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ABSTRACT

Patterns of health care use in New Mexico were examined to determine whether income, education, occupation, or other socioeconomic characteristics were associated with use of the service. Adequacy of services were assessed relative to the State's immediate neighbors and the United States from the perspectives of structure, process, and outcomes. Personal interviews were conducted with 599 rural and urban households in 12 southern counties in 1972 and with 688 households in 20 northern counties in 1974. Secondary data sources were used to assess adequacy of services. Some findings were: variation in household use of health care services was not consistently related to ethnicity, education, occupation, income, or age; rural people rated travel time and distance as their biggest difficulty; most respondents were reasonably well satisfied with both the quality and accessibility of health care services; the ratio of persons per doctor was about 20% higher than the national ratio and the ratio of hospital beds per 1,000 population was about 20% lower; general practitioners received the most visits and emergency services the fewest; and more Spanish Americans used home remedies and were more inclined to gather their own while Anglos looked to commercial sources. (NQ)

Use and Adequacy of Health-Care Services in New Mexico

NEW MEXICO STATE UNIVERSITY
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SUMMARY

This research suggests that emergency services and access to health care merit special attention by New Mexico's health-care planners. Emergency services are often as difficult to obtain as other services. Access to care is limited by the great distance many New Mexicans must travel to obtain treatment. These factors may be contributing to New Mexico's relatively high accidental death rate. Public and private investment in emergency vehicles, such as ambulances and helicopters, and a new look at mobile clinics and use of paraprofessional personnel and telemedicine are in order.

Medical researchers could contribute significantly to health-care planning by assessing the level of preventive care needed or practiced in New Mexico and investigating the relatively high accidental death rate.

Research was undertaken to determine patterns of household use of health care in New Mexico, to evaluate possible relationships between use and household socioeconomic characteristics, and to assess adequacy of health-care services in the state relative to some of its immediate neighbors and the United States.

Data were obtained from personal interviews of a stratified random sample of New Mexico households. The survey of 1300 households yielded 1287 usable questionnaires. Secondary data were assembled to assess adequacy of health-care services.

Socioeconomic Traits Unrelated to Health Care

Variation in household use of health-care services was not consistently related to ethnicity, education, occupation, income, or age. Only 4 to 16 percent of the variation in use was explained by these socioeconomic characteristics. Earlier research indicates similar trends.

Measures of Adequacy

Adequacy of health-care services was examined from the perspectives of structure, process, and outcomes. New Mexico's ratio of persons per doctor is about 20 percent higher than the national ratio, and the ratio of hospital beds per 1000 population is about 20 percent lower. The proportion of medicaid claims that were denied following professional review was very low, except for injections, which implies that appropriate care was rendered in most medicaid cases. New Mexico is below the national rates in deaths caused by heart disease, cancer, and stroke. New Mexicans are definitely accident-prone; the death rate from accidents is well above both regional and national levels. New Mexico infant death rates have improved markedly vis-a-vis those for the entire nation between 1950 and 1970. Most respondents were reasonably well satisfied with both the quality and accessibility of health care services.

CONTENTS

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Use and Adequacy of Health-Care Services in New Mexico

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Health care ranks along with employment, housing and nutrition as a basic concern of most societies. These basic concerns are components of most definitions of quality of life. However defined, after a generation of unprecedented material affluence, a higher quality of life is still a goal for many Americans. Health care in particular has presented persistent problems. Becoming ever more specialized, it has tended to concentrate in the larger urbanized areas. Gone are the days of country doctors and house calls. Gone are the midwives, home births, and the lay practitioner who could fix up a home remedy for headache, toothache, stomachache, constipation, diarrhea or a hundred other common ailments. Instead, New Mexicans, like other Americans, obtain health care in the same service centers where they obtain groceries, clothes, and other household needs.

Just how adequate is New Mexico's health care, who obtains what services, how much do they spend, and how satisfied are they with their services? Answers to these and other questions need continued updating to keep the policy-makers and planners abreast of the times and aware of the population's desires.

Objectives

The study reported here examined patterns of health-care use in New Mexico. It attempted to determine whether income, education, occupation, or other socioeconomic characteristics were associated with use of the service.

The study also examined various measures of health-care adequacy for the state. Only a few indicators of adequacy were selected from the many which could have been assembled. The purpose was to present the current philosophy behind adequacy measurement, to illustrate the various approaches, and to examine New Mexico's situation relative to its immediate neighbor states and the United States.

Previous Work

Common sense tells us that people with higher incomes probably spend more on health services and generally use more health services than those with lower incomes. Aday and Eichhorn compiled a comprehensive review of over 200 studies on correlates of health-service use. They cite numerous studies which indicate that the gap is narrowing in health-care use between rich people and poor (1, p. 23). Specific differences remain, e.g. higher status groups use more preventive services, but once serious illness occurs, all classes see physicians at about the same rate (1, p. 22). Use of physician services increased with educational level primarily because the better educated use preventive services more (1, p. 119).

"The relationship between the volume of physician visits and age is best described by a U-shaped curve" (1, p. 17). The elderly and the young use more services. However, use of dental services shows the opposite pattern (1, p. 18).

