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Dimensions of Retention: A National Study of the Locational Histories of Physician Assistants

by

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About the Center

The WWAMI Rural Health Research Center (RHRC) is one of five centers supported by the Federal Office of Rural Health Policy, a component of the Health Resources and Services Administration of the Public Health Service. The major focus of the WWAMI RHRC is to perform policy-oriented research on issues related to rural health care. Specific interests of the Center include investigations into trends in health personnel in rural America, investigation of the changing patterns of obstetric and neonatal care in rural areas, and the impact of the restructuring of health care on rural provider availability, clinical performance, and outcomes.

The WWAMI Rural Health Research Center is based in the Department of Family Medicine at the University of Washington School of Medicine, and has close working relationships with the Programs for Healthy Communities (PHC) and the other health science schools at the University, as well as with other major universities in the five WWAMI states: Washington, Wyoming, Alaska, Montana, and Idaho. The University of Washington has over 25 years of experience as part of a decentralized educational research and service consortium involving the WWAMI states, and the activities of the Rural Health Research Center are particularly focused on the needs and challenges in these states. The WWAMI RHRC also works closely with the associated Area Health Education Centers.

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Abstract

Background: As the physician assistant (PA) profession has evolved, a trend towards specialization, and away from the generalist emphasis of early PA training programs, has emerged. This trend has the potential to limit the supply of PAs with training appropriate to serving rural populations. In this study, we describe the locational histories of a representative national sample of PAs and consider the implications of observed locational behavior for recruitment and retention of PAs in rural practice.

Methods: A national sample of PAs was surveyed about their education, background and practice activities. Respondents were also asked to list all the places they had practiced since completing their PA training. We used those data to construct a locational career history for each respondent. This made it possible to classify the career histories of PAs as "all rural," "all urban," and "rural to urban". We were also able to track PAs across regions.

Results: We examined retention of PAs in rural practice at several levels: in the first practice, in rural practice overall, and in states. PAs who entered their first practice in a rural location were more likely to leave it over the first four years of practice than urban PAs, and female rural PAs were slightly more likely to leave than men. PAs starting in rural practice had high attrition to urban areas (41%), however, a significant proportion of the PAs who started in urban practice settings left for rural settings (10%). This had the effect of keeping the total proportion of PAs in rural practice at a steady 20 percent (30% among generalists). While 21 percent of the earliest graduates of PA training programs have had exclusively rural careers, only 9 percent of PAs with 4 to 7 years of experience have worked in exclusively rural settings. At the state level we found that generalist PAs were significantly more likely to leave states with practice environments unfavorable to PA practice in terms of prescriptive authority, reimbursement and insurance.

Conclusions: The changing demography of the PA population and the nature of PA training raises serious concerns for those seeking to maintain or increase rural recruitment and retention of PAs. Especially distressing is the trend away from rural practice among female PAs (the majority of recently graduated PAs). PA recruitment and retention efforts need to take account of this changing demography and identify the issues that appear to make rural practice less attractive to women.

Introduction

Twenty years ago, nonphysician clinicians (NPCs) such as nurse practitioners, certified nurse anesthetists and physician's assistants often experienced difficulty in gaining acceptance from patients, physicians, regulators and insurers. Since that time, both acceptance of NPCs and the number of roles NPCs can play have grown substantially (Cawley, 1997; Cooper, 1997). In rural settings NPCs can function as both physician substitutes and scope of service extenders (Krein, 1997; Shi et al., 1993). Sometimes, the presence of NPCs can make the difference between keeping and losing a physician. A community that might not be able to support two physicians may well be able to support a physician and an NPC. NPCs may also enhance the local health care system by making it possible to maintain local surgical and emergency services. In some remote settings, an NPC may be the only local provider of health care.

With greater patient and physician acceptance of NPCs, and the evolution of a less restrictive regulatory environment[1], the NPC professions have evolved, and a trend towards specialization, and away from the generalist emphasis of early training programs, has emerged. The growth of managed care organizations has also provided roles for NPCs that were not envisioned when the earliest NPC training programs were established (Hooker & Freeborn, 1991; Smith, 1970). In addition, the demand for NPCs substantially outstrips supply despite growth in both the number and capacity of training programs. In 1994, for example, there were 64 accredited physician assistant (PA) training programs in the United States. By 1996, there were 78 accredited programs (Cooper, 1997). Despite this growth in training capacity, recent work estimates that there are approximately five available positions for each nurse practitioner and physician assistant (Robbins, 1994).

The specialization trend, the growth of managed care, increased emphasis on reducing health care expenditures, and increased demand has the potential to limit the supply of NPCs with training appropriate to serving rural and other underserved populations. Consequently, successful recruitment and retention of NPCs has become an important issue for rural communities seeking to maintain and enhance local health care systems. While the recruitment and retention of physicians in rural settings has been studied extensively (Conte et al., 1992; Riley et al., 1991; Rosenthal et al., 1992; West et al., 1996), substantially less is known about the issue with respect to NPCs.

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[1] Compare, for example, the restrictive legal practice environments described by Weston (1980) with the survey of practice environments recently conducted by Sekscenski et al. (1994).

In this study, we describe the locational histories of a representative national sample of physician assistants and consider the implications of observed locational behavior for recruitment and retention of physician assistants in rural practice. While many studies of retention have focused on retention in individual practices, we broaden the definition of retention and examine it at several levels: individual practice locations (counties), rural practice overall and retention at the state level. Movement from one rural practice location to another, while interesting at the community level, is not necessarily very interesting with respect to any policy or program aimed at improving rural retention. Setting policy goals and assessing policy implementation with respect to recruitment and retention is better measured in terms of the overall supply of rural providers over the long haul. In addition, it is important to know whether the evolution of the PA profession has affected the underlying demographics and locational behavior of the PA population. Policy goals and underlying assumptions about likely locational behavior made in the early days of the PA profession may no longer be entirely valid. In this study, therefore, we also compare the locational behavior of recent PA graduates to that of PAs who graduated earlier.

Methods

Data Collection and Sampling Frame: A national sample of PAs was identified with the assistance of the American Academy of Physician Assistants (AAPA). The survey instrument was a four-page questionnaire that asked PAs about their current practice specialty and activities, education, background and demography. A practice history section asked respondents to list all their practices locations (and dates of practice) since graduating from PA training. The questionnaire was based on a survey instrument used in a previous study (Larson et al., 1994) and was reviewed and pretested by practicing PAs. The full questionnaire is in the Appendix.

