MENTAL HEALTH DEMOGRAPHIC PROFILE FOR HEALTH SERVICES PLANNING

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The Health Planning and Resources Development Act (Public Law 93-641) places great emphasis on the use of existing data by health systems agencies in planning for the delivery of health services. Perhaps the most basic set of available data are those describing the population of the area. Population data can be used in themselves to suggest subareas in which disproportionate numbers of persons at high risk of need for services may be located. They may also be used in conjunction with data from other sources to estimate the distribution of need for services in an area and to analyze the patterns of utilization of various types of health and medical services. The estimates of need and patterns of utilization provide measures of the extent to which needs are being met.

To make population census data more useful for health services planning, the National Institute of Mental Health developed the Mental Health Demographic Profile System (MHDPS).[1] Based on 1970 census data, this system provides some 130 indicators computed from the population data. These indicators not only describe specific geographic areas but are also useful in identifying areas with high or low risk of the need for health services. The Demographic Profile System provides data on socioeconomic status, ethnic composition, household composition and family structure, style of life, condition of housing, and community instability. Since the system was initially developed for the planning of mental health services, it was designed to produce the indicators for each of the 1,500 community mental health center catchment areas in the United States and for individual census tracts within each. But it can also be used as an aid in planning for health services under Public Law 93-641. Therefore it has now been tabulated for each Health Service Area (HSA) in the United States and for each of the counties within each HSA. The purpose of this Note is to describe the MHDPS and to give an example of its use for mental health planning as an illustration of its application to health planning in general. Given the emphasis on using existing data, these population data have been used effectively in several of the State plans for mental health services required under the Health Revenue Sharing Act (Public Law 96-63).

Aside from simply describing the population of the HSA and how its characteristics vary from one county to another, the data can be used as an aid in identifying those subareas of the HSA in which the need for mental health services may be the greatest. In the data provided for HSA's the country is the smallest unit for which indicators have been produced.[b] Thus subareas must

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[b] The county was chosen as the basic unit in order to provide HSA's with a manageable volume of data. Some HSA's may wish to examine their areas in more detail.

necessarily be defined in terms of whole counties or groups of counties. The assumption implicit in such an approach is that the population of the smallest unit of analysis is homogeneous with respect to the factors under study. The users must exercise caution in the interpretation of the data, therefore, since the population of an entire county frequently does not meet this assumption. However, by examining population data within counties in an HSA, one can determine the extent to which this assumption is met.

The MHDPS has been described in some detail in several publications.[1,2,3] For community mental health center catchment areas, which have populations of 75,000 to 200,000, it compares the value of each of the 130 indicators with the corresponding values for the county and State in which the area is located and for the United States. Since HSA's on the other hand, have 500,000 to 3 million population and contain several counties, sometimes in more than one State, the format of the MHDPS package for HSA's is different. It provides data for the total HSA and for each county within it. A sample part of one table is presented in table 1 as an illustration. Each HSA is also being provided with a similar table for the United States and for each State so that those using the data can make whatever comparisons they wish. Rosen et al.[3] have described a number of uses that can be made of the data in the system. Some of these may prove useful in planning health services in general. The remainder of this Note will be devoted to a discussion of the use of the MHDPS for ranking subareas according to the need for mental health services.

THE MENTAL HEALTH SERVICE DELIVERY SYSTEM

A brief description of the mental health service delivery system will help to place the discussion that follows into proper perspective. Mental health services available to residents of an area may include State mental hospitals, private mental hospitals, psychiatric units in general hospitals, outpatient psychiatric clinics, community mental health centers, half-way houses, residential treatment centers for emotionally disturbed children, and perhaps other types of facilities. The clients of some of these facilities, such as the community mental health center, are almost all residents of the catchment area, while those of private mental hospitals, for example, are drawn from a much larger area without reference to any particular service area. Many State mental hospitals are organized on a geographic unit basis but serve an area much larger than a catchment area. Therefore, even though the State mental hospital is located in a particular area, only a fraction of its patients are residents of the area. Those persons in a catchment area without a State mental hospital who require such hospitalization must therefore go outside the area for care. Periods of care in a State mental hospital are usually longer than those in psychiatric units of general hospitals, while a period of admission in an outpatient clinic may range from one visit to a large number of visits over several months.

