

**Health Professions Education in
Minnesota:
Results of the 2001-2003
Minnesota Health Professions
Trainee Exit Surveys**

March 2005



HEALTH ECONOMICS PROGRAM

HEALTH POLICY, INFORMATION AND COMPLIANCE MONITORING DIVISION
MINNESOTA DEPARTMENT OF HEALTH

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Executive Summary

The Department of Health (MDH) has long been involved in developing state policies related to the state's healthcare workforce, as well as in administering programs, such as loan repayment or grant programs, designed to address shortages or maldistributions of health professionals in Minnesota. The Department also collects data on the demographic characteristics of health care providers and on their distribution throughout the state.

In 2001, in response to a relative lack of data on the dynamics of the health professions labor market in Minnesota, the Minnesota Department of Health's Medical Education and Research Costs (MERC) Advisory Committee, a group of educators, administrators and clinicians who advise the Department on administration of the MERC Fund and on appropriate policy directions for health professions education in Minnesota, worked with MDH to develop the Minnesota Health Professions Trainee Exit Surveys. Through these surveys, the Department now has three years of data that can provide valuable information about the demographics, labor market experiences, and practice characteristics of the graduating cohorts in six disciplines – medicine, pharmacy, dentistry, advanced practice nursing, physician assisting and chiropractic. The surveys are designed to shed new light on the experiences and preferences of health professionals entering the Minnesota workforce, and will over time provide valuable trend information regarding Minnesota's health professions labor market.

The survey results presented in this report are intended for use both by policy makers interested in developing strategies to retain health professionals within Minnesota and by program or institution-level administrators interested in a more detailed understanding about where graduates go upon program completion – and why. Over time, we hope these data will be a valuable tool for designing interventions to address maldistributions of labor by region or specialty, for recruiting healthcare professionals to areas in need of their services, and for developing new insight into the dynamics of the health professions labor market.

Highlights

Characteristics and Educational Background of Trainees

- Women represent at least a third of all respondents in each of the six surveyed provider type groups, and represent the majority of pharmacy, P.A. and advanced practice nursing respondents.
- Among medical residents, women were much more strongly represented in Primary Care specialties and OB/GYN than in non-Primary Care specialties.
- Physician Assistants were more likely than other provider types to have attended high school in Minnesota, with over three-quarters having attended in-state high schools. In comparison, only one-quarter of medical residents had graduated from Minnesota high schools.
- Roughly a quarter of medical resident respondents were international medical graduates (IMGs), and less than one-third (27.1%) had attended Minnesota medical schools.

Educational Debt

- Chiropractic respondents reported the highest levels of educational debt, with 94.7% owing at least \$60,000 (including both undergraduate and professional school debt) and 69.7% reporting that they owed \$100,000 or more.
- Graduates of Minnesota medical schools had lower debt levels than did graduates of other U.S. medical schools, but not as low as IMGs. Three-quarters of IMGs had no debt, compared to just 11% of U.S. graduates.

- Primary Care and Non-Primary Care medical residents had similar debt levels, although Non-Primary Care respondents were more likely to be debt-free.
- Physician Assistants and chiropractors had the highest debt-to-income ratio of the six provider types.

Future Plans

- Roughly a fifth of medical and dental respondents intended to pursue additional specialty or sub-specialty training upon completion of their current training program.
- Among respondents with confirmed practice plans, just 51.8% of medical residents and 54.1% of Chiropractors were staying in Minnesota. Medical residents from Primary Care programs were significantly more likely to be remaining in Minnesota to practice than were respondents from non-Primary Care programs.
- Across all provider types, those who had attended Minnesota high schools, colleges, or professional schools were more likely to remain in Minnesota to practice than were those who attended school elsewhere. The difference between Minnesota and non-Minnesota high school graduates was most pronounced among chiropractors and medical residents.
- Fewer than 15% of respondents had committed to practicing in rural areas or in a federally-designated Health Professional Shortage Area (HPSA). Likelihood of working in a HPSA was greatest for Advanced Practice Nurses, Physician Assistants, Pharmacists and Family Practice physicians.
- Primary Care respondents, particularly those in Family Practice, were more likely to have accepted positions in rural areas or small towns than were non-Primary Care respondents.

Expected First Year Income and Hours

- Median anticipated first year income for medical residents was \$145,000. Respondents in Primary Care specialties reported lower anticipated first year income than respondents in non-Primary Care specialties, at \$122,500 and \$162,500 respectively.
- Among medical resident respondents, females anticipated working roughly 7 fewer hours per week than males (41.5 vs 48.8).
- The majority of dentists (74.9%) and chiropractors (55.8%) anticipated working 39 or fewer hours per week or less.
- Medical residents completing Primary Care residencies anticipated working fewer hours per week than non-Primary Care respondents.

Job Search and Labor Market Perceptions

- Pharmacy, Advanced Practice Nursing, and Physician Assistant respondents tended to search exclusively in Minnesota – mostly in the Twin Cities metropolitan area - while medical residents and chiropractors were more likely to only search outside of Minnesota.
- Chiropractors and medical residents, in general, searched for a practice position longer than the other surveyed provider types.
- The average number of job offers over the course of a job search was lowest for Physician Assistants at 1.2, compared with 3.3 for medical residents. Physician Assistants were also the most likely to report having received no offers.
- Physician Assistants were the most likely to report difficulties in finding a satisfactory position, with 75% indicating at least some difficulty. Most often, these difficulties were attributed to a lack of jobs in the desired practice setting.
- Across all provider types, practice setting was the single most important factor considered in the job search. Geographic location, family/spouse considerations, opportunities for professional growth and partners/coworkers in the practice were also widely taken into account.
- Few respondents considered military, loan, or visa obligations to be important factors in their job search.
- Physician Assistants had the most negative view of the Minnesota job market, with more than half of those who had searched for a job indicating that there were “few” or “very few” jobs available. Dental and pharmacy respondents were the most optimistic.

Introduction

In recent decades, the aging population and increasing incidence of certain types of chronic disease have led to concerns about the capacity of our healthcare system to continue to provide high-quality care to all who seek it. These concerns have, in turn, led to a wave of research into the healthcare workforce both nationally and at the state level. At the national level, while there is by no means agreement on the future of the healthcare workforce, the Council on Graduate Medical Education (COGME) has recommended that U.S. medical schools increase enrollment over the next decade to combat a future shortage of physicians¹ and a national survey of U.S. medical school deans and state medical society executives found that 85% perceived shortages of physicians, often in multiple specialties.² Meanwhile, hospitals nationwide struggle to find and keep nurses in light of mandated minimum staffing ratios and increasing concerns about the relationship between nurse staffing and patient outcomes.

In Minnesota, a 2002 report by the Minnesota Department of Health found that shortages of certain types of health professionals were ongoing, and that these shortages sometimes contributed to rising labor costs.³ Numerous Minnesota organizations or collaborative efforts have been established to examine the size, composition, and distribution of the healthcare workforce, while others have expanded or revised their missions to more closely address issues related to recruitment and retention. In general, these efforts are focused not on shortage identification in and of itself, but rather on determining whether such shortages or maldistributions of healthcare providers have an impact on access to healthcare and, if so, developing appropriate policy responses.

Issues related to the size and distribution of the healthcare workforce in Minnesota have long been of concern to the Medical Education and Research Costs (MERC) Advisory Committee as well. In 1996, when legislation establishing the MERC Fund was passed, the purpose of the fund was

relatively straightforward: to offset a portion of the clinical training costs faced by hospitals and clinics around the state that are involved in the clinical training of a set of health professionals. However, the question of whether training of certain provider types or specialties should be supported at a higher level than others was never far below the surface. In a 1996 report to the Legislature, MDH recommended establishing a set of ‘guiding principles’ for the development of the future MERC distribution formula that included a consideration of whether or not programs “encouraged the expansion of any area of training where there is an anticipated ‘oversupply’ of providers.”⁴

Although workforce over/undersupply has long been debated by MERC and has been included in the MERC statute, the formula governing distribution of MERC funds has not included a component that would more highly reward any given provider type or specialty, nor have any alternative funding mechanisms yet been developed to address the distribution of the health professional workforce in Minnesota. Amidst renewed interest in the issue, the MERC Advisory Committee, a group of educators, administrators and clinicians who advise the Department on administration of the MERC Fund and on appropriate policy directions for health professions education in Minnesota, formed a subcommittee to determine whether or not it would be appropriate and feasible for MERC to take a more proactive role in questions related to Minnesota’s healthcare workforce, either through a modification of the existing distribution formula or through the establishment of a new funding mechanism that could more explicitly provide incentives for the training of specific provider types, specialties or geographic areas.

After examining medical resident exit surveys designed by the State University of New York at Albany’s Center for Health Workforce Studies, the committee recommended that MDH develop a set of similar tools to survey graduating students and residents who were completing programs in Minnesota that would qualify them to enter one of the professions included in the MERC Fund. A set of six surveys was developed in the fall of 2000 to be administered to graduating dental students and residents, pharmacy students and residents, resident physicians, and advanced practice nursing, physician assistant, and chiropractic students. The surveys have now been distributed every spring since 2001.

Table 1.1

Response rates by provider type

Provider Type	Graduates	Returned	Rate
Medical (MD)	2,067	1,188	57.5%
Dental (DDS)	389	304	78.1%
Pharmacy (PhD)	347	255	73.5%
Physician Assistant (PA)	52	52	100.0%
Advanced Practice Nursing (APN)	632	493	78.0%
Chiropractic (CH)	590	551	93.4%
	4,077	2,843	69.7%

Over a three year period, a total of 4,077 surveys have been administered to expected graduates in over 200 programs at 19 institutions. Usable responses were received by 2,843 respondents, for a final response rate of 69.7%, which ranged from a high of 100% for Physician Assistants to a low of 57.5% for resident physicians.

This report presents results for these respondents, with an emphasis on comparing the responses of respondents from each provider type to questions that were common across all surveys and on examining changes in responses within each provider type across the survey years where sample size permits. Findings of particular interest are highlighted.

