# Profile of Colorado's Physician Assistant Workforce

*Key Findings from the American Academy of Physician Assistants' (AAPA) Census Survey*

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## Introduction

Over the past several decades, federal and state policymakers have been faced with the dilemma of crafting effective workforce policy in the face of a primary care workforce that is not meeting the primary care needs of many communities, a rapidly aging population and steadily increasing demands for health care. Adding to this conundrum, the health care workforce is also aging and continues to be geographically maldistributed as the majority of physicians choose to practice in urban or suburban settings, leaving large numbers of rural communities without any, or inadequate, primary care resources.

Health services research findings over the past thirty years have found that the introduction of the Physician Assistant (PA) profession in the early 1970s has been one of several successful strategies to expand the primary care workforce, particularly in rural and other underserved areas. The PA profession emerged in the 1960s when a significant number of medics returned from the Vietnam War with well-honed medical skills and a lack of professional credentials to practice in a civilian context. PA training programs began springing up, most affiliated with medical schools, around the country during the 1970s.[1] PAs are certified health care professionals that are licensed to practice clinical medicine under the supervision of a physician and the medical practice acts in their respective states. Within the physician-PA delegated authority relationship, physician assistants exercise relative autonomy in medical decision-making, providing a broad range of diagnostic and therapeutic services.

To better understand the dynamics of Colorado's PA workforce, the Colorado Health Institute (CHI) analyzed the Colorado cohort of the American Academy of Physician Assistants' (AAPA) 2006 PA Census Survey. This summary of findings presents a picture of the demographic characteristics of PAs who responded to the survey and highlights key findings as they relate to workforce policy issues of high relevance to Colorado policymakers. Specifically, the paper discusses factors that are associated with the availability of Colorado's PA workforce including:

- PA scope of practice
- Primary care access in rural and other underserved areas of the state
- Educational preparation
- Supply of and demand for primary care services

### METHODS

The Colorado cohort of the 2006 AAPA Census Survey was analyzed for this policy brief.[2] In addition, a synthesis of recent literature was conducted to identify key factors affecting the Colorado PA workforce. In addition, CHI completed key informant interviews with experts in the field of PA workforce trends, education and scope of practice.

#### Survey administration

The national 2006 AAPA Physician Assistant Census Survey was conducted between February and September 2006. The survey questionnaire was available online as well as a mail-back paper survey. The online version of the questionnaire was sent to 41,053 licensed PAs throughout the country with valid e-mail addresses and paper questionnaires were mailed to 62,968 licensed PAs.[3] Questionnaires were not mailed to PAs who had indicated on a previous AAPA survey that they were either retired or working in another profession.[4]

#### Response rates and data analysis

Completed surveys were received from 23,436 currently licensed PAs, representing 33 percent of all individuals eligible to practice and nearly 36 percent of PAs invited to participate.[5] A total of 634 (nearly 3 percent of all survey respondents) reported practicing in Colorado or designated Colorado as the

state of their preferred mailing address. The Colorado Department of Labor and Employment (CDLE) estimated that in 2006 there were 1,321 PAs employed in Colorado.[6] Therefore, Colorado respondents accounted for nearly half of PAs employed in Colorado at the time of the survey.

This brief provides findings from the PAs who reported practicing in Colorado. Unless otherwise noted, all analysis describing the characteristics of the Colorado PA workforce is based on CHI's analysis of the Colorado respondents to the 2006 AAPA survey. It is important to note that the survey sample was not randomly drawn from the Colorado PA population and it was not possible to follow up with the PAs who did not respond to the survey. Because of these limitations, it was not possible to weight the Colorado data up to the practicing population and therefore the analysis cannot be generalized to Colorado's PA workforce.

National findings reported in this paper were based on the AAPA's analysis of national respondents to the survey.[7] When possible, CHI provides weighted national data for the PA workforce.