Perhaps the most common measure of utilization of this system of services is an admission rate. This is usually defined as the number of admissions during the year to mental health facilities among residents of the area for each 100,000 population of the area. An admission to an inpatient service is a person who enters the service for a period of inpatient care regardless of whether he had been a patient of that service earlier in the year. A person is considered an admission to an outpatient clinic if he begins a series of one or more visits either for the first time or after having been considered terminated from outpatient care previously. Thus the number of admissions to the total set of psychiatric facilities may include duplicate counting of an individual within a facility as well as between facilities. While this measure is very crude, it does provide some indication of the extent to which the system of mental health service is used.

Measuring Need for Mental Health Services

The measurement of need for mental health services in an area can take at least two forms— direct measures based on sample surveys of the population or indirect measures based on popu-

Table 1. HSA 1: SELECTED STATISTICS FROM THE 1970 CENSUS OF POPULATION AND HOUSING, SECOND PLUS FOURTH COUNT DATA FILES
(ALL SAMPLE QUESTIONS)

	GENERAL POPULATION DATA						SOCIOECONOMIC STATUS				
							ECONOMIC STATUS		SOCIAL STATUS		EDUCA-TIONAL STATUS
	TOTAL POPULA-TION	MALES IN HOUSE-HOLDS	FEMALES IN HOUSE-HOLDS	POPULA-TION IN GROUP QUARTERS	POPULA-TION WHITE	POPULA-TION NEGRO	MEDIAN INCOME FAMILIES AND UN-RELATED INDIVID-UALS	PERCENT FAMILIES IN POVERTY	PERCENT EMPLOYED MALES IN		MEDIAN SCHOOL YEARS COM-PLETED
									LOW STATUS OCCUPA-TIONS	HIGH STATUS OCCUPA-TIONS	
	1	2	3	4	5	6	7	8	9	10	11
AREA TOTAL											
STATISTIC...............	1758355	828971	888912	40472	1630625	115054	$ 8460	7.1	39.3	22.5	12.0
BASE POPULATION..	...	...	...	...	...	...	586318	438859	417952	417952	962969
COUNTY 3											
STATISTIC...............	46458	20973	21698	3787	46207	145	$ 5232	9.6	39.3	23.0	12.2
BASE POPULATION..	...	...	...	...	...	...	17948	10691	10336	10336	22975
COUNTY 9											
STATISTIC...............	81666	38168	40602	2896	79714	528	$ 6787	9.4	43.2	19.7	12.1
BASE POPULATION..	...	...	...	...	...	...	27775	19690	18395	18395	43607
COUNTY 13											
STATISTIC...............	147305	69626	74412	3267	145217	1454	$ 7212	8.5	42.4	19.5	12.1
BASE POPULATION..	...	...	...	...	...	...	51974	37991	35336	35336	82497
COUNTY 29											
STATISTIC...............	1113491	523485	566667	23339	1006843	99238	$ 8769	6.9	37.5	24.0	12.0
BASE POPULATION..	...	...	...	...	...	...	371237	277828	265445	265445	614057
COUNTY 37											
STATISTIC...............	58722	28286	29647	789	57029	1020	$ 8809	5.4	39.9	20.0	12.2
BASE POPULATION..	...	...	...	...	...	...	18830	14953	14602	14602	31539
COUNTY 63											
STATISTIC...............	235720	112860	119495	3365	223944	9546	$ 8978	6.1	43.1	20.6	12.0
BASE POPULATION..	...	...	...	...	...	...	75553	59701	56369	56369	127651
COUNTY 73											
STATISTIC...............	37305	18180	18576	549	35237	1971	$ 8652	6.8	44.5	16.1	11.4
BASE POPULATION..	...	...	...	...	...	...	11741	9201	8814	6814	19992
COUNTY 121											
STATISTIC...............	37688	17393	17815	2480	36434	1152	$ 8195	6.4	44.1	16.3	12.0
BASE POPULATION..	...	...	...	...	...	...	11260	8804	8655	8655	20651

lation indicators. In attempts to measure the incidence or prevalence of mental disorders in populations, a number of studies have been carried out in different populations with different methods of case ascertainment, using different diagnostic groups and different definitions of incidence and prevalence. Reviews of the literature on these studies have been carried out,[4,5,6] but they will not be discussed here. Furthermore, the relationship between the existence of cases of mental disorders in the population and the need for mental health services by individuals with these disorders has not been clearly established. In recent years a number of attempts have been made to assess needs for mental health services in populations directly through surveys.[7,8,9] None of the survey instruments used, however, has gained general acceptance as standard because the studies using them have produced such vastly different results.

