

**Does Subsidizing Physician Practices in
Underserved Rural Communities Make A Difference?**

**Jane T. Kolimaga, M.A.
Thomas R. Konrad, Ph.D.
Thomas C. Ricketts, III, Ph.D., M.P.H.**

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**North Carolina Rural Health Research Program
Cecil G. Sheps Center for Health Services Research
University of North Carolina at Chapel Hill**



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ABSTRACT

Little is known about the relationship between private practice physicians and physicians in federally-subsidized practices who share service areas. We have compared practice characteristics of three types of physicians: those who work in federally-subsidized community health centers (CHCs), private practice physicians within CHC service areas, and private practice physicians in other rural areas. This study, which draws from surveys from a two-state subset of a nationally representative sample, found that rural physicians who compete with CHCs do as well economically as physicians in rural areas who do not compete with CHCs; and the percent of Medicaid and uninsured patients seen in private physician practices does not increase when a CHC is not in the county. We conclude that CHCs do not provide competitive barriers to physicians in private practice, although we don't know if the presence of a CHC inhibits new private physicians from entering practices in these communities.

Index Words:

Rural

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Medicaid

Access to care

Physician competition

Does Subsidizing Physician Practices in Underserved Rural Communities Make a Difference?

Data from the U.S. Bureau of Primary Health Care (formerly the U.S. Bureau of Health Care Delivery and Assistance, or BHCDA) reveal that over 19 million rural Americans live in areas designated as Health Professional Shortage Areas (HPSAs). It is estimated over 2,000 primary care providers would be required to remove these shortage designations¹. The rural South leads the nation with the largest number of HPSA designations (499), the largest estimated underserved population (5,300,000), and the most federally-subsidized community health centers (CHCs) which were established to serve these poor and underserved communities. Of the 133 CHCs in eight Southern states within Public Health Service Region IV, 96, or 72%, are located in rural areas. In addition to their federal grant subsidies under Section 330 of the Public Health Service Act, CHCs differ from private medical practices by their community governance, non-profit status, broader range of services, and obligation to serve all patients without regard to their ability to pay.

A HPSA designation signals an unmet physician need in an area and may give some assurance of a sufficient patient caseload for physicians interested in establishing a private practice. However, a rural environment is more challenging for physicians than urban or suburban sites. For example, rural areas are frequently geographically remote and sparsely populated, tend to be more economically depressed, have higher rates of poverty and uninsurance, and often lack professional support services such as hospitals and a full complement of health personnel². Such factors understandably mediate against a physician's choice of a rural practice location.

In addition to environmental disadvantages, some federal reimbursement policies may place rural private physicians at a revenue disadvantage vis-à-vis CHCs. For example, CHCs have been eligible to receive higher reimbursement for Medicare and Medicaid services through programs such as the Federally Funded Health Centers (FFHC), created under the Johnson administration and substantially revised in the late 1970s, and the Rural Health Clinics Services Act (RHC) enacted in 1977². Rural Health Clinic reimbursement is available for both for-profit and not-for-profit physician practices which meet the requirements for midlevel practitioner staffing, Medicare certification, and area designation for underservice. More recently, Medicaid and Medicare were mandated under the Omnibus Reconciliation Acts of 1989 and 1990 to reimburse CHCs and similar clinics on a 100% reasonable cost basis which in some states has resulted in rates that are substantially higher than individual provider rates³.

Little is known about the relationship between private practice physicians and physicians in federally-subsidized practices who are located within the same general service areas. Our two major purposes in this study were to get factual insight into the differences between private physician practices and federally-subsidized physician practices in rural underserved communities, and to begin to explore the nature of any competition between the two. Specifically, we compared three samples of North Carolina and South Carolina physicians who have chosen to establish practices in underserved rural counties: (1) physicians working as employees of community health centers (CHCs); (2) physicians in private practice within the service area of the CHCs; (3) physicians in private practices in other rural areas. To promote more comparability, we selected only physicians in the three groups who had certain common characteristics: (1) all were primary care physicians (i.e., practiced as family practitioners, internists, pediatricians, general practitioners); and (2) had recently settled in rural communities (i.e., since 1986). We explored the sociodemographic characteristics of these physicians' patient caseloads, practice specialization, productivity, practice staffing, and compensation. In addition, we examined recent federal reimbursement policies and discuss their differential impact on publicly subsidized and private providers in rural areas.

Rural areas still face a shortage of physicians, and effective public policy is critical in fostering the development of physician practices in underserved communities. As choices are made to include rural physicians in competitive plans or to use the CHC mechanism as the best alternative to provide access to care, policy makers need to understand the effects of the latter and the capacity of the former to provide care to the poor. This study provides information about the competitive structure of medicine in rural areas.

