Working Paper

March 2002 #69

Family Medicine Residency Training in Rural Areas: How Much Is Taking Place, and Is It Enough to Prepare a Future Generation of Rural Family Physicians?

by

Roger A. Rosenblatt, M.D., M.P.H.
Ronald Schneeweiss, M.B., Ch.B.
L. Gary Hart, Ph.D.
Susan Casey, Ph.D.
C. Holly A. Andrilla, M.S.
Frederick M. Chen, M.D., M.P.H.

WWAMI RURAL HEALTH RESEARCH CENTER

UW University of Washington

School of Medicine

Department of Family Medicine

About the Center

The WWAMI Rural Health Research Center (RHRC) is one of six centers supported by the Federal Office of Rural Health Policy (FORHP), a component of the Health Resources and Services Administration (HRSA) 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 the training and supply of rural health care providers and the content and outcomes of the care they provide; the availability and quality of care for rural women and children, including obstetric and perinatal care; and access to high-quality care for vulnerable and minority rural populations.

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 WWAMI Center for Health Workforce Studies, 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.

The Rural Health Working Paper Series is a means of distributing pre-publication articles and other working papers to colleagues in the field. Your comments on these papers are welcome, and should be addressed directly to the authors. Questions about the WWAMI Rural Health Research Center should be addressed to:

L. Gary Hart, PhD, Principal Investigator and Director
Roger A. Rosenblatt, MD, MPH, Co-Investigator
Denise Lishner, MSW, Associate Director/Editor
WWAMI Rural Health Research Center
Department of Family Medicine
School of Medicine
University of Washington
Box 354696
Seattle, WA 98195-4696
E-mail: wwamirhrc@fammed.washington.edu
WWW: http://www.fammed.washington.edu/wwamirhrc/

The WWAMI Rural Health Research Center is supported by the Federal Office of Rural Health Policy, Health Resources and Services Administration, Public Health Service (grant #1UICRH00035-03, $871,500, 100%).

About the Authors

Roger A. Rosenblatt, MD, MPH, is a Professor and the Vice Chair in the Department of Family Medicine, University of Washington School of Medicine.

Ronald Schneeweiss, MD, is a Professor in the Department of Family Medicine, University of Washington School of Medicine.

L. Gary Hart, PhD, is Director of the WWAMI Rural Health Research Center and Professor in the Department of Family Medicine, University of Washington School of Medicine.

Susan Casey, PhD, is a Project Coordinator in the Department of Family Medicine, University of Washington School of Medicine.

C. Holly A. Andrilla, MS, is a Biostatistician for the WWAMI Rural Health Research Center, Department of Family Medicine, University of Washington School of Medicine.

Frederick M. Chen, MD, MPH, is a Clinical Instructor in the Department of Family Medicine, University of Washington School of Medicine.

Family Medicine Residency Training in Rural Areas:

How Much Is Taking Place, and Is It Enough to Prepare a Future Generation of Rural Family Physicians?

Roger A. Rosenblatt, M.D., M.P.H.
Ronald Schneeweiss, M.B., Ch.B.
L. Gary Hart, Ph.D.
Susan Casey, Ph.D.
C. Holly A. Andrilla, M.S.
Frederick M. Chen, M.D., M.P.H.

March 2002

This WWAMI Rural Health Research Center study was performed with funding from the Federal Office of Rural Health Policy of the Health Resources and Services Administration, U.S. Department of Health and Human Services. We thank the Robert Graham Center for Policy Studies in Family Practice and Primary Care, the American Academy of Family Practice, and the Association of Family Practice Residency Directors, who provided invaluable assistance in designing the surveys and obtaining high response rates. A brief research letter based on a component of this study appeared in the *Journal of the American Medical Association* (2002, 288[9]:1063-1064) entitled "Family Medicine Training in Rural Areas."

mar BLTFW:2002:m:r 11/4/02

ABSTRACT

Background: The supply of rural physicians is in part determined by the number of family physicians who receive their residency training in rural areas. This paper explores what proportion of all family medicine residency experience actually takes place in rural areas in the United States.

Methods: Surveys were mailed to all 453 civilian family practice residencies in the United States in January of 2000. After two additional mailings and telephone reminders, useable responses were obtained from 435 programs, 96 percent of the total. Programs were asked to indicate the extent to which training rural physicians was part of their core mission and to specify where all residency training sponsored by their programs took place. Using the Rural-Urban Commuting Areas, the ZIP codes of these locations allowed us to determine the relative rurality of all U.S. family practice residency training.

Results: Only 33 family medicine residency programs (7.4%) are located in rural areas; these programs are predominantly in community hospitals with no other residency programs. Most of the training sponsored by these rural programs occurs in rural areas. Although over one-third of the urban programs listed rural training as an important part of their mission, only 2.3 percent of the training they supported took place in rural areas. For the nation as a whole, 7.5 percent of family medicine residency training occurred in rural areas, although 22.3 percent of the U.S. population lives in rural places.

Conclusions: Very little family medicine residency training actually takes place in rural areas, largely because very few residencies are located in rural America. To the extent that there is a link between the place of training and future practice, the lack of rural training contributes to the shortage of rural physicians. Unless significant efforts are made to increase rural residency training, rural physician shortages are likely to persist.

BACKGROUND

Physician maldistribution—the tendency of physicians to disproportionately settle in urban areas—is one of the most deep-seated characteristics of our health care system (Geyman et al., 2000). As a result, there has been a relative deficit of rural physicians in the United States since people first began to track the distribution of health care professionals (Council on Graduate Medical Education, 1998). Physician maldistribution is closely related to physician specialty: the more specialized the physician, the more likely he or she is to choose urban practice (Amundson & Rosenblatt, 1991; Rosenblatt et al., 1992).

