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ABSTRACT: *This paper reports the findings of a study of health insurance coverage and access to health services among farm families in Minnesota. The study included 1,482 families actively engaged in farming during 1989. While less than 10 percent of the population were uninsured during this period, the majority had limited coverage with high deductible and coinsurance provisions. Moreover, they were paying an estimated 15 to 20 percent more for their plans than a similar plan would have cost in the Minneapolis-St. Paul, MN, area. With the exception of cost, satisfaction with health services was found to be very high, and there were few indications of access problems.*

Changes in the rural economy, coupled with rapid increases in health care costs have raised concerns over the accessibility of health services in rural areas (Department of Health and Human Services Departmental Task Force, 1987). As health care costs continue to escalate, many farm families and rural employers are finding health insurance premium costs to be prohibitive (Baldwin, 1986). Efforts to reduce costs are causing some rural hospitals to close or reduce their services, and many rural communities are finding it difficult to attract physicians, in part because of economic factors, but also because it is increasingly difficult to practice medicine in solo practices (Dennis, 1988; Cordes, 1989). This article reports the findings of a study designed to evaluate the magnitude of this problem in Minnesota. The study focused on health insurance coverage and costs, access to health services, and satisfaction with health care among farm families.

Farm families are especially affected by changes in health care costs. Unless they have off-farm employment, they pay the full costs of their health insurance premiums out-of-pocket and consequently bear the full burden of health care cost increases. Moreover, farm families usually must pay more for their health insurance than urban dwellers because they are unable to qualify for group policies (Congressional Budget Office, 1991). Health insurance costs have, therefore, become a major expense for farm families, and as costs increase, many are forced to either buy less coverage or drop their insurance (Mulstein, 1984). This has been especially true during recent years as farm income plummeted. Consequently, a high proportion of the working uninsured with incomes above poverty levels are concentrated in the agricultural sector (Schwartz, 1988).

While several comprehensive studies have documented the changes taking place in rural health care, insurance coverage has received less attention and the unique problems encountered by self-employed farm families have largely been ignored. This study was designed to address this by evaluating health insurance coverage and access to health

services among farm families in Minnesota. Although this population is not by any means a representative sample of farm and ranch families throughout the United States, it provides an opportunity for an in-depth analysis of the issues not readily available through national studies. Moreover, national data often obscure state-level issues that are important to rural health policy development.

Study Design

Two thousand two hundred farm families were initially included in the study. These families were selected from the five state-planning districts that include more than 90 percent of the farms in Minnesota. Fifty-one of the state's 87 counties are represented in these planning districts. Families were chosen using a five percent proportionate random sampling procedure that assured appropriate representation of both high and low population areas. Farm families were defined as those living on and operating 160 acres or more of land. This eliminated hobby farms and urban investors in farm land.

Data were collected by means of a questionnaire followed by a telephone survey. A letter that explained the study and asked the family members to complete a questionnaire about their health insurance coverage and the costs of their insurance plans was sent to each family in the sample. If they were unable or unwilling to complete the form, they were asked to sign a consent form that identified their health insurance plan and granted permission to their health insurance company to release information to us about the plan. Each family was then telephoned to collect detailed information about their access to and use of health services. The telephone survey was conducted by the Minnesota Agricultural Statistics Service.

Of the initial 2,200 family sample, complete data sets were obtained for 1,482 families. An additional 229 families supplied some basic health insurance information over the telephone, but did not wish to participate in the extensive telephone interview. Only those who completed the entire telephone interview were included in this analysis. Since we oversampled in anticipation of some dropouts, we did not add to our sample to make up for those nonrespondents. Data available from the Minnesota Agricultural Statistics Service enabled us to compare location (county) and farm size for those who responded with the nonrespondents. The nonrespondents were distributed among all the counties, and in each county at least 85 percent lived on farms that fell within one standard deviation of the mean size of the farms in that county.

Demographic Makeup of Sample

The mean size of the families included in the sample was 3.3 with a range of one to 12. Slightly more than one half (52.7%) of the population was male. There were 97 (6.5%) single-member households, and 135 (9.1%) households had six or more members. About 7 percent of the total population was 65 years old or older. For this population our insurance questions included medigap coverage, but those data were analyzed separately and are not included in this paper.

