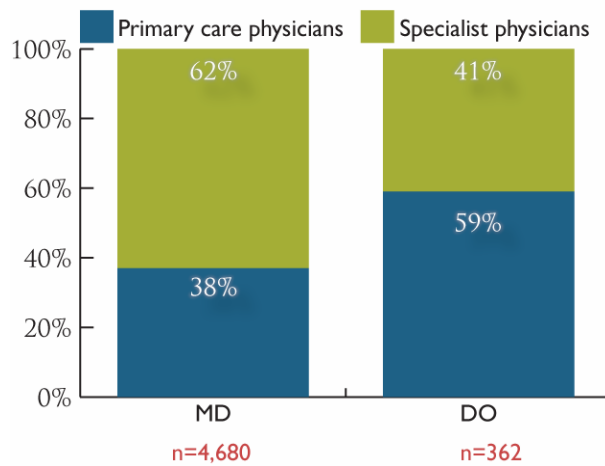


DOs responding to the CHI survey appear more likely to pursue a career in primary care compared to their MD counterparts. About 59 percent of DO respondents indicated being a primary care physician, compared to 38 percent of MD respondents (Graph 7).

¹⁷ American Medical Association. *Physician Characteristics and Distribution in the U.S., 2006 Edition*. pp. 275 and 279.

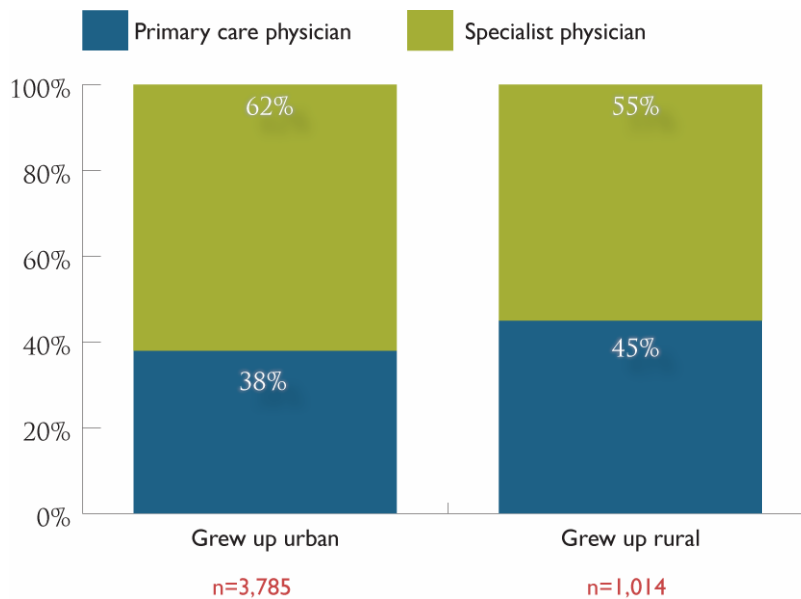
¹⁸ The American Medical Association includes OB/GYNs in their classification of primary care physicians.

Graph 7. Percentage of primary care physicians versus other specialties with a DO degree compared to an MD degree



Survey findings also suggest an association between where a physician grew up and whether she or he pursues a primary care specialty and practice. As shown in Graph 8, of the responding physicians who grew up in a rural area, 45 percent reported pursuing a career in primary care compared to 38 percent who grew up in an urban area.

Graph 8. Primary care and specialist respondents by geographic area where they grew up

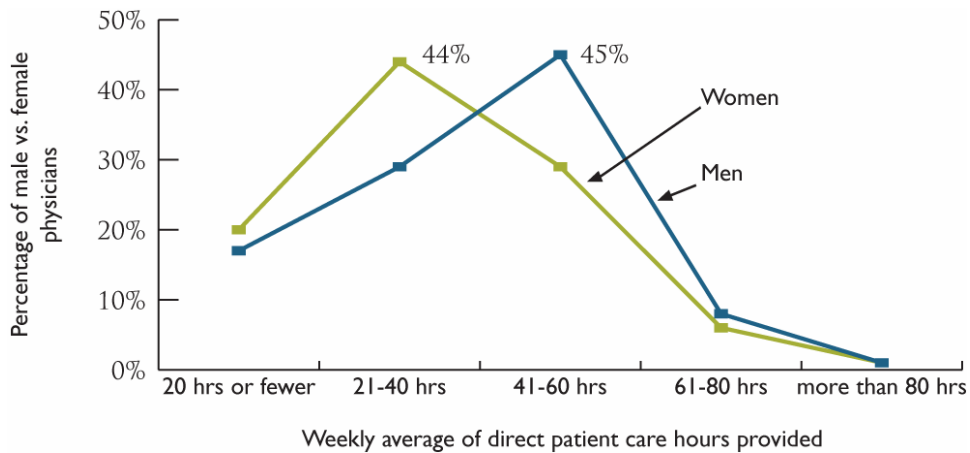


HOURS PROVIDING DIRECT PATIENT CARE

Physicians practice in a variety of settings and assume many different roles including direct patient care in a clinical setting, administrative functions, teaching and research. Therefore, regardless of the number of physicians living and practicing in a particular geographic area, the number of direct patient care hours provided is a strong proxy for the amount of patient care available at any point in time.