Children use more specialists' services than any other age group; the consumption of prescribed and non-prescribed drugs increases with age (1, pp. 17-18). Race makes a difference. whites use more services, see specialists and dentists more often, and use more preventive medicine (1, pp. 20-21). "Farm residents use fewer health care services than metropolitan or rural non-farm residents" (1, p.

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26) "Distance influences the choice of the site for the visit but not the volume of services consumed" (1, p. 27). A number of studies were cited in support of each of these findings.

Fuchs and Kramer found that the number of available physicians was the most important determinant of use of and expenditure for physician services in a nationwide sample (5, p. 41). Supply of services was more important than income, price, or insurance coverage. However "...interstate differences in infant mortality and overall death rates are not significantly related to the number of physicians, to the quality of their services, or to expenditures" (5, p. 41).

Adequacy of health-care services has been approached from several perspectives. It is readily apparent that there are so many important dimensions of adequacy that no single measure, even a composite, is satisfactory. The needs of the particular situation more than anything else determine the appropriateness of the choice of measure.

Sheps' 1955 paper identified four main techniques used in appraisal of hospital quality (6, pp. 286-302). The four techniques were: 1) set standards of care, 2) elements of performance, 3) effects of care, and 4) clinical evaluations. Donabedian drew on Sheps and other earlier works and concluded that there were three essentially different perspectives from which to evaluate adequacy of health care (4, pp. 186-218). These perspectives were: 1) the structure of the health-care system, 2) the process of delivering care, and 3) the outcome of the care. Berkanovic et al. suggested a fourth perspective, i.e., perception of the recipients of the care (2, pp. 19-22).

Each of the four perspectives rests on a different set of assumptions and focuses on different aspects of health care. Each is multi-dimensional - e.g., accessibility and satisfaction are separate and distinguishable elements of recipient perception. This means that alternative measures in any perspective may or may not be interchangeable according to whether they represent the same or different dimensions.

The structural approach is concerned with facilities and equipment, qualifications of medical staff, administrative structure, fiscal organization, and the like. The assumption is that proper facilities and organization will lead to good care. Data for these measures are fairly concrete and accessible, but the relationship between structure and process or outcome is not always well established (4, p. 189).

The process approach is concerned with the quality of information obtained through clinical history; physical examination and diagnostic tests, competence in the performance of procedures including surgery, and so on. Peer quality evaluations are subjective and, therefore, less reliable than structural measures. Peer evaluations are often difficult and expensive to assemble. However, the important question is whether "good" medicine has been applied, and peer evaluations are often considered to be more relevant than structural ones (4, pp. 188-189).

The outcomes approach examines recovery, restoration of function and survival, e.g., perinatal[1] mortality, surgical fatality rates, and rehabilitation of psychiatric patients. These measures tend to be concrete and reliable. However, there are questions of validity is some situations. Many factors other than medical care may influence outcomes, and these factors must be carefully controlled for valid conclusions to be drawn (4, p. 188).

The perception approach is concerned with whether and to what degree the service was judged by the recipient to have been beneficial. The first assumption underlying this approach is that the professionals' mandate to practice medicine rests ultimately in the social contract with their clientele. Professionals are expected to have expertise relevant to solution or amelioration of serious problems and to be able to apply it successfully. The second assumption, more tenuous than the first, is that there will be substantial agreement between professional and lay judgments in the appropriate use of services (2, p. 20). Measurement is relatively costly because few secondary data are available. Valid and reliable measures also require fairly sophisticated measurement techniques.

Much space in the literature has been devoted to discussion of the merits of one adequacy perspective or measure over others. The position adopted was most measures have both merits and shortcomings which can be best overcome by using measures in combination.

Source of Data

Patterns of health-care use in New Mexico were determined from data collected by a questionnaire survey of stratified random samples of rural and urban households in two areas. For reasons of time and budget, 12 counties in southern New Mexico were sampled in the summer of 1972, the remaining 20 northern counties were sampled in the summer of 1974.[2] The southern sample served as a pilot

[1] "Peri" means surrounding, therefore, "perinatal" is the care before, during and after birth.

[2] The 12 southern counties included Catron, Chaves, Dona Ana, Eddy, Grant, Hidalgo, Lea, Lincoln, Luna, Otero, Sierra and Socorro.

study. Therefore, a few details of the questionnaire were modified in the northern questionnaire.

Personal interviews were conducted with 599 households in the south and 688 in the north. Since the data were collected at two times, the results are reported separately. Comparison of the two parts of the state, although intrinsically interesting, was not a primary purpose of the study. Data collected in 1972 represented respondent household behavior for the 1971 calendar year; similarly, data obtained in 1974 referred to the 1973 calendar year.

Data for the various adequacy indices came from standard secondary sources which are cited in each table and figure.

USE OF HEALTH-CARE SERVICES

Patterns of Use

Table 1 shows the average number of annual household visits, the amount spent annually, and the average distance traveled (one way), for seven different medical services. Not surprisingly, general practitioners received the most visits and emergency services the fewest. Hospital visits were the most expensive service, costing the average household from $194 to $253 annually. General practitioners' services were obtained locally, requiring an average of only 15 to 17 miles (one way) travel. Specialists and optometrists required substantially greater travel up to 68 miles (one way) for specialists in southern New Mexico.