The stratified sampling frame was based on rural-urban location, AAPA membership, and included oversamples of rural PAs and PAs who were not members of AAPA. The survey was carried out in a joint survey effort conducted by the Rural Health Research Centers at the University of North Dakota and the University of Washington. A random sample of 2500 AAPA members were surveyed between September 1993 and February 1994. There were 1521 usable responses to two mailings, for a response rate of 61 percent. A survey of a randomly selected oversample of 2077 rural PAs (defined as AAPA member and nonmember PAs living in towns of less than 10,000 population) was conducted at the same time. Of those, 1372 provided usable data, a response rate of 66 percent. Subsequently, a random survey of 1000 nonmembers of AAPA was conducted a few months after the first two surveys. After two mailings, there were 316 responses to that survey, a

response rate of 31.6 percent. This low response rate for non-AAPA members was expected because of similar response to earlier surveys conducted by the AAPA. Actual response rates were probably higher because some of the PAs being counted as nonrespondents did not receive their questionnaires (i.e. they had moved and support staff at their former office locations neither returned nor forwarded the survey).

Exclusions from Career History Analysis: Of the 3209 respondents, 109 were no longer practicing as PAs and were excluded from further analysis leaving a total of 3100 respondents. Accurate characterization of the career histories was dependent on the provision of complete answers to the questions concerning where the respondent had practiced and the period of time covered by each practice. Two hundred sixty-six respondents failed to provide complete information on where they had practiced and were consequently excluded. Some missing data on start and end dates of practices could be imputed from other data, but in 178 cases, date information was missing and not imputable and those cases were also excluded. An additional 11 cases were excluded because the respondents were working in exclusively administrative positions with no clinical responsibilities. This left a final study population of 2645 respondents (89% of the clinically active respondents). Analyses indicated that the final study population did not differ significantly from the larger population in terms of demography, total years of experience, medical specialty or distribution across the sampling strata.

Describing Career Trajectories for PAs: The term "career trajectory" is used to describe the total locational and temporal practice histories of the respondents. The county of each recorded practice location was coded along with begin and end dates of each practice. Federal Information Processing Standards (FIPS) codes were used to identify each county. Multiple practices within a county were counted as one practice location (with one begin date and one end date). Every listed practice location was identified as urban or rural based on whether it was located in metropolitan or nonmetropolitan county.

With each practice location identified as rural or urban, it was then possible to classify the total locational behavior of PAs through their careers. For example, PAs who had practiced exclusively in urban locations were classified as "all urban"; PAs who started their careers in a rural county and eventually migrated to an urban county were classified as "urban to rural". In addition to identifying the trajectories in ways such as "all rural" or "rural to urban," it was also possible to track regional migration of PAs across careers. One regionalization scheme of particular interest was created by examining movement to and from states with more or less favorable regulatory and reimbursement environments for PAs (Sekscenski et al, 1994), allowing us to assess the association between practice environment and locational decisions.

While the career trajectories of most of the respondents were fairly easy to characterize, it was sometimes necessary to idealize the trajectories. These cases arose when the respondent listed practices that overlapped in time by more than one month or when the start and end dates of a practice were "embedded" within the dates of another listed practice. In the case of overlapping practices, the start date of the second practice was adjusted to one month after the end of the first practice. Embedded practices were eliminated from analysis (368 out of a total of 6552 practices reported by the 2645 respondents). These minor changes made the characterization of the career trajectory more practical and ensured that we were not overestimating the total number of months of practice experience of each PA. Total practice experience was calculated from the practice history data, rather than from the date of graduation. This prevented overestimation of total time in practice by excluding gaps between practices from the calculation. Since the study was particularly concerned with long term retention, the 528 PAs with less than four years of total practice experience were excluded from most of the analyses, leaving a total of 2119 respondents in the study population.

Statistical Weighting: After completing the stratified survey, a nonresponse survey of 100 AAPA members and 100 nonmembers was conducted. These nonrespondents were mailed a very short questionnaire that asked whether they were still practicing as PAs and how many hours per week they worked. Respondents who were not in practice were asked to describe their current occupation. Among nonrespondent AAPA members, 16 could not be located. Of the remaining 84 nonrespondents, 7 (8.3%) were no longer in practice as PAs. Among nonrespondent nonmembers, 18 could not be located. Of the remaining 82 nonrespondents, 26 (31.7%) were no longer in practice as PAs.

The results of the nonresponse survey were used to help construct weights to make the initial survey sample nationally representative. When used to adjust the response rates for the unlocatable PAs, estimated response rates increased from 61, 66 and 32 percent to 72, 79 and 39 percent for the national, rural and non-AAPA surveys respectively. A relatively surprising finding from the nonresponse survey was that the majority (68.3%) of non-AAPA members were currently practicing as PAs.

The nonresponse information, along with the response information from the original survey, was used to generate compensatory statistical weights that corrected for biases in strata sampling and response rates. While the weights can be used to produce unbiased population estimates, the use of weights can produce biased estimates of variance. To adjust the variance estimates, a random-effects model (i.e. SUDAAN program) was applied (Kish, 1965; Shah et al., 1996) so that variance estimates produce confidence intervals and statistical tests that were both unbiased and conservative. Two tailed chi-squared tests, t-tests and F-tests were used to test whether differences were statistically significant. All results presented

below are based on the weighted analyses. The sampling strategy and response rates of this survey decrease the power of the statistical tests and widen estimated confidence intervals. Nevertheless, as can be seen in the tables below, the confidence intervals remain relatively small. For instance, the 95 percent confidence interval around the study estimated of 19.2 percent of PAs currently practicing in a rural area was only 17.2 to 21.2 percent (see Table 2).

Results

Description of Study Population: Table 1 shows the general demographic characteristics of the study population by levels of total practice experience. The data presented show that the demography of the populations of PAs varies markedly between younger and older PA cohorts. The earliest graduates (those with more than 12 years of experience) are much more likely to be male, white and to have grown up in small towns than more recent graduates with less experience. Rural origins were examined because several studies have indicated a link between growing up in rural areas and a propensity to practice in rural areas upon completion of training (Goldberg et al., 1984; Hafferty & Goldberg, 1986; Larson et al., 1994). Those classified as having grown up in rural areas were identified by responses to a question that asked the respondents about the population of the town where they had lived at twelve years of age. Literature in rural sociology indicates that rural "enculturation" is linked most strongly to a rural adolescence (Miller & Luloff, 1981).

Current rural and urban practice location of respondents and whether they practice as generalists or specialists is shown in Table 2. Generalists were those PAs who indicated that their practice specialty was family medicine, general pediatrics or general internal medicine. About twenty percent of all PAs, and about thirty percent of all generalist PAs, practiced in rural settings at the time of the survey.

Practice Histories: Analysis of the practice history data by total practice experience (Table 3) indicated that PAs generally have fairly stable work histories. Even those PAs with more than 12 years of experience had practiced in a mean of only 2.6 practices during their careers. Over 60 percent of PAs with more than four years of experience were practicing in their first or second practice since graduation. Analysis of the career histories of the PAs involved examining the location of each practice and then classifying the history in terms of its locational characteristics. About 71 percent of the respondents had spent their entire careers working in urban settings, while about 10 percent had spent their entire careers in rural settings. Twenty-one percent of respondents with more than 12 years of experience had practiced exclusively in rural settings, more that twice the rate found among more recently graduated respondents. About eight percent of the PAs began their careers

in urban settings but eventually moved to rural settings and stayed there, while about seven percent started practicing in a rural setting but eventually moved to an urban one. Figure 1 shows gender differences in overall career locational behavior. Women are more likely to have had all urban careers, less likely to have had all rural careers and less likely than men to have left urban settings for rural ones.