The body of this report is divided into chapters that follow the same general organizational structure as the surveys themselves. Chapter 2 presents demographic data on all respondents, including gender, race, citizenship and age, as well as responses to questions about where the respondent attended high school, college, and professional school and their level of educational debt at the time of program completion. Chapter 3 contains information on the immediate post-training plans of all respondents and, for those who had accepted a practice position, information about the characteristics of that practice. Practice-related questions include anticipated first-year salary, practice setting, ownership level, anticipated weekly hours, and demographics of the area surrounding the practice. Chapter 4 presents information on respondents' job search experiences, including the geographic areas that were searched, search duration, level of difficulty finding a satisfactory position, factors that were considered during the job search, and perception of practice opportunities in Minnesota and nationally. Chapter 5 concludes the report with a discussion of the implications these findings have for the development of policies related to the health professions workforce in Minnesota. Supplemental reports presenting 2001-2003 results for each provider type are available on the MERC website or by request.

Technical Note

For the purposes of this report, Primary Care medical specialties are defined as Family Practice, General Internal Medicine, General Pediatrics and combined Internal Medicine/Pediatrics programs. The definition of Primary Care used in this report does not include OB/GYN.

Demographics, Education, and Debt

Factors as diverse as gender, race/ethnicity, educational debt level, geographic location of training, and exposure to diverse populations or practice settings during training can have a significant impact on how and where health professionals choose to practice. Recently published studies have found links between gender and rural location among physicians on a national level, with female physicians less likely to work in rural areas than male physicians,⁵ and with a rural upbringing strongly related to eventual rural practice.⁶ Closer to home, the Minnesota Department of Health's Office of Rural Health and Primary Care has found that this trend also holds true among Minnesota's practicing dentists.⁷ Other research has uncovered links between a provider's race and service to racially and ethnically diverse populations,⁸ although results are mixed as to whether physician/patient communication improves when there is racial concordance. In Minnesota, as in many other states, the state, region, or even county in which a new health professional received his or her training can be a strong predictor of where that provider will eventually practice. For example, more than half of all pharmacists practicing in Minnesota in 2001 attended the University of Minnesota School of Pharmacy, and virtually all attended pharmacy school in Minnesota, North Dakota, South Dakota, Wisconsin or Iowa.⁹

Given the potential importance of these factors in determining the level of service to underserved geographic areas or population groups, and in projecting the size and composition of the future workforce, the ability to more accurately describe the demographics of the newest health professional cohort will be key for the development of policies to address access to health care and recruitment/retention issues.

This chapter examines demographic characteristics of respondents, including gender, age, race and citizenship status, and presents responses to questions about where the respondent attended high school, college, and professional school. This chapter also presents data on educational debt level.

Cases used for analysis in Chapter 1

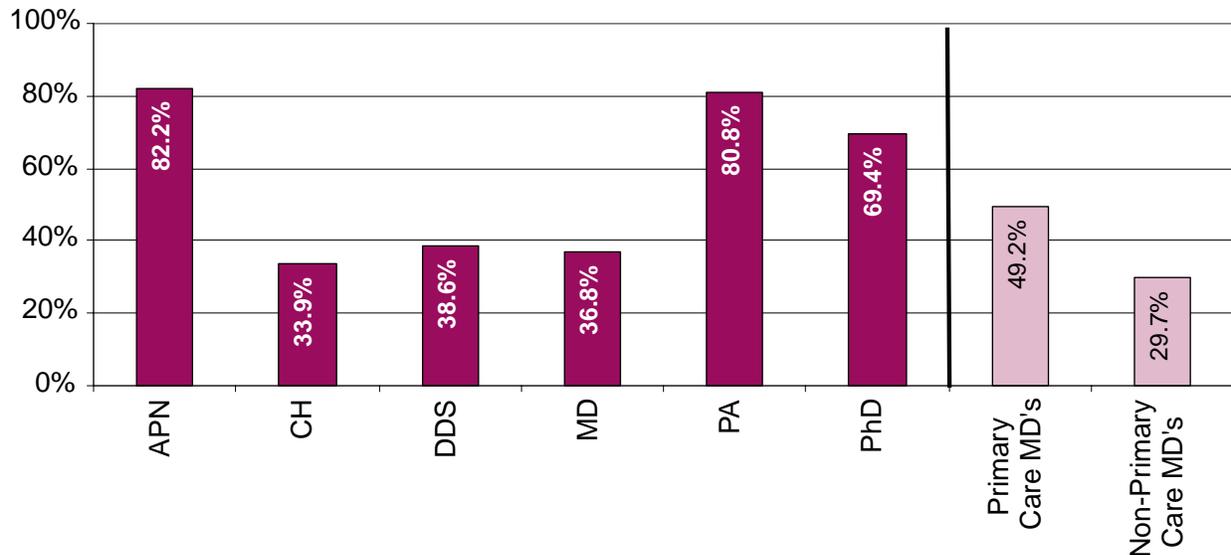
	<u>N</u>	<u>Response Rate</u>
Advanced Practice Nurses (APN)	493	78.0%
Chiropractors (CH)	551	93.4%
Dental Students/Residents (DDS)	304	78.1%
Resident Physicians (MD)	1,188	57.4%
Primary Care (PC)	442	58.4%
Non-Primary Care (NPC)	746	56.9%
Physician Assistants (PA)	52	100.0%
<u>Pharmacy Students/Residents (PhD)</u>	<u>255</u>	<u>73.5%</u>
Total:	2,843	69.7%

Analysis in this chapter is based on responses of all survey respondents, a total of 2,843 students/residents. The responses of medical resident respondents are presented in the aggregate and also split out based on Primary Care/Non-Primary Care status. Abbreviations that will be used for all provider type and specialty groups in charts in this chapter are included in the table above.

Gender

Figure 2.1

Percentage Female, by Provider Type

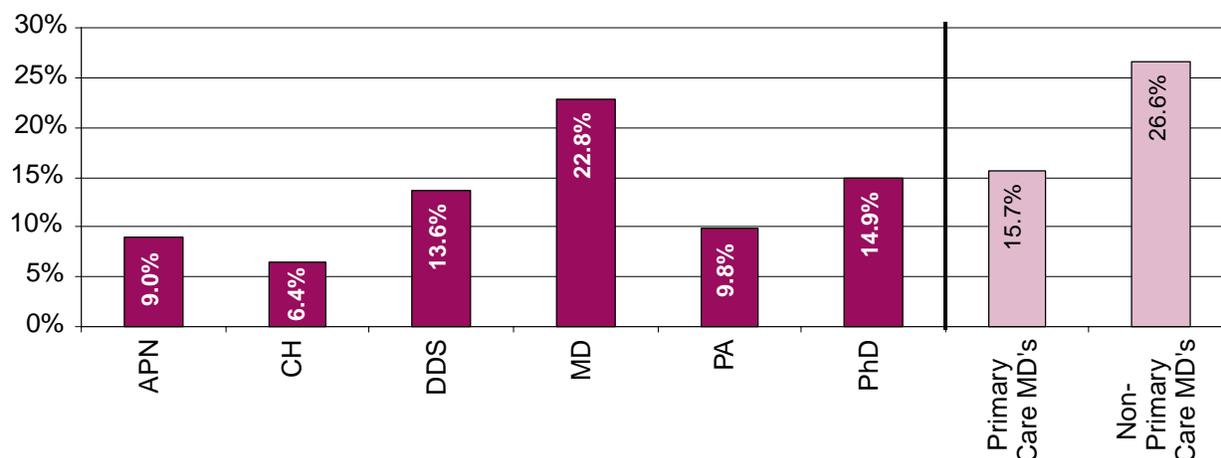


- Strong majorities of pharmacy, advanced practice nursing and P.A. respondents were women, and women represented at least a third of all completers in the other professions as well.
- In each year of the survey, the percentage of respondents in each provider category who were female exceeded the percentage of females practicing in the field in Minnesota, indicating that the gender balance in these provider types may begin to more closely reflect Minnesota's population in the coming years. In some cases, as with pharmacy, the percentage of women graduating is higher than the percentage of women in the population.
- An annual survey conducted by the American Academy of Physician Assistants has found that, over the last six years, an average of 61% to 67% of new P.A. students nationwide were female.¹⁰ In Minnesota, that proportion is even higher, with an average of 80.8% of the 2001-2002 graduating classes composed of women (there were no P.A. graduates in 2003).
- Across all survey years, women were much more strongly represented in Primary Care specialties (and in OB/GYN) than in non-Primary Care specialties. Women represented 49.2% of respondents in Primary Care and 29.7% in non-Primary Care specialties.
- Comparing the three survey years, graduating cohorts of dental students/residents became slightly more male dominated, with the percentage female shrinking from about 43% to 34%. During the same period, advanced practice nursing programs become more female-dominated, rising from roughly 74% to 86% female between 2001 and 2003.

Race

Figure 2.2

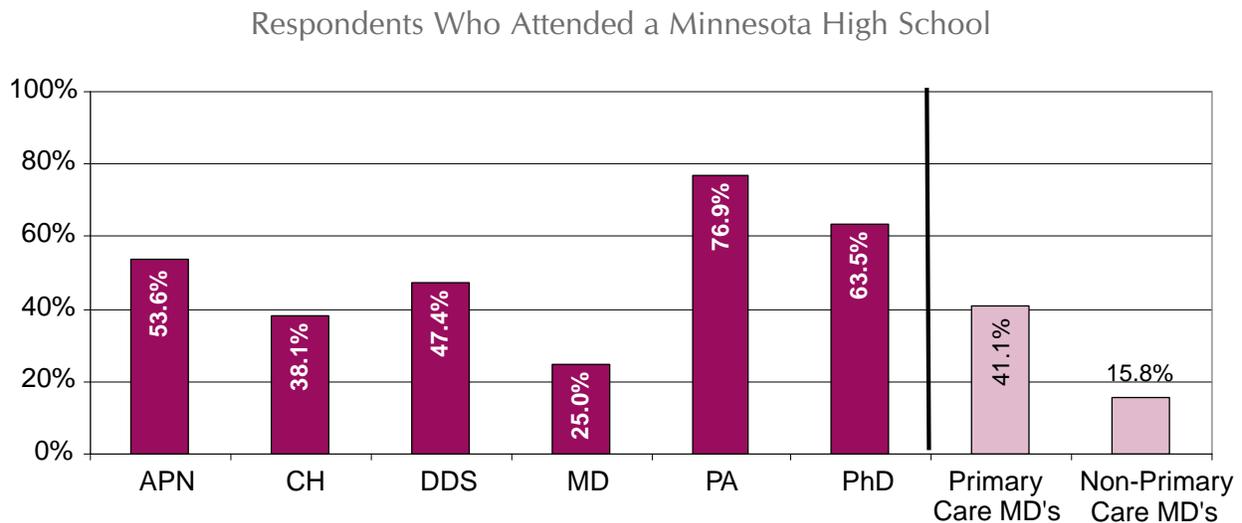
Percentage Non-White, by Provider Type and Specialty



- Across each survey year, medical residents consistently had the highest percentage of non-white or Hispanic respondents, at 22.8%.
 - Non-Primary Care respondents were significantly more likely to be non-white (26.6%) than were Primary Care respondents (15.7%).
 - Nationally, African Americans, American Indians/Alaskan Natives, and certain persons of Hispanic origin are considered to be under-represented minorities in medicine. Members of these groups represented less than 10% of responding medical residents across the three survey years.
 - Across all provider types and medical specialties, Asian/Pacific Islanders were the single largest non-white group. Respondents who identified as Asian/Pacific Islanders represented 14.5% of all medical resident respondents and 12.1% of pharmacy respondents. Asian/Pacific Islanders are not generally considered to be an under-represented minority in medicine.