Socioeconomic Correlates

Use of services was measured in a number of ways. These included total number of visits to all services, number of visits to individual services,[3] number of different services obtained, total cost of all services, and cost of individual services. The foregoing were calculated for the total household unit and for the total divided by number of household members (per capita). The socioeconomic characteristics included rural-urban residence, ethnicity, age, sex, education, employment status, number of years in community, occupation, and social status (determined from occupation) of household head. Respondent satisfaction with the community and a subjective evaluation of general health and insurance coverage were also included.

[3]Individual services included general practitioners, dentists, chiropractors, emergency services, optometrists, specialists, and hospitals.

Regression analyses were performed on various measures of the dependent variables of use and independent socioeconomic variables. The results were quite consistent: there were no meaningful relationships between any variables. Appendix A presents a sample of correlation coefficients for northern New Mexico sample data, illustrating the lack of relationship among variables. Only about 4 to 16 percent of the variation in any dependent variable was accounted for in the regression analyses. The results of two typical regressions are shown in table 2. The socioeconomic characteristics clearly have little influence on use of health care service.

Scatter plots of many combinations of variables were examined to determine whether nonlinear relationships existed. None were detected. The difference in gross patterns of use of health services among social groups in New Mexico is small. This findings may be indicative of the trend observed in other areas, where the gap in use between economic classes is narrowing (1).

Folk Medicine

In the north, respondents were asked whether they used home remedies and if so where they obtained them.[4] They were also asked whether there was a *curandera* in the community and whether they ever consulted one.[5] Of 688 households responding, 196 (28 percent) reported some use of home remedies, 59 (30 percent) gathered the materials themselves, while 70 percent either purchased them or obtained them from friends. More Spanish Americans use home remedies than do the residual ethnic group (mostly Anglo), and they are more inclined to gather their own while Anglos look to commercial sources (table 3). Forty-two respondents indicated there was a *curandera* in their community or nearby (table 4). Only 12 indicated they ever consulted one, and no one consulted one more than once a year.

The possibility exists that some people might wish to hide the fact that they still consult folk practitioners and thus bias the results reported above. However, careful probing of knowledgeable Spanish-American respondents who talked freely on the subject corroborated the numerial results.

[4]Home remedies are primarily herbs but also include common household items in uncommon application, e.g. hot lemonade laced with rum used to treat colds and coughs.

[5]A *curandera* (or *curandero*) is a recognized expert in the application of herbs and other home remedies. They were once very common in Spanish American villages throughout New Mexico.

Table 1. Average annual number of visits, cost, and mean distance traveled (one way) to health-care services by southern New Mexico households, 1971 and northern New Mexico households, 1973

Health-Care Service	South, 1971			North, 1973		
	Visits	Expenditures	Distance per visit	Visits	Expenditures	Distance per visit
	number	*dollars*	*miles*	*number*	*dollars*	*miles*
General practioners	8.9	87.44	17	5.6	85.64	15
Specialists	2.8	81.36	68	3.3	111.55	46
Optometrists	.9	29.14	59	1.0	34.81	37
Dentists	2.5	64.28	31	2.7	81.35	21
Hospitals	.7	253.00	25	.8	194.15	25
Chiropractors	2.3	11.50	23	2.2	20.03	23
Emergency services	.2	5.03	23	.2	5.03	21
Total	18.3	531.75		15.8	532.56	

Table 2. Regression coefficients and amount of variation accounted for in use of health-care services (number of visits and total costs) by household characteristics

Measure of Use per Household	R^2	Household Characteristics						
		Age[1]	Education[1]	Spanish American	Number with poor health[2]	Number of organizations[1]	Health status[1]	Service Access
		regression coefficients						
Number of visits	15.71	0.0899	0.1701	-1.3009	1.6413	1.6417	4.6732	-0.2622
Total expenditure	5.25	3.0032		-89.5718	68.3470	135.3726		

[1] Age, education, number of organizations belonged to, and health status are all of household head.
[2] Number in household with poor health.

Table 3. Use and source of home remedies by northern New Mexico residents by ethnicity

	Spanish American		All Others		Total	
	Number	Percent	Number	Percent	Number	Percent
Do use	99	39	97	22	196	28
Don't use	154	61	338	78	492	72
Total	253	100	435	100	688	100
Source						
Friends	13	13	3	3	16	8
Store	46	46	75	77	121	62
Gather	40	40	19	20	59	30

*Calculated as a percentage of all users in that ethnic group or total category.

Table 4. Presence of and consultation with a local curandera by northern New Mexico residents by ethnicity

	Spanish American		All Others		Total	
	Number	Percent	Number	Percent	Number	Percent
No	151	60	167	38	318	46
Yes	20	8	22	5	42	6
Don't know	82	32	246	57	328	48
Total	253	100	435	100	688	100
Have consulted one	6		6		12	

One respondent, a woman in her 50's was herself a *curandera*. Her practice was limited to a very small clientele. Further, she was not passing the knowledge on to her own daughter because she did not want to bear the "responsibility".