The population indicator approach to assessing needs for mental health services using data such as those in the MHDPS may be seen as an alternative to population surveys. A small number of indicators from the MHDPS will be selected to illustrate their use for this purpose. The selection of the indicators is based on the results of studies that have identified factors which seem to be associated with high risk of coming under psychiatric care.[10,11] A brief summary of some of these results is as follows:

1. Rates for married persons are low.
2. Rates for separated and divorced persons are high.
3. For the most part, rates for children living with mother only are higher than those for children living with both parents.
4. Rates for persons in families with a female head are higher than those for persons in husband-wife families regardless of the relationship to the family head and regardless of family size.
5. Rates are lowest for families with six persons or more.

The MHDPS indicators corresponding to these high risk factors are:

1. Percent of households with one person.
2. Percent of males 14 years of age and over who are divorced or separated.
3. Percent of females 14 years of age and over who are divorced or separated.
4. Percent of households with female heads.
5. Percent of households with own children that are headed by females.

The assumption underlying the use of these indicators is that counties having a high proportion of persons with these high-risk characteristics have greater need for mental health services than counties with lower proportions.

Preliminary Estimation of Need for Mental Health Services

To illustrate how these indicators might be used for planning purposes, the MHDPS data for nine community mental health center catchment areas were obtained, and these five indicators are presented for the nine areas in table 2. For each of these nine areas, measures of rates of admissions to all mental health facilities in the State and to those located in the area are presented in table 3. For these nine areas, therefore, it is possible to assess the relationship between the population indicators and the utilization measures.

Table 2. Values of selected indicators from the Mental Health Demographic Profile System for each of 9 mental health center catchment areas

Area	Indicator				
	(1)	(2)	(3)	(4)	(5)
A	21.9	3.6	5.2	24.8	10.3
B	17.4	2.9	3.9	19.5	7.8
C	16.2	3.9	4.8	17.9	7.0
D	19.3	2.9	4.4	22.7	9.3
E	14.1	2.8	3.6	16.5	6.0
F	19.5	3.0	4.9	22.0	8.2
G	17.3	3.4	4.7	21.2	8.9
H	15.7	2.9	5.0	20.7	10.2
I	10.7	2.0	3.4	14.6	5.6

NOTE: Indicators = (1) Percent households with 1 person
(2) Percent males aged 14 and over divorced or separated
(3) Percent females aged 14 and over divorced or separated
(4) Percent households with female head
(5) Percent households with own children and female head

Table 3. Admission rates of area residents per 10,000 population to mental health facilities located in the State and to those located in area of residence for each of 9 mental health center catchment areas

Area	Total population	Rate per 10,000 population	
		Admissions of area residents to all mental health facilities in State	Admissions of area residents to facilities in area
A	286,742	152.4	145.4
B	84,655	127.3	112.9
C	207,958	200.4	190.4
D	152,510	106.8	77.4
E	121,764	93.7	71.8
F	161,078	148.7	122.8
G	100,916	140.5	134.2
H	154,627	199.3	156.5
I	135,557	120.9	29.3

Since the five indicators were chosen because they were thought to be associated with high risk of coming under psychiatric care, one would expect each of them to correlate positively with admission rates to psychiatric services. The product-moment correlation coefficients between the five indicators and each of the two utilization measures (in table 3) are presented in table 4. The total admission rate and the admission rate to facilities in the area correlate positively with each of the indicators. Since only nine areas are being used for this illustration, the reader should interpret high correlation coefficients as only suggestive of relationships.

Table 4. Correlation between each indicator and each of the types of admission rate for 9 mental health center catchment areas

Indicator[1]	Correlation with:	
	Total admission rate	Admission rate to facilities in area
(1)	.14	.49
(2)	.54	.87
(3)	.70	.82
(4)	.18	.45
(5)	.38	.52

[1] Description of indicators given in table 2.

The analysis thus far suggests that each of the five indicators is associated with high risk of admission to psychiatric facilities—particularly to those facilities located in the area of residence. It seems reasonable, therefore, to examine ways of ranking the areas according to these indicators and to analyze the results in terms of their implications for need for services.

One might use some sophisticated techniques for combining all of the indicators in the MHDPS in order to arrive at an overall score, or an index for each area according to which they contain potential utilizers of mental health services. This has been done by some investigators.[7,3] The data are sufficiently crude, however, that simple approaches based on intuitive methods appear to be quite adequate. It is useful to experiment with the data and to analyze them in relation to other data bearing on the delivery of health and mental health services.