Retention: In the literature, "retention" is usually defined as continued medical practice in a particular practice (Pathman et al., 1992) or in a small geographic unit such as a county (Rosenblatt et al., 1996). In a similar fashion, we examined first practice retention over four years defined as continued practice in the same county. However, we also explored some other dimensions of retention, including continued practice in rural or urban settings and continued practice within states. Some retention analyses were stratified by the favorability of the state practice environment as classified by Sekscenski and colleagues (Sekscenski et al., 1994).

Figure 2 shows retention in the location of the first practice after graduation stratified by whether that practice was in an urban or rural county. The attrition out of first practices is clearly higher among rural PAs during the first five years of practice, with the difference between rural and urban retention growing at each 12 month anniversary. When the first practice retention analysis is stratified by sex (Figure 3), a slightly higher attrition rate among rural female PAs than urban ones is observed for the first three years of practice. Through the first eight years of practice urban women are somewhat more likely to leave their first practices than urban men.

Another way to think about rural retention is to consider retention in rural practice, regardless of the particulars of individual practice locations. In Table 4, rural and urban practice locations at the beginning of the PA career are compared with practice location at the time of the survey. The table shows that while almost 19 percent of the PAs began their careers in rural locations, only 59 percent (11.2% of the total) of that group were still in rural locations at the time of the survey. At the same time, 8.1 percent of the PAs began their careers in urban settings and left for rural practice later in their careers. The in-migration of urban practitioners to rural settings roughly balances the loss of those who leave rural practice settings, so that the proportion of PAs in rural settings remains at approximately 19 percent. A similar situation is observed when the analysis was restricted to generalist providers, as shown in Table 5. Among generalist providers, in- and out-migration balanced with approximately 30 percent of PAs practicing in rural settings.

Retention and Practice Environment: Sekscenski et al (Sekscenski et al., 1994) have rated the favorability of state practice environments for PAs. In their work, each state (and the District of Columbia) received a numeric score of up to 100 points based on legal status, reimbursement and prescriptive authority. For PAs,

scores ranged from 0 (Mississippi) to 100 (Washington State). The study demonstrated that higher state scores were associated with higher practitioner-to-population ratios.

The Sekscenski scores were used to examine state level retention of PAs. States were grouped according to whether they had high practice environment scores (81 to 100, 29 states), or low ones (0 to 80, 22 states). Out-migration from first practice states was examined across practice environment category among generalists, specialists and overall. Table 6 shows very small and nonsignificant differences in state level retention among PAs overall and among specialist PAs. Among generalist PAs (those in family practice, pediatrics and general internal medicine) however, there was much higher retention in states with more favorable PA practice environments (72% compared to 57%, $p < .01$). This general pattern was observed in all practice experience cohorts but was somewhat more pronounced among generalist PAs with eight or more years of total practice experience (77% retention compared to 52%).

PAs who had their first practice in California, or who emigrated to California, were excluded from this analysis. California has an enormous "pull" effect among health providers generally, and despite its relatively low practice environment score of 59, only 14 percent of the PAs who started their careers in California eventually left.

Discussion

Given the number of respondents and the use of adjustment weights, the findings of this study are generalizable and nationally representative. As with all estimates based on a sample survey with nonrespondents, results should be viewed cautiously and attention paid to confidence intervals and statistical significance. Two other caveats should be borne in mind when considering the study results. First, many metropolitan counties, especially in the West, include large rural areas where practices may be located. Given the use of county as the rural/urban unit in the study, this may lead to an underestimate of the number of rural practice locations. Second, as noted above, some of the trajectory data were idealized to make characterization of the career trajectories practical. Inevitably, some of the complexity of practice arrangements and locations was lost for some cases.

The demography and practice histories of PAs have changed significantly since the earliest PA training programs graduated their first classes in the late 1960s. While study findings indicate that the proportion of PAs working in rural settings has remained relatively constant at about 20 percent (30% among generalists), our data suggest that both recruitment and retention of PAs to rural settings will become

more problematic in the next decade. More recent graduates are more likely to be female and to work as specialists than earlier graduates. They are also less likely to enter rural practice and stay in rural practice. While 21 percent of the earliest graduates of PA programs have had exclusively rural careers, only nine percent of PAs with four to seven years experience have worked exclusively in rural settings. Additionally, more recent graduates are only about half as likely to have initiated their careers in urban settings and moved to rural ones (6.1% compared to 11.5%). The trend among female PAs, who now comprise about 60 percent of recently graduated PAs, (and make up 75% of current PA students (Cawley, 1997)) is even more strongly away from rural practice trajectories.

At the time of the survey approximately 60 percent of all PAs had been retained in either their first or second practice. Even among PAs with more than twelve years of practice experience we found that 27 percent were still in their first practice location, and an additional 30 percent were in their second position. Despite high levels of demand for PAs and many job opportunities, the majority of PAs exhibit fairly high levels of locational stability over the course of their careers. Attrition out of first practice locations over time was somewhat higher among PAs starting their careers in rural areas than among PAs starting out in urban settings. Further analysis of PA retention at the state level indicated that PAs tended to stay in the state in which they had their first practice. However, unfavorable practice environments did appear to be associated with higher levels of PA out-migration among generalist PAs. This suggests that issues like prescriptive authority, insurance and reimbursement are more likely to affect the behavior of generalists than specialists.

Policy Implications

The results of this study suggest that the practice environment at the state level is associated with generalist PA retention. Sekscenski et al (Sekscenski et al., 1994) found that lack of prescriptive authority was an important contributor to overall low PA practice environment scores (p. 1268). That study also noted that low scores were associated with lower practitioner-to-population ratios than states with higher scores. States with unfavorable practice environments that aim to enhance retention may want to examine modification of laws governing prescriptive authority, reimbursement and insurance for PAs.

Since 1970, PA training programs have evolved from training military medics for civilian roles into programs providing career paths for a much more diverse student population and, especially, enrolling much larger proportions of women. The most important findings of this study with respect to rural recruitment and retention of PAs concern the larger role being played by women in the PA

profession. Female PAs, like their generalist physician counterparts (Doescher et al., 1997) appear to be significantly less likely than men to work in rural practice settings. Our analysis also suggests that women who enter rural practice are somewhat more likely to leave it than men. The implications of this finding for rural areas are potentially severe, though this may be mitigated somewhat if the absolute number of PAs being trained increases. If the number and proportion of PAs practicing in rural settings is to remain constant or grow, PA *student* recruitment and training, as well as PA recruitment and retention efforts, need to take account of this changing demography and address the issues that appear to make rural practice less attractive to women.