The discipline of family medicine was created in the early 1970s, partially as a way to improve the supply of rural physicians. Because 22 percent of recent family physician graduates settle in rural areas, a much higher percentage than any other discipline, increasing the number and proportion of family doctors reliably augments the supply of new rural physicians (American Academy of Family Physicians, 2002). But even within family medicine there are differences among residency programs, both in the emphasis they put on rural practice and on their effectiveness in encouraging their graduates to establish themselves in rural areas (Rabinowitz, 1993).

An important element of the equation is the extent to which residency training occurs in rural areas. Because it has long been known that physicians tend to practice in areas near where they trained—and because rural training experiences provide physicians with the educational experiences they need to become confident and competent rural doctors—it makes sense to train future rural doctors in rural areas (Denton et al., 1989; Dorner et al., 1991; Rosenthal, 2000; Rosenthal et al., 2000). However, very little is known about the extent to which family practice residency training actually occurs in rural areas.

This study explores this issue through a survey of all family practice residency programs in the United States. Specifically, we address the following questions: What proportion of all family practice residency training occurs in rural settings? Which educational experiences tend to be located in rural areas? Do programs with a self-proclaimed mission of preparing future rural physicians preferentially locate their training experiences in rural areas?

METHODS

The University of Washington Rural Health Research Center, the Robert Graham Center for Policy Studies in Family Practice and Primary Care, and the Association of Family Practice Residency Directors, with funding from the Federal Office of Rural Health Policy, collaborated to conduct a survey of family practice residency programs. A 16-item questionnaire was developed to determine the precise locations of all family medicine training in the nation and the proportion occurring in rural areas. The questionnaire was reviewed and pretested by the University of Washington-affiliated family practice residency network directors and modified accordingly.

In January 2000, questionnaires were mailed to the 453 civilian family practice residency programs located in the United States and listed in the 1998 American Academy of Family Practice (AAFP) Directory of Family Practice Training Programs that had active residents in 1999. Two subsequent mailings were sent to nonrespondents (March 2000 and May 2000), and investigators personally contacted the remaining nonrespondents. Useable responses were provided by 435 of the programs, for a response rate of 96 percent. The geographic location of nonresponding programs did not differ significantly from those that responded. None of the nonresponding programs were located in a rural area. All analysis that follows is based on the 435 responding programs, except where otherwise noted.

The questionnaires asked each program director the extent to which preparing future rural physicians was an important part of their mission. We also collected detailed information about the ZIP code and geographic location of every rural training experience offered by each residency, including the location of the model family practice, rural training tracks, block rotations, or other more intermittent rural experiences. Each of these locations' ZIP codes was geocoded using the Rural-Urban Commuting Area (RUCA) classification system, a method that assigns each ZIP tract area within the United States to a spectrum of rural and urban locations, based not only on the size of the place but its work commuting relationship to surrounding larger places (Economic Research Service, 2002; Morrill et al., 1999; WWAMI Rural Health Research Center, 2002). We assigned each training location to one of four mutually exclusive categories: urban areas (A), large rural city areas (B), small rural town areas (C), and remote smaller rural town areas (D). This approach approximates the Office of Management and Budget (OMB) metropolitan-nonmetropolitan dichotomy but has the advantage of accurately

classifying subcounty-sized communities and identifying those small places that are suburbs of larger cities.*

RESULTS

A large number of family medicine programs in the United States consider training rural physicians to be their central mission; 120 programs (28%) considered rural training to be very important, and an additional 58 programs (13%) had the dual mission of training both rural and urban underserved physicians. Not surprisingly, the geographic location of the parent program is strongly related to mission. All five of the programs located in small rural towns had a rural training mission, as did 67.9 percent of the programs in large rural areas. No programs were located in remote small rural towns.

Very few programs are actually located in rural areas. 92.4 percent of all programs—representing 94.8 percent of all the family medicine residents in the country—are located in urban areas. As noted above, only five programs are actually situated in small rural areas, and they train only 0.6 percent of residents.

Programs based in rural areas are quite different from their urban counterparts, as seen in Table 2. 87.9 percent of rural programs are the only residency program within their sponsoring hospital, in contrast to training programs in urban areas, where more than half of family medicine residencies coexist with other disciplines. Only 2 of the rural programs are situated in academic health centers (AMCs), as compared to the 55 urban programs that operate within the walls of an AMC. Rural programs were more likely to sponsor rural training tracks (RTTs) than their urban counterparts.

Programs with a predominantly rural mission differ systematically from those with an urban mission, as seen in Table 3. The typical residency with an exclusively rural mission is the only residency in a community hospital; about 17 percent have an affiliated rural training track. By contrast, urban-oriented programs tend to be in hospitals with other residency programs, very rarely have a rural training track (2%), and are more likely to be in an academic health center. Sixty-one percent of the programs hosting rural training tracks list only rural training as their

---

* The RUCA coding system is available at http://www.fammed.washington.edu/wwamirhrc/descript.htm.

central mission, with most of the balance belonging to programs with both a rural and an urban mission.

Even though the vast majority of family medicine training programs are located in urban areas, it is clear from the previous tables that some urban-based programs have a rural emphasis. The majority of programs with a rural training track (28 of 33 or 84.8%) have their home base within an urban area. And while most urban programs do not have a rural mission, most programs with a rural mission are located in urban areas, simply because the preponderance of family practice residency programs are located in urban areas. Perhaps more important than the location of the parent program or its stated mission is where the training actually occurs, which is explored in Table 4.