## The Physician Assistant Profession: A National and Colorado Perspective

In 2007, the U.S. Bureau of Labor Statistics ranked PAs as one of the fastest growing occupations for the period covering 2006 to 2016. In 2007, the CDLE projected the number of PA positions to increase annually by 2.9 percent between 2006 and 2016 and estimated that there would be 1,766 PAs practicing in Colorado by 2016. During this timeframe, CDLE estimated that due to turnover, retirement and increased demand, Colorado will have 63 openings for PAs annually. [8]

In a primary care practice, PAs handle routine patient visits and have access to the expertise of their supervising physician as needed. As members of a primary health care team, PAs complete medical histories, examine, diagnose and treat patients, and order and interpret laboratory tests and x-rays. In the surgical medical specialties, supervising surgeons routinely delegate to PAs a variety of tasks including pre-operative histories, ordering and compiling diagnostic tests as well as providing post-operative care. In either primary care or medical specialties, a PA's responsibilities may include education, research and administrative services.[9]

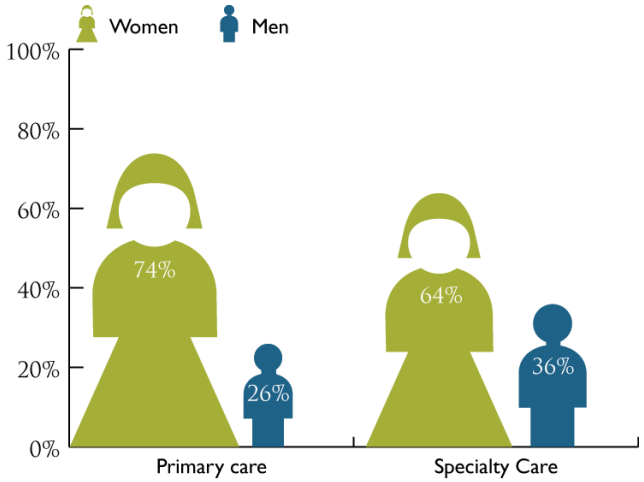
PAs have prescriptive authority in all 50 states and work in virtually all health care settings.[10] Residents in many rural communities who would otherwise be without a health care provider often have primary care access as a result of a PA-operated clinic. PAs always work under the supervision, remotely or otherwise, of a licensed physician as required by state statute. Many PAs make house calls, have hospital privileges and visit nursing home facilities to treat patients under the delegated authority of their supervising physician.

### COLORADO PA DEMOGRAPHIC PROFILE

As an historic artifact, PAs typically have been a male dominated profession. However, this trend has changed over the past several decades as many women view the PA profession as an alternative to a nursing career.[11] In fact, in Colorado, 69 percent of respondents to the AAPA survey were female, compared to 62 percent nationally.[12]

Similar to physician practice patterns, PAs are increasingly practicing in specialties other than primary care. Half of Colorado's PA survey respondents reported practicing in a primary care specialty including general internal medicine, family medicine and general pediatrics. Nationally, the percentage of survey respondents practicing primary care was only 36 percent.[13] The other half of Colorado respondents practiced in other specialties such as dermatology, obstetrics and gynecology or emergency medicine or within a subspecialty of internal medicine or pediatrics.

Graph 1. Specialty and gender, Colorado PA respondents, 2006

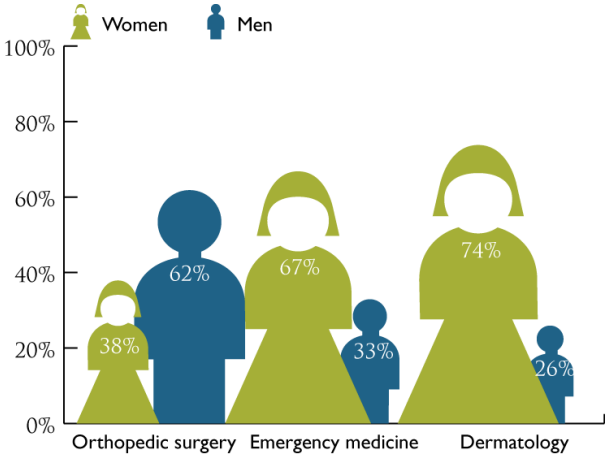



SOURCE: CHI analysis of the AAPA 2006 Physician Assistant Census Survey

A greater proportion of female PA respondents in Colorado practiced a primary care specialty compared to other specialties. The opposite was true for males. As shown in Graph 1 above, 74 percent of the Colorado respondents who practiced primary care were female and 26 percent were male. On the other hand, of those respondents who practiced in a specialty area, 64 percent were female and 36 percent were male.

