## **Rural Health Research**

# Why Rural Residents Migrate for Family

# Physician Care

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**ABSTRACT:** Several studies have examined why rural residents bypass local hospitals, but few have explored why they migrate for physician care. In this study, data from a random mail survey of households in rural lowa counties were used to determine how consumers' attitudes about their local health system, health beliefs, health insurance coverage and other personal characteristics influenced their selection of local vs. nonlocal family physicians (family physician refers to the family practice, internal medicine or other medical specialist providing an individual's primary care). Migration for family physician care was positively associated with a perceived shortage of local family physicians and use of nonlocal specialty physician care. Migration was negatively associated with a highly positive rating of the overall local health care system, living in town, Lutheran religious affiliation and private health insurance coverage. By understanding why rural residents prefer to bypass local physicians, rural health system managers, physicians and policy-makers should be better prepared to design innovative health organizations and programs that meet the needs of rural consumers.

esidents of rural areas face substantial barriers to the utilization of physician services. Local physicians are often unavailable or are perceived as having poor technical and interpersonal skills (Bureau of Health Professions, 1992; Hart, et al., 1991; Ricketts, 1994). As a result of these and possibly other factors, many rural residents bypass local physicians and other health care providers (Amundson, 1993; Andrus and Kohout, 1985). In other words, many rural residents migrate for physician care.

Understanding why rural medical care users migrate for physician services has a number of important implications for health policy and management. From a policy perspective, it could be argued that the accessibility of medical care in a rural community is not an important issue as long as rural residents can attain services as needed in another rural, suburban or urban locality. However, there are numerous social and economic benefits associated with using local providers. Rural residents, as well as their urban counterparts, often feel a greater sense of security when medical care is locally available (Rosenblatt and Moscovice, 1982). One recent study found that patients are willing to have surgery performed locally even if the risk of mortality is higher than that at a regional medical center (Finlayson, et al., 1999). Although it is difficult

The authors thank William R. Clarke for his useful comments on the statistical analyses, James A. Merchant for his thoughtful feedback on the policy implications and Laurie Walkner for her able assistance in data collection for this study. For further information, contact: Tyrone F. Borders, Ph.D., Department of Health Services Research and Management, Texas Tech University Health Sciences Center, 3601 4th Street, Room 1C165, Lubbock, TX 79430; e-mail somtfb@ttuhsc.edu. to place a dollar amount on such psychological benefits, it is certainly possible that they outweigh the economies of scale and scope associated with centralizing medical care in nonrural localities. Of course, many rural counties will never be able to support many, if any, specialty physicians, but most do have sufficiently large populations that can support family care physicians.

A primary economic benefit to having physicians located in rural areas pertains to the viability of rural economies. The local medical care system, especially the local hospital, is typically one of the larger employers and revenue generators in a rural community. As such, it has a substantial multiplier effect on spending in other sectors of the economy (Christianson and Faulkner, 1981; Cordes, et al., 1999; Damasauskas, 1992; Doeksen, et al., 1990; Thompson, 1996; Vaughan, et al., 1994). Moreover, the presence of local medical care providers has been linked to the attraction of new businesses and investments that, in turn, help sustain the viability of rural America (Cordes, et al., 1994). A secondary economic benefit pertains to opportunity costs. Individuals who bypass local providers may need to spend more time traveling and, consequently, take more time off from work and other activities than individuals who visit local providers. On the other hand, some rural residents may prefer to migrate for medical care if they already travel to work or to shop for nonmedical products and services.

Health care managers should be interested in migration because it indicates a potential problem with the degree to which the local health care delivery system is meeting community needs. If health care managers better understood how migration is affected by consumer perceptions of provider availability, attitudes about physician quality and other personal characteristics, those managers would be better prepared to alter the local delivery system and increase their organizations' market shares. Migration for physician care also has implications for rural hospitals (Taylor, 1997). Individuals who bypass local physicians presumably also bypass local hospitals, except in emergency situations, as well as other local health care providers. Thus migration has the potential to undermine the viability of the entire local health care delivery system (Amundson, 1993).

