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PUBLIC HEALTH SERVICES IN SIXTY-SEVEN RURAL COUNTIES: ARE THEY MEETING THE COUNTY'S MEDICAL NEEDS

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"A time-honored and repeatedly stated principle in the health field is that those who need care and ask for it should receive it whether or not they can afford to pay for it." (2, p. 150) This paper is a report on a preliminary test of the adequacy of public health services in rural areas, using data from 67 rural counties in Oregon and Florida.

There are two separate but related aspects of this conceptual notion of need. First, a determination of the status of the health of the people in a given area, and second an evaluation of what is being done about the existing situation. To do justice to the ideas presented in my opening quotation, the need for health services must be determined, and then an assessment made as to whether those in need are receiving care regardless of their ability to pay.

A community's total health needs may be furnished by either the public or private sector. In practice there is considerable overlap between public and private services. However, a sizeable number of persons are being excluded from both. The proper division of responsibilities between the public and private sectors is not considered here. The primary consideration is that all residents of the community have access to medical services. It is assumed that the public sector will have to absorb those health services which cannot be or are not provided by the private sector.

There are five broad categories of persons cited in public health studies as most in need of health services: rural residents, the poor, Negroes, children, and the aged. These categories are, obviously, not mutually exclusive. Viewing those in need of medical services from a geographical perspective, it has been shown that rural residents are more disadvantaged than people in urban areas. From the various National Health Surveys and other independent research projects we know that rural residents have access to fewer general practitioners, specialists (of all types), dentists, nurses, and hospital beds (15,16,18,22,27). In short, there are fewer facilities and professional personnel in rural areas than in the more populated places. On the other hand rural people have more disability days per person per year (28b,28j), a greater incidence of acute conditions, more days of restricted activity due to illness, and more days of bed disability than their urban neighbors (2, p. 55, 7,25,28h,28k,28l). These survey results indicate that rural residents need medical care, but have fewer health resources at their disposal.

Looking at the broad area of people needing medical services from another direction one author says: "Identifying the low-income group is tantamount to identifying a high probability of medical need as shown by various indexes of prevalence and severity of disabling illness." (19, p.517) Leaving little room for doubt the surveys "confirm clearly and in quantitative terms the generally accepted idea that there is a positive relation between poor health and low income." (16, p. 363) There can also be no doubt about the existence and depth of poverty in rural areas (5,6,24). Health-wise, wherever they are located, the poor have more of everything that is bad and less of everything that is good (1,2,14,19,26,27,28a,28c,28f,28g). A high percentage of low income persons, then, indicates an acute need for health service.

A third perspective from which it is possible to view those persons in need of medical services is that of race. Since 32.1 percent of the U.S. Negro population live in rural areas (9), and median family income for Negroes in 1967 was $4,674 (compared to $7,792 for white families) (11), Negroes are a subgroup of both rural and low income persons. However, due to the special circumstances and specific problems inherent in being a Black American, Negroes can be considered a distinct group for the purposes of this analysis (17). Negroes have a shorter life expectancy, higher infant mortality rate, four times as great a maternal mortality rate, and a higher death rate from infectious diseases than whites (8,14,27). In any geographical area, a high proportion of Negroes indicates a definite need for medical services.

Approached from the direction of age two final, and much more obvious, groups can be identified. Research

results show that children under 5 years (2,23,26,28d,29), and those persons 65 years of age or older (13,28e),are quite likely to have considerable need of medical services.

Schematically these five groups and subgroups can be thought of as over-lapping circles where it is possible for all groups to exist independently or in combination with one or all other groups (except, of course, the impossibility of being aged and a child at the same time).

The first of these five groups, rural people, was used to define the universe of this study. The other four groups were used as independent variables in the analysis. Due to the availability of unusually detailed and comprehensive State health reports, Oregon (21) and Florida (4) were chosen for initial analysis. From these two States all counties (Florida=44, Oregon=23) with a 1966 estimated population of less than 50,000 were selected for study. The counties were ranked on the four need variables:

Number of families under $3,000
Number of children under 5 years
Number of persons over 65 years
Number of Negroes

Previous results from a factor analysis of data on public health services in Florida and Oregon counties revealed seven performance variables, which seemed statistically more important than a number of other variables. These seven performance items were used in this study as dependent variables; they are:

Total expenditure for public health
Number of nurses
Number of tuberculosis tests and X-rays
Number of antepartum and postpartum nursing visits
Number of nursing visits to children under 5 years
Number of diabetes nursing visits
Number of cardio-vascular nursing visits

Rank order correlations were calculated to determine the degree to which services were associated with expected need for medical treatment and care.

The entire matrix of these correlations is presented in Table I.