Male respondents reported providing more hours of direct patient care than women. About 45 percent of men compared to 29 percent of women said they provide between 41 and 60 hours per week of direct patient care (Graph 9).

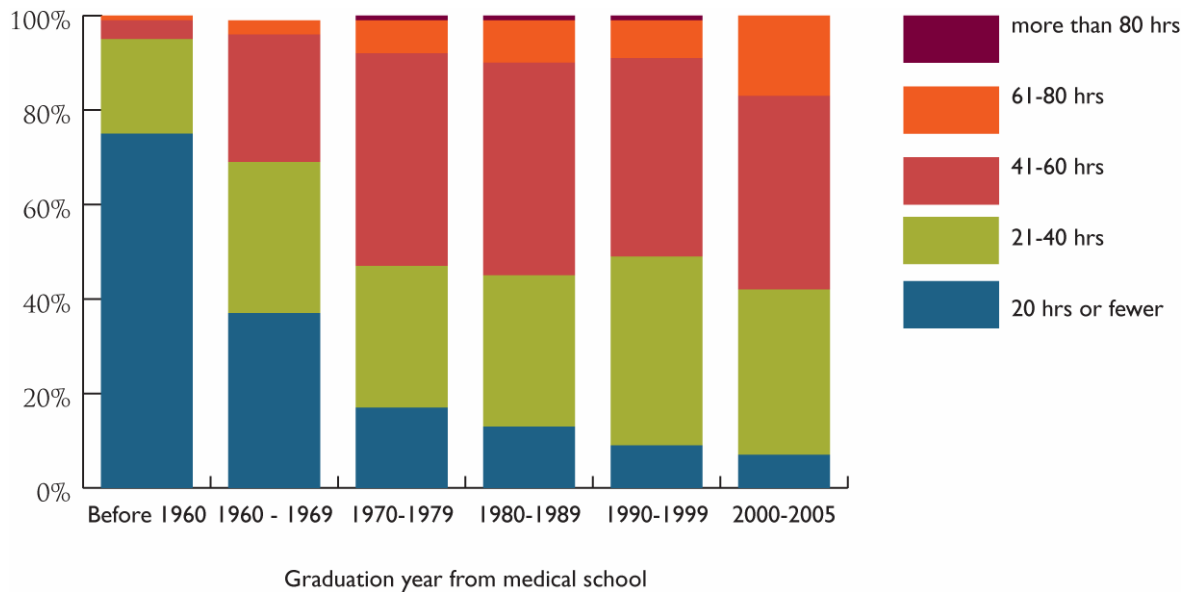
Graph 9. Percentage of men compared to women respondents at various levels of direct patient care hours



While male physicians reported providing *more hours* of direct patient care, female physicians reported spending a greater *percentage* of their time in direct patient care. These divergent findings appear to be explained by the fact that women physicians worked fewer overall hours—48 percent of women reported working more than 40 hours per week compared to 67 percent of men.

No clear association was found between type of physician (MD or DO) and the number of direct patient care hours provided on a weekly basis. An association does exist, however, between when a respondent graduated from medical school and the number of direct patient care hours provided—recent graduates were more likely to work a greater number of hours in direct patient care than those with earlier graduation dates (Graph 10).

Graph 10. Number of direct patient care hours provided by graduation date from medical school.



Discussion of findings

As noted earlier, findings from the 2005 Colorado Physician Workforce Survey cannot be generalized to the entire physician workforce in Colorado. Many findings, however, parallel national trends, such as the large percentage of physicians who are 55 years or older. The retirement of these physicians could have serious implications for access to primary health care in Colorado, with certain geographic areas being more affected than others.

No universal agreement exists on the appropriate number of specialists and primary care physicians needed to avoid health care shortages. In the past, health workforce experts have focused on the oversupply of specialist physicians and the dearth of physicians practicing in primary care specialties. With a rapidly aging population, this simple dichotomy is being re-examined due to the growing prevalence of chronic disease in an aging population.

In subsequent years, CHI hopes to track these trends from subsequent physician surveys and other workforce data. CHI anticipates this workforce monitoring activity will inform public and private decisions about the appropriate numbers of physicians needed to meet the ongoing medical care demands of the state's population.

For more information

To learn more about Colorado's health professions, see CHI's Workforce Web site at www.ColoradoHealthInstitute.org/Workforce. For more information about CHI's Health Workforce Database project, visit <http://www.coloradohealthinstitute.org/resourceHotissues/hotissuesViewItemFull.aspx?theItemID=25>.

1576 Sherman St., Ste. 300 • Denver, CO 80203-1728 • 303.831.4200 • 303.831.4247 fax • www.coloradohealthinstitute.org

The Colorado Health Institute (CHI) is an independent, nonprofit health policy and research organization based in Denver. It was established in 2002 by Caring for Colorado Foundation, The Colorado Trust and Rose Community Foundation. CHI's mission is to advance the overall health of the people of Colorado by serving as an independent and impartial source of reliable and relevant data for informed decisionmaking.