Unfortunately, although several studies have investigated migration for hospital care (Adams and Wright, 1991; Buczko, 1992, 1994; Goldsteen, et al., 1994; Williamson, et al., 1994), few have investigated migration for physician care. One notable exception is a study by Kleinman and Makuc (1983) who found that approximately 47 percent of individuals living in a rural county adjacent to a metropolitan county and 45 percent living in a rural county nonadjacent to a metropolitan area migrated for physician services. In another notable study, Andrus and Kohout (1985) studied the impact of consumer perceptions of local medical care and out-shopping for nonmedical products on migration for family physician services in a rural Iowa community. Their findings suggest that several factors affect rural medical care users' migration for physician care, including local doctors' fees, the adequacy of local physicians' equipment and ability to meet community health needs, whether the individual saw the same doctor every visit and out-shopping for groceries and entertainment. Yet other factors undoubtedly contribute to rural medical care users' decisions to access family physicians (i.e., family practice, internal medicine or other medical specialists providing primary care) located in local vs. external market areas. Given the paucity of studies on migration for physician care, the present study sought to investigate a range of factors potentially related to migration, including attitudes about the local delivery system, health beliefs, sociodemographic and socioeconomic characteristics, enabling factors and perceived health status.

#### Methods

**Study Setting.** The study was conducted in Iowa's rural counties. Iowa has 99 counties, 89 of which are considered rural (defined here as nonmetropolitan statistical area counties or counties with fewer than 50,000 residents). Approximately 40 percent of Iowa's 2,852,423 residents live in a rural county (U.S. Bureau of Census, 1997). Iowa does not contain any frontier counties (i.e., counties with fewer than six persons per square mile) as do many other rural states, such as North Dakota, Nevada, and Utah (Cordes, 1989). The rural Iowa population is predominantly white and has a large percentage of elderly persons.

Survey Sample. Data were collected through a random sample of households who had either a telephone or personal vehicle registered in a rural Iowa county. Each household was mailed a survey and an accompanying cover letter. The cover letter requested that any adult in the household respond to the survey. Several steps were taken to maximize the response rate, including mailing reminder postcards and a second survey if the original was not returned. Of the



Figure 1. Modified Version of the Behavioral Model of Health Services Use (adapted from Andersen, 1995).

1,000 surveys mailed, 18 were not deliverable because the household member(s) had moved or died. Of the 982 deliverable surveys, 434 were returned, yielding a 44 percent response rate. The response rate is similar to that achieved in comparable mail surveys performed in rural Iowa (Rohrer, et al., 1998a, 1998b).

Theoretically, the sample distribution should have been similar to that for the population of rural Iowa adults. To ascertain whether the sample was over- or underrepresentative of particular population subgroups, the percentage of the sample in each of five age groups was compared with rural Iowa county-level percentages derived from the 1990 U.S. Census (U.S. Bureau of Census, 1997). These comparisons suggested that younger adults between the ages of 18 and 24 were underrepresented, whereas the elderly (individuals 65 years and older) were overrepresented. Further comparisons were conducted by gender. The gender distribution for the sample was similar to that of rural Iowa (Iowa State University Department of Economics, 1999).

**Dependent Variable.** The dependent variable was whether the respondent's family physician practice was located in the respondent's home county. The authors' previous experience with similar surveys has shown that "family physician" is the term rural residents typically use to refer to their primary care physician. Moreover, the majority (approximately 77 percent) of primary care physicians practicing in Iowa are family practitioners (University of Iowa and Iowa Department of Public Health, 1997). Most of the remaining physicians (approximately 15 percent) are internal medicine physicians. Only about 8 percent are either pediatricians or obstetricians/gynecologists. For these reasons, the authors did not ask study participants about the location of a particular type of specialist they might visit for primary care, such as an internal medicine physician or family practitioner. Rather, the authors asked respondents "is your family doctor's office located outside of your home county?" Response options included yes, no and "do not have a family doctor." Those who reported they did *not* have a family doctor (approximately 4 percent) were excluded from analyses.

The authors chose for several reasons to define a rural medical care market area as a county. First and foremost, geopolitical areas emphasize accountability by local officials, community leaders, health care managers and health care providers for the provision of services that maximize community health (Simpson, et al., 1994). The geopolitical method is especially appropriate for defining a medical service area in rural lowa because counties are fairly similar in geographic size and the county seat, where most health care providers are located, is almost always located in the center of the county.