SERVICE ADEQUACY

Structure

At its most elemental level the structural perspective is concerned with facilities, e.g. doctors and hospitals. Table 5 shows the numbers of hospitals and doctors, by county. The state is 20 percent above the United States in rate of persons per doctor and a like percentage below in hospital beds per 1,000 population.

The doctors are highly concentrated in Bernalillo, Santa Fe, and Los Alamos counties. Figure 1 shows the distribution of the hospital facilities throughout the state. Hospitals are concentrated in southern, southeastern, and northwestern New Mexico, which are the more heavily populated parts of the state. Several sparsely settled counties, in a band from northeast to southwest, have more

Table 5. Hospitals and doctors, by county, for New Mexico 1974 and the United States 1972

	Hospitals	Doctors[1]	Persons per Doctor[2]	General Hospital Beds[4] per 1,000 population
State	54	1,234	910	
Bernalillo	11	685	528	4.68
Catron	0	1	2,100	0
Chaves	5	37	1,281	4.38
Colfax	2	9	1,422	6.67
Curry	1	29	1,500	2.32
DeBaca	1	2	1,200	
Curry	1	29	1,500	2.32
De Baca	1	2	1,200	10.00
Dona Ana	1	58	1,345	2.13
Eddy	2	30	1,347	4.24
Grant	2	19	1,232	5.78
Guadalupe	0	0	---	0
Harding	0	0	---	0
Hidalgo	1	1	5,200	3.91
Lea	3	33	1,062	4.35
Lincoln	2	8	1,062	5.06
Los Alamos	1	27	589	5.50
Luna	1	6	2,367	4.09
McKinley	3	27	1,833	6.31
Mora	0	1	4,300	0
Otero	1	18	2,361	1.88
Quay	1	5	2,280	5.18
Rio Arriba	1	15	1,820	3.02
Roosevelt	1	3	5,700	2.18
Sandoval	1	14	1,629	0.48
San Juan	1	35	1,763	2.08
San Miguel	3	20	1,150	3.39
Santa Fe	1	113	539	3.47
Sierra	2	7	1,100	4.21
Socorro	1	5	1,860	4.54
Taos	1	10	1,890	1.83
Torrance	0	3	2,033	0
Union	1	3	1,600	7.45
Valencia	3	10	4,400	1.88
U.S.[3]	7,061	333,259	625	7.40
State[3]		1,431	752	5.90

[1] Does not include military medical personnel or federal and state civil service medical personnel.

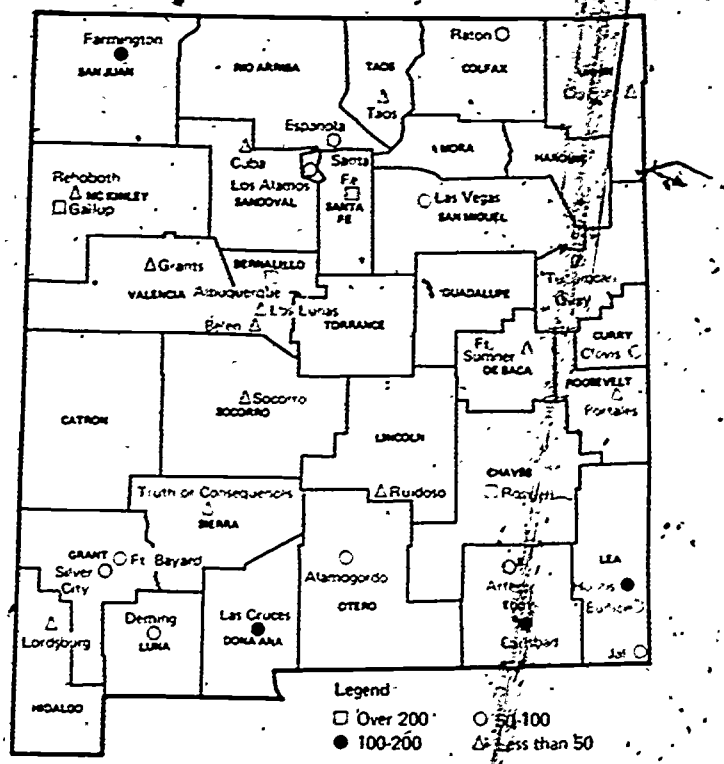
[2] 1974 estimated population divided by 1974 number of private physicians and surgeons

[3] These data include military and public service doctors and hospitals and are for 1972.

[4] Includes only general hospital beds divided by estimated 1974 population.

Source: New Mexico Health and Social Services Department, Hospital Facilities in New Mexico, 1974, New Mexico Board of Medical Examiners, Official List of Physicians and Surgeons, 1974. Published in New Mexico Statistical Abstract Bureau of Business and Economic Research, University of New Mexico, Albuquerque, 1975.
U.S. Bureau of the Census, *Statistical Abstract of the United States*, 95th Annual Edition, 1974, pp. 73 & 79.

Fig. 1. Distribution of general hospital facilities in New Mexico, by bed count



Source: New Mexico Health and Social Services Department, 1975

limited facilities. In a few counties, like Roosevelt County, service facilities are somewhat limited because of the proximity of a larger service center in Texas. In other counties, like Catron County, the lack of facilities is due primarily to a small and dispersed population.