Data and Methods

Several sources of data were used for this analysis. The majority of the data were collected for a larger nationally representative study of physician retention in rural underserved areas⁴. There were 80 physicians in the national sample of 1,172 physicians who were practicing in the 103 primary care HPSAs in North Carolina and South Carolina and who entered practices in rural communities between 1987 and 1990. These 80 physicians were selected for our study on the basis of their choice of practice site within three location categories in rural areas:

- a CHC;
- a private practice located within a county in a CHC service area;
- a private practice not located within a county in a CHC service area.

Physicians in this study responded to a questionnaire which covered details of their background, demographics, productivity, practice staffing, patient characteristics, and compensation,

in addition to attitudes and future intentions to remain in rural practice. Both National Health Service Corps (NHSC) physicians and others were included. All NHSC physicians placed between 1987 and 1990 in rural areas were surveyed from lists provided by NHSC central office staff. Similarly, a random sample of non-NHSC physicians was drawn from the American Medical Association Physician Masterfile representing physicians moving to rural communities during this same period.

North Carolina and South Carolina were chosen because of the high number of HPSA designations for primary care physician shortages (51 and 52, respectively), the number of federally-subsidized primary health care programs (24 and 21, respectively), the percent of total population who live in rural areas (45% and 32%, respectively), and percent of the state's medically underserved population who receive treatment in CHCs (15% and 18%, respectively)⁵. In addition, anecdotal and supplementary information on these states were easily available to the authors.

Service areas of individual CHCs were identified from the April 1991 *Directory of 330/329-Funded Community and Migrant Health Centers* compiled by the National Clearinghouse for Primary Care Information for the Bureau of Primary Health Care. Service areas are defined as consisting of whole or partial counties, but in the case of partial counties the directory does not specify which portions of the county are included in the service area. All CHC service area respondents included in this study indicated a practice location in a county which was wholly within a CHC service area. The service area of the private physicians was assumed to be the county of their practice location. This assumption is reasonable in North Carolina and South Carolina due to a consistent size of counties of approximately 23 x 23 miles (average North Carolina county land area = 484 square miles; average South Carolina county land area = 656 square miles).

The major variables of interest for this study were *physician characteristics* (e.g., age, gender, ethnicity, specialty); *county demographic characteristics* (e.g., population size, per capita income, percent 65 and over); *reimbursement sources* (e.g., Medicaid, Medicare, uninsured); *physician productivity characteristics* (e.g., hours worked per week, on-call hours, number of patients seen in office and in hospital); *practice characteristics* (number of other physicians in practice, number of mid-level practitioners in practice, ownership of practice); and *physician compensation* (e.g., starting annual income, most recent annual income, non-salary compensation). The larger national study did not request the percentage of the patients in the NHSC respondents' practices covered by Medicare. As a proxy, we obtained the percentage of medical users for individual CHCs who were 65 years and older from the Bureau of Common Reporting Requirements (BCRR) 1990 data file and then matched the CHC data to the individual CHC physician respondents.

County sociodemographic and population data were obtained from the Bureau of Health Professions' Area Resource File and the U.S. Bureau of the Census, 1990 Census of Population.

Student's t-tests and chi-square tests were used to detect statistically significant differences between CHC physicians (n = 26) and non-CHC physicians (n = 19) in CHC service areas and all other rural physicians (n = 35) at the $p < .05$ level.

Results

Respondent Characteristics. Data in Table 1 show that the two predominant physician specialties in rural CHCs are family/general practice and internal medicine physicians, representing 54% and 25%, respectively, of all physicians in these centers. This finding reflects the physician staffing pattern found in rural CHCs nationwide⁶. While family practice physicians predominate in rural CHCs, those primary care physicians who tend to settle in CHC service areas as "neighbors" are most likely to be internists (53%), with the next largest group representing family and general practice (37%). However, the specialty distribution of those rural physicians who practice in underserved areas which do not have a CHC closely resembles CHC physician staffing patterns, that is, family practice dominates (54%) and is followed by internal medicine (32%). Across all three physician groups, pediatricians were the third largest practice specialty.

Environmental Characteristics. The data in Table 2 indicate that there are no statistically significant differences in the population size of CHC and non-CHC rural counties, although CHC service area counties are found to have significantly lower per capita income and a relatively higher percent of the population 65 and older. These findings reflect the federal policy of establishing CHCs in areas whose populations are poor and at high risk of medical underservice.