After these indicators have been combined into a single index, the composite index can be used as a basis for ranking areas. Since the five indicators have different orders of magnitude, one approach is to express each indicator in terms of its standardized deviation from its mean value across all nine areas. For sake of convenience, one can then multiply these standardized deviations from the mean by 10 and add the result algebraically to 50. This avoids negative number, gives values with a mean of 50 and standard deviation of 10, and places each of the five indicators on the same scale. To illustrate using indicator (1), the mean across the nine areas is 16.9 and the standard deviation is 3.28. The standardized deviation from the mean for area A is $\frac{21.9 - 16.9}{3.28} = 1.52$. Then $(1.52 \times 10) + 50 = 65.2$, the transformed value for area A. After repeating this process for each of the five indicators, it is reasonable to compute the mean value of all five indicators for each area. This assumes, however, that the indicators have equal weights, which may be reasonable for a beginning. The results of these computations are given in table 5. No attempt will be made in this Note to use differential weights in combining indicators.

Table 5. Transformed values of indicators and mean of transformed values for each of 9 mental health center catchment areas and correlation of each indicator with the mean

Area	Transformed values of indicators[1]					Mean
	(1)	(2)	(3)	(4)	(5)	
A............	65.2	60.2	61.8	65.0	62.6	63.0
B............	51.5	47.4	41.8	48.5	48.0	47.4
C............	47.9	65.7	55.6	43.5	43.3	51.2
D............	57.3	47.4	49.5	58.5	56.8	53.9
E............	41.5	45.5	37.2	39.1	37.4	40.1
F............	57.9	49.2	57.2	56.3	50.3	54.2
G............	51.5	56.5	54.1	53.8	54.4	54.0
H............	46.3	47.4	58.7	52.2	62.1	53.3
I............	31.1	30.9	34.1	33.2	35.1	32.9
Correlation with mean......	.92	.75	.92	.94	.88	

[1] Description of indicators given in table 2.

The correlations between each indicator in turn and the mean across all five indicators are given in the bottom line of table 5. The fact that these correlation coefficients range from .75 to .94 provides evidence that the mean represents a consistent summary of the five indicators. To obtain some idea of the ranking of these nine areas according to need for service, the areas were ranked according to the means and also according to the values of each of the five indicators. These rankings are presented in table 6. Whether judged according to individual indica-

Table 6. Rank order of 9 mental health center catchment areas for each indicator and for mean of indicators

Area	Indicator[1]					Mean
	(1)	(2)	(3)	(4)	(5)	
A............	1	2	1	1	1	1
B............	4	6	7	6	6	7
C............	6	1	4	7	7	6
D............	3	6	6	2	3	4
E............	8	8	8	8	8	8
F............	2	4	3	3	5	2
G............	5	3	5	4	4	3
H............	7	6	2	5	2	5
I............	9	9	9	9	9	9

[1] Description of indicators given in table 2.

tors or by the mean, area A clearly ranks highest, area I lowest and area H second lowest. Area F seems to rank second but the ranking of the remaining five areas may be open to question. The mean index might be used as suggestive of the ranking of areas, but the rankings for each of the individual indicators should also be taken into account.

Even though area A ranks highest with respect to not only the mean but also each of the five indicators, it ranks only third in terms of rate of utilization of facilities located in the area. This may be a reflection of the fact that mental health services tend to be used when they become available. Thus utilization rates tend to be a function of availability of service. Area I, on the other hand, ranks lowest on the so-called indicators of need, but its admission rate to services located in the area is extremely low.

Ranking of Need in Excess of Services Available

The "high-risk" indicators listed above were used as a basis for ranking areas according to need for mental health services. To the extent that services are already available, some of these needs are already being met. To assess relative rank according to unmet need, therefore, it is important to obtain some measure of availability of services. For the nine areas used in this illustration, data were available on the number of full-time equivalent staff persons in all psychiatric facilities. These included psychiatrists, psychologists, psychiatric social workers, psychiatric nurses, psychiatric aides, and a few other categories of personnel. These numbers, the corresponding staff rates per 10,000 population, and ranking of the nine areas according to the rate of staff time available for mental health treatment services are presented in table 7.