High School/Professional School

Figure 2.3



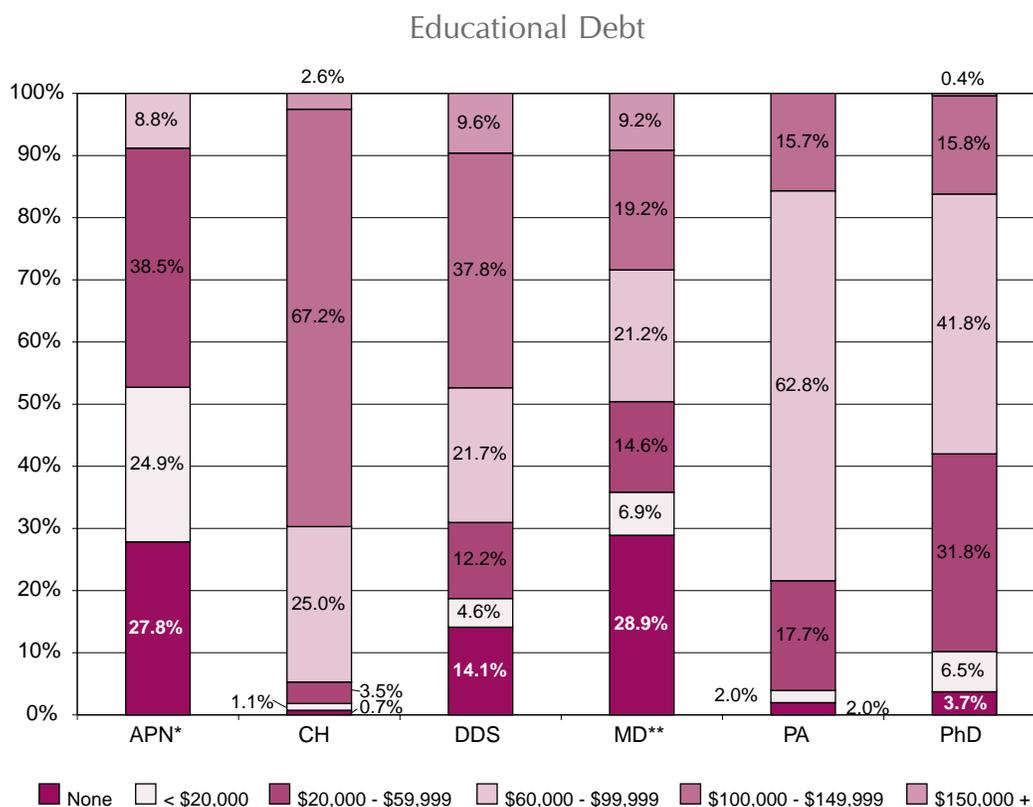
- Across all three survey years, Physician Assistants and Pharmacists were the most likely to have graduated from a Minnesota high school (76.9%, 63.5%). Medical residents were the least likely to have graduated from Minnesota high schools, at just 25%.
- The majority of medical residents attended out-of-state professional schools. Only roughly one-fourth (27.1%) of medical residents attended medical school in Minnesota. Among advanced practice nurses, just over half (59.7%) received their baccalaureate nursing degree from a Minnesota school.

Citizenship

- The overwhelming majority of respondents in all six groups were either native-born or naturalized U.S. citizens or permanent residents. J-1 or J-2 temporary visa holders represented just 4.0% of dental respondents and 11.8% of medical residents. H-1, H-2, or H-3 visas were even less common, at just 1% for medical residents and 2.7% for Chiropractors.¹¹
- While roughly a quarter of medical resident respondents (23.6%) were international medical graduates, nearly half (45.1%) of IMG's were either U.S. citizens or permanent residents.
 - Non-Primary Care residents were significantly more likely than Primary Care residents to be international medical graduates (30.6% vs 11.4%) or to be J-1 or J-2 temporary visa holders (16.2% vs 4.2%).

Educational debt

Figure 2.4



* For Advanced Practice Nurses, the highest debt category on the 2001-2002 survey was "Over \$60,000." All responses in the "Over \$60,000" category were grouped into the "\$60,000 - \$90,000" category for this chart.

** Due to a database error, responses from medical residents completing residencies/fellowships at the University of Minnesota's Academic Health Center in 2003 could not be included in the results.

- Among the provider types, chiropractors reported the highest debt level. Virtually all had at least some debt, with 94.7% owing at least \$60,000 (including undergraduate and professional school debt) and 69.7% reporting that they owed \$100,000 or more.
- Among all exiting medical residents, the average debt load was \$65,100. The average debt load of indebted medical residents was \$91,500.
- International medical graduates (IMG's) had significantly lower debt than did U.S. medical school graduates. Graduates of Minnesota medical schools, while facing higher debt loads than IMG's, were still better off than graduates of other U.S. medical schools.
 - Three-quarters (74.7%) of IMG's had no debt, compared with just 11% of U.S. graduates.
 - The average debt load of indebted respondents was \$44,000 for IMG's, \$86,000 for Minnesota graduates and \$101,200 for graduates of other U.S. medical schools.

- Respondents completing Primary Care and Non-Primary Care residencies reported similar levels of debt; among those with some debt, Primary Care respondents' average debt load was \$94,900 and Non-Primary Care respondents averaged \$89,100. However, Non-Primary Care respondents were more likely to be debt-free, at 34.6%, than were Primary Care respondents (18.1%).

- Chiropractors and Physician Assistants had the highest debt to expected income ratio. On average, P.A.s owed an amount equal to roughly 130% of their expected first year income, and chiropractors owed 240% of their expected first year income. Advanced Practice Nurses had the lowest debt to income ratio.

Table 2.1

Provider Type	Average Debt Load (U.S. grads only)	Median Expected 1st Year Income	Debt as % of Annual Income
APN	\$26,700	\$80,000	33.4%
CH	\$108,000	\$45,000	240.0%
DDS	\$95,200	\$88,000	108.2%
MD	\$81,800	\$145,000	56.4%
PA	\$75,100	\$57,500	130.6%
PHD	\$68,700	\$90,000	76.3%

Post-Training Plans

As outlined in Chapter 2, it is important to have a clear picture of the people in the health professions ‘pipeline’ in order to predict the size and composition of the future health workforce and to project where –or if- these professionals will choose to practice. However, it is equally important to know whether program graduates are choosing to remain within the state to practice or to pursue further training, and the types of practices at which they choose to work.

For example, more clearly understanding the outflow of graduates who complete Minnesota training programs but leave the state to pursue further training or to practice elsewhere, as well as the number of graduates who follow the opposite pattern, is crucial to translating raw enrollment and graduation counts into a true projection of future practitioners. Better information on hours worked and anticipated tenure in a geographic area can help to refine estimates of level of service, turnover, and ease of access to medical, dental or other treatments. Changes in anticipated first-year income over time can be an important indicator of shifts in relative demand for an occupation or specialty.

Cases used for analysis in Chapter 3*

	<u>N</u>
Advanced Practice Nurses (APN)	204
Chiropractors (CH)	292
Dental Students/Residents (DDS)	124
Resident Physicians (MD)	681
Physician Assistants (PA)	27
<u>Pharmacy Students/Residents (PhD)</u>	<u>120</u>
Total:	1,448

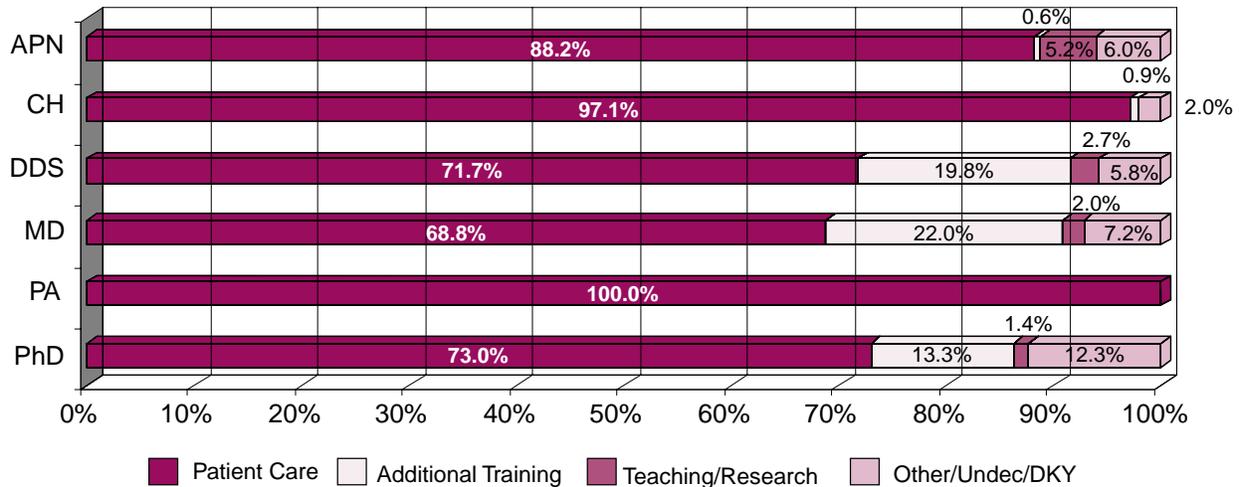
*For the question on general future plans, all 2,843 respondents are included in the analysis. For all questions related to characteristics of the respondent's practice, analysis is limited to the 1,448 respondents who indicated that they would be going directly into patient care/clinical practice and that they had accepted a practice position.