Patient Characteristics. The data in Table 3 indicate that CHC physicians serve a significantly higher proportion of Medicaid patients, the uninsured, and minority patients than the other two physician groups. This, however, is not an unexpected finding since service to the poor and underserved is at the heart of the CHC mission. North Carolina and South Carolina CHCs have 14% and 6%, respectively, of their patients covered by private insurance⁵. However, the data also indicate that for the two private physician groups, after accounting for patients without insurance and those covered by Medicaid and Medicare, the remaining private pay or privately insured patients represent a little more than one-fourth (26.9% and 25.4%) of their total patient caseload, compared to 20.9% of the patient caseload of CHC physicians.

Table 3 also shows that CHC physicians serve significantly fewer Medicare patients than non-CHC providers. This finding may be partially explained by the larger proportion of internists among the non-CHC providers. Kletke et al.⁷ cite studies which show that patients 65 years of age and older make up more than 35% of all visits to general internists, more than three times their representation in the total population. 1990 Census data show that the rural population tends to be older, with 14.7% of the total rural population being 65 and over, compared to 11.9% in urban areas. In our study, the data indicate that 13.3% of CHC physician patients are covered by Medicare which, as seen in Table 2, is approximately equal to this age group's 13.1% representation in the CHC's county of location. These data also approximate the statewide CHC age cohort data; patients 65 and over represent 14% and 13% of total patients in all North Carolina and South Carolina CHCs, respectively⁵.

Demographics. We found that 36% of the CHC physician respondents were non-white, compared to 22% of the private physicians in the CHC service area and 3% of the private physicians in other rural areas (Table 1). The greater availability of minority physicians in the CHCs may also play a role in attracting minority patients. The disproportionate use of CHC physicians by minority patients may be explained by a larger proportion of minorities in the total population, the disproportionate number of the poor and medically underserved who belong to racial/ethnic minority groups, and linguistic, cultural, or racial factors which inhibit access to the mainstream health care system⁵. Nationwide, about 50% of rural CHC patients are members of minority groups.

Productivity Indicators. Table 4 shows that across five measures of productivity, there are no statistically significant differences among CHC physicians and private physicians in CHC service areas and in other rural counties. All three respondent groups indicated average total office hours per week that are higher than those reported by the AMA for all nonmetropolitan physicians⁸. When the average number of patients seen in the office on an average full day is converted to weekly totals — 122.5 for rural CHC physicians, 137.0 for non-CHC physicians in CHC service areas, and 127.0 for all other rural physicians — overall the three respondent groups report a higher number of office visits than those shown by the AMA data for all nonmetropolitan physicians (102.6), for family practice physicians (127.5), and for internists (94.5). Productivity measures are also considerably higher than those reported in rural NHSC evaluations conducted in the early 1980s⁹. These data suggest a convergence over time in the practice patterns of subsidized and non-subsidized physicians, and that CHC areas are underserved and the practice loads are due to provider shortages or excess demand.

Practice Characteristics. Several aspects of provider practices were examined (Table 5). We looked at the availability of other physicians in the practice (part-time and/or full-time), the availability of physician assistants and nurse practitioners, and practice ownership. Although few

rural practitioners tend to start out on a solo practice situation, CHC doctors are in practices with a more diverse staffing pattern. The CHC respondents were found to be significantly more likely to have mid-level practitioners in their practices. This finding is not unexpected given that a major difference between CHCs and private medical practices is a broader range of services, which makes it more likely that CHCs would employ a wider range of practitioners, and their access to RHC-enhanced payments which require a mid-level practitioner on site. The higher average number of inpatients seen daily by CHC physicians, 7.2 versus 5.2 and 5.8 for the two non-CHC physician groups (Table 4), may be attributable, in part, to the expanded practice in CHCs resulting from their use of mid-levels. No significant differences in other practice characteristics were found.

Compensation Characteristics. Table 6 shows that in terms of levels of starting annual income and most recent annual income, rural CHC physicians receive about \$10,000 less in salary compensation annually than private physicians. Private physicians practicing in areas not served by CHCs had a higher starting income than CHC physicians and increased their income beyond both of the other two study groups. Yet, private physicians practicing in CHC counties had the highest starting salaries. One explanation for the income differential between physicians practicing in the same service area may be the difference in specialization. AMA national data for 1988 show that internal medicine physicians have a higher average net income (\$130,900) than either family practice physicians (\$94,600) or pediatricians (\$94,900)⁸. In nonmetropolitan counties, the AMA reports that the differential in average salaries between internists and family physicians narrows, so that the average internist salary is \$111,300 compared to \$97,500 for the family physician (comparable data for pediatricians is not given in the AMA report). In CHC service areas, 48% of the non-CHC physician group is comprised of lower-compensated (relatively speaking) family physicians and pediatricians, compared to 75% of the CHC physicians in these specialties.