At this point the nine areas have been ranked according to a measure of need for mental health services and according to a measure of the availability of services. An analysis of the relationship between these two measures should provide a basis for ranking areas according to unmet need for mental health services. However, there is no standard way of doing this. Regard-

Table 7. Ranking of 9 mental health center catchment areas according to the ratio of expected to observed full-time equivalent mental health treatment staff per 10,000 population

| Area | FTE staff | | | | Ratio of expected FTE rate to observed | Rank of ratio |
| | Number | Rate per 10,000 population | Rank of rate | Expected rate | | |
	(1)	(2)	(3)	(4)	(5)=(4)/(2)	(6)
A	217.8	7.6	4	10.2	1.34	4
B	24.6	2.9	7	5.0	1.72	1
C	119.5	5.8	5	6.3	1.09	6
D	117.9	7.7	3	7.2	.94	7
E	21.9	1.8	8	2.6	1.44	2
F	128.4	8.0	2	7.3	.91	8
G	50.2	5.0	6	7.2	1.44	3
H	216.7	14.0	1	7.0	.50	9
I	2.7	0.2	9	0.25	1.25	5

less of the method selected for this analysis, all available information about mental health services in the areas under investigation should be examined. This would include the number of inpatient psychiatric beds, the number of staff hours spent in outpatient psychiatric facilities, the number and location of mental hospitals, the extent to which they serve residents of the area in which they are located, the number and types of agencies providing social support, and so forth. There is undoubtedly a variety of ways in which information such as this can be analyzed and estimates of relative need for mental health services developed. The following will be limited to an approach to ranking areas on the basis of the mean indicators of need and the rate of available staff time. It is one of perhaps several ways these two measures could be used for the same purposes.

If for each of the nine areas we plot as the X value the mean index in table 5 and as the Y value the full-time equivalent (FTE) staff rate in table 7, the relationship between these two variables appears to be approximately linear. It may be useful, therefore, to use a linear regression equation to predict the full-time equivalent staff rate from the observed mean index of need and compare the observed staff rate with this predicted value. The procedures are as follows:

1. Let X = mean index of need
   Y = full time equivalent staff rate
   and fit the data to the equation $Y = a + bX$ by the method of least squares.
2. This involves solving the following equations for a and b:

$$na + b\sum_{i=1}^{n} X_i = \sum_{i=1}^{n} Y_i$$

$$a\sum_{i=1}^{n} X_i + b\sum_{i-1}^{n} X_i^2 = \sum_{i=1}^{n} X_i Y_i$$

In the illustration with nine areas:

$n = 9$, $\sum X = 450$, $\sum X^2 = 23127.36$,
$\sum Y = 53$, $\sum XY = 2856.81$

3. Substituting these values in the two equations and solving for a and b yields the fitted equation:
   $Y = 10.59 + .33X$
4. When each value of X (the mean index in table 5) is substituted in the equation, the corresponding values of Y are obtained and are given in column (4) of table 7. These are the expected values of the full-time equivalent staff rate predicted from the regression equation.
5. The ratio of the expected FTE staff rate to the observed was computed for each area and presented in column (5) of table 7. The ranking of the areas according to this ratio is given in column (6).

The ratio in table 7 may be interpreted as the proportionate excess of full-time equivalent staff expected on the basis of indicators of need over that actually available. Based on the above method, area B now ranks highest. It had ranked seventh according to the mean index of need, but because of its low rate of mental health staff availability, its additional need, relative to that for the other areas, is high.

DISCUSSION

To facilitate maximum use of data such as those in the MHDPS, a few points should be kept in mind. Some of these have been mentioned above but will bear repeating.

Selection of indicators.—One might use the entire set of 130 indicators in analyzing the population of an area and, depending on the purpose of the analysis, apply such data reduction techniques as factor analysis or stepwise multiple regression. If, on the other hand, the planner decides to use a small set of variables from the MHDPS, he should have some rationale for selecting the particular set of indicators. The five variables used for illustrative purposes in this Note were selected because studies had shown them to be associated with high risk of admission to psychiatric facilities. Other variables, such as percent of families below the poverty level, could have been chosen for the same reason.

Developing a composite index.—A simple method of combining indicators into a single index was presented above. This involved a transformation to make the indicators approximately additive and was based on the assumpion that each indicator contributes equal weight. More work needs to be done to explore alternative weighting procedures if there are indications that the assumption of equal weights does not hold. This should not preclude analysis of each indicator separately, however, since the individual indicators may yield additional information that could be masked in a composite index.