Chapter 3 presents data related to respondents' immediate post-training plans. All survey recipients were asked about their future plans. Those who indicated they had accepted a practice position or would be self-employed were then asked a series of questions about the characteristics of their practice, including the setting (inpatient hospital, community-based facility, long term care, etc), level of ownership, anticipated hours and income, the demographics of the surrounding area, and how they anticipated that their time would primarily be spent. With the exception of discussion related to general future plans, analysis in this chapter is limited to respondents who indicated that they had already accepted a practice position or would be self-employed; this represented approximately half of all respondents. It is important to note that this chapter includes the responses of those who had accepted positions outside of Minnesota and/or outside of the U.S.

Future Plans

Figure 3.1

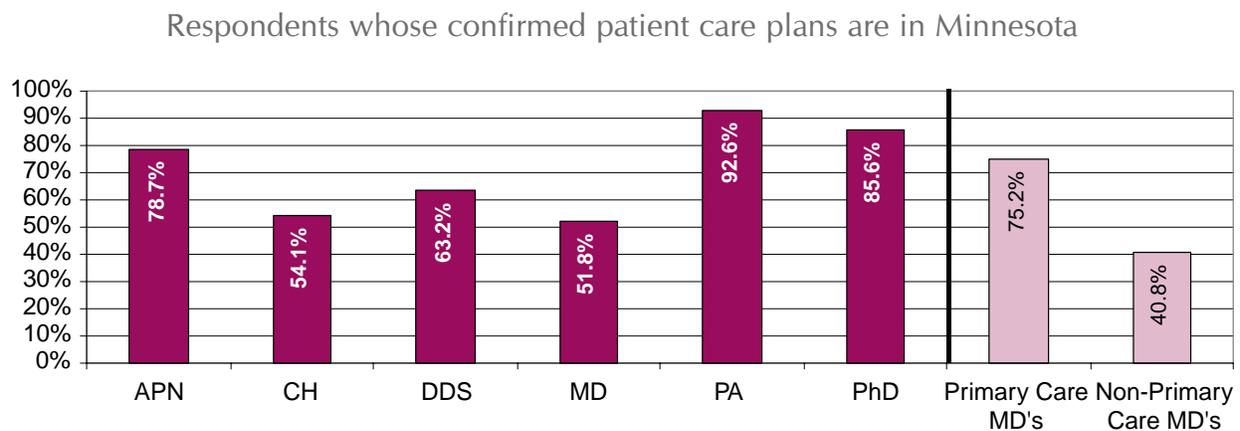
Future Plans



- Across the survey years, a large majority of respondents planned to go directly into clinical practice upon completion of their current training program, as opposed to working in teaching or research positions or going on for additional specialty training. In the case of Physician Assistants, 100% of respondents planned to go directly into patient care. Post-graduate programs for Physician Assistants do exist; however, on a national level, relatively few P.A.s go on to complete such programs, and no post-graduate option is currently available for P.A.s in Minnesota.
- Medical resident and dental respondents were the most likely to be going on for additional training, at 22.0% and 19.8% respectively.
 - Of medical residents who planned to pursue training in a subspecialty, 48.6% planned to remain in Minnesota for their training. Of those that were leaving the state, 43.4% indicated that they would not be returning to Minnesota following completion of their subspecialty training and an additional 37.7% were unsure.
- International medical graduates (IMGs) were more likely to be pursuing additional training than were graduates of U.S. medical schools (27.0% for IMGs, 20.7% for U.S. medical school graduates).

Location of Practice: within/outside of MN

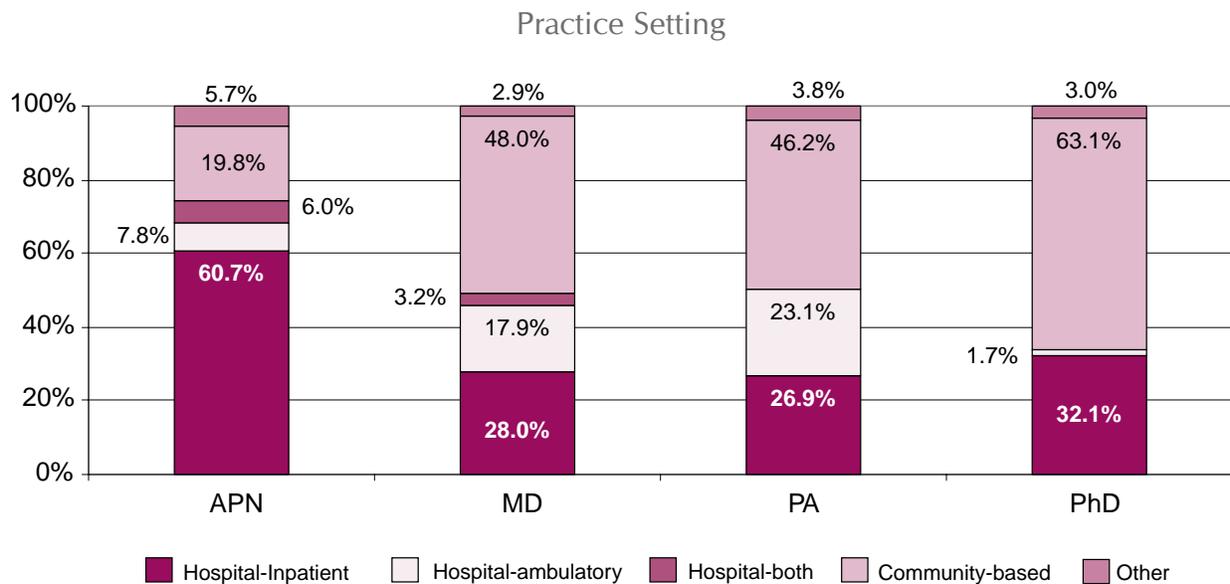
Figure 3.2



- Among those with confirmed practice plans, medical residents and chiropractors were the least likely to be staying in Minnesota to practice. Just 51.8% of medical residents and 54.1% of chiropractors with confirmed jobs were staying in the state. Physician Assistants and pharmacists were the most likely to be staying, at 92.6% and 85.6% of those with jobs.
 - Respondents from Primary Care residencies were significantly more likely than those from non-Primary Care residencies to remain in Minnesota for their upcoming practice (75.2% vs 40.8%).
- Exit survey respondents bear out the theory that the location where a health professional grew up is an important predictor of where they will eventually practice. Graduates of Minnesota high schools were significantly more likely to remain in Minnesota to practice than were non-Minnesota high school graduates, a factor which partly explains why medical residents and chiropractors are less likely to remain in-state than other groups.
 - While holding true for all provider types, the difference between Minnesota and non-Minnesota high school graduates was most pronounced among medical residents (87.6% of Minnesota graduates with confirmed practice positions remaining in Minnesota vs 36.7% of non-Minnesota graduates) and chiropractors (84% vs 33.5%).
- Graduates of Minnesota medical schools were significantly more likely to be remaining in Minnesota to practice than graduates of other U.S. medical schools or IMGs.
 - Among residents with confirmed jobs, 80.8% of Minnesota medical school graduates were remaining in the state to practice, compared to just 39.5% of IMGs. Conversely, while nearly a quarter of IMGs with confirmed plans had accepted positions abroad, no Minnesota medical school graduates had done so in any of the three survey years.

Practice Setting

Figure 3.3



- Responses from medical residents showed that a majority planned to work in ambulatory settings; close to half of respondents with confirmed plans (48.0%) had secured positions in community-based settings and an additional 21.1% either in hospital-based ambulatory settings or in practices that combine inpatient and ambulatory time in a hospital setting.
 - Medical residents who had accepted positions in small cities or rural areas were significantly more likely to be working in community-based facilities than were their urban counterparts. Of those planning to work in small cities or rural communities, 67.8% had accepted positions in community-based settings, compared to 34.4% of those in major cities.
- More than half of pharmacists who had accepted positions were committed to working in community facilities or retail pharmacies (63.1%), while 32.1% had committed to inpatient hospital positions. This may signify a coming shift in pharmacy employment in Minnesota; statewide, just 21.9% of licensed pharmacists worked in hospital settings in 2002¹².
- Physician Assistant respondents were roughly equally split between those with jobs in community-based settings and those who will practice in hospital-based settings.
- Physician Assistants were asked about the specialty of the physician with whom they would primarily be working; the majority indicated that they would be working with a Family Practice physician (30.8%) or a surgical specialist (23.1%). These figures are almost identical to the percentage of P.A.'s who were working for physicians in these specialties nationally.¹³

Employer and Ownership

- Medical residents were asked to report not only the practice setting in which they would be working but also whether their employer would be a hospital, a managed care organization, a group practice, or other entity. The largest group of respondents (39.4%) indicated that they would be employed by a group practice, with 30.3% employed directly by a hospital/clinic.
- Even if a medical resident's upcoming practice was in a hospital setting, the hospital was not always the actual employer. Among respondents who would be practicing in a hospital (inpatient or ambulatory setting), 41.1% indicated that they would be employed by a group practice or a managed care organization and 40.1% by the hospital itself.
- Just 15.2% of medical residents indicated that they would be self-employed in their upcoming practice.