Process

Evaluations of performance in the medical process are both costly and time-consuming. Consequently, few data are available.

The New Mexico Medicaid Program established the nation's first statewide professional review program for medical care in 1971. Under this system, paramedics review care received by patients as described on claim forms. They compare care with guidelines for appropriateness established by the New Mexico Foundation for Medical Care. If the medical services prescribed are outside the guidelines, the claim is referred to a physician for review. Approximately 15 percent of the total claims are reviewed by physicians, who make the final determination. In addition, a random sample of the claims accepted by the paramedics are also reviewed by physicians.

Table 6 presents the proportion of claims which were denied after review for various types of Medicaid services in New Mexico. It indicates a very low rate of denial or, conversely, a high rate of approval of Medicaid practice, except for injections. The injection denial rate has increased markedly as a percentage of total billings over the two-year period, as can be seen in figure 2. No reason was given for the decline in billings or the stability of the derived level. Unfortunately, since the New Mexico program was experimental and among the nation's first, no comparable national statistics were available.

Table 6. Health-care claims denied medical payment for medical reasons, by type, September, 1971-August, 1973, New Mexico.

Type of Health Care Utilization	Medicaid Claims Denied Payment
	percent
Visits to physicians' offices	1.04
Days spent in hospital	.01
Days spent in nursing homes	.02
Injections	31.18
Lab tests	1.74

Source: Hsi-Tien Chang and Wesley E. Curtis, *Data Tabulation and Analysis New Mexico Medicaid Program September 1 to August 31, 1973, Part IV* Albuquerque. New Mexico Experimental Medical Care Review Organization, July 1974, p. A-8.

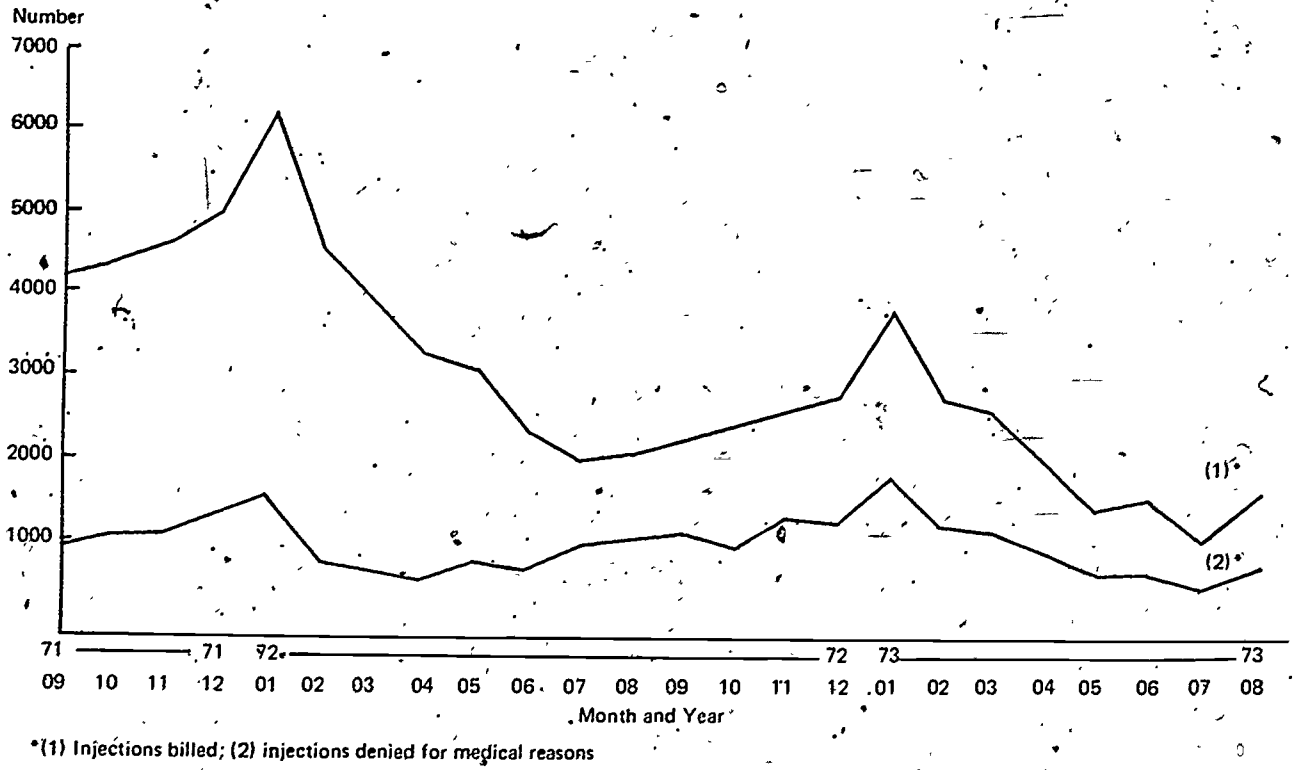
Outcomes

There are some striking contrasts in the health-care outcomes data from New Mexico, the neighboring states, and the U.S. Table 7 shows that, for the four biggest killers, New Mexico is well below the national and regional (except for Utah) rates on three. heart, malignant neoplasms (cancer), and cerebrovascular diseases. However, New Mexicans are definitely accident prone, being well above both the national and regional rates in deaths from accidents.

