DIFFERENCES IN THE INCIDENCE OF SCHIZOPHRENIA AS SHOWN BY FIRST ADMISSIONS TO MENTAL HOSPITALS IN THE STATE OF MICHIGAN

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DIFFERENCES IN THE INCIDENCE OF SCHIZOPHRENIA AS SHOWN BY FIRST ADMISSIONS TO MENTAL HOSPITALS IN THE STATE OF MICHIGAN

by

Henry Holstege

AN ABSTRACT

Submitted to the College of Science and Arts
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ABSTRACT

In order to investigate the distribution of schizophrenia in Michigan, first admission schizophrenics to all the State Mental Hospitals in Michigan, the Veterans Administration Hospital at Battle Creek, and the two largest private hospitals in Michigan for the years 1949, 1950, and 1951 were studied. These data were coded and punched on IBM cards and analyzed by machine methods. The two major hypotheses stated were: (1) there is a direct relationship between urbanity and the rate of schizophrenia and (2) that the incidence of schizophrenia is not random throughout the population in regard to marital status, nativity, sex, and age.

The state of Michigan was divided into three separate areas; Standard Metropolitan Areas, counties contiguous to Standard Metropolitan Areas, and counties not contiguous to Standard Metropolitan Areas. It was assumed that these three areas were in different stages of urbanization. The result of the study showed that the Standard Metropolitan Areas had the highest rate of schizophrenia, counties not contiguous to Standard Metropolitan Areas had the next highest rate of schizophrenia, while counties contiguous to Standard Metropolitan Areas had the lowest rate of schizophrenia. Therefore, it was concluded that in Michigan there is no direct relationship between urbanity *per se* and the rate of schizophrenia.

The rate of schizophrenia was also determined for age, sex, nativity, and marital status.

The population of the state of Michigan was grouped into ten year age groupings. It was found that the rate of schizophrenia was highest in the age group 25-34, and that there was a real difference in the rates between all the age groupings. The schizophrenic rate declined steadily after the 25-34 age group, with every subsequent age group having a lower rate of schizophrenia than the one preceding it.

The population of the state of Michigan was also separated by sex and the rate of schizophrenia for each sex computed. The difference in the rate of schizophrenia was found to be so slight that it was not considered to be a real difference.

Separate schizophrenic rates were also computed of the population of Michigan on the basis of nativity. It was found that there was a real difference in the foreign and native born rates and that the foreign born had a lower rate of schizophrenia than the native born.

Schizophrenic rates by marital status were obtained. The results show that there is a real difference among the various marital status groups and that the divorced had the highest rate, followed by the separated, single, widowed, and married.

In general, the findings of this study should indicate those groups in society which are particularly susceptible to schizophrenia.

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CHAPTER I

INTRODUCTION

The purpose of this thesis is to study the distribution of schizophrenia in Michigan, with emphasis upon urban-rural incidence. The assumption is made that schizophrenia is a disease entity. It is further assumed that the content and etiology of schizophrenia are social psychological or psychiatric in nature. The assumption is also made, however, that this disease entity is greater in one group than in another and that the differing characteristics of these groups may be regarded as a sociological question. Thus, it is assumed that social factors, if not the primary cause of schizophrenia, are at least precipitating factors. The major hypotheses may be stated as follows:

1. The incidence of schizophrenia varies according to urban and rural residence.
    a. The rate of schizophrenia in Michigan will be higher in Standard Metropolitan Areas than outside such areas.
    b. The rate of schizophrenia in Michigan will be higher in counties contiguous to Standard Metropolitan Areas than in those counties not contiguous to Standard Metropolitan Areas.
2. The incidence of schizophrenia is not random throughout the population in regard to marital

status, nativity, sex, and age.

a. Married people in Michigan will have a lower rate of schizophrenia than widowed, single, or divorced persons.

b. Widowed persons will have a lower rate of schizophrenia than divorced or single persons.

c. Single persons will have a lower rate of schizophrenia than the divorced.

d. Females in Michigan will have a higher rate of schizophrenia than males.

e. Foreign born persons will have a higher rate of schizophrenia in Michigan than native born.

f. The schizophrenic rate in Michigan will vary in a non-random pattern by ten year age break-downs.