Figure 3.4

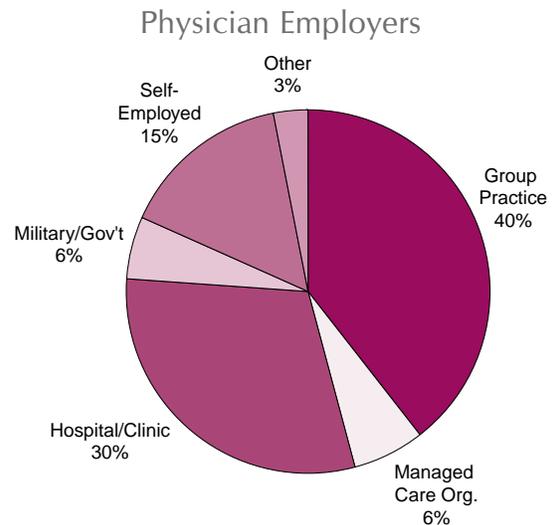
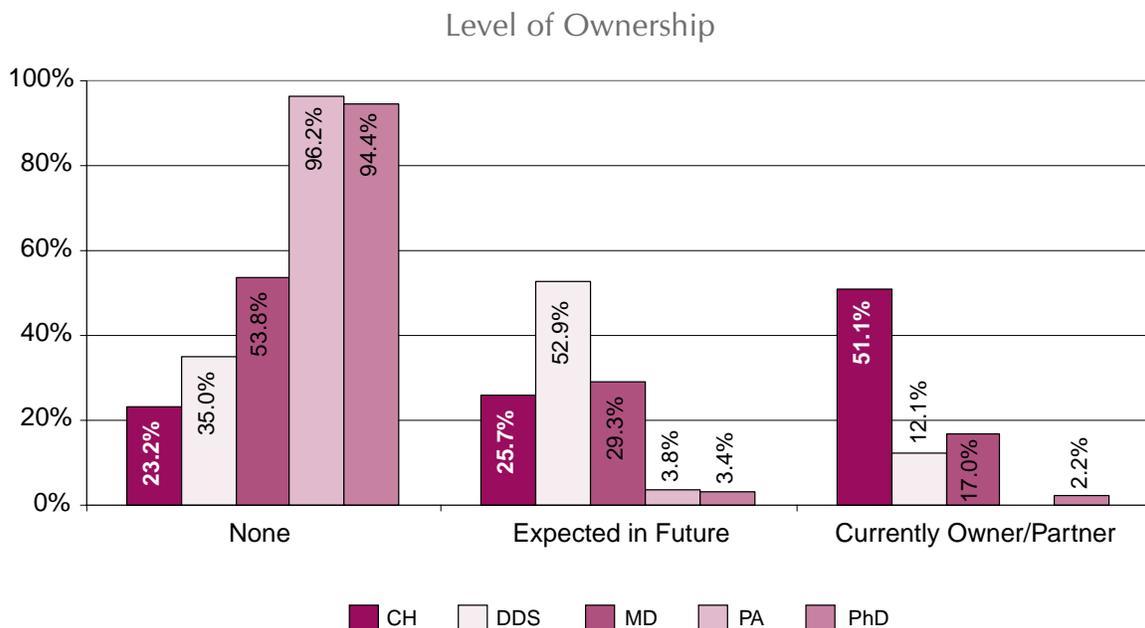


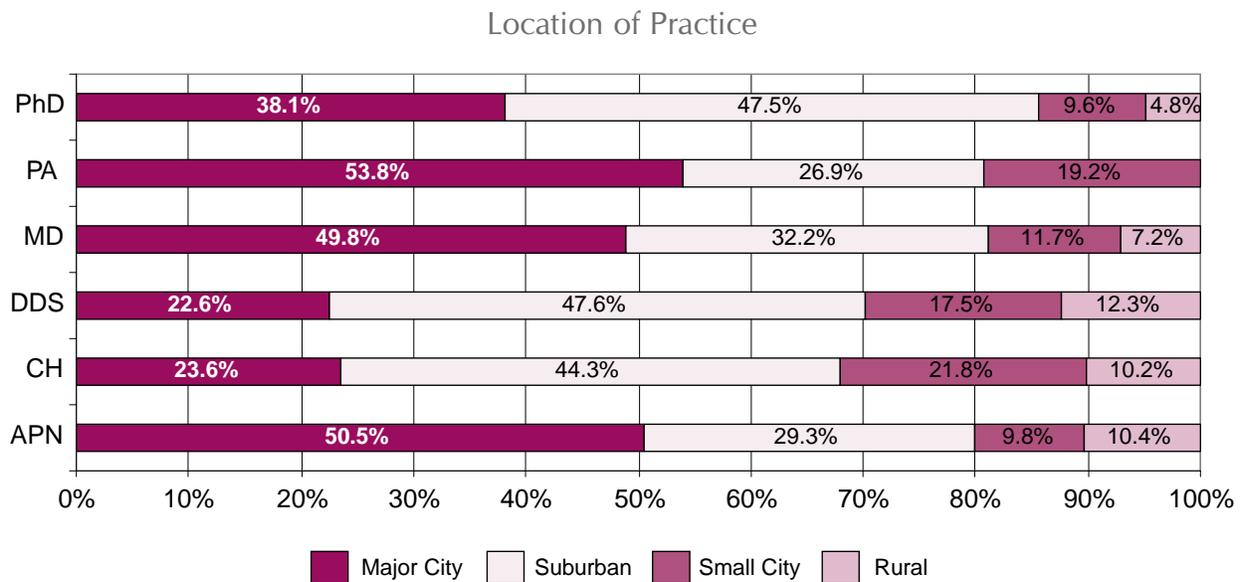
Figure 3.5



- Relatively few respondents reported that they would have any level of ownership in their upcoming practice. Only chiropractors will be partners or owners/partners in significant numbers, at 51.1% of respondents. In the future, however, 29.3% of medical residents, 25.7% of chiropractors and 52.9% of dentists expected to have the opportunity to become owners or partners.

Location of Practice: Urban/Rural

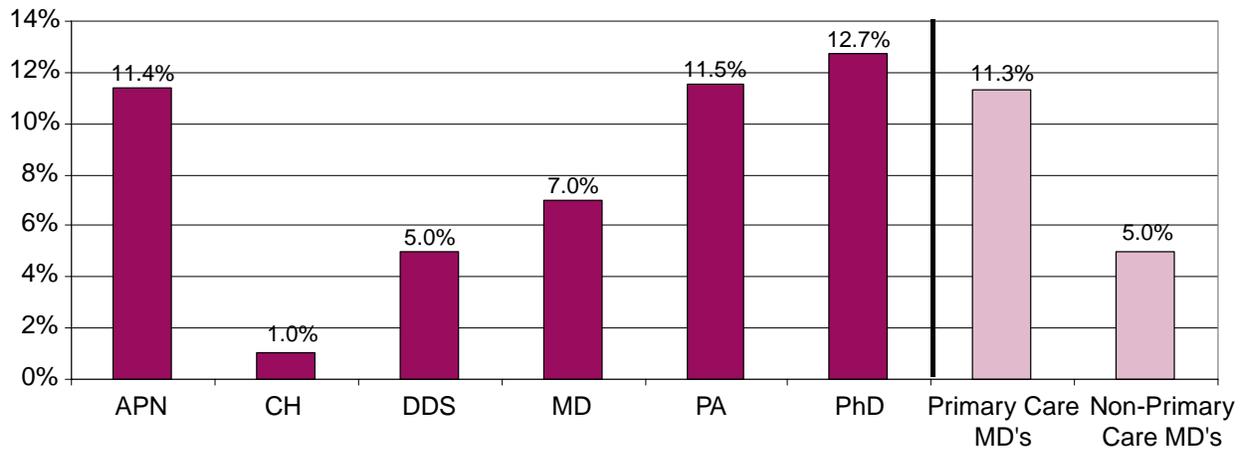
Figure 3.6



- Very few respondents had committed to practices in rural areas. Dental respondents indicated the highest likelihood to locate in a rural area, at 12.3%.
 - Reflecting national and state data showing that Family Practice physicians represent a disproportionate share of rural physicians, Family Practice residents were more likely than respondents in other specialties to locate in non-metropolitan areas. More than one-third (36.5%) of Family Practice respondents with confirmed plans were committed to practices in rural areas or cities with populations under 25,000, compared to just 12.3% of medical residents in other specialties.
- More than half of advanced practice nurses and Physician Assistants had committed to working in the urban core, either in the inner city or in another area within a major city. Conversely, chiropractors, dentists and pharmacists were most likely to have committed to suburban practices.
- Health Professional Shortage Areas (HPSAs) are geographic areas or population groups in which the U.S. Department of Health and Human Services' Division of Shortage Designation has determined that there is a shortage of health professionals. Certain health professionals, including Primary Care physicians, dentists, and P.A.s, are eligible for the National Health Service Corps Loan Repayment Program if they agree to serve for at least two years in a HPSA. The Minnesota State Loan Repayment Program is also available to these providers. Overall, very few respondents had accepted positions in a federally designated Health Professional Shortage Area (HPSA). Pharmacists were the most likely to have committed to a HPSA practice, at 12.7%. Many respondents did not know whether or not their upcoming practice was in a HPSA.

Figure 3.7

Upcoming Practice in HPSA



Expected Annual Income

Figure 3.8

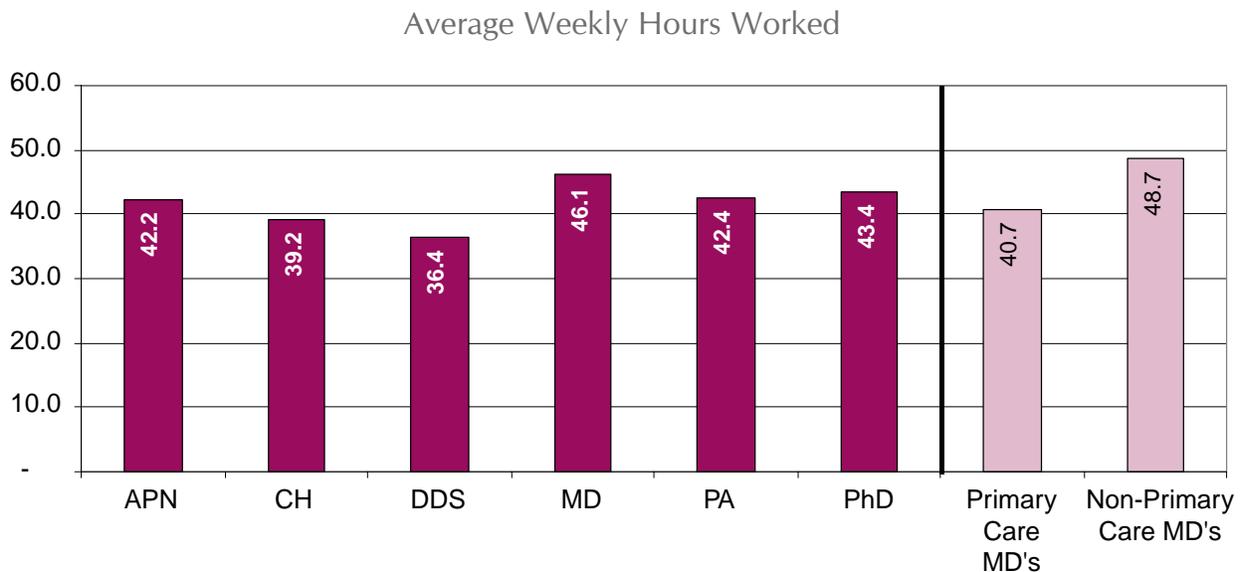
Median Expected First Year Income
(base salary plus incentive income)



- Overall, Primary Care respondents expected significantly lower annual first year incomes than non-Primary Care respondents. Median expected first year income for medical residents completing Primary Care programs was \$40,000 less per year than for respondents in non-Primary Care specialties.
- While the majority of respondents in all six major groups pronounced themselves at least 'somewhat' satisfied with their anticipated first-year income, chiropractic respondents were the least likely to be 'very' satisfied. Just a fifth (21%) of chiropractic respondents declared themselves 'very' satisfied with their first-year income, compared to 52.1% of medical residents and 68.1% of pharmacists. Chiropractors had the highest average debt, the lowest expected income and the highest debt-to income ratio of the surveyed provider types.