Infant death rate is one of the most widely used and accepted indicators of health and well being. Table 8 shows New Mexico whites above the U.S. rate, while nonwhites were below the national rate in 1970.[6] New Mexico is as high as, or higher than, its immediate neighbors in both rates.

[6]Whites include Spanish-, Mexican-, and Anglo-Americans. Nonwhites are primarily Indians and blacks in New Mexico.

Fig. 2. Injections billed and denied—two-year period



*(1) Injections billed; (2) injections denied for medical reasons

Source Hsi Tien Chang and Wesley E Curtis, *Data Tabulation and Analysis New Mexico Medicaid Program September 1 to August 31, 1973, Part IV.* Albuquerque, New Mexico Experimental Medical Care Review Organization, July 1974, p. 25.

Table 7. Death rates for the ten leading causes of death,[1] New Mexico, selected states, and U.S., 1970

Cause of Death	U.S. Average Rate	Arizona		Colorado		New Mexico		Utah	
		Rate	Percent of U.S.	Rate	Percent of U.S.	Rate	Percent of U.S.	Rate	Percent of U.S.
Diseases of heart	362.0	268.5	74.2	272.0	75.0	200.8	55.5	213.1	58.9
Malignant neoplasms[2]	162.8	134.3	82.5	119.3	73.3	104.6	64.3	96.3	59.2
Cerebrovascular diseases	102.0	74.4	72.9	80.7	79.1	63.9	62.6	62.4	61.2
Accidents	56.4	75.9	134.6	58.3	103.4	89.1	158.0	58.2	103.2
Influenza and pneumonia	30.9	32.2	104.2	32.5	105.2	32.0	103.6	18.3	59.2
Certain diseases of early infancy	21.3	19.9	93.4	20.9	98.1	24.6	115.5	21.8	102.3
Diabetes mellitus	18.9	14.8	78.3	12.3	65.1	15.5	82.0	16.0	84.7
Arteriosclerosis	15.6	12.3	78.8	16.9	108.3	8.2	52.6	10.8	69.2
Cirrhosis of the liver	15.5	17.4	112.3	13.1	84.5	18.3	118.1	9.7	62.6
Bronchitis, emphysema, & asthma	15.2	27.8	182.9	17.9	117.8	15.5	102.0	13.5	88.8

[1] Rates per 100,000 estimated midyear population.
[2] Includes neoplasms of lymphatic and hematopoietic tissues.

Source: U.S. Department of Commerce, Statistical Abstract of the United States, 1974. Published in New Mexico Statistical Abstract, Bureau of Business and Economic Research, University of New Mexico, Albuquerque, 1975.

Table 8. Infant death rates for New Mexico, neighboring states, and the U.S., 1950, 1960, 1968, 1970

Area	Rate per 1,000 Live Births						
	1950	1960		1968		1970	
		White	Nonwhite	White	Nonwhite	White	Nonwhite
United States	29.2	22.9	43.2	19.2	34.5	17.8	30.9
Arizona	45.8	26.6	60.8	19.7	38.8	16.0	28.0
Colorado	34.4	26.9	44.0	20.3	27.3	19.7	23.5
New Mexico	54.8	30.9	52.8	22.3	33.5	19.5	28.9
Utah	23.7	18.8	54.0	16.6	52.4	14.9	17.5

Source: U.S. Department of Commerce, Statistical Abstract of the United States, selected years. Published in New Mexico Statistical Abstract, Bureau of Business and Economic Research, University of New Mexico, Albuquerque, 1975.

The remarkable thing is the trend since 1950, when the New Mexico infant death rate was much higher than the national and regional averages. New Mexico has clearly made a great deal of progress, according to this indicator. The marked drop in the nonwhite rate from 1960 to 1970 probably reflects the great strides in Native American health care, since that group constitutes a big majority of nonwhite New Mexicans.

Perceptions

Perception of adequacy was measured by several items in the questionnaire surveys. Respondents were asked to rate the quality of each service they obtained as good, fair, or poor. They were asked to evaluate overall accessibility of medical services. As part of a community-attractiveness inquiry, the northern sample was asked to rate the adequacy of medical/health facilities in their immediate community. Finally, all respondents were asked which factors cause the most difficulty in obtaining services: travel time and/or distance, cost, waiting time, and others.

Results were consistent and generally reflected favorably on the medical services in New Mexico. Services obtained were given uniformly high ratings (table 9). From 82.4 to 95.1 percent were rated "good." The results were so uniform that analysis of socioeconomic correlates was not feasible.

The assessment of overall household access to required health services was 40.7 to 43.5 percent good, 7.9 to 13.9 percent poor, and 42.6 to 51.2 percent in-between (table 10). The picture changed somewhat when northern respondents were asked about the adequacy of facilities in their immediate community of residence (table 11). Less than 5 percent of the sample rated their communities as excellent, 30.8 percent rated them good, and 23.9 percent rated them poor or dismal.