Independent Variables. Andersen's Behavioral Model of Health Services Use was employed to guide the conceptualization of relationships (Andersen, 1995). As shown in Figure 1, the authors theorized that environmental factors (health system variables) and population factors (predisposing, enabling and need characteristics) impact the location of physician service use (i.e., whether the family physician is located in the consumer's home county or another county). The operationalization of each independent variable is explained in more detail below.

Health System Variables. Because this study was interested in the effects of consumers' perceptions on migration, the availability of local doctors from the consumer perspective was assessed. A dummy variable was created to represent whether the respondent perceived a shortage of local family physicians. A similar item measured the perceived availability of local specialty physicians. Overall satisfaction with the local delivery system was assessed through a single item that asked "How would you rate the local health care system?" Because of the low number of respondents who rated their local health system as fair or poor, a dummy variable was created to represent a rating of excellent or very good with the comparison group comprised of those who rated the local delivery system as good, fair or poor.

Predisposing Variables. Predisposing variables included age (categorized as young, middle or elderly), gender, marital status, educational status (some college education/less than a college education), employment status (employed/unemployed) and race (race was categorized as white vs. other because Iowa is predominantly white). Additional variables included ancestry (Germany, England, Ireland, Norway or other), religious affiliation (Lutheran, Catholic, other Christian or other non-Christian/no religious affiliation), a high or low number of individuals per household (three or more vs. two or fewer) and level of social support (the number of close friends or family members the respondent consulted with about medical problems, categorized as high, medium or low). Since rural residents who live in town might be less likely to travel for physician care than those who live outside of town, the authors also included a measure of the location of residence. Dummy variables were created to represent whether the individual lived in town, on a farm with annual agricultural sales of \$1,000 or more or in the country but not on a farm (the comparison group). Respondents were also asked about their beliefs about the benefits of medical care. A dummy variable was created to represent whether the respondent strongly agreed or agreed that family physician care is beneficial. Similarly, a dummy variable was created to represent whether the respondent strongly agreed or agreed that family physician care is cost-beneficial (i.e., that family physician care is usually worth the cost).

*Enabling Variables.* Whether an individual resides in a fringe county (i.e., a rural county adjacent to an urban county) could further enable him or her to visit nonlocal physicians. Therefore, a dummy variable was created to represent whether the respondent lived in a fringe county. Whether an individual visits a local specialty physician could be associated with the location of his or her family physician. To test for this relationship, dummy variables were created to represent whether an individual had a specialty physician inside his or her home county, a specialty physician outside his or her home county or no specialty physician at all. Having no specialty physician was treated as the comparison group.

More financially oriented enabling variables included the respondent's household income category and type of insurance coverage. Income was categorized as low (\$20,000 or less), moderate (\$20,001 to \$35,000), moderately high (\$35,001 to \$75,000) and high (\$75,001 and higher). Because the measures of insurance were not mutually exclusive (an individual could have Medicare and private health insurance), each response option (Medicare, Medicaid and private) was treated as a dummy variable. Respondents were then asked whether their insurance adequately covered the cost of their health care and if they had ever put off seeing the doctor because of the cost.

In addition, the survey contained several questions about the financing and organization of the respondent's insurance coverage. Dummy variables were created to represent those who had prepaid or fee-forservice insurance. Two additional variables pertained to the respondent's perceptions of the bureaucracy of his or her insurance company. A dummy variable was created to represent whether there was or was not a time in the last six months when the respondent had to fill out more forms than he or she thought was reasonable. A second dummy variable was created to represent whether there was/was not a time in the last six months when the respondent's health insurance company took a lot of his or her time and energy when dealing with approvals and payments. A third dummy variable was created to represent whether the respondent was globally satisfied or unsatisfied with his or her health insurance.

*Need Variables.* Perceived need was measured using a modified version of the physical and mental health component summary measures of the Short Form-12 (SF-12) health status instrument (Ware, et al., 1996). To accommodate the survey layout, some of the SF-12 items were slightly modified. Because of these modifications, the recommended scoring algorithms (Ware, et al., 1995) could not be used to create summary scores. Rather, the six physical and six mental health items were summated to create physical and mental health summary scores. Chronbach's coefficient alphas calculated on the authors' modified physical and mental health summary scores (alpha=0.90 and 0.79, respectively) are very similar to Chronbach's alphas reported for original SF-12 physical and mental health summary scores (alpha=0.89 and 0.76, respectively; Ware, et al., 1995). An individual's use of physician services over the past year was also included as an indicator of need. The frequency of physician visits was categorized as low (one or fewer visits), high (four or more visits) or moderate (two to three visits).