We were able to determine the actual training locations of virtually all the residents in training reported by the 435 programs that responded to our survey. As seen in Table 4, the results support the conclusion that slightly more training occurs in rural areas than would be apparent from the location of the parent programs. 7.5 percent of the time the residents spent in training took place in rural areas, even though only 5.4 percent of the residents who were in training in July of 1999 attended programs that were located in rural areas. A substantial amount of all rural training—28.9 percent of all training that took place in rural areas—can be attributed to rural training experiences of residents coming from urban programs. Despite that, most rural training experiences in the United States (71.1%) derive from the 33 rural programs.

The most dramatic difference in the extent of rural training is between programs located in urban areas as compared to those located in rural areas. As seen in Figure 1, the actual proportion of time that urban residents spend in rural training locations is miniscule—2.3 percent (212.9 FTEs) of their total experience. Those rural experiences are split fairly evenly between rural training tracks—which apply to only a few residents out of a much larger group—and other residents who are taking block rotations in rural areas. By the same token, residents from programs situated in rural areas train exclusively in rural places. Most of that training is in their model family practice center, but a total of 14.5 percent (76.3 FTEs) of their training occurs in either rural training tracks, block rural rotations, or rural outpatient clinics.

The picture looks quite different if we examine training location through the lens of the programs' missions. As seen in Figure 2, there is a concordance between program emphasis and the proportion of time spent in rural areas, with programs with a rural inclination much more likely to deploy their residents to rural areas. But even in the 119 programs that listed rural training as very important to their

program, less than 20 percent of the training takes place in rural areas. As we saw in Figure 1, urban programs—no matter what their stated mission—train all but their rural training track residents predominantly in urban areas. Rural programs—most of which avow a goal of training future rural physicians—do virtually all their training in rural areas.

Figure 3 shows the discrepancy between the distribution of the United States population and the location of family practice training experiences. 22.3 percent of the U.S. population lives in areas designated as rural using the RUCA approach, but only 7.4 percent of the family medicine training occurs in these areas. It is interesting that about one-third of the so-called "rural" training experiences reported by urban programs actually do not take place in areas that are considered rural using the RUCA approach. While programs located in rural areas almost never miscategorize training locations as rural, urban programs obviously consider some smaller urban training locations to be rural training opportunities from their vantage point. Not adjusting for this misclassification would result in a 60.0 percent overestimate of rural training.

DISCUSSION

Very little family medicine training in the United States occurs in rural areas. Although 40.9 percent of all the family medicine programs in the country list training rural physicians as central to their missions, only 7.4 percent of the programs are actually located in rural areas, and only 7.5 percent of residents' total training experiences occur in rural areas. To the extent that actual rural training is a critical determinant of future practice location, the paucity of rural training experiences may explain why only nine percent of the nation's physicians are located in rural areas (Council on Graduate Medical Education, 1998; Denton et al., 1989; Dorner et al., 1991).

As bad as the situation is for family physicians, it is undoubtedly much worse for other disciplines. With the exception of family medicine, very few other allopathic residency programs are located in rural areas at all. Residency training tends to be an urban-centered activity, with nearly all of the training resources located in our nation's cities. However, one of the visions of family medicine has been to base a greater proportion of training in rural places, using such innovative educational vehicles as the rural residency track. Although this model has proved to be extremely effective in predicting future rural practice, the tiny number of residents engaged in such training (1.4% of all training) means that it will have little

impact on the larger problem of physician maldistribution (Rosenthal, 2000; Rosenthal et al., 2000).

These data suggest that we have largely failed to move residency training out of the urban center, a result very similar to that found in an earlier study (Bowman & Penrod, 1998). Although a large proportion of family medicine training occurs in the community hospital setting, these community hospitals are predominantly in urban areas. Decentralized training—including rural training tracks, block rotations, and decentralized continuity clinics—account for a very small proportion of all residency training (Saver et al., 1998). As the economic vitality of smaller hospitals is increasingly threatened by changes in the reimbursement system, even these small contributions to rural training may disappear.

This study represents the first precise quantification of the extent of rural family medicine residency training in the United States and establishes a baseline from which to measure future trends. The portrait is ominous for those concerned about the future of rural medical care. Given decreasing numbers of graduating medical students entering family medicine, the financial difficulties of some rural health systems, and the small amount of rural residency training, physician maldistribution is likely to increase (Medicare Payment Advisory Commission, 2001; Mohr et al., 1999; Pugno et al., 2001; Pugno et al., 2000). And to the extent that physicians trained in rural settings are more adept at rural medicine, one must be concerned about the quality and cultural competence of future rural practice.

What can be done to address this problem? This study demonstrates that very little rural family practice residency training is taking place in the United States. Very few programs are located in rural areas, in part because rural hospitals themselves have neither the educational nor the financial resources to support complex and expensive residency training programs (Ellis, 2000; Geyman et al., 2000). Only 3.1 percent of rural hospitals even receive Graduate Medical Education (GME) payments from Medicare (Slifkin, 1999). The recent passage of the Balanced Budget Act of 1997 (BBA) exacerbated the situation, establishing caps on the number of residents in training and further eroding the financial stability of small hospitals (Frenzen, 1997). The amendments of the Balanced Budget Refinement Act of 1999 (BBRA) and Medicare Benefits and Improvement Act (BIPA) mitigated the impact of the BBA somewhat, but rural hospitals remain financially tenuous and are not likely to become a significantly larger source of training for future rural physicians (Iglehart, 1999; Lewin Group, 2000).

Urban hospitals with a rural training mission remain a promising source of future rural physicians. Nearly a quarter of them state that their main mission is training rural physicians, and urban hospitals already account for 28.9 percent of the

family practice residency training that occurs in rural areas. Changes in federal funding formulas both through Medicare reimbursement and through educational grants (Title VII) might be very effective in moving more training into rural areas. Rural training tracks, in particular, have proven to be extremely effective tools, and urban hospitals have demonstrated the capacity to initiate and support successful rural training tracks (Crittenden, 1999; Malaty, 2000; Rosenthal, 2000; Rosenthal et al., 2000). Despite this potential, it is clear from this study that we have not yet been successful in moving family medicine residency training into rural areas.