The apparent compensation gap between CHC and non-CHC physicians may be diminished when other paid benefits are taken into account, such as malpractice insurance, personal and family health insurance, and retirement/pension plans. The availability of these benefits to CHC physicians is generally higher than to the other physician groups, although only the difference in the proportion providing malpractice insurance is statistically significant. Additionally, through their service in CHCs, the NHSC physicians are able to reduce medical school debt, while some proportion of the non-Corps physicians are likely to be paying medical school debt from after-tax income.

Discussion

This exploratory analysis has compared the practices of federally-subsidized and private physicians focusing on their reimbursement mix, productivity, staffing, and compensation. We found

that rural private practice physicians who compete with CHCs do as well economically as private physicians in rural areas who do not compete with CHCs, and the percent of Medicaid and uninsured patients seen in the private physician practices did not increase when a CHC was not a competitor in the service area county. One of the implications of the first finding may be that the presence of a subsidized physician practice does not have any adverse effects on private physician practices; the patterns of responses between the two private physician groups are similar for almost all economic and non-economic variables studied. The second finding affirms the role of CHCs in providing care to the poorest and most underserved populations who otherwise may not access the mainstream health care system. These findings are based on a relatively modest sample size of physicians from two states and should not be considered definitive or nationally representative. In addition, the data are self-reported; Kletke et al.¹⁰ found that physicians tend to overstate the proportion of Medicaid patients in their practices by as much as 40%. However, despite these limitations, the findings do raise several important policy issues, including the competitive effects of federally-supported physician practices on private physician practices in rural communities, whether federal subsidy and reimbursement policies change the mix of patients and services in physician practices and, conversely, whether the practice content differences we observed could be changed by policy. We begin this discussion with the issue of competition.

The issue of competition between federally-subsidized community health centers and mainstream private physician practices was initially raised in 1964 with the announcement of the first federally-supported community-based health projects which were to be funded by the Community Action Program. This program was established by the Economic Opportunity Act of 1964, under the direction of the Office of Economic Opportunity (OEO). The fears of the American Medical Association and the American Hospital Association that the new modes of comprehensive, community-based health care delivery would compete with private physicians and the operation of hospitals were supposedly allayed by the OEO's guarantee that their projects "would not compete with the private sector"¹¹. The issue was also examined by Kehrer et al.⁹.

Anecdotal information suggests that CHCs do compete directly with private providers. For example, the only private doctor in a poverty-stricken Mississippi county reportedly shut her family practice clinic because competing with doctors at the County Health Department and the federally-sponsored CHC "leaves them at a disadvantage"¹². Another report relates competition among rural obstetrical providers for Medicaid patients¹³. However, instances of cooperation are also reported. One rural CHC medical director noted the successful efforts of his CHC "to be a supporter, not a competitor" of private physicians, while another rural CHC administrator is committed to the belief

that, “the Center should be an asset to the whole community, including the private providers in the area.” This CHC has referral arrangements and shared calls with its community’s private providers³.

There also have been empirical studies of communities which have both publicly-subsidized and private physician practices. Fossett et al.¹⁴ found the availability of public facilities in rural areas appears to reduce the level of care Medicaid patients receive from private physicians in the counties where these facilities are located. Their results also suggest, although not conclusively, that public care in rural areas is more likely to substitute for private care. Kehrer et al.¹⁵ reported that physicians in less competitive rural areas have few cost incentives to prefer to treat any particular type of patient and are more likely to accept most patients who present themselves for care. Ricketts¹⁶ studied 193 subsidized rural primary care programs and found a pattern of competitive strategies by the clinics in terms of price, service mix, staff availability, structural accessibility, outreach, and targeting of services. However, the strategy chosen by a particular clinic could not be predicted based on service area population and apparent competitors in the area; the impact of the strategies on private providers was not a part of the study design. Bradham et al.¹⁷, using the same database, noted the influence of the rural communities themselves on the economic survival of a rural practice and, in particular, the considerable time involved and the difficulty faced by any new provider in attracting patients where there are existing, acceptable sources of care. These studies suggest that competition in rural underserved areas may not follow classical economic theory.

The issue of a two-tiered system of health care inevitably arises in discussions of communities with both publicly-subsidized and private physician practices. Fossett et al.¹⁴ posit that the availability of care from public facilities reduces the level of care Medicaid patients receive from private physicians when the two providers are in the same county. In effect, the presence of a publicly-subsidized health clinic may be promoting and maintaining a two-tier system of care in which Medicaid and other poor patients are seen at the publicly-subsidized facility and private pay/insured patients are seen by private, fee-for-service physicians. Our data in Table 3 indicate that the proportion of Medicaid patients seen in the two private physician groups is similar (20.6% and 21.1%) and the differences in the proportion of Medicaid patients in these two groups are significantly lower than the CHC physician group (36.8%). Similarly, the percent of uninsured patients in the two private physician groups were significantly lower than the CHC practice (16.2% and 15.3% versus 29.0%), although there was a slight but still statistically significant difference found at the $p < .05$ level between the two private physician groups as well. Our study did not control for the presence of any publicly-subsidized facility other than a CHC, but it is clear from these data that the proportion of Medicaid and uninsured patients seen in private physician practices did not increase in the absence of a CHC; it is likely that Medicaid and uninsured patients sought care elsewhere, perhaps in a local