Hours Worked

Figure 3.9



- Medical residents anticipated working more hours per week than other provider types, at an average of 46.1 hours. More than a third (37.6%) anticipated working 50 hours or more per week, not including on-call hours.
- Among medical residents, non-Primary Care respondents expected to work more hours per week than Primary Care respondents.
- Medical residents working in major cities anticipated working significantly more hours per week than those in small cities or rural areas. Just 22.6% of respondents with commitments in small cities or rural areas anticipated working over 50 hours per week, compared with 45.5% of their urban counterparts. This difference is partly due to variations in specialty mix in urban/rural areas; Primary Care respondents were more likely to indicate location in rural areas or small towns than were non-Primary Care respondents.
- The majority of dentists (74.9%) and chiropractors (55.8%) anticipated working 39 hours or less per week upon completion of training.
- Among medical resident respondents, females anticipated working roughly 15% fewer hours per week than male respondents (41.5 hours vs. 48.8 hours).

Labor Market Experiences

While many recent reports have attempted to shed light on the existence of, or severity of, worker shortages in the health professions, these studies have focused almost exclusively on demand-side measures such as number of current or projected openings or relative difficulty filling positions. Reliable supply-side measures, such as difficulty finding a position, have not yet been developed, in part because it can be challenging to identify and survey job seekers who are looking for specific classes of work.

Recipients of the 2001-2003 Exit Surveys were asked a variety of questions that, taken together, can shed light on demand for occupations from the job seeker's viewpoint. Each respondent was asked about length of time spent looking for a position, geographic areas in which the respondent searched for a position, number of offers received, ease or difficulty in finding a satisfactory position, whether or not difficulty in finding a satisfactory position led to a change in search strategies, and the factors that were important to the respondent in their search for, and selection of, a practice position. Over time, changes in these measures may allow for more detailed analysis of trends in the market for specific occupations or specialties.

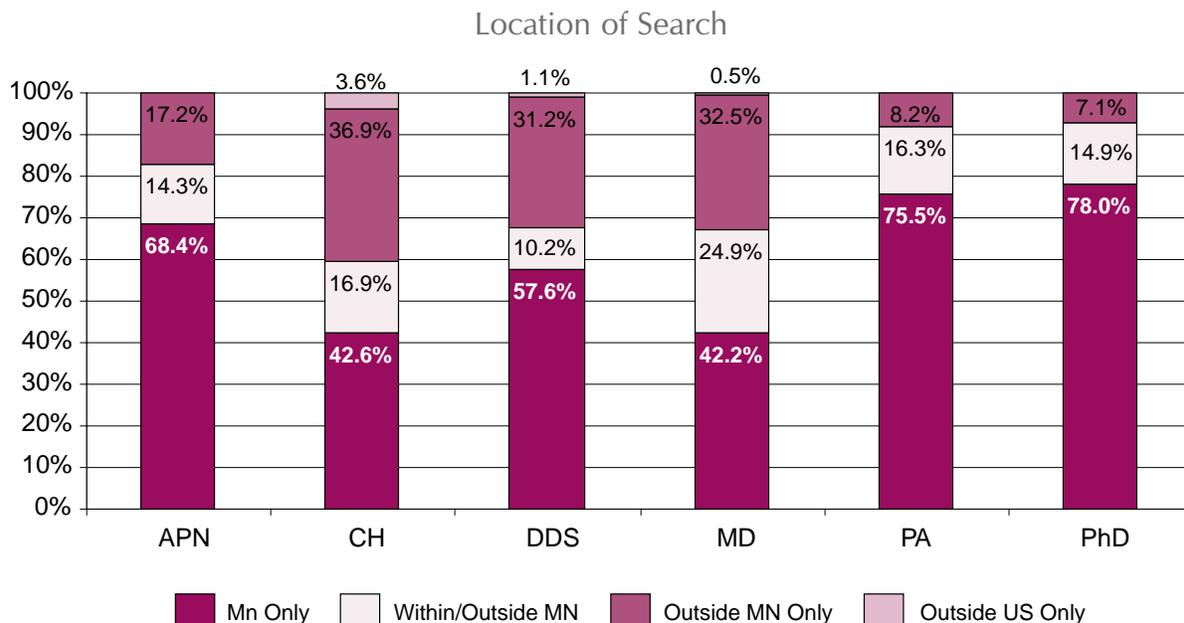
Cases used for analysis in Chapter 4

	<u>N</u>
Advanced Practice Nurses (APN)	290
Chiropractors (CH)	438
Dental Students/Residents (DDS)	185
Resident Physicians (MD)	695
Primary Care (PC)	249
Non-Primary Care (NPC)	446
Physician Assistants (PA)	48
<u>Pharmacy Students/Residents (PhD)</u>	<u>158</u>
Total Cases used in Chapter 4	1,814

This section includes data only on those respondents who were planning to go directly into a patient care position upon completion of training and who had searched for a job; a total of 1,814 respondents. Respondents on temporary (H1, H2, H3, J1 or J2) visas were excluded from all analyses in this chapter. Because these respondents were more likely to experience problems in their job search due to their visa status than other respondents, their inclusion in this analysis could have biased the results for many provider types or specialties with relatively higher numbers of temporary visa holders.

Location of Search

Figure 4.1



- Pharmacy, Advanced Practice Nursing and Physician Assistant respondents were the most likely to have searched only within Minnesota, at roughly 70% of respondents or more. Of those who searched only within Minnesota, most focused their searches on the Twin Cities metropolitan area rather than searching statewide.
- Conversely, more than one-third of medical resident and chiropractic respondents did not search for a position within Minnesota at all, a higher proportion than other provider types.
- Very few respondents in any group did statewide searches, nor did many respondents search in Southwest, Northwest or Northeast Minnesota. Physician Assistants were the most likely to search in Greater Minnesota for positions.

Job Offers

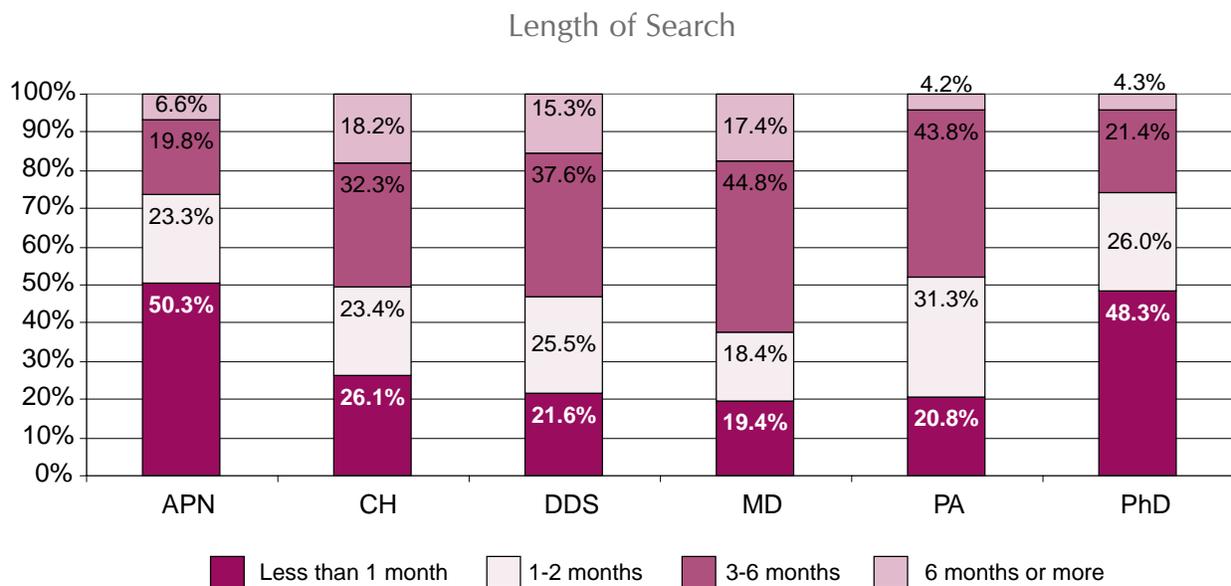
- The average number of job offers was lowest for Physician Assistants at 1.2, compared to 3.3 for medical residents and 2.8 for pharmacists.
- Physician Assistants were the most likely to have received no job offers, at 33.3%; another third received just one offer in the course of their search.
- Virtually all pharmacy and medical resident respondents who had searched for a position had received at least one job offer.