REFERENCES

American Academy of Family Physicians (2002). *Report on Survey of 2001 Graduating Family Practice Residents*. Reprint No. 155-Z. Leawood, KS: Author. Available at: http://www.aafp.org/resident/rep155. Accessed February 11, 2002.

Amundson, B. A., Rosenblatt, R. A. (1991). The WAMI Rural Hospital Project. Part 6: Overview and conclusions. *Journal of Rural Health*, 7(5), 560-574.

Bowman, R. C., Penrod, J. D. (1998). Family practice residency programs and the graduation of rural family physicians. *Family Medicine*, 30(4), 288-292.

Council on Graduate Medical Education (1998). *Tenth Report: Physician Distribution and Health Care Challenges in Rural and Inner-City Areas*. U.S. Department of Health and Human Services, Health Resources and Services Administration.

Crittenden, R. A. (1999). The Balanced Budget Act of 1997 and rural training supported by Medicare graduate medical education funds. *Journal of Rural Health*, 15(1), 21-25.

Denton, D. R., Cobb, J. H., Webb, W. A. (1989). Practice locations of Texas family practice residency graduates, 1979-1987. *Academic Medicine*, 64(7), 400-405.

Dorner, F. H., Burr, R. M., Tucker, S. L. (1991). The geographic relationships between physicians' residency sites and the locations of their first practices. *Academic Medicine*, 66(9), 540-544.

Economic Research Service (2002). *Measuring Rurality: Rural-Urban Commuting Area Codes*. Washington, DC: U.S. Department of Agriculture. Available at: http://www.ers.usda.gov/Briefing/Rural/Data/desc.htm. Accessed February 11, 2002.

Ellis, F. J. (2000). Despite inroads, recruiting faculty for rural medicine still uphill battle. *Academic Physician and Scientist*, Jul/Aug, 1-5.

Frenzen, D. D. (1997). *How Will Measures to Control Medicare Spending Affect Rural Communities?* Agriculture Information Bulletin No. 734. U.S. Department of Agriculture.

Geyman, J. P., Hart, L. G., Norris, T. E., Coombs, J. B., Lishner, D. M. (2000). Educating generalist physicians for rural practice: how are we doing? *Journal of Rural Health*, 16(1), 56-80.

Iglehart, J. K. (1999). Support for academic medical centers--revisiting the 1997 Balanced Budget Act. *New England Journal of Medicine*, 341(4), 299-304.

Lewin Group (2000). *Impact of the Balanced Budget Act of 1997 and the Balanced Budget Refinement Act of 1999 on Rural Hospitals*. Office of Rural Health Policy.

Malaty, W. (2000). Rural training track fill rates: survey results. *Journal of Rural Health*, 16(3), 243-244.

Medicare Payment Advisory Commission (2001). *Medicare in Rural America. Report to Congress*. Washington, DC: Author.

Mohr, P. E., Franco, S. J., Blanchfield, B. B., Cheng, C. M., Evans, W. N. (1999). Vulnerability of rural hospitals to Medicare outpatient payment reform. *Health Care Financing Review*, 21(1), 1-18.

Morrill, R., Cromartie, J., Hart, L. G. (1999). Metropolitan, urban, and rural commuting areas: toward a better depiction of the U.S. settlement pattern. *Urban Geography*, 20(18), 727-748.

Pugno, P., Schmittling, G. T., McPherson, D. S., Kahn, N., Jr. (2001). Entry of US medical school graduates into family practice residencies: 2000-2001 and 3-year summary. *Family Medicine*, 33(8), 585-593.

Pugno, P. A., McPherson, D. S., Schmittling, G. T., Kahn, N. B., Jr. (2000). Results of the 2000 National Resident Matching Program: family practice. *Family Medicine*, 32(8), 543-550.

Rabinowitz, H. K. (1993). Recruitment, retention, and follow-up of graduates of a program to increase the number of family physicians in rural and underserved areas. *New England Journal of Medicine*, 328(13), 934-939.

Rosenblatt, R. A., Whitcomb, M. E., Cullen, T. J., Lishner, D. M., Hart, L. G. (1992). Which medical schools produce rural physicians? *JAMA*, 268(12), 1559-1565.

Rosenthal, T. C. (2000). Outcomes of rural training tracks: a review. *Journal of Rural Health*, 16(3), 213-216.

Rosenthal, T. C., McGuigan, M. H., Anderson, G. (2000). Rural residency tracks in family practice: graduate outcomes. *Family Medicine*, 32(3), 174-177.

Saver, B. G., Bowman, R., Crittenden, R. A., Maudlin, R. K., Hart, L. G. (1998). *Barriers to Residency Training of Physicians in Rural Areas*. Rural Health Working Paper #46. Seattle, WA: WWAMI Rural Health Research Center, University of Washington.

Slifkin, R. T. (1999). *Medicare Graduate Medical Education Payments to Rural Hospitals*. NC Rural Health Research and Policy Analysis Program.

WWAMI Rural Health Research Center (2002). *Rural-Urban Commuting Area Codes; Description of Codes and Technical Notes*. Seattle, WA: Author. Available at: http://www.fammed.washington.edu/wwamirhrc/descript.htm. Accessed February 11, 2002.