Measures of availability of services.—In the illustration above, number of full-time equivalent staff in mental health facilities was used as a measure of availability of services since this information was available for all of the areas being studied. One might also use such measures as the number of inpatient psychiatric beds, the number of long-term beds, the number of short-term beds, and the number of outpatient clinic staff hours available.

Overall ranking according to needs for services.—In the above example a crude method of comparing an estimate of expected need for mental health services with a measure of actual availability of services was presented. The areas were then ranked according to the ratio of these two measures. Alternative methods for predicting needed services might be used, such as multiple regression, factor analysis, or other multivariate techniques. The results of analyses using these techniques are sometimes difficult to interpret, but they have the advantage of taking into account the intercorrelations among the variables used.

Interpretation of results.—Given all of the problems in this type of data and the assumptions underlying their use, caution should be exercised in interpreting the results of an analysis of need for mental health services. It should be kept in mind that the analyses are crude and that there is no single "correct" method. Therefore each method employed will yield at least minor differences in the ranking of areas.

Population data in the kind of detail provided by the Mental Health Demographic Profile System can be useful as an aid in planning for mental health services in general. However, they alone cannot be expected to provide answers regarding the need for services. They should be used in conjunction with other data describing the health and environment of the population. All the data taken together, then, should form the basis for raising questions about health or mental health services in an area. In the process of answering these questions the planner will have the basis for a constructive plan.

REFERENCES

[1] Redick, R. W., Goldsmith, H. F., and Unger, E. L.: *1970 Census Data Used to Indicate Areas With Different Potentials of Mental Health and Related Problems.* Series C, No. 3. DHEW Pub. No. (ADM) 75-159. Alcohol, Drug Abuse, and Mental Health Administration. Washington. U.S. Government Printing Office, 1971.

[2] Goldsmith, H. F., Unger, E. L., Rosen, B. M., Shambaugh, J. P., and Windle, C. D.: *A Typological Approach to Doing Social Area Analysis.* Series C, No. 10. DHEW Pub. No. (ADM) 76-267. Alcohol, Drug Abuse, and Mental Health Administration. Washington. U.S. Government Printing Office, 1975.

[3] Rosen, B. M., Lawrence, L., Goldsmith, H. F., Windle, C. D., and Shambaugh, J. P.: *Mental Health Demographic Profile System Description: Purpose, Contents and Sampler of Uses* Series C, No. 11. DHEW Pub. No. (ADM) 76-263. Alcohol, Drug Abuse, and Mental Health Administration. Washington. U.S. Government Printing Office, 1975.

[4] Lin, T., and Standley, C. C.: The scope of epidemiology in psychiatry. *Public Health Papers.* No. 16. Geneva. World Health Organization, 1962.

[5] Shepherd, M., Cooper, B., Brown, A. C., and Kalton, G. W.: *Psychiatric Illness in General Practice.* London. Oxford University Press, 1966.

[6] Goldberg, D. P.: *The Detection of Psychiatric Illness by Questionnaire.* London. Oxford University Press, 1972.

[7] Warheit, G. J., Bell, R. A., and Schwab, J. J.: Planning for Change: Needs Assessment Approach. Unpublished monograph, 1974.

[8] Tischler, G. L., Henisz, J., Myers, J. K., and Boswell, P. C.: Utilization of mental health services: I, Patienthood and prevalence of symptomology in the community. *Arch. Gen. Psychiatry.* 32:411-416, Apr. 1975.

[9] Hargreaves, W. A., Attkisson, C. C., Siegel, L. M., McIntyre, M. H., and Sorensen, J. E.: Resource Material for Community Mental Health Program Evaluation, Part II, Needs Assessment and Planning. Unpublished monograph, 1974.

[10] Pollack, E. S., Redick, R. W., Norman, V. B., Wurster, C. R., and Gorwitz, K.: Socioeconomic and family characteristics of patients admitted to psychiatric services. *Am. J. Public Health.* 54:506-518, 1964.

[11] Redick, R. W., and Johnson, C.: *Marital Status, Living Arrangements and Family Characteristics of Admissions to State and County Mental Hospitals and Outpatient Psychiatric Clinics.* Statistical Note No. 100. DHEW Pub. No. (ADM) 74-6. Alcohol, Drug Abuse, and Mental Health Administration. Washington. U.S. Government Printing Office, 1974.

SYMBOLS

Data not available---	- - -
Category not applicable-----------------------------	. . .
Quantity zero--	-
Quantity more than 0 but less than 0.05------	0.0
Figure does not meet standards of reliability or precision----------------------------	*