Table I shows high relationships between almost all items in the need for services category and the seven performance variables. The exception to this rule is the lack of correlation for cardiovascular nursing visits in Florida counties. This finding may partially be explained by existence in most Florida counties of a visiting nurse service. There may be some special arrangement with this private organization to provide nursing visits for this particular illness, thereby releasing the county unit from a full responsibility for cardiovascular nursing visits. The correlations in Table I also strongly suggest that performance is related to county population. The question then becomes: What relationships exist when the population factor is held constant?

In order to answer this question, a set of partial rank order correlations, with population held constant, were prepared (Table II). In general, it seems that higher service levels were strongly associated with poverty in Oregon; in Florida total expenditures showed a significant negative relationship with this variable. In Florida (but not in Oregon) larger numbers of children were associated with higher levels of services to children. There was some evidence that increased number of aged were associated with a higher level of general public health services in Oregon, but in neither State did increased number of aged show a significant relationship with any of the specific services studied. Increased numbers of Negroes appear to lead to more emphasis on services to children in Florida.

Does this analysis mean that medical needs are being met in these counties? Emphatically; this analysis does not. It shows only that in one of two States the direction of services is in a positive direction with relationship to certain need categories of people. Whether the services provided are of sufficient quality, scope and magnitude are subjects for further research and study.

Table I – Rank Order Correlations of Public Health Variables for Florida and Oregon (1966-67)[1]

	1966 Pop.	# Under $3,000	# Under 5 years	# Over 65 years	# Of Negro	Expend	# Of Nurses	TBTest X-Rays	Ante-Post	Child 5 years	Dia-betes	Cardio vascul
1966:Fla												
Pop.:Ore												
#Under:Fla	.887											
$3,000:Ore	.753											
#Under:Fla	.974	.847										
5 years:Ore	.983	.734										
#Over:Fla	.925	.879	.861									
65 year:Ore	.951	.835	.925									
#of :Fla	.802	.742	.842	.671								
Negro :Ore	.652	.356	.654	.548								
Expend:Fla	.849	.675	.850	.756	.663							
:Ore	.821	.839	.785	.858	.390							
#Of :Fla	.744	.662	.749	.672	.544	.885						
Nurses:Ore	.825	.854	.797	.864	.392	.970						
TBTest:Fla	.552	.471	.523	.514	.377	.621	.637					
X-Rays:Ore	.570	.669	.608	.620	.323	.721	.733					
Ante- :Fla	.276	.302	.341	.193	.377	.258	.245	.121				
Post :Ore	.656	.504	.670	.576	.404	.612	.654	.376				
Child :Fla	.388	.433	.454	.238	.496	.381	.362	.205	.750			
5years:Ore	.540	.639	.563	.571	.330	.656	.718	.595	.611			
Dia- :Fla	.455	.442	.442	.380	.431	.519	.661	.542	.141	.263		
betes :Ore	.730	.773	.770	.726	.274	.852	.853	.737	.655	.783		
Cardio:Fla	-.028	-.016	.014	-.010	-.062	.171	.294	.126	.311	.310	.152	
vascul :Ore	.708	.784	.701	.745	.326	.877	.872	.795	.570	.627	.871	

Number for Florida = 44; number for Oregon = 23

[1]Using the standard product moment correlation formula on the numerical value of each county's rank on the variable. For some comments on the appropriateness of using this method see: S. Labovite, "Some Observations on Measurement and Statistics," *Social Forces* 46:151-160 (December, 1967).

Table II – Partial Rank Order Correlations of Public Health Variables for Florida and Oregon (1966-67) with the Effects of Population Controlled[2]

	# Under $3,000	# Under 5 years	# Over 65years	# Of Negro
Expend: Fla	-.320**	.193	-.146	-.056
Ore	.588*	-.210	.406**	-.335
#Of :Fla	.009	.164	-.063	-.130
Nurses :Ore	.628*	-.126	.459**	-.338
TBTest:Fla	-.049	-.079	.010	-.133
X-Rays:Ore	.444**	.318	.307	-.078
Ante- :Fla	.129	.331**	-.171	.271
Post :Ore	.020	.182	-.132	-.040
Child :Fla	.290	.364**	-.345**	.366**
5years :Ore	.420**	.208	.221	-.034
Dia- :Fla	.094	-.005	-.121	.124
betes :Ore	.497**	.418**	.150	-.390
Cardio :Fla	.019	.181	.042	-.066
vascul :Ore	.540**	.039	.329	-.253

[2]Using the formula: $r_{12.3} = \frac{r_{12} - r_{13}r_{23}}{\sqrt{1 - r_{13}^2}\sqrt{1 - r_{23}^2}}$; where the third variable is always population.

*Indicates a significance level of 99%; **Indicates a significance level of 95%

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ABBREVIATIONS

A.J.P.H. = *American Journal of Public Health*
P.H.R. = *Public Health Reports*

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