Analysis. All respondents, except those who did not respond to the questions pertaining to the dependent variable, were included in the analysis. Missing values for dichotomous independent variables were imputed, as suggested by Aday (1996, pp. 314–316), using a cold-deck imputation technique. This involved replacing a missing value with its most plausible or reasonable substitute. For example, if the respondent failed to report if he or she had Medicare coverage (Medicare=1), that respondent was included in the comparison group (Medicare=0). Such imputation not only increases the sample size used in analyses, but it also lowers the chance of falsely rejecting the null hypothesis.

Because the dependent variable was dichotomous, multivariate logistic regression was employed. The authors tested predictor variables in a hierarchical, chunkwise fashion. In chunkwise regression, each chunk or set of related variables is tested to determine which independent variables are related to the dependent variable. Theoretically, a chunkwise technique maximizes reliability and the probability of developing a credible, parsimonious model (Kleinbaum, et al., 1988). Andersen, et al., argue that hierarchical entry is necessary to fully understand the contribution of each set or chunk of variables (Phillips, et al., 1998). The health system chunk was tested first, followed by the predisposing, enabling and need chunks, which are hypothesized to have an increasingly larger impact on health service use (Andersen, 1995; Phillips, et al., 1998).

The statistical significance of each chunk was evaluated according to its log likelihood ratio. A *P*-value of 0.10 was chosen, because a *P*-value of 0.05 may exclude variables that could be significant in the full model (Hosmer and Lemeshow, 1989). Variables that had Wald statistics with a corresponding *P*-value of 0.10 or less were eliminated. To determine whether multicollinearity might be present, the variance inflation factor was calculated for each independent variable in its respective chunk. Multicollinearity was also reevaluated in the final model; there was no evidence of a problem with multicollinearity in any of the models.

#### Results

Descriptive statistics for the health system and predisposing variables are displayed in Table 1. Descriptive statistics for the enabling and need variables are displayed in Table 2. For categorical variables, the chisquare test was used to test for differences between migrators and nonmigrators. The *t*-test was used to test for differences in perceived health status scores.

Approximately 96 percent of all respondents reported that they had a family physician. Of those who had a family physician, approximately 30 percent outmigrated, choosing a family physician located outside their home county. The remaining 70 percent chose family physicians located in their home county.

Results of the multivariate analysis are shown in Table 3. Two health system variables (an excellent/very good health system rating and shortage of local family physicians) had a P-value of 0.10 or less and were retained to be tested with the predisposing chunk. Two predisposing variables were associated with migration. These included Lutheran religious affiliation and the location of family residence (living in-town, living on a farm with agricultural sales of \$1,000 or more or living in the country but not on a farm, which served as the comparison group). These variables, along with health system variables that continued to be related to migration, were retained and tested with the enabling chunk. In addition, one health system variable that did not have a P-value of 0.10 or less in the predisposing chunk (a perceived shortage of family physicians) was retained because of its theoretical relationship to migration. The health system and predisposing variables retained for inclusion continued to be associated with migration. Four enabling variables (having a local specialty physician, having a nonlocal specialty physician, private health insurance coverage and fee-for-service insurance financing) were also related to migration. These enabling variables, along with previously retained health system and predisposing variables, were tested with the need chunk.

When the need chunk was tested, SF-12 scores were

Table 1.	<b>Descriptive Statistics for Health System</b>
	and Predisposing Variables.

Table 1. Continued.