health department, community hospital outpatient or emergency facility, or rural health clinic. Where there are low Medicaid physician participation rates, Medicaid patients do seek and obtain care in other settings, such as hospital outpatient clinics¹⁸. If one assumes that quality of care in both publicly-subsidized and private settings is equivalent, and there is no evidence to the contrary, then this “separate but equal” approach to health care delivery may not be problematic, except for the not-so-insignificant political implications of possibly promoting social-economic segregation in the health care system.

Kehrer¹⁵ found that it is not in a private physician’s interest in small rural areas to preferentially treat, or not treat, certain population groups. But, where a population’s need for services exceeds the available supply of primary care physicians and where there also exist high rates of poverty and uninsured individuals, as is the case in HPSAs, it is in the financial interest of private physicians to attempt to maximize the number of patients who have some ability to pay for their services. We have approximated the service area’s ability to pay for medical care services by subtracting the publicly insured and uninsured individuals from the total patient load. Those patients with some ability to pay through private sources represent 20.9% of CHC physician patients, compared to 26.9% of patients in private physician practices which compete with CHCs and 25.4% in private physician practices in other rural areas. Evidently, neither of the two private physician practice groups rely on insured/private pay patients for much more than one-fourth of the practices’ total reimbursement income; for the CHCs this payment source represents only about one-fifth of their patient reimbursement income.

While private physicians may be competing with CHCs for the relatively small portion of private-pay patients for personal income generation, one might suppose that CHCs, too, have a financial incentive to compete with private providers for these patients. Financially, CHCs operate very close to a breakeven level, so any surplus of revenues over expenses tends to be used to purchase or replace physical assets, increase working capital, and cover emergencies. However, the Bureau of Primary Health Care¹⁹ reports that the common strategies for raising revenues, such as increasing patient volume, reducing charity care, increasing prices, increasing non-patient revenue, and diversifying into other ventures, have not been successful for CHCs. The Bureau offers a few explanations for this lack of success, including the grant-driven attitudes prevalent among board members and staff, difficult target populations and locations, and changes in reimbursement, regulation and competition. These reasons may also be used to refute the supposition that CHCs can compete with private providers.

Recent federal policy initiatives which mandate 100% reasonable cost-based Medicaid and Medicare reimbursement to federally qualified providers may provide the incentive for CHCs to more actively compete with private physicians for these patients. Federally-Qualified Health Centers, by definition, include CHCs and, also by definition, exclude private physician practices unless they can qualify as a “look-alike” to a CHC. Very few, if any, private physician practices can meet the statutory requirements of a community governing board and sliding fee scale discounts. Cost-based reimbursement is a compelling incentive for CHCs to increase their base of publicly-insured patients and may also effectively reduce the numbers of these patients who may otherwise receive care from private physicians. A study of the early impact of this reimbursement has shown that CHCs have not yet begun to increase their publicly-insured patient bases, largely because of lack of physical space to accommodate new patients, difficulties in recruiting additional providers, and need to upgrade record-keeping systems, but these problems have been identified as the initial targets for use of the increased revenues³. CHCs in some states are not yet receiving Medicaid cost-based reimbursement because of methodological and financing issues which have slowed the implementation process. For other CHCs located in states which previously have had a higher-than-national average Medicaid reimbursement, cost-based reimbursement may actually result in a decrease in these revenues.

It is unclear from available data if the extension of FQHC-Medicaid cost-based reimbursement to private physicians in underserved areas would result in higher proportions of Medicaid patients in these practices and, by extension, increased competition with CHCs for these patients. Previous research shows conflicting conclusions about the association between increased Medicaid rates and provider participation. For example, Perloff et al.²⁰ and Fossett et al.²¹ concluded that more generous reimbursement, eligibility rules, and service provisions may not be as effective as physician supply and demand issues in influencing physician Medicaid participation. Yet, Mitchell’s²² multivariate analysis of 2,291 private practice physicians nationwide found that a 10% increase in the Medicaid fee would increase physician participation by around 3%. However, in a later study, Mitchell²³ found that rural physicians appeared to be unresponsive to payment rates, suggesting that, given the higher proportion of uninsured patients in their caseloads (that is, relative to urban physicians), there may be much less cross-payer competition for the physicians’ time.