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Table 1: Demographic Characteristics by Total Practice Experience

	Years of PA work experience				
	< 4 years	4 - 7 years	8 - 11 years	≥ 12 years	Total (95% confidence interval)
Mean age***	34.7	37.6	40.3	45.6	38.9 (38.5 - 39.3)
% Female***	64.5	65.2	50.5	31.5	56.1 (53.4 - 58.8)
% White*	84.3	89.2	93.1	93.0	89.9 (88.0 - 91.8)
% Married***	64.1	64.5	70.6	77.0	67.9 (65.2 - 70.6)
% Rural origin*** (< 10,000 pop)	26.4	26.5	25.1	37.7	27.6 (25.2 - 30.0)
% Rural origin*** (< 25,000 pop)	37.1	42.2	37.4	52.4	41.2 (38.5 - 43.9)

Unweighted number of respondents	528	771	631	715	2645

Significance of the differences between the four experience groups using appropriate chi-square or F-test
* $p \leq .05$
** $p \leq .01$
*** $p \leq .001$

Table 2: Current Practice Location and Specialty by Total Experience

	Years of PA work experience			
	4 - 7 years	8 - 11 years	≥ 12 years	Total (95% confidence interval)
% Rural practice***	15.7	15.6	36.6	19.2 (17.2 - 21.2)
% Rural generalists***	10.0	10.6	29.2	13.5 (11.9 - 15.1)
% Rural specialists	5.8	5.0	7.4	5.7 (4.4 - 7.0)
% Urban practice***	84.3	84.4	63.4	80.8 (78.8 - 82.8)
% Urban generalists	33.6	31.3	30.2	32.2 (29.1 - 35.3)
% Urban specialists***	50.6	53.1	33.2	48.6 (45.5 - 51.7)
Unweighted number of respondents	771	631	715	2117

Significance of the differences between the three experience groups using appropriate chi-square or F-test
*** $p \leq .001$

Table 3: General Practice Histories and Locational Trajectories by Total Experience

	4 - 7 years	8 - 11 years	≥ 12 years	Total (95% confidence interval)
Mean number of practices ***	2.2	2.5	2.6	2.4 (2.3 - 2.5)
Mean length of practices (months) ***	42	64	96	60 (58 - 62)
Mean length of first practice (months) ***	42	58	88	56 (53-59)
% Still in first practice *	34.0	26.6	27.2	30.2 (27.3 - 33.1)
% Still in first or second practice *	66.1	56.8	57.2	61.2 (58.1 - 64.3)
Locational trajectory type				
% All urban ***	77.2	72.5	54.0	71.6 (69.1 - 74.1)
% All rural ***	9.1	6.7	21.1	10.2 (8.6 - 11.8)
% Rural to urban **	4.3	10.1	7.1	6.9 (5.5 -8.3)
% Urban to rural **	6.1	7.9	11.5	7.7 (6.4 - 9.0)
% Mixed *	3.3	2.8	6.4	3.6 (2.4 - 4.8)

Unweighted number of respondents	771	631	715	2117

Significance of the differences between the three experience groups using appropriate chi-square or F-test
* $p \leq .05$
** $p \leq .01$
*** $p \leq .001$

Table 4: First and Last Practice Locations Among PAs with More than Four Years of Practice Experience

	Last practice location		
	Percent urban	Percent Rural	Percent of Total
First practice location			(95% confidence interval)
Percent Urban	73.0	8.1	81.1 (79.0 - 83.2)
Percent Rural	7.8	11.2	18.9 (16.8 - 21.0)
Percent of Total	80.8	19.2	100.0
(95% confidence interval)	(78.8 - 82.8)	(17.2 - 21.2)	

Overall p-value (2 by 2 table)			< .001
Unweighted number of respondents	1257	860	2117

Table 5: First and Last Practice Locations Among Generalist PAs with More than Four Years of Practice Experience

	Last practice location		
	Percent urban	Percent Rural	Percent of Total
First practice location			(95% confidence interval)
Percent Urban	61.9	11.3	73.3 (69.9 - 76.7)
Percent Rural	8.5	18.2	26.7 (23.3 - 30.1)
Percent of Total	70.5	29.5	100.0
(95% confidence interval)	(67.1 - 73.9)	(26.1 - 32.9)	

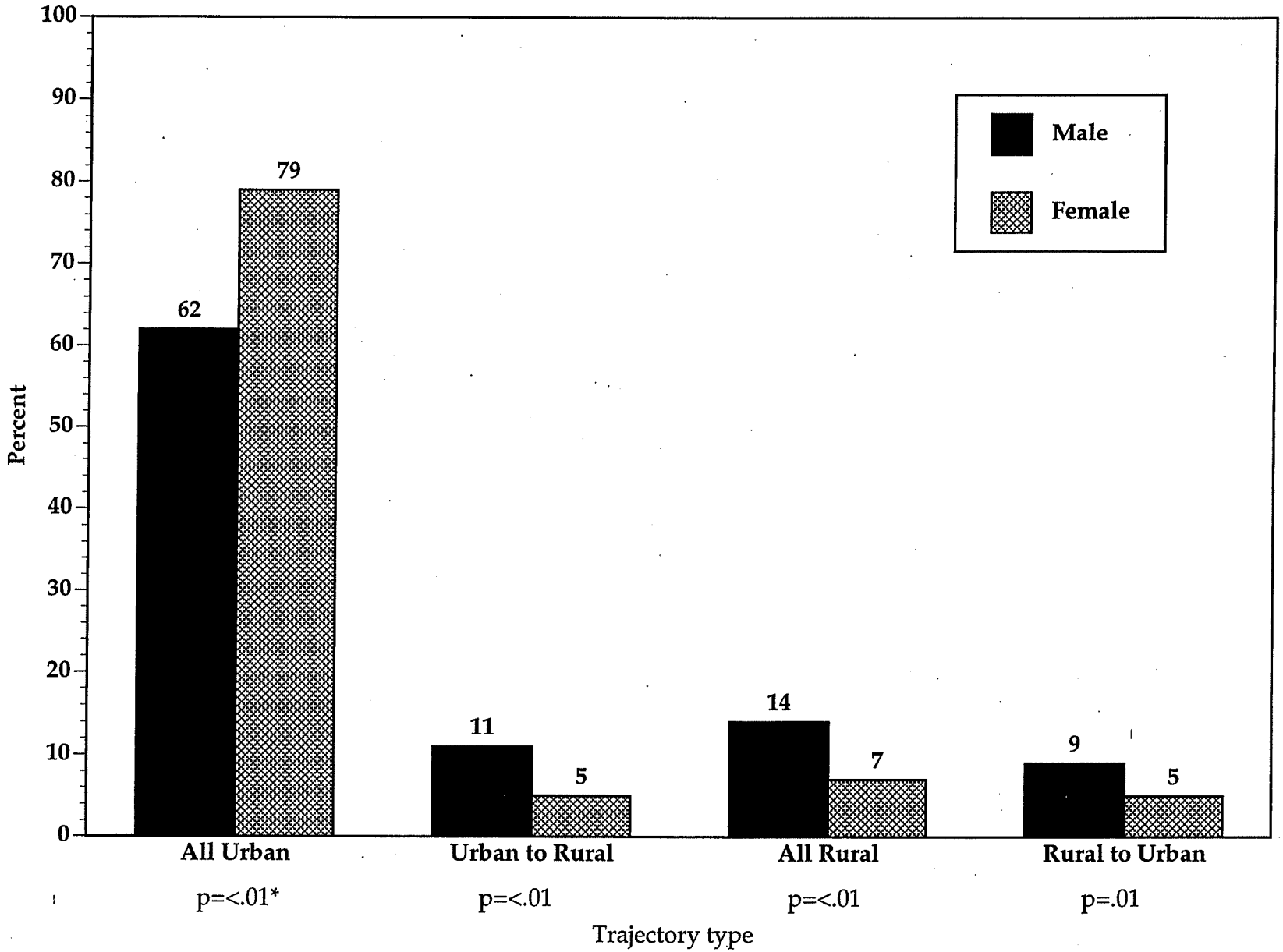
Overall p-value (2 by 2 table)			<.01
Unweighted number of respondents	557	660	1217