This study is concerned with the incidence, not the prevalence, of schizophrenia. First admission schizophrenics to private, state, and federal (Veterans Administration) hospitals in Michigan for the years 1949-1950-1951 will be used. These three years were chosen so that the population base of the 1950 census can be used in computing rates. The prevalence rate, based on cases obtained on one census date, is a function of annual incidence, duration and intensity of illness, modes of onset, and quality of treatment. Thus, chronic cases obtaining custodial

care in state hospitals are more likely to be included in prevalence studies than cases obtaining acute, short-term treatment. Thus, cases are not weighted equally. Incidence could actually be equal in two groups with markedly different prevalence. Just because there are schizophrenics not hospitalized as found in mental disease surveys does not mean that they will not be hospitalized in the future, and if they are hospitalized in the future then first admissions will be an adequate criterion of the schizophrenic rate. The point is not how many schizophrenics are about in the population at a given period of time but how many never are institutionalized.

Of course, by incidence is meant "known," not "true" incidence. Because of the excellent cooperation of the private, state, and federal hospitals, and because of the nature of the disease itself, this writer believes that at most only a very small fraction of known schizophrenics could have escaped his net.

It would have been desirable to take into account also the cases which are not hospitalized at all but are cared for in their own homes. However, it seems unlikely that the number could be large <u>in proportion</u> to the hospitalized cases, or that they would be dis-

tributed in the population in a different ratio than the hospitalized cases. Besides, schizophrenic patients are so markedly mentally ill at the time of commitment that they can hardly be cared for at home, even if the members of the family desired to do so.[1]

Every effort is made by the Michigan State Department of Mental Health to differentiate between first admissions and readmissions, and it is unlikely that an appreciable number of readmissions could be classified as first admissions. The records of the private and federal hospitals were personally scanned by the writer to make certain that only first admissions would be included in the study. The writer checked every entrance record for the years 1949-50-51 and set aside the record of every person that had evidence of a previous committal for schizophrenia at any institution at any time. He accepted only the records of those persons who were diagnosed as first admission schizophrenics. As stated above, the state hospital records were sorted automatically on the basis of first admission schizophrenia. Hence any error in tabulating at the hospital level, if any, must have been slight.

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[1]Robert E. L. Faris and H. Warren Dunham, Mental Disorders in Urban Areas, Chicago: University of Chicago Press, 1939.

Schizophrenia was especially chosen from the range of diagnostic categories because it is considered by many psychiatrists as one of those psychoses which has such definite clinical symptoms that it will sooner or later necessitate hospitalization.[2] According to Kline[3] schizophrenia is an actual disease concept, and the concept includes symptoms which occur only and always in schizophrenia. He also states that accessory symptoms may vary and the subtypes may pass over into one another without altering the essence of the disease. Besides, apart from the disorders of advanced age, schizophrenia is the most common disorder, it lasts longer, has fewer recoveries, and is the most difficult for the patient, his relatives, and his friends to understand.[4] As long as a patient ultimately goes to the hospital it does not matter very much from the statistical point of view how long this step may be delayed.[5]

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[2]Ø. Ødegaard, "A Statistical Investigation of the Incidence of Mental Disorder in Norway," Psychiatric Quarterly, July, 1946 pp. 382-383.

[3]Nathan Kline, Synopsis of Eugene Bleuler's Dementia Praecox or the Group of Schizophrenics, New York: International Universities Press, 1952.

[4]Carney Landis and M. Marjorie Bolles, Textbook of Abnormal Psychology, New York: Macmillan Co. 1950.

[5]Christopher Tietze, P. Lemkau, and M. Cooper, "Schizophrenia, Manic-Depressive Psychoses and Social-Economic Status," American Journal of Sociology, Vol. 47, September 1941, pp. 167-175.