	Total (n=412) (percent)	Bypassed Local Doctor (n=122) (percent)	Visited Local Doctor (n=290) (percent)
Health system chunk			
Health system rating			
Excellent/very good	49.0	32.8	55.9
Good/fair/poor	51.0	67.2	44.1
Family physician shortage			
Yes	31.3	42.6	26.6
No	68.7	57.4	73.5
Specialty physician shortage			
Yes	46.6	45.9	46.9
No	53.4	54.1	53.1
Predisposing chunk			
Age category			
Young	36.4	33.6	37.6
Middle-aged	31.8	34.4	30.7
Elderly	31.8	32.0	31.7
Gender			
Male	51.0	54.9	49.3
Female	49.0	45.1	50.7
Marital status			
Married	70.4	73.0	69.3
Single	29.6	27.0	30.7
Educational status			
Some college/college graduate	51.5	50.0	52.1
High school graduate or less	48.5	50.0	47.9
Employment status			
Employed	59.0	59.0	59.0
Unemployed	41.0	41.0	41.0
Race			
White non-Hispanic	94.2	95.1	93.8
Other race	5.8	4.9	6.2
Ancestry			
German	44.9	44.3	45.2
English	7.5	8.2	7.2
Norwegian	7.8	7.4	7.9
Irisn Othor	5.3 24 E	7.4	4.5
Policion	34.5	52.0	55.2
Catholic	10 4	22.1	183
Lutheran	19.7	14.8	21.0
Other Christian	47 1	475	46.9
Other/none	14.3	15.6	13.8
Persons in household	11.0	10.0	10.0
High (3 or more)	39.1	37.7	39.7
Low (2 or fewer)	60.9	62.3	60.3
Social support			
Low (0 to 3 contacts)	40.3	36.1	42.1
Moderate (4 to 9 contacts)	31.8	36.1	30.0
High (10 or more contacts)	27.9	27.9	27.9

		Total (n=412) (percent)	Bypassed Local Doctor (n=122) (percent)	Visited Local Doctor (n=290) (percent)
Location of re	sidence****			
In town		73.8	62.3	78.6
On farm		10.4	18.9	6.9
In country, 1	not on farm	15.8	18. <del>9</del>	14.5
Benefits of ph	ysician care			
Beneficial	•	81.6	81.2	81.7
Not benefici	al	18.5	18.9	18.3
Cost-benefits	physician care			
Cost-benefic	ial	54.4	48.4	56.9
Not cost-ber	neficial	45.6	51.6	43.1
* P<0.10. ** P<0.05. *** P<0.01. **** P<0.001.				

not shown to be significantly related to migration. In light of these somewhat surprising findings, the Box-Tidwell test (Hosmer and Lemeshow, 1989) was calculated but failed to reveal a nonlinear association. Whether the individual was a high or low user of physician services, which is also an indicator of need for health services, was not related to migration for family physicians. In this final model, an excellent/ very good rating of the local health care system, Lutheran religious affiliation, living in town and private health insurance coverage were negatively associated with migration. A perceived shortage of local family physicians and visiting a nonlocal specialty physician were positively associated with migration.

#### Discussion

The authors found that medical care users' perceptions of the quality of their local delivery system have a strong impact on whether they bypass local providers. Family physician users who rated their local delivery system as excellent or very good were about 69 percent less likely to bypass local family physicians than those who rated it as good, fair or poor. Responses to an additional item contained in the study

Table 2.	Descriptive Statistics for Enabling and
	Need Variables.

	Total (n=412) (percent)	Bypassed Local Doctor (n=122) (percent)	Visited Local Doctor (n=290) (percent)
	<u> </u>	<u> </u>	<u> </u>
Enabling chunk			
Fringe county			
Yes	45.4	50.8	43.1
No	54.6	49.2	56.9
Location of specialty physician			
In county	25.4	7.4	32.8
Out of county	52.7	73.0	<b>4</b> 4.1
No specialty physician	22.1	19.7	23.1
Household income			
\$20,000 or less	19.9	19.7	20.0
\$20,001 to \$35,000	22.8	23.0	22.8
\$35,001 to \$75,000	37.9	36.1	38.6
\$75,000 or greater	<b>19.4</b>	21.3	18.6
Medicare			
Yes	33.3	36.9	31.7
	66.7	63.1	68.3
Medicald	4.0		2.0
Ies No	4.9	7.4	3.8
INO Priveto incuronco	95.1	92.0	90.2
Voc	95 7	<b>97</b> A	973
ies No	143	02.0 18.0	07.2 17.9
Insurance adequate	14.5	16.0	12.0
Voe	68 7	66 4	697
No	31 3	33.6	303
Put off visit because of cost	01.0	50.0	50.5
Yes	14.6	15.6	14 1
No	85.4	84.4	85.9
Type of insurance	0011	•	0017
FFS	66.3	68.9	65.2
Prepaid	23.5	21.3	24.5
No insurance	10.2	9.8	10.2
Insurance forms			
Never unreasonable	61.7	61.5	61.7
Sometimes/always unreasonable	38.4	38.5	38.3
Time required of insurance			
Never a lot of time	56.8	54.9	57.6
Sometimes/always a lot of time	43.2	45.1	42.4
Overall insurance rating			
Best/second best possible	54.1	54.9	53.8
Neutral/worst/second worst	45.9	45.1	46.2
Need chunk			
Physician visits			
High user (4 or more)	30.6	30.3	30.7
Moderate user (2 to 3)	25.7	31 1	23.4
Low user (1 or fewer)	43.7	38.5	45.9
Perceived health status (mean)	_0.7	2010	
Physical	11.7	119	11.6
Mean	11.7	11.9	11.6