The Rural Health Clinics Services Act, which was implemented in 1978, qualifies private, for-profit physician practices in rural underserved areas for cost-based Medicaid and Medicare reimbursement if eligibility criteria are met, most notably the availability of non-physician primary care practitioners such as physician assistants, nurse midwives, and nurse practitioners (“midlevels”) for at least 50% of the time the practice is open for patient care. Unlike FQHCs, the practice can be for-profit, and governance by a Board of Directors and a sliding-fee scale are not required. Our data show

that one explanation for the low private provider participation in this program may be the relatively low number of private rural practices which employ midlevels; about 24% of rural physicians in non-CHC service areas and 11% in CHC service areas employ midlevels. The RHC program may not be well known among private physicians, and the lack of any apparent financial advantage for high volume practices may have also impeded private practice participation in this program. Since 1987, however, several amendments to the Act had been passed which were intended to alleviate some of the obstacles to participation. In 1991 and 1992, an additional 219 participants were certified in the program, bringing the total to approximately 800 nationwide²⁴. While these data indicate increasing interest and participation in the program, less than 10% of the total are private physician practices (S. Walman, HCFA Bureau of Program Operations, personal communication).

For private practice physicians, Medicaid and Medicare reimbursement rates typically do not cover all costs of providing patient care but, as guaranteed sources of payment, are important revenue sources. Public insurance sources provide more than half of the patient revenue in these private practices. The impact of subsidy and reimbursement policies upon the utilization and income of private family physician practices may become an increasingly important public policy consideration as other federal health policies, such as the expansion of the National Health Service Corps loan repayment and scholarship programs, move toward the encouragement of primary care specialties.

Conclusions

We began this article by noting that over 19 million rural Americans live in areas that have a shortage of primary care physicians and that over 2,000 of these physicians would be needed to remove the shortage designations. It is essential that we thoroughly understand these rural shortage environments if public policy initiatives, such as increasing the supply of primary care physicians, are to be effective in these areas. This study has examined one factor which may be responsible for the reluctance of primary care physicians to develop practices in some rural areas, that is, potential competition from a federally-subsidized health center. Our basic findings are that the presence of a CHC in a county has little effect on a private physician practices when both economic and non-economic variables are considered, and the absence of a CHC does not increase the number of Medicaid and uninsured patients in private physicians practices. Our data show that physicians who compete with CHCs do as well economically as physicians in rural areas who do not compete with CHCs. In those areas in which CHC and private physicians coexist, there are significantly more poor and younger patients in CHCs and more elderly and private pay patients in private practices, suggesting that providers segment the market for the poor and underserved.

The proposition that the presence of a publicly-subsidized health care facility in an underserved community which also has a private physician practice establishes a two-tiered system of medical care was discussed, but further policy analysis is clearly needed. For example, should federal clinics be subsidized to serve publicly insured individuals or should they be targeted to those with limited or no insurance? Where provider choice is so limited, would a two-tiered system of care develop, or does it already exist? Is public money better spent on subsidizing health clinics or encouraging private sector practices to broaden their patient base to include those groups who may have been left out of the system historically?

Our data show that private physician practices in the absence of a CHC competitor do not increase their proportion of Medicaid and uninsured patients. CHCs are eligible to receive cost-based Medicaid and Medicare FQHC reimbursement and presumably will result in a higher reimbursement rate than was previously paid (the FQHC program is optional and CHCs which do not expect to benefit financially will simply not seek this type of reimbursement). There is conflicting evidence from other research studies which makes it difficult to predict if offering increased Medicaid and Medicare reimbursement to private physicians would result in increased participation in these programs. Experience with cost-based reimbursement to private physicians under the RHC program is limited because of the small numbers of rural physician practices which have the staff and scope of services needed to qualify. Could extending cost-based reimbursement, such as is available to CHCs, induce private physicians to increase their share of Medicaid and other poor persons in these areas, or will poor patients continue to seek care from public facilities even where private physicians are adequately reimbursed and are willing to care for them? Will the FQHC program make CHCs compete with private physicians for more Medicaid and Medicare patients? An evaluation of the impact of the FQHC program, when more fully implemented in more states, will help answer some of these questions.

We conclude that CHCs do not present competitive barriers to private practice physicians, however, we do not know if the presence of a CHC inhibits new physicians from establishing private practices in CHC communities. Yet, many small rural communities may never have the population base for both a viable private physician practice along with other alternative systems of care, such as a federally-subsidized health center. In such situations, the only solution for guaranteeing access to the needed services for remote low density population communities may be exclusive reliance on a subsidized health center. However, data from appropriately targeted research would improve our understanding of the relationship between private and public providers of care in rural, underserved communities in which private physician practices are thriving, and may lead to public policy which would make these communities more attractive to private physicians.