Figure 3 shows the specific difficulties that respondents perceived. Not surprisingly, rural people rated travel time and distance as their biggest difficulty. In the urban samples, 23 and 29 percent indicated no difficulty at all. Cost and

Table 9. Respondent's perception of quality of services obtained by users (percent of total visits rated good and poor)*

	Response			
	Southern 1971		Northern 1973	
Service	Good	Poor	Good	Poor
	percent			
General Practitioner	87.5	1.0	86.6	2.0
Specialists	89.0	0.8	95.1	1.7
Optometrists	92.7	1.0	92.4	2.3
Dentists	93.5	0.6	92.8	2.0
Hospital	83.2	4.3	85.6	6.1
Chiropractors	91.2	1.0	82.4	5.6

*The difference between the percentage of "good" responses plus the percentage of "poor" and 100 percent equals the percentage of "fair" or mixed responses.

Table 10. Assessment of overall household access to required health services.

Response*	Northern Responses	Southern Response
	percent	
Good	43.5	40.7
Intermediate	42.6	51.2
Poor	13.9	7.9

*The respondents were asked to rate overall household access on a scale of 1 (good) to 7 (poor). Scale scores were grouped as follows 1 & 2 = good, 3, 4 & 5 = intermediate, 6 & 7 = poor.

Table 11. Perception of community of residence as a place with adequate medical or health facilities (northern sample)

	Adequacy					
	Excellent	Good	Fair	Poor	Dismal	Nonexistant
	percent					
Response	4.8	30.8	24.1	19.2	4.7	16.4

waiting time were smaller but important factors with all subsamples. "Other" responses included discrimination, competence of personnel, and a wide variety of individual comments.

CONCLUSIONS AND IMPLICATIONS

Conclusions

No marked or consistent social, cultural or economic differences in the patterns of use emerged from the rather heterogeneous New Mexico population. Gross inequities have largely disappeared, probably because of generally higher incomes, wider availability of insurance programs, and various government programs. Whatever the reason for the consistent use patterns, it does not mean that the burden of medical bills is less for lower income groups.

While the practice of using home remedies is still alive and flourishing, particularly among Spanish Americans, the use of *curanderas* seems to be fading fast.

Taken separately, each indicator of adequacy examined is somewhat limited in that it reflects a narrow aspect of health care. Taken together, they offer a more comprehensive and persuasive description of the health-care situation in New Mexico and the population's perception of that situation. The indicators also provide some compelling evidence of New Mexico's position vis-a-vis its immediate neighbor states and the United States as a whole.

New Mexico is somewhat below the national averages on facilities. Moreover, the doctors and hospitals are fairly concentrated in a few urbanized centers. This concentration is consistent with the rural resident's perception of travel time and distance as being the most serious difficulty in access to needed services. The population, however, was generally very satisfied with the quality of their services. Rural residents, while recognizing problems of access, count these problems as one of the necessary and unavoidable costs of life in small towns or open countryside (3, p. 43).

This satisfaction may rest, in part, on the results which the outcome indicators show. New Mexico is very near the national and regional averages on infant death rates and well below the national death rates for the big killers—heart disease and cancer. As for the accident rate, it may be that New Mexicans either do not recognize that they have a high accident rate or do not view it as primarily a medical problem.