Table 6: Association Between Leaving First Practice State and Practice Environment Among PAs with ≥ 4 Years of Experience, by Specialist/Generalist Status (California excluded)

	Generalists - Practice environment score in original state		Specialists - Practice environment score in original state		All PAs- Practice environment score in original state	
	Low ≤ 80	High > 80	Low ≤ 80	High > 80	Low ≤ 80	High > 80
% PAs who left original state	42.9	27.9	28.2	31.0	34.1	29.5
(95% confidence interval)	(34.1-51.7)	(22.6-33.2)	(21.9-34.5)	(25.7-36.3)	(28.9-39.3)	(25.7-33.3)
% PAs who stayed in original state	57.1	72.1	71.8	69.0	65.9	70.5
(95% confidence intervals)	(48.3-65.9)	(66.8-77.4)	(65.5-78.1)	(63.7-74.3)	(60.7-71.1)	(66.7-74.3)
% Total	100.0	100.0	100.0	100.0	100.0	100.0
Overall p-value (2 by 2 table)	.004		.506		.162	
Unweighted number of respondents	307	786	272	534	586	1334*

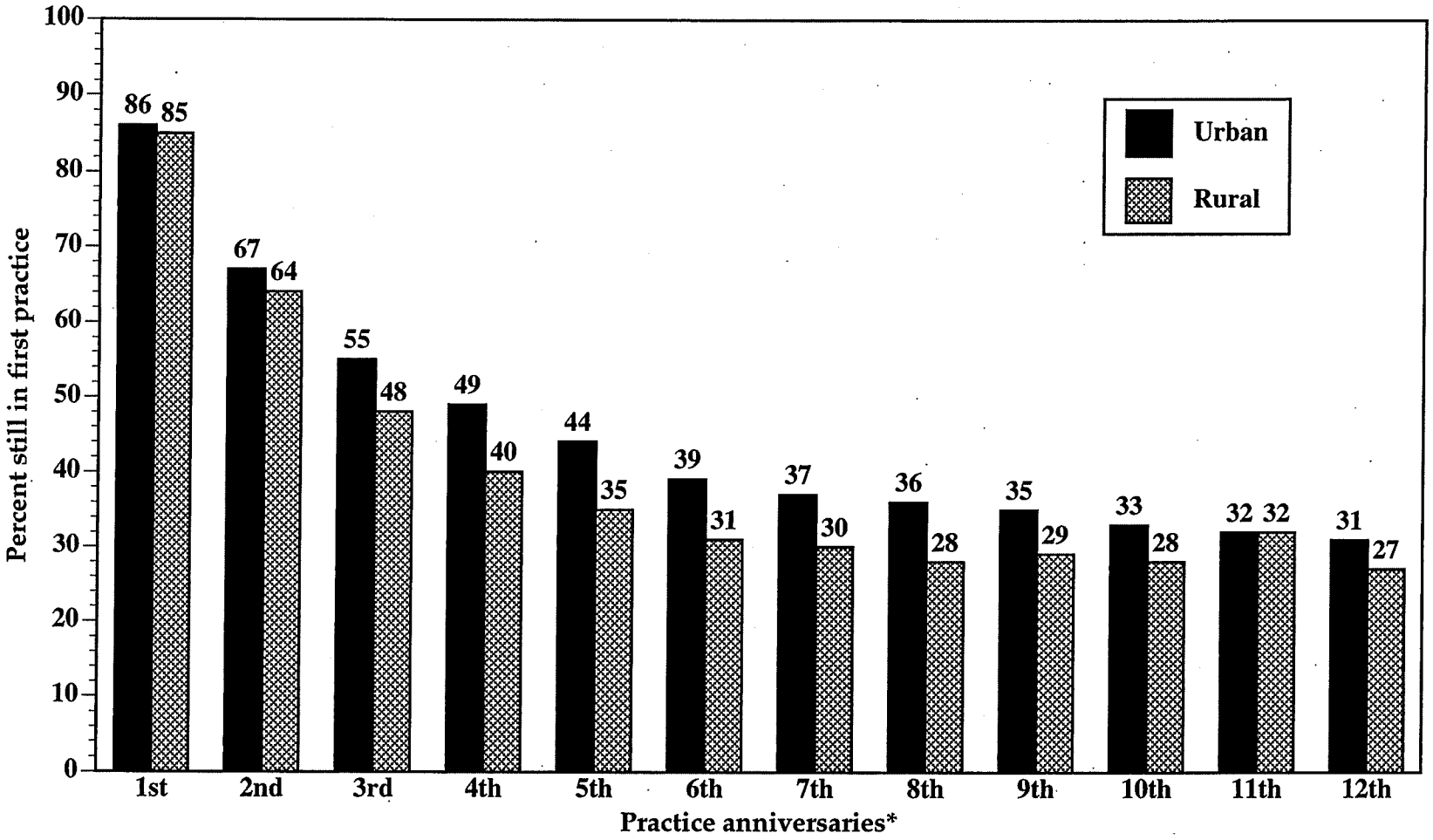
*Specialty could not be determined for 21 respondents.