Table 1: Location of U.S. Family Medicine Training Programs with Differing Training Emphases

Location of Parent Program*,**	Training Mission (%)					Number of Responding Programs	Percentage of All Programs (n = 435)
	Rural Very Important	Urban Underserved Very Important	Both Rural and Urban Underserved Important	Neither Important	Total		
Small rural	100.0	0.0	0.0	0.0	100.0	5	1.1
Large rural	67.9	0.0	14.3	17.9	100.0	28	6.4
Urban	23.8	25.9	13.4	36.8	100.0	402	92.4

* The RUCA code aggregations were as follows: urban (1.0, 1.1, 2.0, 2.1, 2.2, 3.0, 4.1, 5.1, 7.1, 8.1, and 10.2), large rural (4.0, 5.0, and 6.0), small rural (7.0, 7.2, 7.3, 7.4, 8.0, 8.2, 8.3, 8.4, 9.0, 9.1, and 9.2), and remote small rural (10.0, 10.2, 10.3, 10.4, and 10.5).
** No parent programs were located in remote small rural areas.

Table 2: Characteristics of Programs by Rural-Urban Location of Parent Program

	Location of Parent Program		
	Urban (n = 402)	Large Rural (n = 28)	Small Rural (n = 5)
Programs with only family medicine residency in hospital (%)	45	93	60
Programs in community hospitals (%)	86	96	80
Programs in academic health centers (%)	14	4	20
Programs with rural training track (%)	7	14	20

Table 3: Characteristics of Programs by Rural-Urban Training Emphasis

	Rural Training Mission			
	Rural Very Important (n = 120)	Urban Underserved Very Important (n = 104)	Both Rural and Urban Underserved Important (n = 58)	Neither Important (n = 153)
Programs with no other residencies in hospital (%)	70	32	45	43
Programs in community hospitals (%)	90	81	81	91
Programs in academic medical centers (%)	10	19	19	9
Programs with rural training track (%)	17	2	14	2

Table 4: Percentage of Family Medicine Training in Rural and Urban Places, by the Location of the Sponsoring Program*

Training Location	Location of Sponsoring Program: Urban (n = 402)	Large Rural (n = 28)	Small Rural (n = 5)	Total
Rural:				
Model family practice	0	4.1	0.4	4.6
Rural training track	0.9	0.3	0.1	1.4
Block rotations	1.1	0.1	0.1	1.3
Continuity clinics	0.2	0.1	0	0.3
All rural training	2.2	4.6	0.8	7.5
Urban	92.5	0	0	92.5
Total	94.6	4.6	0.8	100.0**

* Rows and columns may not add because of rounding errors.
** Represents 9,793 full-time equivalent residents.

Figure 1

Rural & Urban FP Residence Training by Program Location

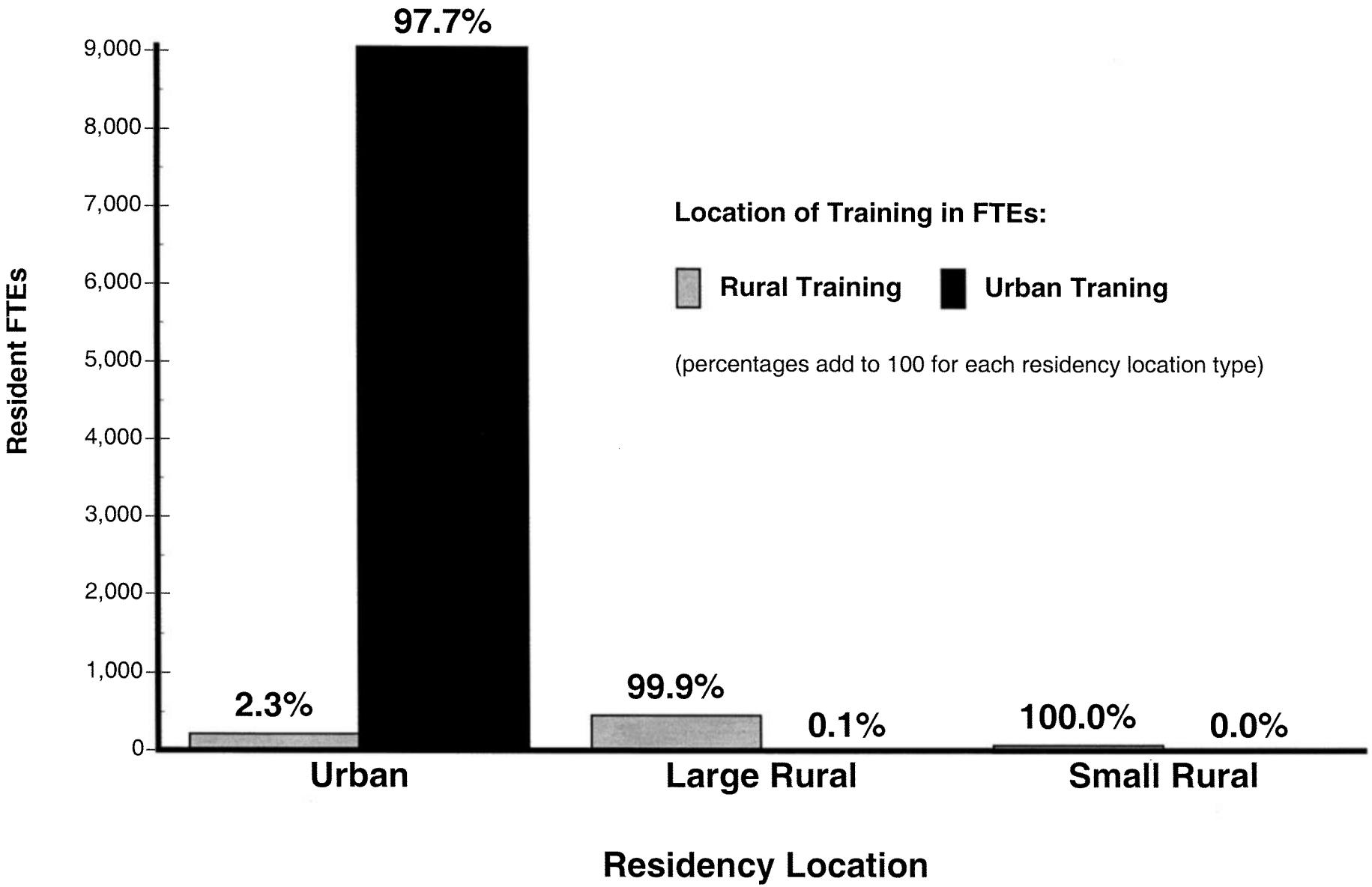


Figure 2

Rural Training by Reported Residency Program Mission

(2000 Family Practice Residency Director Survey, n=435)