More than one half of the households (54%) had at least one person working in an off-farm job, and 18 percent had two or more persons working off the farm. About one half of those with off-farm jobs were employed part time with an average of 20 hours of work per week. The wives' work accounted for 51.9 percent of the hours worked in off-farm settings. Thirty-eight percent of the farm wives worked off the farm, and of these, 44.2 percent held full-time jobs.

Almost one half of the farm families had at least $5,000 income each year from nonfarm sources, and 67 percent received more than three quarters of their income from farming. Only 15 percent of the respondents noted that 50 percent or more of their income was from off-farm activities. Net income, however, was quite low. Less than 16 percent of the families reported $10,000 or less as their total net income, and 45.8 percent reported a net income of less than $20,000 per year. It is important to note, however, that net income for farm families under-represents actual income because it does not include housing and often excludes some other items such as cars, trucks, and home-grown food (Note 1).

Health Insurance Coverage

Almost seven percent (6.6%) of the farm families included in our study had no health insurance, and an additional 2.7 percent had some member(s) of the

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Table 1. Farm Family Health Insurance Coverage by Net Farm Income: 1989 (N=1,359).

Family Income	No One in Family Insured	Someone in Family Insured	Entire Family Insured
Less than $10,000 15.9%*	21%	2%	76%
$10,000-$19,999 29.9%	8%	4%	88%
$20,000-$34,999 33.7%	2%	2%	96%
$35,000-$49,999 11.4%	3%	0%	97%
$50,000 and higher 9.5%	0%	1%	99%
Mean** 9.5%	6.6%	2.7%	90.7%

* Proportion of families in this category.
** When individuals rather than families are included in the analyses, 9.5% are uninsured.

Note: Percentages may not add to 100 due to rounding.

Table 2. Primary Reason Given for Not Having Health Insurance: N=118.

Reason	Number of Households	Percent
Too expensive	82	69.5
Not sick often	10	8.5
Do not believe in health insurance	8	6.8
Unhappy with past insurance	8	6.8
Never thought about it	2	1.7
Unemployment reasons	2	1.7
Rejected for health reaons	2	1.7
Other	4	3.4

Note: Percentages do not add to 100 due to rounding.

household who were not covered. Of the total number of individuals included in the study, 9.5 percent were without any type of health insurance (Table 1). This is considerably lower than the current national estimates of the rural agricultural population uninsured, which is 25.9 percent. This data underscores the importance of state-level studies (Moyer, 1989).

Nearly one third of those without health insurance had some coverage up to 1983. Thirty percent of those without health insurance at the time of the study had dropped their plans between 1983 and 1988. A high proportion (69.5%) of the families that lacked insurance noted costs as the major factor influencing their decision (Table 2). Moreover, 25 percent of those with insurance noted that they changed plans during the past two years because of premium costs.

More than three quarters of the families paid the entire costs of their health insurance plans. About 60 percent of those who obtained their plans through off-farm employment did so because of the wife's employment. The mean contribution of the husband's off-farm employer for health insurance was $155 a month, compared to $110 for the wife's employer. Most of those who bought their own insurance plans did so from independent agents (67.7%), usually from private sector insurance plans such as Equitable, State Farm, and the Time Insurance Company. About 30 percent had Blue Cross/Blue Shield; less than 1 percent used a health maintenance organization. As shown in Table 3, 38.4 percent of the families listed premium costs as the most important factor influencing their choice of plan. Another 20 percent noted premium costs as the second most important factor influencing plan choice. Freedom to choose doctors, convenience of location, and reputation of providers received very low ratings as factors influencing choice, although freedom to choose a doctor was ranked first or second for 20 percent of the families. Almost 95 percent of the respondents indicated that other plans were available when they made their choices. While national studies have found that freedom to choose providers and convenience of services were important priorities, this does not appear to be the case for these farm families. Cost concerns are an overriding consideration and, unlike

Table 3. Most Important Reason Reported for Selecting Health Insurance Plans By Minnesota Farm Families: 1989 (N=1,304).