Figure 1. Trajectory types by sex of PAs with more than 4 years of experience



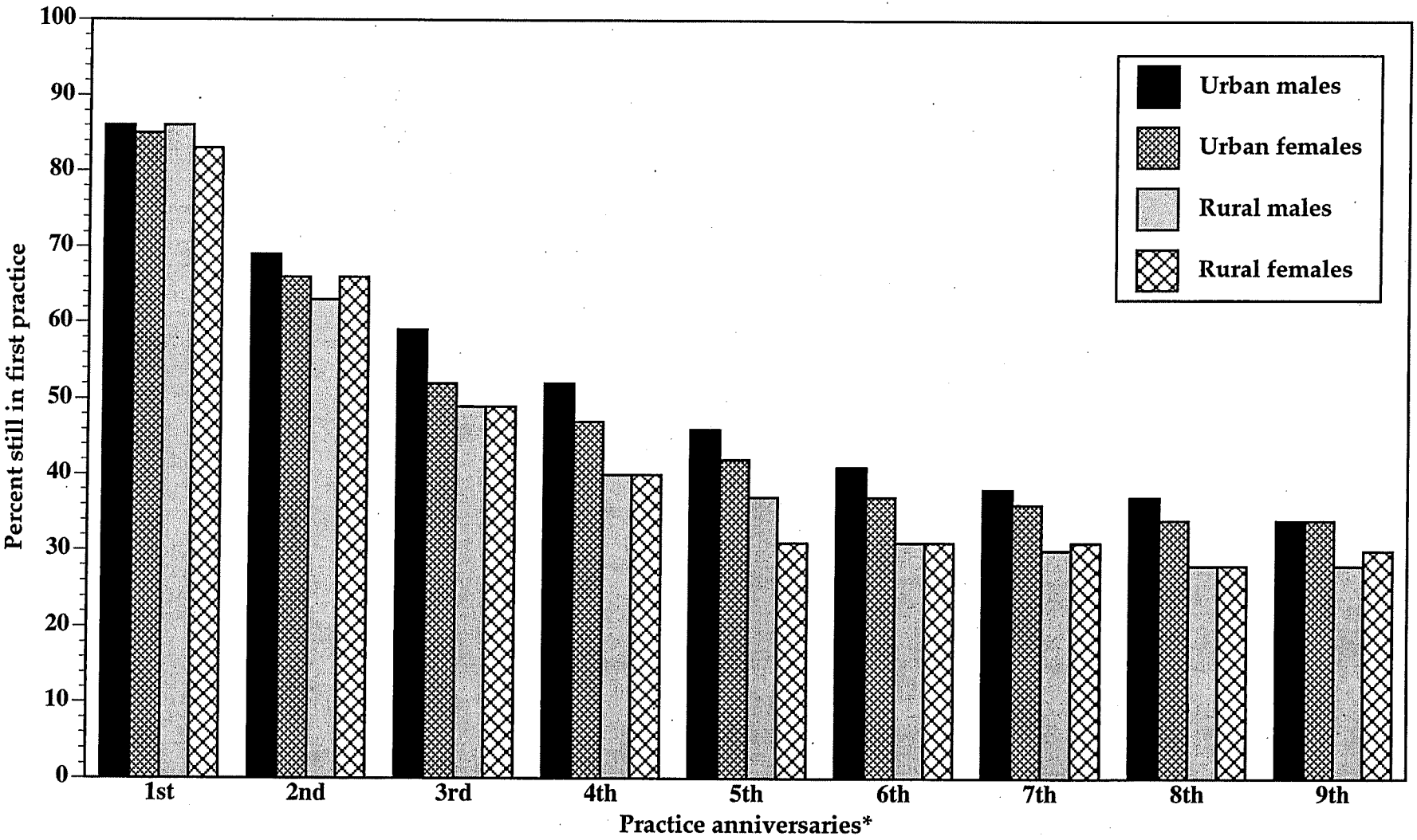
*significance of difference between male and female (chi-square)

Figure 2. Retention in first practice among PAs by location of first practice, adjusted for total years in practice



*The unweighted denominators for retention percentages from left to right are: 1711, 921, 1688, 861, 1561, 785, 1412, 705, 1253, 651, 1116, 604, 976, 564, 835, 511, 716, 473, 612, 413, 502, 363, 390. 325.

Figure 3. Retention in first practice among PAs by location of first practice, adjusted for total years in practice



*The unweighted denominators for retention percentages from left to right are: 843, 868, 534, 387,836, 852, 512, 349, 785, 776, 473, 312, 731, 681, 448, 257, 678, 577, 424, 227, 624, 492, 402, 202, 566, 410, 384, 180, 508, 327, 361, 150, 451, 265, 334, 139.

NATIONAL PHYSICIAN ASSISTANT SURVEY

This is a federal Health Resources and Services Administration funded survey conducted by the research centers at the **University of North Dakota** and the **University of Washington** and endorsed by the **American Academy of Physician Assistants**.

You have been randomly selected to participate in this very important national survey. The information collected will be used to shed light on issues that directly affect physician assistants. Please take a few minutes from your busy day to answer the questions. Your responses will be kept **strictly confidential**. Results will be disseminated in aggregate form. The enclosed postage paid envelope is for your convenience. Thank you.

PRACTICE CHARACTERISTICS

1. How many years **total** have you practiced as a PA? _____ years

2. Are you currently practicing clinically as a PA?
   Yes, full time ___ Yes, part time ___ No ___ (If no, answer 2b & 2c, then skip to question 23.)

   2b. If no, what are you currently doing? _____
   2c. If no, why did you quit practicing? _____

3. Please describe your primary employment setting (check all that apply):
   - ___ Solo Office
   - ___ Group Office
   - ___ HMO
   - ___ Military Facility
   - ___ VA Facility
   - ___ Medicare Certified Rural Health Clinic (PL95-210)
   - ___ Other (specify) _____
   - ___ Teaching Hospital
   - ___ Non-Teaching Hospital
   - ___ Nursing Home
   - ___ Correctional Facility
   - ___ IHS/PHS Facility
   - ___ 329/330 Community Health Center

4. Please identify the **one area** that best describes your current practice: (Check only one)
   - ___ Family Practice
   - ___ General Internal Medicine
   - ___ OB/GYN
   - ___ General Pediatrics
   - ___ Subspecialty of Internal Medicine (specify): _____
   - ___ Subspecialty of Pediatrics (specify): _____
   - ___ General Surgery
   - ___ Subspecialty of Surgery (specify): _____
   - ___ Emergency Medicine
   - ___ Industrial Occupational Medicine
   - ___ Other (specify): _____

5. How many hours per week do you typically work as a PA (exclude call)? _____ hours
6. How many on-call hours per week do you typically work as a PA? _____ hours
7. How many outpatients visits do you typically provide per week? _____ visits
8. How many inpatients visits do you typically provide per week? _____ visits

9. How many days per year are you allowed for the following:
   ___ Sick ___ Vacation ___ Continuing Medical Education ___ Maternity

10. How many PAs per week do you typically interact with on a professional basis? _____
11. How many PAs are employed at your practice location? _____
12. How many physicians are employed at your practice location? _____

13. Does your supervising physician practice in the same town you practice in?
    - ___ Yes, in same location
    - ___ Yes, but different site
    - ___ No, <10 miles away
    - ___ No, 10-20 miles away
    - ___ No, 20-30 miles away
    - ___ No, >30 miles away