Although a higher proportion of PAs than physicians continue to work in primary care practice settings, nationally, PAs are increasingly moving away from primary care specialties and into other specialties.[14] The most common specialty practices where Colorado respondents indicated they worked were orthopedic surgery, emergency medicine and dermatology. Graph 2 summarizes the gender distribution within those specialties.

Graph 2. Top three specialty practices by gender, Colorado PA respondents, 2006

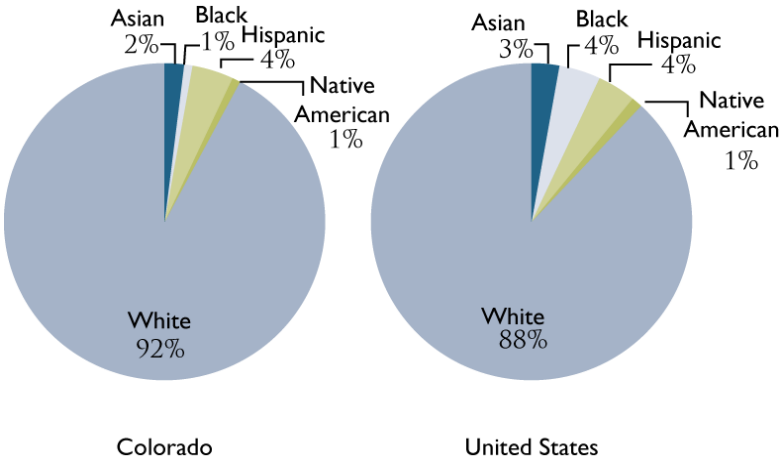



SOURCE: CHI analysis of the AAPA 2006 Physician Assistant Census Survey

As noted in Graph 3, a higher percentage of Colorado PA respondents were white (92 percent) compared to 88 percent nationally. Similar to the physician workforce, the PA workforce in Colorado is not as ethnically and racially diverse as the population of the state. For example, four percent of

Colorado PA respondents were Hispanic and one percent was Black. However, according to 2006 population estimates, 20 percent of the Colorado population was Hispanic and four percent was Black.[15]

Graph 3. Ethnicity and race of PA respondents, Colorado and U.S., 2006[16]




SOURCE: CHI analysis of the AAPA 2006 Physician Assistant Census Survey

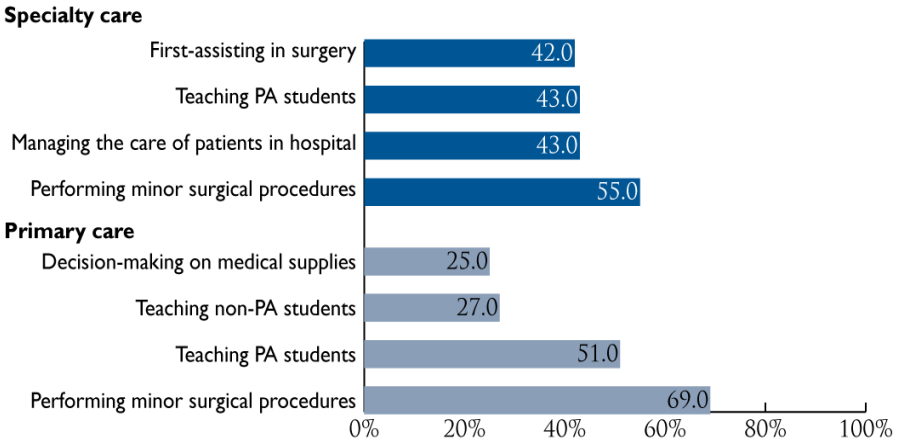
A number of national studies have found that individuals from racial and ethnic minority backgrounds prefer to receive care from physicians who have similar racial, ethnic and cultural backgrounds.[17] In addition, research suggests that physicians who identify themselves as a racial or ethnic minority tend to provide more health care to minority, underserved or medically indigent populations when compared to their White counterparts.[18] While this research is limited to physicians, if the same finding were true for other health care professionals, it would suggest that increasing the ethnic and racial diversity of the PA workforce could improve access to these historically underserved populations.