Reason	Number of Households	Percent
Amount of premium	501	38.4
Services that are covered	319	24.4
No other plan available	71	5.7
Freedom to choose doctors	69	5.2
Amount of copayment or deductible	54	4.1
Convenience of location	39	2.2
Reputation of doctors	11	0.8
Other	74	19.2

national respondents, farm families appear to be willing to trade systems reform sacrifices for lower costs (Blendon & Altman, 1984; Jajiich-Toth & Roper, 1990).

Most of the health insurance plans purchased by the farm families in this study had coinsurance and deductible provisions. The usual coinsurance provision was an 80/20 plan with the enrollee paying 20 percent of the health care costs. Most had stop-loss provisions at the $2,000 to $3,000 level. The usual deductible for physician and hospital services was $500 per family member for up to two members, but many deductibles were as high as $1,000 per family member. Because of these provisions, the farm families spent an average of $1,179 during 1989 on health care in addition to the cost of their health insurance premiums. The average annual premium for those with health insurance was $2,589. A popular plan among many farm families had the following provisions: it covered physician and hospital services, it did not cover prescription drugs or eye glasses, it carried a $500 deductible per person for up to two family members, and it had a 20 percent coinsurance provision with a $2,000 stop-loss. This plan cost between $250 and $275 each month for a family of four. Based on data from Minneapolis-St. Paul, MN, health insurance plans, it is estimated that farm families pay at least 15 to 20 percent more for health insurance coverage than they would pay if they were part of a group in the Minneapolis/St. Paul area. Moreover, they are getting most of their health care from lower cost, rural providers.

Health insurance clearly represents a major out-of-pocket expense for farm families. The costs of those programs cause some to go without insurance or to seek low-cost plans that provide limited coverage and have high deductible and coinsurance provisions. As a result, while only about 10 percent of the farm population are without insurance, many are underinsured. Those with insurance try to buy the most coverage with the fewest dollars, regardless of convenience of providers, choice of physicians, or reputation of the physicians and hospitals. Their plans, while slightly less expensive than employer-provided plans in urban areas, provide much less coverage with higher copayments and deductibles. Ninety-nine percent of the health insurance plans held by these farm families have coinsurance provisions, and 96 percent have deductibles for physician visits. This compares to 41.7 percent coinsurance and 52 percent deductible for enrollees in group health insurance plans statewide in Minnesota (Lurie, Finch, & Dowd, 1990). Moreover, while the usual health insurance plans held by urban residents cover a wide range of services, the farm plans tend to be more restrictive. Coverage of hospital care was at times limited to thirty days per year, and prescription drugs, dental care, and vision tests were rarely covered.

As found in previous studies, the health insurance purchased by farm families was directly related to income. Twenty-one percent of those with incomes under $10,000 had no health insurance (Table 1). About one third of these families are enrolled in the Medicaid program, but the remainder have no coverage. They make up most of the uninsured farm families in this study.

The high costs of these insurance plans, coupled with a depressed farm economy, result in an exceptionally high proportion of the families' disposable incomes being spent on health insurance coverage. The insured farmers with annual incomes below $20,000 (45.8% of the families) spent an average of 14 percent of their income for health insurance. Fifty-eight percent of those with annual incomes below $10,000, and 50 percent of those with incomes between $10,000 and $20,000, spent more than 10 percent of their incomes on their health insurance plans (Table 4). Moreover, many of the families in these income categories were still underinsured

Table 4. Proportion of Income Spent on Health Insurance Premiums for Those Farm Families with Insurance: 1989 (N=1,195).

	Income Spent on Health Insurance Premiums		
Family Income	Less than 5 Percent	5-10 Percent	Greater than 10 Percent
Less than $10,000 15.9%*	14%	27%	58%
$10,000-$19,999 29.9%	22%	28%	50%
$20,000-$34,999 33.7%	51%	29%	21%
$35,000-$49,999 11.4%	71%	25%	4%
$50,000 and higher 9.5%	78%	17%	5%

* Proportion of families in this category.

Note: Percentages may not add to 100 due to rounding.

according to the Congressional Budget Office definition of spending more than 10 percent of income for health care. Forty percent of these families spent at least 10 percent of their income for out-of-pocket health service costs during the year prior to the study, and 79 percent spent 10 percent or more for their health insurance premium plus health services costs.