questionnaire further corroborate that the quality of local providers contributes to migratory or out-shopping behavior. When asked if and why they migrated for *any* type of health care, approximately 34 percent of respondents reported that they left their local market area to access "better care."

Consumers' perceptions of the availability of local family physicians were also associated with migration for family physician care. Individuals who perceived that a shortage of family physicians existed in their home county were more than twice as likely to choose family doctors in external market areas. This was expected as previous research has shown that the availability of local inpatient services is negatively related to migration for hospital care (Adams, et al., 1991; Goldsteen, et al., 1994; Williamson, et al., 1994). In further support of these findings regarding physician availability, when directly asked if and why they migrated for any type of health care, the main reason cited was that the service needed was not locally available. Of course, conclusions based on consumers' perceptions of physician supply rest on the assumption that consumers can provide valid and reliable ratings of physician availability. Alternative methods of assessing physician availability, such as the number of physicians per 10,000 residents in each county, could have been used. However, physician supply data do not provide information on productivity, the number of urban physicians who travel to rural satellite clinics to provide care or price, all of which could influence consumers' ability to access local physician services.

In addition to health system factors, several predisposing factors appear to affect the location of physician service use. First, among users of family physician care, Lutherans were about 60 percent less likely to migrate for family physician services than individuals of another or no religious faith. It is difficult to interpret this finding because of the limited literature on religious status and health care utilization. A comprehensive literature review conducted by Schiller and Levin (1988) points out that few consistent associations between religion and health care exist. One plausible explanation is that Lutherans who live in the rural Midwest possess differing health beliefs or attitudes about medical care than individuals of other religious faiths. Their beliefs about the relative benefits of medical care, closer community ties or other sociological characteristics, rather than their theological beliefs, could predispose them to use local services.

Where an individual lives also had a strong impact on where his or her physician was located. Among users of family physician services, those who lived in

### Table 3. Odds Ratios by Chunk and Hierarchical Entry.

Variable	Step 1 (n=412)	Step 2 (n=412)	Step 3 (n=412)	Step 4 (n=380) <sup>1</sup>
Health system chunk Excellent/very good health system rating Local family physician shortage	0.469*** 2.199**	0.321**** 1.697	0.300**** 1.945***	0.306**** 2.278**
Family $\times$ specialty physician shortage Health system rating $\times$ family physician shortage	1.165 0.575			
Predisposing chunk				
Young		0.982		
Elderly	•	1.564		
Male		1.414		
Married		1.089		
Some college education/college graduate		1.082		
Employed for wages or self-employed		1.227		
White non-Hispanic		1.120		
German ancestry		1.210		
English ancestry		1.139		
Norwegian ancestry		2.433		
Catholic		1.011		
Lutheran		0.453*	0.422**	0.470**
Other Christian		0.986	0.424	0.170
High number of individuals in household		0.887		
High level of social support		0.792		
Low level of social support		0.632		
Live in town		0.508**	0.520*	0.489**
Live on farm		2.642**	2.601**	1.584
Family physicians beneficial		1.290		
Family physicians cost-beneficial		0.777		
Beneficial $\times$ family physician shortage		1.630		
Cost-beneficial $ imes$ family physician shortage		0.661		
Enabling chunk				
Fringe county	•		1.394	
Specialty physician in county			0.277***	0.445*
Specialty physician out of county			1.981**	2.919***
Household income \$20,000 or less			0.929	
Household income \$20,001 to \$35,000			0.997	
Household income \$35,001 to \$75,000			1.031	
Medicare coverage			1.301	
Medicald coverage			2.20/	0 275***
Incurance adequately covers cost			0.362	0.575
Put off visit because of cost			0.966	
FFS financing			2 846*	1 298
Prepaid financing			2.108	
Insurance forms never take a lot of time			1.282	
Insurance plan never takes a lot of time			0.916	
Insurance best/second best possible			0.995	
Need chunk				
Physical component score				0.996
Mental component score				0.989