## SCOPE OF PRACTICE ISSUES

Individual state statutes and regulations delineate the scope of practice of PAs. In Colorado, a supervising physician may delegate authority to a PA as long as those delegated activities are consistent with the physician's education, training, board certification and active practice. Services performed by the PA must be of the type that a reasonable and prudent physician would find within the scope of sound medical judgment to delegate. Moreover, the supervising physician may only delegate services that the physician is qualified and insured to perform and that the physician has not been legally restricted from performing.[19]

Many PA functions overlap with those of their supervising physician. Generally, each physician/PA team determines the appropriate balance of PA clinical autonomy and physician supervision. PAs working in a surgical setting may assist in performing surgical procedures in the operating room, serving as first surgical assistant to their supervising surgeon.

Graph 4. Colorado PA respondents performing selected professional activities, primary vs. specialty care, 2006




SOURCE: CHI analysis of the AAPA 2006 Physician Assistant Census Survey

As Graph 4 illustrates, 69 percent of Colorado's primary care PAs reported performing minor surgical procedures; 78 percent were engaged in teaching and mentoring students and 25 percent performed decision-making about the procurement of medical equipment and supplies. Regarding Colorado's specialty care-practicing PAs, 55 percent performed minor surgical procedures, 43 percent managed the care of patients in the hospital, 43 percent taught and mentored PA students and 42 percent were first-assistants in surgery.

## PRIMARY CARE ACCESS IN COLORADO'S MEDICALLY UNDERSERVED COMMUNITIES

Geographically, Colorado is predominantly a rural state, with 47 of Colorado's 64 counties designated as rural and the remainder designated as urban.[20] In addition to the geographic barriers created by the Rocky Mountains, high plains and national forests, other demographic and economic factors, such as ethnicity and income status contribute to the vulnerability of individuals in medically underserved areas of the state.

A study analyzing national data from 1997-2003 found a greater proportion of rural health primary care visits were attended by a PA as compared to urban patient visits. Moreover, individuals who were self-pay were also more likely to visit a PA as compared to individuals with private insurance.[21] This suggests that nationally PAs are important in extending primary care services to lower income individual and those living in rural areas.

However, in 2006, approximately 11 percent of Colorado PA respondents reported working in a rural county while 16 percent of Colorado's population lived in a rural county. Urban counties with the highest percentage of PA respondents included Denver County (19%), Arapahoe County (14%), El Paso County (12%), Jefferson County (8%) and Boulder County (7%).

Graph 5. Number of years worked in current primary specialty based on practice location of current employer, Colorado PA respondents, 2006


SOURCE: CHI analysis of the AAPA 2006 Physician Assistant Census Survey

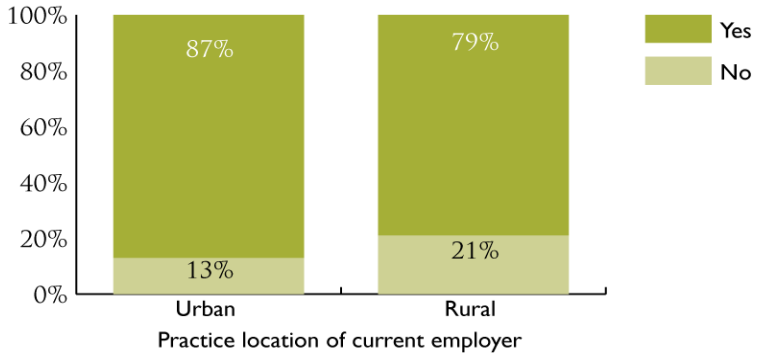
Graph 5 shows that in Colorado, PA respondents that reported working in a rural location were likely to have worked longer within the same specialty compared to those working in an urban area. Specifically, 36 percent of PA respondents working in rural locations worked in the same primary clinical specialty for 10 or more years. On the other hand, of PAs working in an urban practice, only 23 percent had worked in the same primary specialty for ten years or longer.