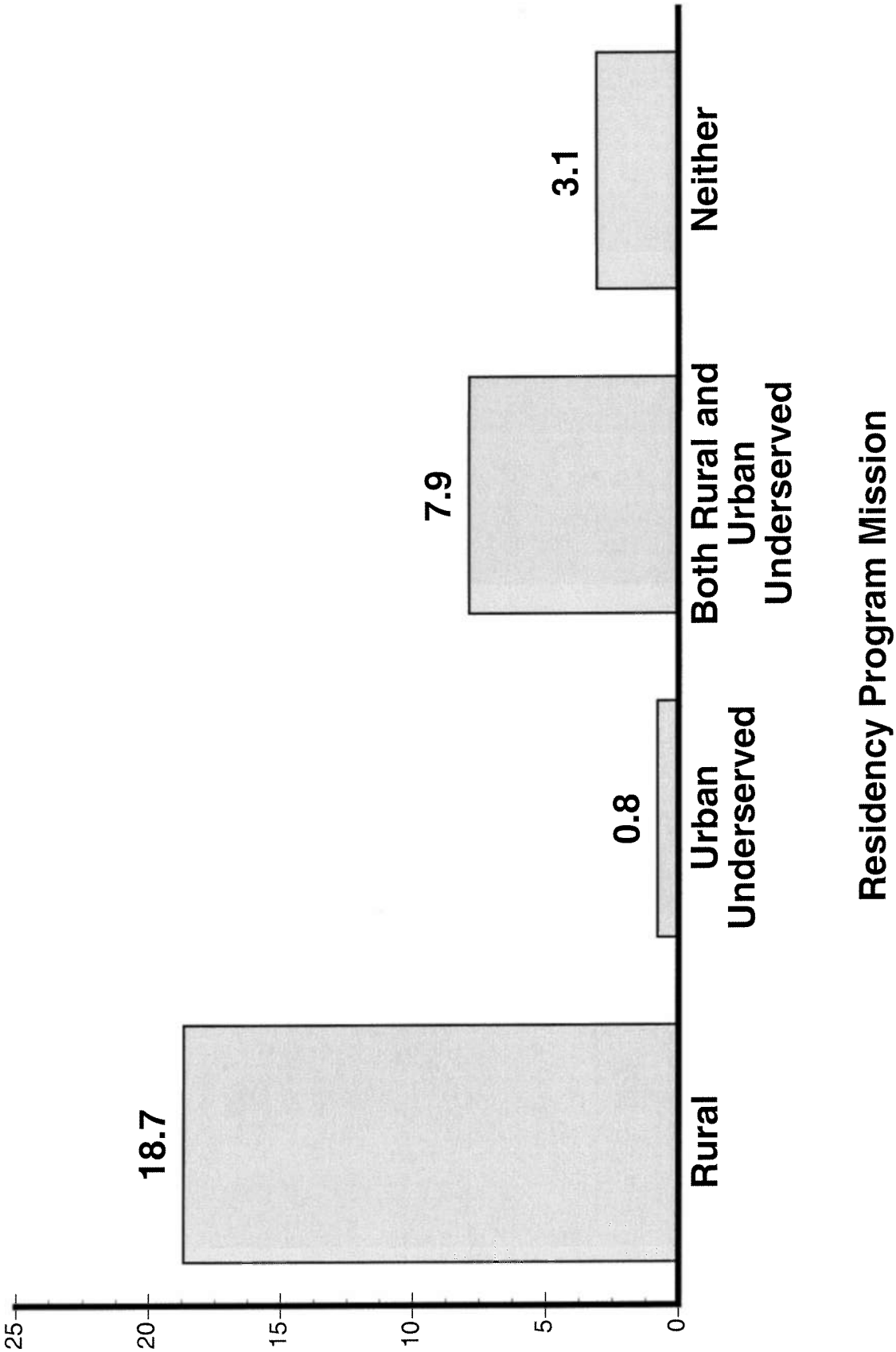
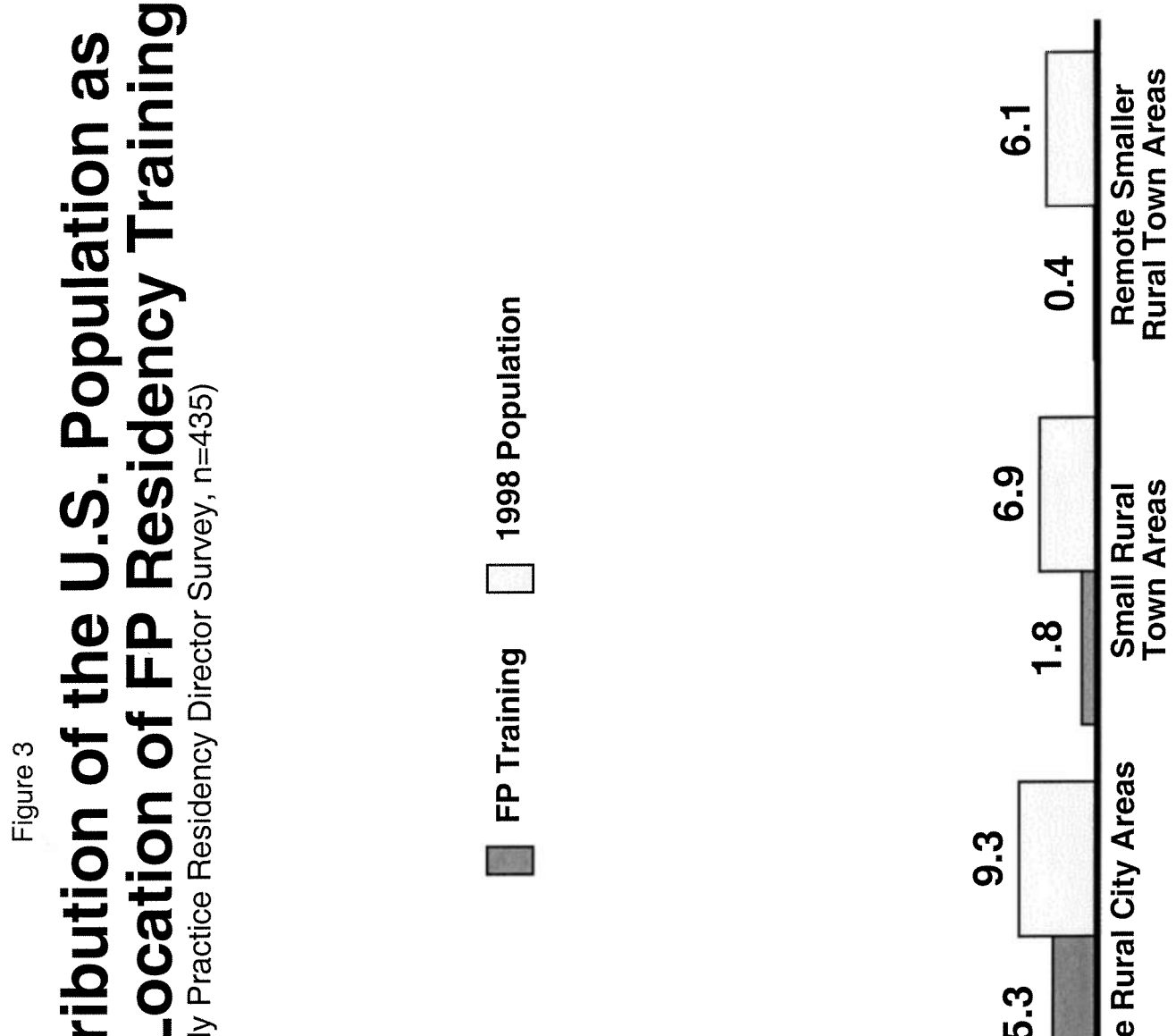