#### Table 3. Continued.

Variable	Step 1 (n=412)	Step 2 (n=412)	Step 3 (n=412)	Step 4 (n=380) <sup>1</sup>
High user of physician services				0.750
Low user of physician services				1.243
.og-likelihood chi-square ratio (full model)	29.019	63.401	97.714	91.156
P-value (full model)	0.0001	0.0001	0.001	0.001
-statistic (full model)	0.660	0.740	0.790	0.788

1. The sample size is smaller for the need chunk because no imputations were made for missing SF-12 scores.

P<0.10.</li>

\*\* P<0.05.

\*\*\* P<0.01.

\*\*\*\* P<0.001.

town were about half as likely to choose a family physician outside their local market area than individuals who lived in the country. Individuals who live in town may simply find it easier to visit local physicians. In contrast, individuals who live on a farm or in the country may decide that if they have to travel for medical care, they might as well travel to another market. Migrating for family physician care could even be associated with lower time costs, as family physicians in external markets may have lower appointment and/or waiting times. Moreover, individuals who live on a farm or in the country may travel to other counties for nonmedical goods and services, such as entertainment and retail shopping (Andrus, et al., 1985). If so, they may be more likely to visit family physicians during the same trip.

One enabling factor, whether a user of family physician services had a specialty physician outside of his or her county, had the strongest association with migration. Apparently, if an individual has a specialty physician outside of his or her home county, he or she is much more likely to have a family physician outside of his or her home county. The type of health insurance coverage an individual had was also related to migration for family physicians, raising especially important questions about the accessibility of medical care among vulnerable populations in rural areas. Specifically, individuals who had private insurance were less than half as likely to migrate for family physician care than those who had other types of insurance or no insurance. In other words, individuals with Medicaid coverage only, Medicare coverage only, or no insurance were more than twice as likely to migrate for family physician care than those who had private health insurance, suggesting that individuals without private health insurance face greater problems with access to family physician services in rural areas.

Finally, health status has been shown to influence the quantity of physician service use among rural and nonrural residents (Andersen and Newman, 1973; Cox, 1986; Luft, et al., 1976; Markides, et al., 1985; Rohrer, et al., 1998; Wan and Soifer, 1974). Similarly, health status has been shown to influence migration for hospital care (Adams and Wright, 1991; Buczko, 1992, 1994). Surprisingly, however, it was not related to the location of physician service use. An obvious explanation of this finding is that medical care users who visit local providers are neither healthier nor sicker than medical care users who visit family practitioners in other areas. In other words, although need influences the decision to seek medical care (Andersen, 1995), it appears need does not affect whether an individual bypasses local family physicians.

Limitations. Before discussing the potential health policy and management implications of these results, the authors should point out several limitations of this study. As stated earlier, there is a possibility of nonresponse bias because of the 44 percent response rate. For example, it is possible that individuals who visited local providers were more likely to respond to the survey than those who migrated. Unfortunately, without collecting any data from the nonrespondents the authors have no way of knowing if and how nonrespondents and respondents differed. Comparisons of demographic characteristics, such as age and gender distributions, between this sample and Census bureau data for Iowa's rural counties (U.S. Census Bureau, 1997) suggest that the elderly were overrepresented in the present study.