In 1992, the Child Health Associate/Physician Assistant (CHA/PA) training program at the University of Colorado at Denver program incorporated a rural track in which students spend three to five months in a rural clinical placement. In 2006, two-thirds of PA students completed a rural rotation and almost all completed a rotation in an underserved area. According to key informants, the rural track was incorporated into the program in response to studies that found PAs were more accepted by a rural community when they were familiar with the area, lifestyle and culture of local residents.

## PA Job Satisfaction

Research has found that a leading factor in PA job satisfaction is practice autonomy, where autonomy is defined as the freedom to practice under remote supervision protocols.[22] Overall, 86 percent of Colorado respondents indicated that they would choose a PA career again. However, there were some differences between urban and rural respondents.

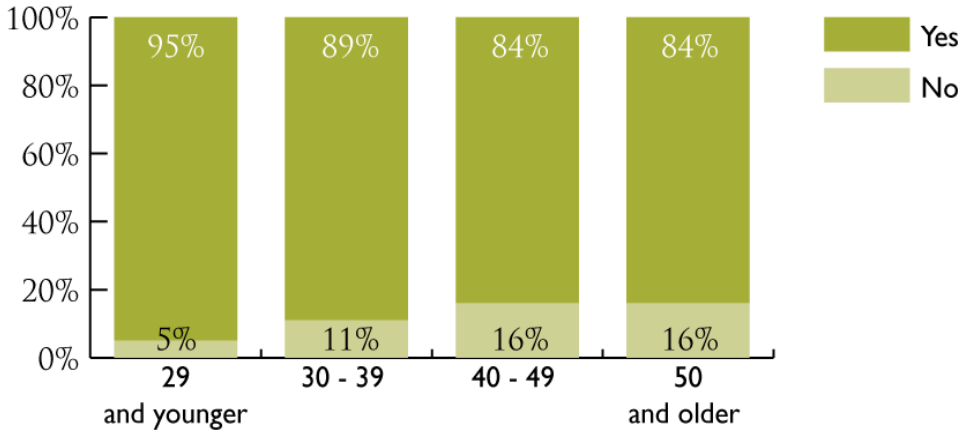
Graph 6. Percent of Colorado respondents who would choose PA career again by location of current primary employer, 2006[23]




SOURCE: CHI analysis of the AAPA 2006 Physician Assistant Census Survey

Graph 6 illustrates that slightly more Colorado PA respondents working in an urban practice would choose a PA career again (87%) when compared to those working in a rural practice (79%).

Graph 7. Colorado PA respondents who would choose PA career again by age group, 2006




SOURCE: CHI analysis of the AAPA 2006 Physician Assistant Census Survey

Younger PA respondents were more likely to report choosing a career as a PA again when compared to their older counterparts. Around 95 percent of PA respondents 29 years and younger would choose the same career; whereas 84 percent of PA respondents 50 years and older answered similarly.

## PA EDUCATIONAL PREPARATION

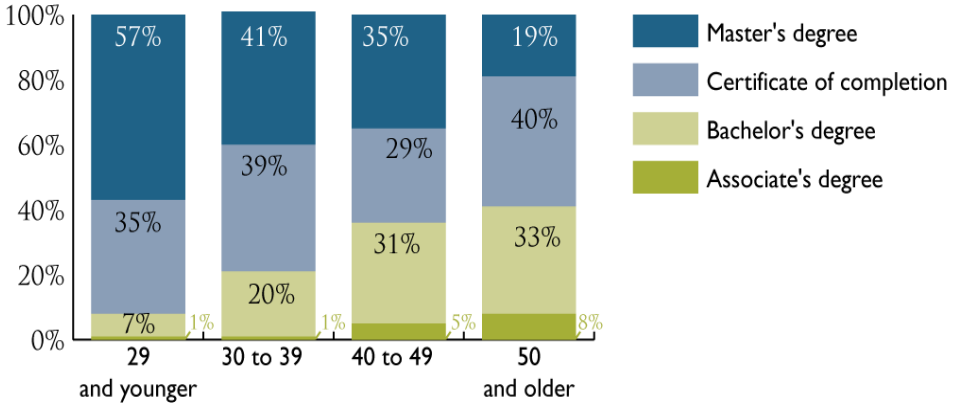
Currently, there are almost 150 accredited entry-level PA programs in the United States.[24] Colorado has two PA education programs: the CHA/PA Program at the University of Colorado and the PA Program at Red Rocks Community College (RRCC).