Access to Health Services

Nearly 47 percent of the respondents were within ten miles of a hospital, and 89 percent were within twenty miles of a hospital. It doesn't appear that this has changed a great deal during recent years. Only two percent of the respondents noted that a nearby hospital had closed since 1986. The services provided by the hospitals are often limited, however, and may have decreased during this time. Twenty-five percent of the respondents noted that they routinely used a hospital other than the closest facility. Because of these use patterns, the actual distance for hospital services is somewhat greater than that stated above. Only 40 percent were within 20 miles of the hospital they use, and 25 percent were more than 35 miles from their hospital of choice. Reasons given for bypassing the nearest hospital included better care, services not available at the nearest hospital, and location of their doctors at the hospitals.

Access to physician services was even better than access to hospital care. Nearly 70 percent of the respondents were within ten miles of a doctor or a clinic. Only one percent must travel more than 30 miles to see a physician. Six percent noted, however, that a closer physician's office had closed during the two years previous to the study. As with hospital care, 27 percent of the farm families reported that they used a physician who was not the closest doctor. This probably reflects the changing shopping patterns in rural Minnesota that resulted from a consolidation of retail sales in larger communities. Shopping for health care may be following these same patterns. This also may signal the tendency of farmers to seek medical care where more resources are available, especially if they are dissatisfied with their local doctor. The distances in Minnesota are such that this is possible. More than 50 percent of the respondents noted that they go to a generalist physician located in a community with six or more physicians.

Although nearly 10 percent of the total population included in this study were uninsured, less than 1 percent noted that they or anyone in their family were denied care during the past year because of an inability to pay. Eleven respondents said that someone in their family was denied care by a physician, one by a dentist, and five by a hospital. However, 171 respondents (11.8%) said that during the year before the study they delayed seeking care when they needed it. The majority of these noted lack of money as the reason for their delay.

The uninsured averaged 2.47 doctor visits per year while those with insurance averaged 3.61 visits. Moreover, families with health insurance coverage had someone hospitalized during the past year more than twice as frequently as families where no one was insured. Although the overall utilization of physician services was found to be somewhat higher than that reported by a previous study of agricultural workers in one rural area in Minnesota, it is lower than that reported in the metropolitan Minneapolis/St. Paul, MN, area or for the Minnesota population in general (Chaska et al., 1980; Lurie, Finch, & Dowd, 1990). The lower utilization rates for the uninsured may reflect a

conscientious decision among those with few health care needs not to buy health insurance. However, the length of hospital stay for the uninsured was, on average, 0.7 days shorter than for the insured, indicating that insurance status also may influence utilization patterns.

Satisfaction With Health Services

Perceptions about the health services in these rural areas were assessed by a series of questions focused on the availability and costs of services. Satisfaction with availability and costs was measured using a five point scale with "very satisfied" and "very dissatisfied" as the polar anchor points (Note 2). As found by previous national studies and studies in Minnesota, satisfaction with health services among these farm families was very high (Freeman et al., 1987; Kralewski, Shapiro, Mitchell, & Nyseth, 1987). More than two thirds of the respondents said they were very satisfied with the services provided by their physicians, including physician availability and the care and treatment provided (Table 5). Slightly fewer, but still more than 60 percent, were also very satisfied (and an additional 28.9% somewhat satisfied) with the ease of getting an appointment.

Satisfaction with hospital services was even higher. More than 80 percent of the respondents indicated that they were very satisfied with their hospital care. This included both the technical aspects of care and the human side of hospital services. However, the costs of care were the exception to these high levels of satisfaction. Only 39.3 percent said they were very satisfied with hospital costs, and more than one third said they were very dissatisfied with physician costs. This pattern is consistent with national studies that found high levels of satisfaction with physician services but a great deal of dissatisfaction with costs (Blendon & Altman, 1984; Jajiich-Toth & Roper, 1990).