Table 1
Descriptive Statistics of Respondent Characteristics

Characteristics	Rural CHC Physicians	Non-CHC Physicians in Rural CHC Service Area	Rural Physicians not in Rural CHC Service Area
Number	26	19	35
Gender:			
Male	56%	72%	89%
Female	44%	28%	11%
Ethnicity:			
White	64%	78%	97%
Other	36%	22%	3%
Age	35.0	38.1	37.9
Specialty:			
Family/General Practice	54%	37%	54%
Internal Medicine	25%	53%	32%
Pediatrics	21%	11%	15%
Other	--	--	2%
Currently in the National Health Service Corps	23/26	0/19	0/35
Months at rural practice site:			
Respondents still at site (Oct 91)	35.5 (n=20)	34.5 (n=11)	29.4 (n=26)
Respondents who left site	27.8 (n=6)	21.5 (n=8)	23.8 (n=9)

Table 2
Environmental Characteristics

Characteristics of Counties where Physician Practices are Located	Rural CHC Physicians	Non-CHC Physicians in Rural CHC Service Area	Rural Physicians not in Rural CHC Service Area
Population of county of practice site	56,265	52,216	46,783
Per capita income of county of practice site*	\$11,702	\$12,884	\$12,735
Percent of population in county of practice site ≥ 65**	13.1%	14.1%	14.3%

* Student's t test found statistically significant differences between CHC providers and the two other physician groups (p < .05).

** Student's t test found the difference between the CHC physicians and the private physicians not in CHC service areas to be significantly different (p < .05).

Table 3
Patient Characteristics

Study Variables	Rural CHC Physicians	Non-CHC Physicians in Rural CHC Service Area	Rural Physicians not in Rural CHC Service Area
Percent Medicaid patients*	36.8% (n=21)	20.6% (n=16)	21.1% (n=31)
Percent Medicare patients**	13.3% (n=26)	36.3% (n=16)	38.2% (n=31)
Percent uninsured patients***	29.0% (n=21)	16.2% (n=16)	15.3% (n=28)
Percent minority patients***	76.7% (n=26)	43.3% (n=17)	28.6% (n=33)

*Student's t test found statistically significant differences between the means of the CHC physicians and each of the other two groups (p < .05).

** Student's t test found the means of CHC physicians and physicians within CHC service areas are significantly different (p < .05).

*** Student's t test found the differences between all pairs of means are statistically significant (p < .05).

Table 4
Productivity Indicators

Study Variables	Rural CHC Physicians	Non-CHC Physicians in Rural CHC Service Area	Rural Physicians not in Rural CHC Service Area
Total hours worked per week	48.8 (n=26)	48.9 (n=18)	51.8 (n=34)
Total hours worked in office per week	39.8 (n=25)	38.7 (n=18)	41.7 (n=34)
Number of on-call weeknights and weekend days per week	3.2 (n=25)	3.4 (n=16)	3.4 (n=34)
Number of patients seen in office on average full day	24.5 (n=24)	27.4 (n=18)	25.4 (n=34)
Number of inpatients cared for on average day	7.2 (n=24)	5.2 (n=13)	5.8 (n=29)

Table 5
Selected Practice Characteristics

Study Variables	Rural CHC Physicians	Non-CHC Physicians in Rural CHC Service Area	Rural Physicians not in Rural CHC Service Area
Percent of respondents' practices with other full-time MDs in practice	64% (16/25)	67% (12/18)	61% (20/33)
Number of other full-time MDs in respondents' practices	3.8 (n=16)	1.9 (n=12)	2.6 (n=20)
Percent of respondents' practices with part-time MDs in practice	40% (10/25)	17% (3/18)	18% (6/34)
Number of part-time MDs in respondents' practices	1.4 (n=10)	1.3 (n=3)	1.2 (n=6)
Percent of respondents' practices with other MDs in practice (full-time and/or part-time)	80% (20/25)	72% (13/18)	64% (21/33)
Number of other MDs (full time and part-time) in respondents' practices	3.0 (n=25)	1.5 (n=18)	1.8 (n=33)
Percent of respondents' practices with non-physician primary care providers in practice*	52% (13/25)	11% (2/18)	24% (8/34)
Number of non-physician primary care providers in practice	1.5 (n=13)	1.0 (n=2)	1.3 (n=8)
Percent of respondents' practices owned by respondent	NA	44% (8/18)	60% (21/35)

* Chi-square analysis found statistically significant differences among all respondents (p < .05).