14. How many hours per week do you work at the same location as your supervising physician? _____ hours

15. What percentage of your patient visits do you typically treat according to clinical guidelines developed with/ by your supervising physician? _____ %

16. What percentage of your patient visits are discussed with your physician supervisor?
_____% discussed at time of visit
_____% discussed after visit
_____% not discussed
100% TOTAL

17. How many beds are in the hospital where you provide most of your care? _____ beds _____ N/A

18. How many hours per month of volunteer health services do you provide? _____ hours

19. Approximately how many times per month do you perform or assist in the following aspects of your medical practice?

	Times Per Month			
	0	<4	4-10	>10
Prenatal Care	1	2	3	4
Hospital Rounds	1	2	3	4
House Calls	1	2	3	4
Nursing Home Rounds	1	2	3	4
Supervising other health workers	1	2	3	4
Discussing patients with MDs other than your preceptor	1	2	3	4
Talking with other PAs	1	2	3	4
Emergency room duty	1	2	3	4
Casting	1	2	3	4
Suturing	1	2	3	4
Surgical Assisting	1	2	3	4
Labor & Delivery	1	2	3	4
Practice Management (budget, billing)	1	2	3	4
Personnel Management (hiring, firing)	1	2	3	4
Treating AIDS patients	1	2	3	4
Hospital committee meetings	1	2	3	4
Athletic team coverage	1	2	3	4
Coroner work	1	2	3	4
Night call	1	2	3	4

EDUCATION

20. PA Program from which you graduated: _____ Month/Year Graduated: _____

21. Highest degree earned *prior* to PA school: High School ___ Associate ___
Baccalaureate ___ Masters ___ Doctorate ___ Other (specify) _____

22. Highest degree earned *since* PA school: Associate ___ Baccalaureate ___ N/A ___
Masters ___ Doctorate ___ M.D. ___ Other _____

23. Did you do a Primary Care preceptorship: Yes___ No___
If yes, how long was your preceptorship? ___ months

24. If yes, which of the following best describes where you did your preceptorship (if you did more than one, choose where you spent the most time):
___ Urban ___ Suburban ___ Rural ___ Other (_____)

25. During your PA training, approximately how many months did you spend at a rural location? ____ months

26. Prior to training to become a PA, were you a healthcare provider (e.g., RN, EMT, etc.?)
____Yes ____No If yes, please specify type of provider _____

PRACTICE LOCATION DECISION MAKING

27. Please list all towns/cities in which you have practiced medicine beginning with your present location. If you no longer practice, begin with your most recent clinical job. Do not list places before you became a PA.

TOWN	STATE	MONTH/YEAR
_____	_____	___/___ to present
_____	_____	___/___ to ___/___
_____	_____	___/___ to ___/___
_____	_____	___/___ to ___/___
_____	_____	___/___ to ___/___
_____	_____	___/___ to ___/___
_____	_____	___/___ to ___/___
_____	_____	___/___ to ___/___

28. **Please circle the population ranges that best answer the following:**

	<2,500	2500-5000	5-10,000	10-25,000	25-50,000	50-100,000	100,000+	Unsure
Size of the town/city you were born in.	1	2	3	4	5	6	7	8
Size of the town/city you lived in when you were 12 years of age.	1	2	3	4	5	6	7	8
If married, the size of the town/city your spouse lived in when they were 12 years of age.	1	2	3	4	5	6	7	8
Size of the smallest town/city you ever lived in before entering PA school.	1	2	3	4	5	6	7	8
Size of the largest town/city you ever lived in before entering PA school.	1	2	3	4	5	6	7	8
Size of town/city you are currently living in.	1	2	3	4	5	6	7	8

29. How important were the following factors in selecting <u>your present location</u> to practice medicine. (Please rate the following on a scale of 1 to 5 with 1 being not important and 5 being very important)

	Not Important				Very Important
Close proximity to family	1	2	3	4	5
Small town environment	1	2	3	4	5
A large degree of responsibility/autonomy	1	2	3	4	5
Friendly state laws on prescriptive authority	1	2	3	4	5
Friendly state laws on reimbursement policies	1	2	3	4	5
Comprehensive hospital facilities	1	2	3	4	5
Good reputation & character of supervising physician	1	2	3	4	5
Good salary offer	1	2	3	4	5
Quality public schools	1	2	3	4	5
Good opportunities for CME	1	2	3	4	5
Comprehensive benefit plan	1	2	3	4	5
Access to quality lab/technology	1	2	3	4	5
Presence of other PA's employed in the practice	1	2	3	4	5
Need to fulfill loan obligation	1	2	3	4	5
Other (specify_____)	1	2	3	4	5

PRACTICE SATISFACTION

30. How satisfied are you with the following factors in your **present community**? (Please rate the following on a scale of 1 to 5 with 1 being not satisfied, and 5 being very satisfied)

	Not Satisfied				Very Satisfied
Size of community	1	2	3	4	5
Social/recreation opportunities	1	2	3	4	5
Place of worship	1	2	3	4	5
Overall environment for children	1	2	3	4	5
Community's acceptance of spouse	1	2	3	4	5
Quality of schools	1	2	3	4	5
Overall community satisfaction	1	2	3	4	5
Degree of safety	1	2	3	4	5

31. If married, how satisfied is your spouse, overall, with the community? 1 2 3 4 5

32. How satisfied are you with the following aspect of your **current practice**? (Please rate the following on a scale of 1 to 5 with 1 being not satisfied and 5 being very satisfied)

	Not Satisfied				Very Satisfied
Relationship with supervising physician	1	2	3	4	5
Quality of care provided by your supervising physician	1	2	3	4	5
Availability of supervising physician	1	2	3	4	5
Number of other PAs in community	1	2	3	4	5
Salary	1	2	3	4	5
Degree of responsibility/autonomy	1	2	3	4	5
Range of services you are allowed to provide	1	2	3	4	5
Level of personal stress associated with work	1	2	3	4	5
Professional acknowledgment and respect from:					
A. Supervising Physician	1	2	3	4	5
B. Other Physicians	1	2	3	4	5
C. Other PAs	1	2	3	4	5
D. Nurses	1	2	3	4	5
E. Patients	1	2	3	4	5
F. Community members	1	2	3	4	5
Workload	1	2	3	4	5
Time Off	1	2	3	4	5
Opportunity for continuing medical education	1	2	3	4	5

DEMOGRAPHICS

33. State in which you practice:_____

34. Year of Birth:_____

35. Sex:
Male_____ Female_____

36. Ethnicity:
_____ White (not of Hispanic origin)
_____ African American/Black
_____ Hispanic/Latino origin
_____ Asian or Pacific Islander
_____ Am Indian or Alaskan Native
_____ Other (please specify) _____

37. Marital Status:
_____ Single
_____ Married
_____ Divorced/Separated/Widowed

38. Are you a member of the AAPA? Yes_____ No_____
Are you a member of your AAPA state chapter? Yes_____ No_____

39. Are you *currently* NCCPA Certified? Yes_____ No_____
First year of NCCPA certification: 19_____

Thanks for your help!