The CHA/PA program was established in 1968, when a projected pediatric health care shortage provided impetus for its development. In 1973, the CHA/PA program became the first PA education program in the country to offer a master's degree of physician assistant studies. While the CHA/PA program continues its focus on pediatrics, it also provides training for care across the lifespan. The program currently has an average class size of 40 students per year and has graduated a total of 820 PAs. Since 2008, all graduates receive an MPAS (master's in physician assistant studies). They previously received a certificate of completion and many received a master's in science degree.[25]

The RRCC PA Program was established in 1998. Class size averages 28-30 students per year. The program offers a Certificate of Physician Assistant Studies. Students accepted into the program may, however, choose to receive a master's degree through RRCC's affiliation with Saint Francis University at Loretto Pennsylvania via a long-distance learning program. The program is also affiliated with Regis University in Denver which awards a master's degree in clinical leadership.

PA education has evolved from associate's degrees to certificate programs. Currently, an increasing number of PAs are receiving master's degrees from PA programs.[26] According to the AAPA, in 2006, 35 percent of PAs had a master's degree and 44 percent had a bachelor's degree from an accredited PA program.[27] Of Colorado's survey respondents, 42 percent had a master's degree and 28 percent had a bachelor's degree from a PA program.

Graph 8: Educational degrees from PA programs awarded by age group, Colorado PA respondents[28]




SOURCE: CHI analysis of the AAPA 2006 Physician Assistant Census Survey

As summarized in Graph 8, there was an association between age and educational background in 2006 with younger respondents more likely to have a master's degree when compared to their older colleagues. For example, 57 percent of the degrees awarded to PA respondents 29 years and younger were master's degrees compared to 19 percent of degrees awarded to PA respondents 50 years and older. Conversely, within the older age groups (40-49 and 50 and older) PA respondents were more likely to have earned a bachelor's or associate's degree compared to younger respondents.

### SALARY

According to the Medical Group Management Association, PA compensation grew by 15 percent from 2001 to 2005, outpacing the income growth rate for family physicians (10%) and pediatricians (11%).[29] According to national 2006 AAPA census data, the average annual salary for a PA working full-time (at least 32 hours per week) in a clinical capacity was $84,396.[30] This represents a 23 percent increase from the mean annual salary of $68,757 for a PA practicing full-time in 2000.

In Colorado, the average annual salary for PA respondents practicing full-time (at least 32 hours per week) in a clinical capacity in 2006 was nearly $78,000.[31] In addition, 33 percent of Colorado PAs received a performance-based bonus, while 17 percent received a bonus based on the overall performance of the practice.

In addition to annual salary, 24 percent of national PA respondents reported that they received a bonus for their performance and some reported that they received additional pay above their salary for working overtime, assisting in surgeries, administrative services and on-call time and availability. Overall, 68 percent reported that they received some kind of remuneration in addition to their base salary.

## Conclusion

Many of the findings from Colorado parallel national trends, including increased specialization of PAs and a trend toward master degree preparation as the preferred professional degree. These and other trends are most apparent on a national level, but have implications for the PA workforce in Colorado. Nationally, PAs are more likely to practice in health professions shortage areas (HPSAs) than physicians, although this is not a finding in the Colorado PA sample. Because many of Colorado's rural counties are designated as HPSAs, the re-distribution or strategic deployment of PAs in Colorado is a policy option worth considering and steps could be taken to learn from other states where PAs are more inclined to practice in a rural community where recruitment strategies have been designed.

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

CHI suggests several opportunities for further study which may enhance our knowledge of how the training and deployment of PA professionals might impact health care workforce issues: 1) conduct a Colorado-specific PA workforce survey to include questions addressing recruitment, retention and compensation related to rural, underserved areas of Colorado; 2) assist AAPA efforts to increase the response rate for Colorado PAs; 3) conduct a career choice satisfaction survey to better understand the factors that influence PAs to practice in primary care and rural settings. These workforce monitoring activities could inform public and private decisions about the appropriate numbers of PAs needed to meet the ongoing health care needs of the state's population.