In addition to potential response bias, the authors did not control for some variables that might be associated with migration. First, the survey did not contain any guestions about the availability of transportation for the respondent. The elderly could be especially limited in their ability to drive to another community for medical care because of physical and/or cognitive impairments. Second, the authors did not control for how travel for other activities, such as work or out-shopping for nonmedical goods and services, may influence migration for medical care. Third, the study contained limited information about consumers' perceptions of different components of their local health care system. The authors simply asked respondents about their overall perceptions of the local system. Their ratings of quality could differ for the local hospital, physicians, and other providers. Moreover, questions remain about how specific characteristics of the technical and interpersonal quality of local providers influence migration. Fourth, it is impossible to discern from the study if individuals choose their family physician first and then choose their specialty physician, or vice versa. It is quite plausible that an individual first decides to visit a family physician in another market who then refers the patient to a specialty physician in the same area. Future research should include questions about referrals out of the local market as well as information about formal and informal relationships between local and external providers. A rural resident visiting a local family physician who is a member or affiliate of some form of health delivery system, such as a regional physician clinic or hospital/physician network, may be more likely to seek treatment from a specialist who is a member of the same system.

Finally, caution should be used when generalizing the findings of this study to other predominantly rural states, especially states with rural frontier areas, where the distribution of providers across rural counties is sparse. Individuals who live in rural frontier areas often do not have the opportunity to choose local physicians because no doctors are located within their county. Unfortunately, because of the limited literature on migration for medical care, it is impossible to accurately discern how generalizable these findings are. However, given their similarities in demographics and health system factors, the authors would contend that rural migration is likely similar in other upper Midwestern states such as Wisconsin, Illinois and Minnesota.

Policy and Management Implications. The findings of this study raise important policy questions about access to physician care among individuals without private health insurance. In this study, individuals who had private insurance were more likely to visit local family physicians than individuals with other types or no insurance. In other words, individuals with Medicare coverage, Medicaid coverage or no insurance were more likely to migrate for family physician services. One interpretation of this finding is that rural family physicians prefer to treat individuals with private insurance coverage. Given that individuals without insurance may access family physician services in other areas, some physicians, managers and policy makers might argue that this finding is of little concern. However, individuals without private insurance may face barriers to the quantity of physician service use if their family physician is not located in their home county. Although they may have a family physician in another area, individuals with Medicare coverage, most of whom are elderly, may have inadequate transportation, poor physical mobility or cognitive impairments that impede their travel for care when necessary. Moreover, individuals with Medicaid coverage or no health insurance at all may not have the financial resources necessary to travel for family physician care when it is needed.

Perhaps one of the most important questions from a policy standpoint is whether the costs and benefits of using rural vs. urban providers can be properly assessed in a market setting or, alternatively, whether there is a role for the public sector in improving resource allocation. Reasons for market failure in the health sector are generally well understood (Rice, 1998). Lack of information is a commonly cited problem and is certainly an issue here. Rural residents are generally not well equipped with information about the quality of providers for different health services. They may make blanket assumptions about quality that may lead to excessive aversion (or use) of rural providers. Public sector measures to provide better information to rural citizenry may be a form of intervention that promotes efficiency in the use of rural health services.

Externalities, which occur when the transaction

price does not fully account for all costs of production or the full value of the service, are another form of market failure that are believed to be widespread. Externalities in the consumption of health are widely thought to exist. That is to say, access to health services for underserved Americans, such as rural residents, is thought to provide benefits to the wider society. Other social benefits of supporting the rural medical infrastructure may exist. Migration for medical care could precipitate the decline of a rural community because the rural health care system typically is one of the larger employers in a rural area and has a substantial effect on other sectors of the local economy (Christianson and Faulkner, 1981; Cordes, et al., 1994, 1999; Damasauskas, 1992; Doeksen, et al., 1990; Thompson, 1996). Public intervention to support the underserved and/or those who care for the underserved may be necessary to improve the efficiency of medical resource allocation among rural communities.

#### Conclusions

As described in this study, a large percentage of rural medical care users bypass local family and specialty physicians. However, as previously assumed, migration for physician care is not simply a function of low physician availability, or at least low perceived availability, of local physicians. Rather, a variety of health system, predisposing and enabling factors influence whether rural medical care users bypass local physicians. Among the factors associated with migration for family physicians were consumers' perceptions of the quality of the local delivery system, a perceived shortage of family physicians, whether the individual lived in town, whether the individual had a specialty physician outside his or her county and whether the individual had private insurance. Assuming that it is preferable to use local physician services, health policymakers and managers should consider strategies to decrease migration for medical care. Alternatively, health policy-makers and managers may need to consider the possible attractiveness of partial regionalization of primary care physician services. Rural health advocates have tended to assume that all primary care should be provided locally. These data reveal that some consumers prefer to travel for primary care.

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