Discussion

From the perspectives of farm families, the organization and delivery of health services in rural Minnesota gets high marks. Satisfaction levels with both physician services and hospital care were very high. The high degree of satisfaction with physician services nationally is often attributed to the fact that

Table 5. Level of Satisfaction with Physician and Hospital Services, 1987.

	Very Satisfied	Somewhat Satisfied	Somewhat Dissatisfied	Dissatisfied
Physician Services: N=1,217				
Availability	68.5	27.2	3.0	1.4
Ease of getting appointment	63.6	28.9	6.5	1.1
Physician's care	72.2	25.2	1.8	1.8
Physician's cost	8.3	35.9	11.0	34.8
Hospital Services: N=183				
Nursing care	85.3	11.4	2.3	1.0
Discharge instructions	82.8	14.9	1.7	0.7
Tests and procedures	80.8	16.6	2.0	0.7
Costs	39.3	32.6	19.5	8.6

Note: Percentages may not add to 100 due to rounding.

those using health services tend to gravitate to physicians with whom they are satisfied. If this is the case, the high satisfaction scores among the farm families indicate that there are sufficient numbers of physicians within reasonable distances to enable this selection process. Similarly, it doesn't appear that there is a hospital access problem. It must be again noted, however, that there were few elderly in our sample. Therefore, these satisfaction rates may not reflect the attitudes of less mobile populations, such as the aged.

It is interesting to note that although there is a great deal of concern among some policy-makers and health care practitioners about the adverse effects national policy is having on access to health services in rural areas, the data in this study do not support that contention. Less than 10 percent of the respondents indicated dissatisfaction with the ease of getting a physician appointment, and less than 5 percent with the availability of physicians. Moreover, nearly one third indicated that they now bypass the closest physician for care. One must therefore conclude that most of the farm families in Minnesota do not find access to physicians' services a problem. In addition, a high proportion apparently do not mind

driving farther than needed to obtain care from an alternate physician or hospital.

The economics of health care in rural Minnesota present a much less favorable picture. More than one third of the insured farm families spend more than 10 percent of their incomes on health insurance. For these families, health insurance is one of their major expenses. In part, this reflects the depressed farm economy and the relatively low levels of net income. Therefore, even though farm families buy relatively low health insurance coverage, they pay a high proportion of their incomes for the premiums. To deal with cost increases, many farm families change health insurance companies rather than select another plan from the current company. About one quarter of the farm families changed health insurance companies during the two years before the study, many citing premium costs as the reason for change. It is likely that many of these changes resulted in less coverage.

Because of the high costs of health insurance premiums, farm families are buying plans that have high coinsurance and deductible provisions, and offer limited coverage for other than physician and hospital services. Even the physician and hospital coverage usually has a $500 to $1,000 deductible and 20 percent coinsurance. Some plans have deductibles as high as $1,500 for the family before the insurance will pay any of the costs. These plans provide catastrophic illness coverage, but the premiums are much higher than those charged for catastrophic illness plans in urban areas.

This study raises several policy questions about health insurance and health services in rural areas. First, what are the factors causing these health insurance premiums to be higher than those in urban areas? Is this a high-risk population, or are the insurance plans configured in a manner that creates high overhead costs and few provider cost control measures? The latter appears to be the case. The lack of access to large risk pools is a serious problem. Second, why are so many farm families bypassing the nearest doctor for care in another community? If this reflects a trend in rural shopping patterns as a result of the consolidation of retail outlets or changing shopping preferences, efforts to strengthen rural health services must recognize these changes. Some well-intended policy efforts to maintain financially distressed rural medical practices or hospitals may be misdirected and fail to recognize the changing rural shopping patterns.

Finally, the need for some type of subsidized health insurance plan for rural low income families is painfully evident. The proportion of net income allocated to health insurance and health care by many of these low income farm families is far too high and may have a long-term adverse effect on the family. In many cases, these families could drop their health insurance and enroll in the Medicaid program. By trying to take responsibility for financing their health care, they may be allocating too much of their disposable income at the expense of other important items.

Notes

1. The farm income question was as follows: What was your total net income for all sources in 1988 after deducting all farming expenses and payment of interest but before depreciation and income taxes?
2. The satisfaction section contained 20 questions. The questions and responses are available upon request from the authors.

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