REFERENCES

- ¹Bureau of Health Care Delivery and Assistance. Selected Statistics on Health Professional Shortage Areas (as of June 30, 1992). Washington DC: Health Resources and Services Administration, 1992.
- ²U.S. Congress, Office of Technology Assessment. Health Care in Rural America, OTA-H-434. Washington, DC: U.S. Government Printing Office, September 1990.
- ³Lewis-Idema D, Falik M, Ricketts TC, et al. Effects of Increased FQHC Revenue on Community Health Centers. Final Report submitted to Health Resources and Services Administration, August 13, 1992.
- ⁴Pathman DE, Konrad TR, Ricketts TC. The Comparative Retention of National Health Service Corps and Other Rural Physicians: Results of a 9-year Follow-up Study. *Journal of the American Medical Association* 1992 Sept 23/30; 268(12): 1552-1558.
- ⁵National Association of Community Health Centers. Access to Community Health Care: A State and National Data Book. Washington DC: National Association of Community Health Centers, 1992.
- ⁶National Association of Community Health Centers. Health Professionals for Health Centers: The Physician Pipeline to Health Centers. Washington DC: National Association of Community Health Centers, 1991.
- ⁷Kletke PR, Schleiter MK, Tarlov AM. Changes in the Supply of Internists: The Internal Medicine Population from 1978 to 1998. *Annals of Internal Medicine* 1987 July; 107(1): 93-100.
- ⁸American Medical Association. Socioeconomic Characteristics of Medical Practice 1989. Chicago IL: AMA, 1989.
- ⁹Kehrer, B. Granneman TW, Manser ME, et al. Evaluation of the Effects of NHSC Physician Placements upon Medical Care Delivery in Rural Areas. Non Technical Summary Report. Princeton: Mathematica Policy Research, June, 1982.
- ¹⁰Kletke PR, Davidson SM, Perloff JD, Schiff DW, Connelly JP. The Extent of Physician Participation in Medicaid: A Comparison of Physician Estimates and Aggregated Patient Records. *Health Services Research* 1985 Dec; 20(5): 503-523.
- ¹¹Sardell A. The U.S. Experiment in Social Medicine: The Community Health Center Program, 1965-1986. Pittsburgh, PA: University of Pittsburgh Press, 1988.

- ¹²American Medical News. Competition Defeats Rural MD. September 28, 1992.
- ¹³Taylor DH, Ricketts TC, Langholz R. A Response to the Professional Liability Crisis: The First Three Years of North Carolina's Rural Obstetrical Care Incentive (ROCI) Program. Working Paper: North Carolina Rural Health Research Program, Sheps Center for Health Services Research, University of North Carolina at Chapel Hill, November 1991.
- ¹⁴Fossett JW, Peterson JA, Ring MC. Public Sector Primary Care and Medicaid: Trading Accessibility for Mainstreaming. *Journal of Health Politics, Policy and Law* 1989 Summer; 14(2): 309-325.
- ¹⁵Kehrer BH, Sloan FA, Wooldridge J. Changes in Primary Medical Care Delivery 1975-1979: Findings from the Physician Capacity Utilization Surveys. *Social Science and Medicine* 1984; 18(8): 653-660.
- ¹⁶Ricketts TC. Competition and Rural Primary Care Programs. *Journal of Rural Health* 1990 April; 6(2): 119-139.
- ¹⁷Bradham DD, McLaughlin CP, Ricketts TC. The Ability of Aggregate Data to Predict Self-Sufficiency Levels in Subsidized Rural Primary Care Practices. *Journal of Rural Health* 1985 July; 1(2): 56-68.
- ¹⁸Long SH, Settle RF, Stuart BC. Reimbursement and Access to Physicians' Services under Medicaid. *Journal of Health Economics* 1986 Sept; 5(3): 236-51.
- ¹⁹Campbell P, Hock J, Kouba D. Physician Compensation: A Guidebook for Community and Migrant Health Centers. Rockville, MD: Public Health Service, HRSA, Bureau of Health Care Delivery Assistance, 1990.
- ²⁰Perloff JD, Kletke PR, Neckerman KM. Recent Trends in Pediatrician Participation in Medicaid. *Medical Care* 1986 Aug; 24(8): 749-760.
- ²¹Fossett JW, Perloff DJ, Kletke PR, Peterson, JA. Medicaid Patients' Access to Office-Based Obstetricians. *Journal of Health Care for the Poor and Underserved* 1991 Spring; 1(4): 406-421.
- ²²Mitchell, JB. Medicaid Participation by Medical and Surgical Specialists. *Medical Care* 1983 Sept; 21(9): 929-938.
- ²³Mitchell JB. Physician Participation in Medicaid Revisited. *Medical Care* 1991 July; 29(7): 645-653.

²⁴Travers K, Ellis, R. Comparison of the Rural Health Clinic and Federally Qualified Health Center Programs. Washington, DC: National Association of Community Health Centers, Dec 1992.