Figure 3

Rural-Urban Distribution of the U.S. Population as Compared to the Location of FP Residency Training

(2000 Family Practice Residency Director Survey, n=435)



Previous WWAMI Rural Health and Health Workforce Research Center Working Papers

The WWAMI Rural Health Research Center was established in 1988. The WWAMI Center for Health Workforce Studies was established in 1998.

1. Hart, L. Gary; Rosenblatt, Roger A.; and Amundson, Bruce A. Is There a Role for the Small Rural Hospital? January 1989.
2. Hart, L. Gary; Rosenblatt, Roger A.; and Amundson, Bruce A. Rural Hospital Utilization: Who Stays and Who Goes? March 1989.
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.
7. Rosenblatt, Roger A; Weitkamp, Gretchen; Lloyd, Michael; Schafer, Bruce; Winterscheid, Loren C.; Vaughn, J. Daniel; and Hart, L. Gary. Are Rural Family Physicians Less Likely to Stop Practicing Obstetrics Than Their Urban Counterparts: The Impact of Malpractice Claims. April 1990.
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.

24. Grossman, David; Hart, L. Gary; Rivara, Frederick P.; Rosenblatt, Roger A.; Maier, Ronald V. From Roadside to Bedside: The Regionalization of Motor Vehicle Trauma Care in a Remote Rural County. October 1993.

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.

27. Williamson, Harold A.; West, Peter A.; Hagopian, Amy. Scope of Rural Medical Services: A Workbook for Hospital Trustees. March 1994.

28. Cullen, Thomas J.; Hart, L. Gary; Whitcomb, Michael E.; Lishner, Denise M.; Rosenblatt, Roger A. The National Health Service Corps: Rural Physician Service and Retention. September 1994.

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.

32. Hart, L. Gary; Dobie, Sharon A.; Baldwin, Laura-Mae; Pirani, Michael J.; Fordyce, Meredith; Rosenblatt, Roger A. Rural and Urban Differences in Physician Resource Use for Low-Risk Obstetrics. March 1995.

33. Rosenblatt, Roger A.; Saunders, Greg; Shreffler, Jean; Pirani, Michael J.; Larson, Eric H.; Hart, L. Gary. Beyond Retention: National Health Service Corps Participation and Subsequent Practice Locations of a Cohort of Rural Family Physicians. April 1995.

34. Dobie, Sharon; Hart, L. Gary; Fordyce, Meredith; Andrilla, Holly; Rosenblatt, Roger A. Content of Obstetric Care for Rural, Medicaid, and Minority Women. June 1995.

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.

37. Norris, Thomas E.; Reese, Jennifer W.; Rosenblatt, Roger A. Are Rural Family Physicians Comfortable Performing Cesarean Sections? March 1996.

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.

41. Perrin, Edward B.; Hart, L. Gary; Skillman, Susan M.; Paul, Britt; Hanken, Mary Alice; Hummel, Jeffrey. Health Information Systems and Their Role in Rural Health Services: Issues and Policy Recommendations. August 1996.