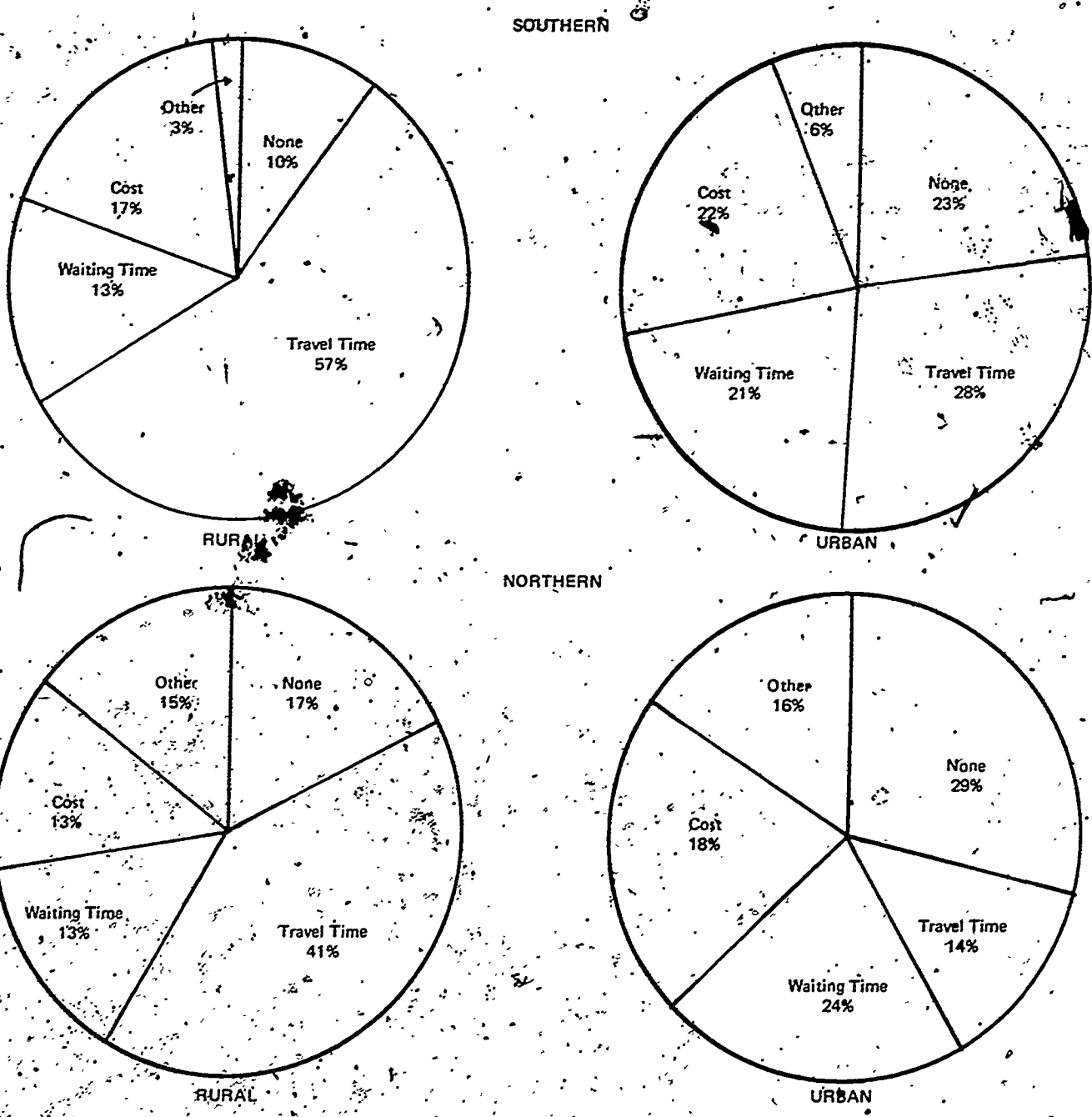
Data on process of medical care reflects a low percentage of billing denial. This percentage cannot be interpreted too strongly as indicative of quality medical practice because of the short period of evaluation.

These conclusions should not encourage apathy in efforts to improve health-care services in New Mexico. The state is still below the national average on many indicators, and there is nothing sacred about the average. There is much room for improvement.

Implications for New Mexico Health-Care Policy

These findings indicate that programs to further reduce financial barriers to health care may not be aimed at the most severe problems in New Mexico.

Fig. 3. Percent of respondents indicating primary difficulty in obtaining medical services, northern and southern New Mexico, by rural and urban residence



Access to health care, particularly travel time and waiting time, was perceived by the respondents as a major problem. The difficulty was caused, in part, by the uneven distribution and shortage of professional personnel, which in turn stems from the basic structure of the American health-care system. Mobile clinics, greater use of paraprofessional personnel, telemedicine, and expanding medical-school output are a few of the things that are being tried across the country to increase access.

Emergency service, which is related to access but distinct from it, also merits more attention by health planners. This may be a factor in the high New Mexico accidental death rate. Many accident victims may not be receiving the attention they need quickly enough, particularly in the remote areas. Residents in these areas of the state find

emergency services as difficult and time-consuming to get to as are other services. New Mexico may need more ambulances, airplanes, and helicopters to move people over its vast distances and sparsely settled areas.

Research Needs

Future research on health care should focus on a few priority topics.

1 There is a need to identify the reasons for the unusually high and low death rates in New Mexico. For example, why are New Mexicans accident-prone yet experience less heart disease and cancer than the national average?

2 Is preventive care as widely used as it could or should be?

3 There is a need to look at the feasibility of innovative new services to improve access.

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APPENDIX

Correlation coefficients, use of various health-care services by selected socioeconomic characteristics (northern sample)

Item	Number of Different Medical Services Visited in 1971	Total Number of Visits to Medical Services in 1971	Total Cost of Medical Services to Household	Number of Visits to Hospitals	Number of Visits to Dentists	Number of Visits to Optometrists	Number of Visits to General Practitioners	Number of Visits to Specialists
Population size of the community	0.12	0.04	0.06	0.10	0.12	-0.04	–	0.10
Number of years spent in present location	-0.12	-0.01	-0.03	-0.06	-0.09	0.01	-0.01	0.01
Ethnicity	-0.06	-0.09	–	-0.01	-0.10	-0.07	-0.08	-0.03
Household size	0.18	0.11	0.04	0.06	0.11	0.03	0.09	0.01
Age of the household head	-0.11	-0.04	0.02	0.04	-0.12	0.02	-0.02	-0.04
Years of formal education of household head	0.13	0.06	0.07	0.08	0.20	0.05	-0.03	0.09
Total family income	0.16	0.14	0.15	0.27	0.24	0.12	-0.01	0.18
Presence of medical insurance coverage, 1971	0.16	0.08	0.11	0.06	0.10	0.02	-0.02	0.09
Total number of persons with fair or poor health in household	0.12	0.25	0.04	0.08	-0.06	-0.01	0.24	0.05