Previous WWAMI Rural Health Research Center Working Papers

1. Hart, L. Gary; Rosenblatt, Roger A.; and Amundson, Bruce A. Is There a Role for the Small Rural Hospital? January 1989.
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3. Amundson, Bruce A. and Hughes, Robert D. Are Dollars Really the Issue for the Survival of Rural Health Services? June 1989.
4. Nesbitt, Thomas S.; Rosenblatt, Roger A.; Connell, Frederick A.; and Hart, L. Gary. Access to Obstetrical Care in Rural Areas: Effect on Birth Outcomes. July 1989.
5. Schleuning, Dianne; Rice, George; and Rosenblatt, Roger A. Addressing Barriers to Rural Perinatal Care: A Case Study of the Access to Maternity Care Committee in Washington State. October 1989.
6. Rosenblatt, Roger A.; Whelan, Amanda; and Hart, L. Gary. Rural Obstetrical Access in Washington State: Have We Attained Equilibrium? January 1990.
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8. Rosenblatt, Roger A.; Whelan, Amanda; Hart, L. Gary, Long, Constance; Baldwin, Laura-Mae; and Bovbjerg, Randall R. Tort Reform and the Obstetric Access Crisis: The Case of the WAMI States. June 1990.
9. Hart, L. Gary; Pirani, Michael; and Rosenblatt, Roger A. Causes and Consequences of Rural Small Hospital Closures from the Perspectives of Mayors. September 1990.
10. Welch, H. Gilbert; Larson, Eric H.; Hart, L. Gary; and Rosenblatt, Roger A. Readmission Following Surgery in Washington State Rural Hospitals. January 1991.
11. Amundson, Bruce A.; Hagopian, Amy; and Robertson, Deborah G. Implementing a Community-Based Approach to Strengthening Rural Health Services: The Community Health Services Development Model. February 1991.
12. Hoare, Geoffrey; Katz, Aaron; Porter, Alice; Dannenbaum, Alex; and Baldwin, Harry. Rural Health Care Linkages in the Northwest. April 1991.
13. Whitcomb, Michael E.; Cullen, Thomas J.; Hart, L. Gary; Lishner, Denise M.; and Rosenblatt, Roger A. Impact of Federal Funding for Primary Care Medical Education on Medical Student Specialty Choices and Practice Locations (1976-1985). April 1991.
14. Larson, Eric H.; Hart, L. Gary; and Rosenblatt, Roger A. Is Rural Residence Associated with Poor Birth Outcome? June 1991.
15. Williamson, Harold A.; Rosenblatt, Roger A.; Hart, L. Gary. Physician Staffing of Small Rural Hospital Emergency Departments: Rapid Change and Escalating Cost. September 1991.
16. Hart, L. Gary; Pirani, Michael J.; Rosenblatt, Roger A. Rural Hospital Closure and Local Physician Supply: A National Study. December 1991.
17. Larson, Eric H.; Hart, L. Gary; Hummel, Jeffrey. Rural Physician Assistants: Results from a Survey of Graduates of MEDEX Northwest. May 1992.
18. Hart, L. Gary; Robertson, Deborah G.; Lishner, Denise M; Rosenblatt, Roger A. Part 1: CEO Turnover in Rural WAMI Hospitals. Part 2: Rural Versus Urban CEOs: A Brief Report on Education and Career Location Patterns. August 1992.
19. Williamson, Harold; Hart, L. Gary; Pirani, Michael J.; Rosenblatt, Roger A. Rural Hospital Surgical Volume: Cutting Edge Service or Operating on the Margin? January 1993.
20. Rosenblatt, Roger A.; Saunders, Greg; Tressler, Carolyn; Larson, Eric H.; Nesbitt, Thomas S.; Hart, L. Gary. Do Rural Hospitals Have Less Obstetric Technology than their Urban Counterparts? A Statewide Study. March 1993.
21. Williamson, Harold A.; Hart, L. Gary; Pirani, Michael J.; Rosenblatt, Roger A. Market Shares for Rural Inpatient Surgical Services: Where Does the Buck Stop? April 1993.
22. Geyman, John P.; Hart, L. Gary. Primary Care at a Crossroads: Progress, Problems and Policy Options. May 1993.
23. Nesbitt, Thomas S.; Larson, Eric H.; Rosenblatt, Roger A.; Hart, L. Gary. Local Access to Obstetric Care in Rural Areas: Effect on Prenatal Care, Birth Outcomes, and Costs. August 1993.
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25. Baldwin, Laura-Mae; Hart, L. Gary; West, Peter A.; Norris, Tom E.; Gore, Edmond. Two Decades of Experience in the University of Washington Family Medicine Residency Network: Practice Differences Between Graduates in Rural and Urban Locations. November 1993.

26. Statewide Office of Rural Health and Washington Rural Health Association. Implementing Health Care Reform: Setting a Course for Rural Washington. Summary of a Workshop, November 9-10, 1993, Seattle, Washington. January 1994.

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29. Neighbor, William E.; Baldwin, Laura-Mae; West, Peter A.; Bezy, Judith M.; Hart, L. Gary. Experience of Rural Hospitals with the National Practitioner Data Bank. October 1994.

30. Rosenblatt, Roger A.; Mattis, Rick; Hart, L. Gary. Access to Legal Abortions in Rural America: A Study of Rural Physicians in Idaho. November 1994.

31. West, Peter A.; Norris, Thomas E.; Gore, Edmond J.; Baldwin, Laura-Mae; Hart, L. Gary. The Geographic and Temporal Patterns of Residency-Trained Family Physicians: University of Washington Family Practice Residency Network. February 1995.

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35. Melzer, Sanford M.; Grossman, David C.; Hart, L. Gary; Rosenblatt, Roger A. Hospital Services for Rural Children in Washington State: Where Do They Go for Care and Who Takes Care of Them? October 1995.

36. Larson, Eric H.; Hart, L. Gary; Rosenblatt, Roger A. Is Rural Residence a Risk Factor for Poor Birth Outcome? A National Study. December 1995.

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38. Lishner, Denise M.; Richardson, Mary; Levine, Phyllis, Patrick Donald. Access to Primary Health Care Among Persons with Disabilities in Rural Areas: A Summary of the Literature. April 1996.

39. Dunbar, Peter J.; Mayer, Jonathan D.; Fordyce, Meredith A.; Lishner, Denise M.; Hagopian, Amy; Spanton, Ken; Hart, L. Gary. A Profile of Anesthesia Provision in Rural Washington and Montana. May 1996.

40. Perrin, Edward B.; Hart, L. Gary;, Goldberg, Bruce; Grossman, David; Skillman, Susan M.; Paul, Britt. Patient Outcomes and Medical Effectiveness Research in Rural Areas for Racial/Ethnic Populations: Issues and Recommendations. July 1996.

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