Table 4.1

Provider Type	Avg. Job Offers	No Offers	5 or more Offers
APN	1.9	23.7%	10.2%
CH	1.8	13.0%	5.3%
DDS	2.7	7.3%	15.8%
MD	3.3	1.5%	22.0%
PA	1.2	33.3%	0.0%
PhD	2.8	4.4%	18.2%

Length of Search

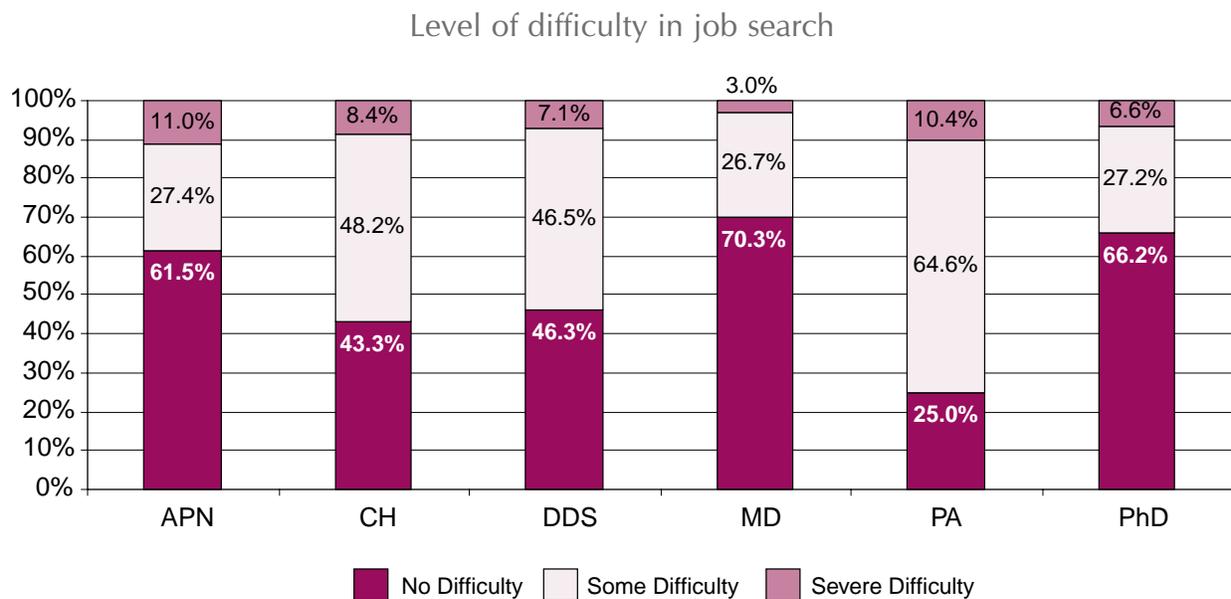
Figure 4.2



- Chiropractors, medical residents and dentists, in general, searched for a practice position longer than the other surveyed provider types. While most respondents found satisfactory positions relatively quickly, nearly 20% of these respondents had spent six months or more searching before finding and accepting a practice position.
- Advanced Practice Nursing and pharmacy respondents did not generally search long before finding a position; roughly half in each group had spent less than a month searching before accepting a position.
- Of those who were planning to go into patient care and had begun looking for a job, the percentage that had found a job varied widely. Only 64.3% of chiropractors and 55.1% of Physician Assistants who had actively searched for a job had found one at the time they completed the survey, compared with 77.9% of pharmacists and 90.7% of medical residents.

Difficulty of Job Search

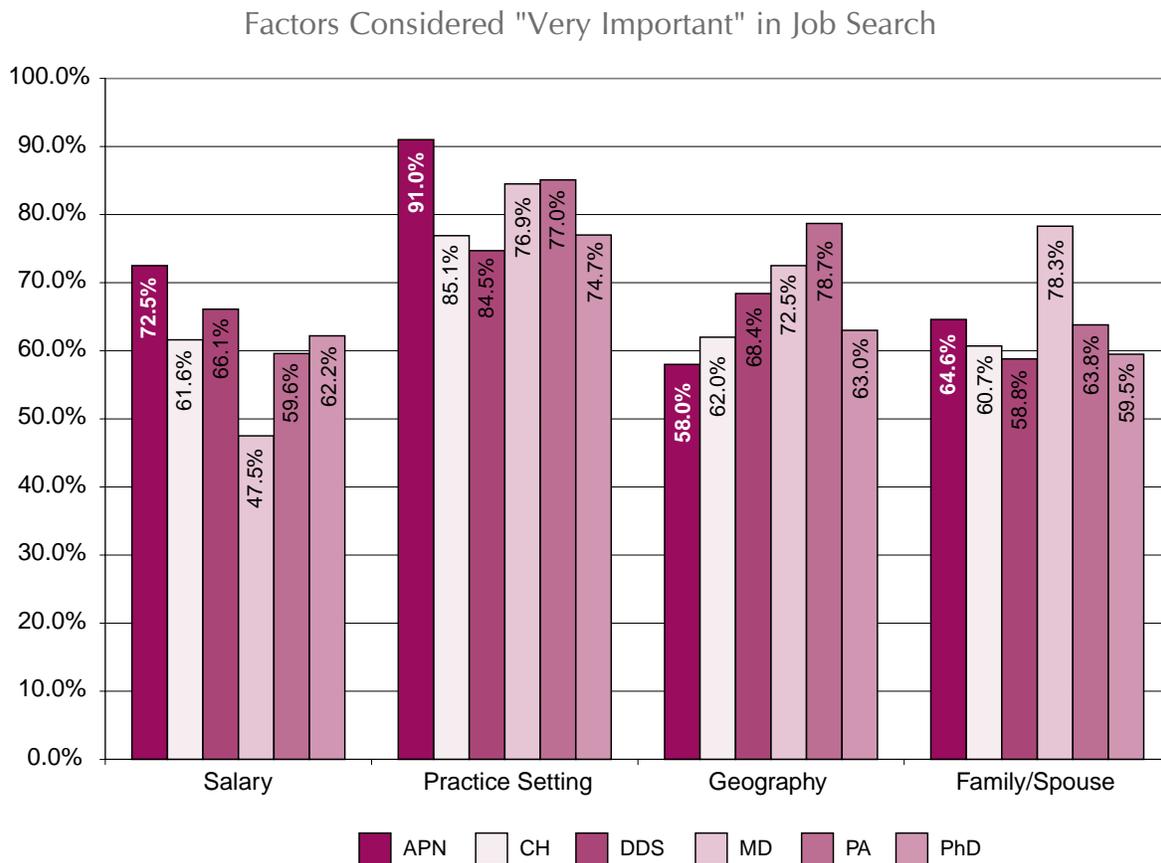
Figure 4.3



- Physician Assistant respondents were the most likely to report difficulty finding a satisfactory position. The majority of P.A. respondents (75.0%) indicated they had some/severe difficulty finding a position, compared to just 29.7% of medical residents and 33.8% of Pharmacists.
- There was no significant difference in job search difficulty between Primary Care and non-Primary Care medical residents.
- For medical resident and dental respondents, a lack of positions in the desired geographic area was the most common explanation for a difficult search (32.1% and 38.9%, respectively, of respondents who had experienced difficulties), while for chiropractors, the primary reason for difficulties was low salary/compensation (30.3%).
- Physician Assistants were the most likely to have changed their plans due to a difficult job search, with 27.7% of those who experienced difficulties in their job search making changes in their search strategy. The most common response to a difficult search was to expand the search into new practice settings.

Factors in Job Search

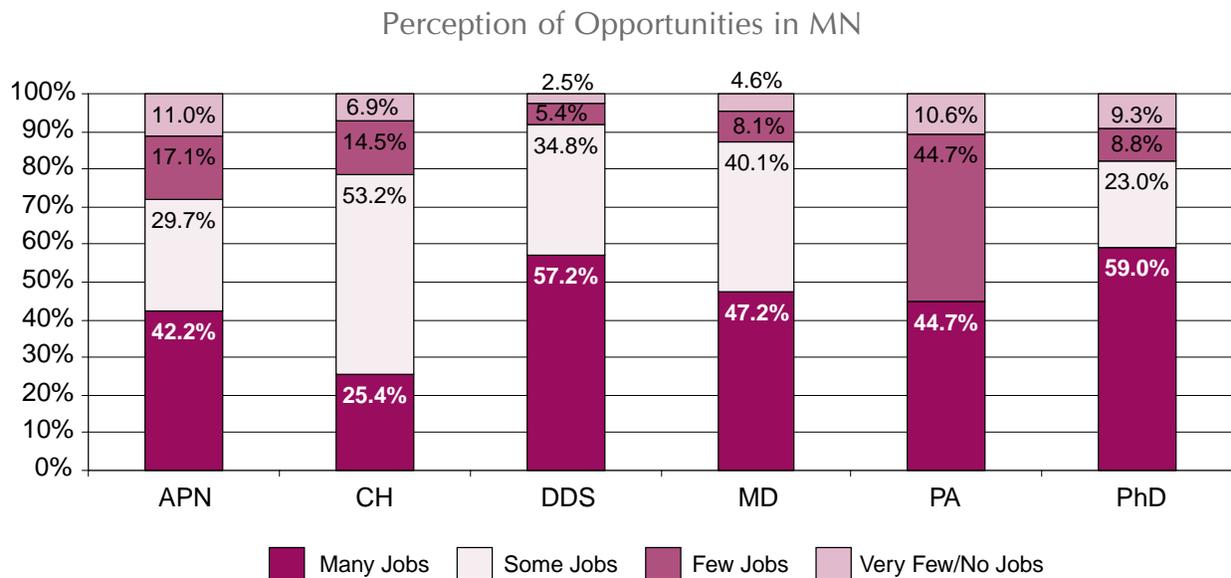
Figure 4.4



- Practice setting was the single most important factor that graduates considered in their job search. Respondents were asked about the relative importance of a series of factors, and three-quarters or more of respondents in all provider types listed practice setting as “very important.”
- Geographic location of the practice, family or spouse considerations, opportunities for professional growth and partners/coworkers in the practice were also very important to the majority of respondents.
- Relatively few respondents took military, loan or other obligations into account when searching for a job. Only 5-15% of respondents in each provider type indicated that these obligations were very important to them as they searched for a job.

Perceptions of Job Market

Figure 4.5



- Respondents who had searched for a job were asked about their perception of the availability of practice opportunities in Minnesota. Again, Physician Assistants were markedly more pessimistic about the labor market than were respondents from other provider types. More than half of the P.A.s who had searched for a job (55.3%) reported that there were “few,” “very few,” or “no” opportunities available. In contrast, roughly a quarter or fewer of respondents in other provider types responded in this way.
- Pharmacy respondents were the most optimistic about the state labor market, with nearly 60% of respondents reporting that there are many jobs available in Minnesota.
- Perceptions of the national labor market were generally more favorable than perceptions of Minnesota opportunities.