### FOR MORE INFORMATION

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

## Endnotes

[1] Society for the Preservation of Physician Assistant History (2004). "Illustrated History of the PA Profession, Timeline: Implementation Period." Duke University Medical Center (DUMC), North Carolina: http://www.pahx.org/period03.html.
[2]American Academy of Physicians Assistants (2008). Census Survey data 2006, Colorado.
[3] American Academy of Physician Assistants (2008). "2006 AAPA Physician Assistant Census Report, Introduction." Alexandria, VA: http://www.aapa.org/research/06census-intro.html.
[4] Ibid
[5] Ibid.
[6] Colorado Department of Labor and Employment. Labor Market Information Gateway, 2009.
[7] For a summary of national findings, http://www.aapa.org/research/06census-content.html (Accessed April 1, 2009).
[8] Colorado Department of Labor and Employment. Labor Market Information Gateway, 2009.
[9] Legler, CF and JF Cawley, WH Fenn (2007). "Physician assistants: education, practice and global interest." *The Medical Teacher* 29: e22–e25.
[10] American Academy of Physician Assistants (2008). "Facts at a Glance."Alexandria, VA: http://www.aapa.org/glance.html (Accessed January 15, 2009).
[11] Lindsay, Sally (2005). "The Feminization of the Physician Assistant Profession," *Women and Health.*
[12] When weighted for non-response bias, 58% of the national PA workforce was female.
[13] Respondents were asked to identify the specialty they practiced most frequently for their primary clinical employer.
[14] Cooper, RA (2007). "New Directions for Nurse Practitioners and Physician Assistants in the Era of Physician Shortages." *MDAcad Med* 82:827–828.
[15] US Census Bureau. In addition, around 2% of the Colorado population was multi-racial.
[16] When the national workforce data were weighted for non-response bias, 83% of the national PA workforce was white, 5% was Asian, 6% was black, 5% was Hispanic and 1% was Native American.
[17] Smedley, BD et al. *Unequal Treatment: Confronting Racial and Ethnic Disparities in Health Care* (2003). Board on Health Sciences Policy, Institute of Medicine of the National Academies. pp 573-4.
[18] Ibid.
[19] Colorado Revised Statutes, Title XII.
[20] Colorado Rural Health Center, applying definitions from the U.S. Census Bureau. For purposes of analysis, frontier and rural counties are referred to as rural.
[21] Staton F, Bhosle M, Camacho F, Feldman S, and Balkrishman R. (2007). "How PAs Improve Access to Care." JAPPA 20(6).
[22] Henery, L and Hooker R. (2007). "Retention of Physician Assistants in Rural Health Clinics." *The Journal of Rural Health* 23(3)
[23] Respondents were asked, "Would you become a PA if you were choosing a career today?" For the purposes of Graph 7, respondents who answered the question "definitely yes" and "probably yes" were consolidated in the "yes" category. Respondents who answered the question "definitely no" and "probably no" were consolidated in the "no" category.
[24] Accreditation Review Commission on Education for the Physician Assistant, Inc. Available at http://www.arc-pa.org/Acc_Programs/acc_programs.html (Accessed April 6, 2009)
[25] Glicken et al (2007). "The Child Health Associate Physician Assistant Program – An Enduring Educational Model Addressing the Needs of Families and Children," *JPAE* 18 (3): 24-29.
[26] Jones, EP (2007). "Physician Assistant Education in the United States." *Academic Medicine*. September 82(9):882-887.
[27] Because respondents may have multiple degrees, they may be counted multiple times in the different degree categories. When weighted for non-response bias, 29% of PAs in the US had received a master's degree from a PA school, while 47% had received a bachelor's degree from a PA school.

[28] Because respondents may have multiple degrees, they may be counted multiple times in the different degree categories.
[29] Lowes, R (2007). "NPs and PAs: A Seller's Market. "*Medical Economics* Jan: 51-53.
[30] Excludes self-employed PAs.
[31] AAPA, 2006 AAPA Physician Assistant Census Report for Colorado, available at http://www.aapa.org/research/state-reports-2006/co.pdf (Accessed April 6, 2009). Excludes self-employed PAs.