42. Saver, Barry; Casey, Susan; House, Peter; Lishner, Denise; Hart, Gary. Antitrust and Action Immunity in Rural Washington State. Part I: User's Guide to Antitrust and Rural Health Care Environments. Part II: Antitrust Issues in Rural Washington State. January 1997.

43. Dyck, Sarah; Hagopian, Amy; House, Peter J.; Hart, L. Gary. Northwest Rural Hospital Governing Boards. November 1997.

44. Doescher, Mark P.; Ellsbury, Kathleen E.; Hart, L. Gary. The Distribution of Rural Female Generalist Physicians in the United States. February 1998.

45. Wright, George E.; Andrilla, C. Holly A. How Many Physicians Can a Rural Community Support? A Practice Income Potential Model for Washington State. April 2001.

46. Saver, Barry G.; Bowman, Robert; Crittenden, Robert A.; Maudlin, Robert K.; Hart, L. Gary. Barriers to Residency Training of Physicians in Rural Areas. April 1998.

47. Larson, Eric H.; Hart, L. Gary; Goodwin, Mary-Katherine; Geller, Jack; Andrilla, Catherine. Dimensions of Retention: A National Study of the Locational Histories of Physician Assistants. April 1998.

48. Baldwin, Laura-Mae; Rosenblatt, Roger A.; Schneeweiss, Ronald; Lishner, Denise M.; Hart, L. Gary. Rural and Urban Physicians: Does the Content of their Practices Differ? May 1998.

49. Geyman, John P.; Hart, L. Gary; Norris, Thomas E.; Coombs, John B.; Lishner, Denise M. Physician Education and Rural Location: A Critical Review. February 1999.

50. Hart, L. Gary; Morrill, Richard; Cromartie, John. A Guide to the Use of Rural and Urban Commuting Areas (RUCAs) in Health Care Analyses. (forthcoming)

51. Hart, L. Gary; Rosenblatt, Roger A.; Lishner, Denise M.; Friedman, Harvey; Baldwin, Laura-Mae. Where Do Elderly Rural Residents Obtain their Physician Care? A Study of Medicare Patients in Washington State. (forthcoming)

52. Ellsbury, Kathleen E.; Doescher, Mark P.; Hart, L. Gary. The Production of Rural Female Generalists by U.S. Medical Schools. January 1999.

53. Lishner, Denise M.; Rosenblatt, Roger A.; Baldwin, Laura-Mae; Hart, L. Gary. Emergency Department Use by the Rural Elderly. November 1998.

54. Baldwin, Laura-Mae; Grossman, David C.; Casey, Susan; Hollow, Walter; Sugarman, Jonathan R.; Freeman, William L.; Hart, L. Gary. Perinatal and Infant Health Among Rural and Urban American Indians/Alaska Natives. June 1999.

55. Larson, Eric H.; Hart, L. Gary; Muus, Kyle; Geller, Jack. Content of Physician Assistant Practice: Results from a National Survey. May 1999.

56. Richardson, Mary; Casey, Susan; Rosenblatt, Roger A. Local Health Districts and the Public Health Workforce: A Case Study of Wyoming and Idaho. November 1999.

57. Larson, Eric H.; Hart, L. Gary; Ballweg, Ruth. National Estimates of Physician Assistant Productivity. January 2000.

58. Hart, L. Gary; Norris, Thomas E.; Lishner, Denise M. Attitudes of Family Physicians in Washington State Toward Physician-Assisted Suicide. February 2002.

59. Rosenblatt, Roger A.; Baldwin, Laura-Mae; Chan, Leighton; Fordyce, Meredith A.; Hirsch, Irl B.; Palmer, Jerry P.; Wright, George E.; Hart, L. Gary. The Quality of Care Received by Diabetic Patients in Washington State: A Rural-Urban Comparison. March 2000.

60. Wright, George E.; Paschane, David M.; Baldwin, Laura-Mae; Domoto, Peter; Cantrell, Diana; Hart, L. Gary. Distribution of the Dental Workforce in Washington State: Patterns and Consequences. March 2001.

61. Rosenblatt, Roger A.; Casey, Susan; Richardson, Mary. Rural-Urban Differences in the Public Health Workforce: Findings from Local Health Departments in Three Rural Western States. January 2001.

62. Ellsbury, Kathleen E.; Baldwin, Laura-Mae; Johnson, Karin; Runyan, Sue; Hart, L. Gary. Gender-Related Factors in the Recruitment of Generalist Physicians to the Rural Northwest. February 2001.

63. Norris, Thomas E.; Hart, L. Gary; Larson, Eric H.; Tarczy-Hornoch, Peter; Masuda, David; Fuller, Sherrilynne; House, Peter J.; Dyck, Sarah M. Low-Bandwidth, Low-Cost Telemedicine Consultations Between Rural Family Physicians and Academic Medical Center Specialists: A Multifaceted Satisfaction Study. February 2001.

64. Larson, Eric H.; Palazzo, Lorella; Berkowitz, Bobbie; Pirani, Michael J.; Hart, L. Gary. The Contribution of Nurse Practitioners and Physician Assistants to Generalist Care in Underserved Areas of Washington State. June 2001.

65. Rosenblatt, Roger A.; Rosenblatt, Fernne Schnitzer. The Role and Function of Small Isolated Public Health Departments: A Case Study in Three Western States. June 2001.

66. Thompson, Matthew J.; Skillman, Susan M.; Johnson, Karin; Schneeweiss, Ronald; Ellsbury, Kathleen; Hart, L. Gary. Assessing Physicians' Continuing Medical Education Needs in the U.S.-Associated Pacific Jurisdictions. September 2001.

67. Hart, L. Gary. The Evaluation Questionnaires of Office for the Advancement of Telehealth Grantees. September 2001.