Policy Implications

Although debates around the existence and impact of worker shortages in the health professions have been ongoing both nationally and in Minnesota, an overall lack of data on the labor market experiences of these workers has made it difficult to design policy interventions to address issues of distribution, labor force composition, in-state retention and lack of access to care in underserved areas. The results presented in this report are an important first step towards the development of a better understanding of the practice decisions made by a key group of new practitioners and the factors that play into those decisions.

In the coming years, MDH will use multiple years of data from these surveys to construct a longitudinal database, which will make changes in relative demand for the surveyed health professions easier to track. However, many questions remain unanswered. As long as access to healthcare remains an issue, debates about the number and mix of health professionals needed in the state will continue, as will questions about the best methods of recruiting new people into fields that are anticipating large numbers of retirees in the coming years, the accuracy of predictions about future supply and demand, and the appropriate role of the State and other stakeholders in ensuring an adequate size and mix of health professionals in the future.

Several of the findings in this report point to areas in which state-level policies might be able to impact retention of health professionals within Minnesota or to influence the mix of Primary Care and non-Primary Care professionals working around the state. For example, survey results show that across all six provider types, one of the strongest predictors of in-state practice is having attended a Minnesota high school, college or professional school. Given this finding, one of the best approaches for increasing retention within the state may be to increase the number of entering professional students or residents who have Minnesota ties through preferential admissions or financial aid policies or through the use of incentives to institutions to increase the number of 'home grown' students or residents admitted. Working to increase awareness of and interest in healthcare careers at the high school and pre-high school levels would also be an important component of such an approach; several existing Minnesota organizations and collaboratives, such as the Healthcare Education-Industry Partnership (HEIP), have begun to focus on this strategy in recent years.

Another area where it might be possible to influence practice decisions is by expanding loan repayment programs that are tied to HPSA service or to increased service to underserved populations. The majority of respondents indicated that service requirements related to loan repayment, visa status or military obligations were not a major factor they considered when looking for a practice position. But for those that had committed to a HPSA practice, such obligations were more likely to have been an important factor leading to that choice.

According to the Minnesota Department of Health's Office of Rural Health and Primary Care (ORHPC), applications for Minnesota's various midlevel practitioner, physician and other loan repayment programs routinely outweigh the relatively small number of slots currently available. Evaluations of loan repayment programs have shown that a significant percentage of program completers continue practicing in an underserved area after completion of their service obligation; a 2004 study of 1996 data showed that over half of surveyed physicians who had participated in a loan repayment, direct incentive or loan program stayed at their practice for at least eight years.¹⁴ Given the finding that Primary Care respondents tended to have slightly higher debt levels than did non-Primary Care respondents while expecting a lower average income, this implies that expanding loan repayment or other incentive programs could have a small but significant impact on practice decisions and lead to a greater number of practitioners opting to practice in rural or urban HPSAs.

The responses from Physician Assistants also highlight an interesting dynamic. Nationally, P.A.s have taken on greater visibility and responsibility as healthcare providers, practicing in a wide variety of settings and specialties, often in rural areas or small cities. Physician Assistants have also made great inroads in Minnesota; close to 900 P.A.s are employed in Minnesota,¹⁵ and the profession is expected to grow by 48% to roughly 1,350 between 2000 and 2010, making it one of the fastest-growing occupations in the state in terms of percentage growth.¹⁶ Additionally, the use of P.A./NP/physician teams is widely recognized as a way to maintain or increase services at lower costs, an important consideration at a time when many practices are feeling pressure to reduce costs.

However, despite these factors, the responses of Physician Assistants to questions about job opportunities were markedly more pessimistic than those of other provider types. While it is possible that the outlook of P.A. respondents is partially due to a mismatch between job search area and job location or to unrealistic expectations in terms of salary or level of responsibility, the responses of Minnesota P.A. grads could also indicate underutilization of P.A.s in certain practice settings or geographic areas in the state. It is unclear from these results whether the appropriate policy response would be a change in reimbursement policies for P.A. services, a change in the current status of P.A.s as registered rather than licensed health professionals, or the promotion of other incentives to utilize P.A.s as a critical part of a healthcare delivery team. Given the potential of P.A.s, along with Nurse Practitioners and other physician extenders, to provide a wide variety of services at lower costs, however, further research into the dynamics of the market for these providers may be warranted.

Appendix A: About the Minnesota Health Professional Trainee Exit Surveys

The Minnesota Health Professions Trainee Exit Surveys were developed in conjunction with the Medical Education and Research Costs (MERC) workforce subcommittee, with additional input provided by representatives of specific Minnesota health professions educational programs. The surveys were administered through GME coordinators and other institutional contacts in the spring of each year to a total of 4,077 students and residents at 19 institutions who were intending to complete a dental, pharmacy or medical residency, an entry-level Pharm D or DDS degree, or an advanced practice nursing, chiropractic, or Physician Assistant program between May and December of the survey year.

Table A.1

Response Rates by Provider Type and Physician Specialty Group

Provider Type	Grads	Returned	Rate
Advanced Practice Nursing	632	493	78.0%
Chiropractic	590	551	93.4%
Dental	389	304	78.1%
Medical Resident	2,067	1,188	57.5%
Physician Assistant	52	52	100.0%
Pharmacy	347	255	73.5%
	4,077	2,843	69.7%

Physician Specialty Categories	Grads	Returned	Rate
Primary Care	750	442	58.9%
Non-Primary Care	1,317	746	56.6%
	2,067	1,188	57.5%

A total of 2,843 valid responses were received, or 69.7% of the total population of exiting students/residents. Table A.1 and A.2 show the response rate by provider type, physician specialty area and institution. The gender and race/ethnicity distributions of respondents in each provider type were tested for any significant variation from known gender and race/ethnicity distributions of all graduating students/ residents within the provider type. None of the grouped respondents showed significant variation from the known gender and race/ethnicity distributions of all graduates in the provider type.

Table A.2

Response Rates by Institution

Institution	Graduates	Respondents	Rate
Abbott Northwestern Hospital: Medical	29	29	100.0%
Abbott Northwestern Hospital: Pharmacy	4	3	75.0%
Children's Hospital	6	3	50.0%
United Hospital	18	18	100.0%
Augsburg College	52	52	100.0%
College of St. Catherine	62	43	69.4%
College of St. Scholastica	49	42	85.7%
Duluth Graduate Medical Education Council	24	22	91.7%
Hennepin County Medical Center: Medical	135	80	59.3%
Hennepin County Medical Center: Dental	10	9	90.0%
Metropolitan State University	17	12	70.6%
Minnesota State University, Mankato	45	43	95.6%
Mayo Medical Programs	998	623	62.4%
Mayo Dental Programs	12	10	83.3%
Mayo Nursing Programs	84	70	83.3%
Mayo Pharmacy Programs	20	12	60.0%
Minneapolis Sports Medicine Center	6	4	66.7%
Northwestern College of Chiropractic	590	551	93.4%
Regions Hospital	71	43	60.6%
St. Mary's University of Minnesota	72	66	91.7%
United Pharmacy	6	6	100.0%
Winona State University	60	45	75.0%
University of MN AHC: Pharmacy Students	299	216	72.2%
University of MN AHC: Pharmacy Residents	14	11	78.6%
University of MN AHC: Dental Students	173	144	83.2%
University of MN AHC: Dental Residents	198	145	73.2%
University of MN AHC: Nursing School	227	156	68.7%
University of MN AHC: Medical School	780	369	47.3%
Veteran's Administration	16	16	100.0%
	4,077	2,843	69.7%

Endnotes

- ¹ Council on Graduate Medical Education. Statement on the Physician Workforce, Washington D.C, 2003.
- ² Journal of the American Medical Association, December 10, 2003, 290 (22): 2992-5. RA Cooper, et al “Perceptions of Medical School Deans and State Medical Society Executives about Physician Supply.”
- ³ Minnesota Department of Health, Health Economics Program, “Labor Availability and Health Care Costs,” 2002.
- ⁴ Minnesota Department of Health, Health Economics Program, “Medical Education and Research Costs (MERC): a Final Report to the Legislature,” 1996.
- ⁵ An exchange visitor or “J” visa allows the holder to remain in the country so long as he or she is participating in an educational exchange program. Holders of “J” visas must return to their home country for at least two years upon completion of training unless they receive a waiver to practice in an underserved area. An “H” temporary worker visa allows the holder to work in the U.S. for up to six years.
- ⁶ WWAMI Research Center, University of Washington, “Physician Education and Rural Location: A Critical Review,” February 1999.
- ⁷ Journal of Rural Health, Fall 2003, 19 (4): 484-491. Brooks, RG et al, “The rural physician workforce in Florida: a survey of US- and foreign-born primary care physicians.”
- ⁸ Minnesota Department of Health, Office of Rural Health and Primary Care, “Minnesota Dentist Workforce Profile,” 2002.
- ⁹ Kington, Raynard, Diana Tisnado, and David Carlisle, “Increasing racial and ethnic diversity among physicians: an intervention to address health disparities?” In *The Right Thing To Do, The Smart Thing To Do: Enhancing Diversity in the Health Professions*. Summary of the Symposium on Diversity in the Health Professions in Honor of Herbert W. Nickens, MD, National Academy Press, 2001.

¹⁰ Minnesota Department of Health, Office of Rural Health and Primary Care, “Minnesota Pharmacist Workforce Profile,” 2002.

¹¹ American Academy of Physician Assistants, 2001 Survey of New Enrollees in Physician Assistant Programs.

¹² Minnesota Department of Health, Office of Rural Health and Primary Care, estimate based on data from Minnesota Board of Pharmacy, 2002.

¹³ American Academy of Physician Assistants, 2003 Physician Assistant Census.

¹⁴ Medical Care, June 2004, 42 (6): 560-568. Pathman, DE et al, “Outcomes of States’ Scholarship, Loan Repayment, and Related Programs for Physicians.”

¹⁵ Minnesota Department of Economic Security, Research and Statistics Office, Occupational Employment and Wage Statistics, 2003.

¹⁶ Minnesota Department of Economic Security, Research and Statistics Office, “2000-2010 Occupational Employment Projections.”

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