The study of the causes of schizophrenia has been made from various points of view. Causes have been sought in heredity, germ diseases, glandular disorders, blood chemistry, brain defects and other constitutional traits. It is safe to state that no conclusive findings have resulted from any of these approaches.[6] The writer agrees with those who state the hypothesis that the cause of schizophrenia can be sought in the social experiences of the individual. It may be that in the nature of these experiences, and the type of social relations or the lack of social relations, the explanation lies.[7] The writer is aware of the work done on the hereditary and physical aspects of schizophrenia. Such work on the blood chemistry of schizophrenics as that of the Swedish biochemist Stig Akerfeldt, the work of the American neuropsychiatrist, Nicholas Bercel, and the classical study by Kallman on the genetics of schizophrenia are examples. It should be emphasized that the writer in no way wishes to minimize the contribution of hereditary factors in the etiology of schizophrenia, however unknown the specific nature of these hereditary

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[6]Robert E. L. Faris, "Cultural Isolation and the Schizophrenic Personality," American Journal of Sociology, Sept.1954 p. 155.

[7]Ibid., p. 169.

forces may be. He does however agree with Nicholas Pastore who wrote in the Psychological Bulletin of 1949[8] that no knowledge to date of the physical aspects of schizophrenia can preclude an environmental component. It soon becomes apparent to any person who has read many case histories of schizophrenics that there are both psychogenic and sociogenic disturbances in the life history of persons who later develop a "functional" mental disorder. The crucial question is, however, whether these mental and social distrubances are causal in the mental derangement or only symptomatic of underlying constitutional tendencies.

The success that some hospitals seem to have with the so-called "tranquilizers" does not mean that the etiology of the disease is a physical one. It is quite possible that a phenomenon may be induced socially and removed organically and vice versa.[9]

The symptomatology of schizophrenia is varied but certain symptoms appear to be somewhat common to all forms. The textbooks of psychiatry generally include the following symptoms: apathy and indifference, lack of contact with reality, disharmony between mood and thought,

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[8] Nicholas Pastore, "The Genetics of Schizophrenia: A Special Review," Psychological Bulletin, Vol. 46, July, 1949, pp. 285-302.

[9] Faris and Dunham, op. cit., p. xiv.

stereotyped attitudes, ideas of reference, delusions, illusions, hallucinations, impaired judgement, lack of attention, generally intact memory, lack of insight, defects of interest, seclusive makeup, hypochondriacal notions, and negativism.[10] The instructions followed in the private, state, and federal (Veterans Administration) hospitals in Michigan in classifying schizophrenics are those recommended by the American Psychiatric Association. No correction can be made for diagnostic disagreement in the present study. The probable existence of bias does not preclude statistical analysis which, in fact, sometimes uncovers other bias not previously suspected. A slight margin of error in the basic data emphasizes, the need for caution but does not prevent drawing proper inferences and conclusions. (If it did, the efforts of statisticians in many areas would be futile indeed, even those of the physicists).[11]

Schizophrenia was not broken down into its several subtypes, namely, simple, hebephrenic, catatonic, and paranoid.

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[10] Faris and Dunham, op. cit., p. 38.

[11] Benjamin Malzberg and Alfred Lee, Migration and Mental Disease, New York: Social Science Research Council, 1956.

The belief is held among the staffs of many hospitals that the difficulty in accurately distinguishing the subtypes of schizophrenia makes it not worth attempting since it is practically impossible to find agreement as to the characteristics of the various types. In fact, not all institutions even attempt to classify this category of mental disorder into subtypes.[12]

SOURCE OF DATA AND MODE OF ANALYSIS

The data for this study consist of 3,881 first admission schizophrenics to the two largest private hospitals in Michigan, and The Neuropsychiatric Institute at Ann Arbor, The Veterans Administration hospital at Fort Custer, and all the State mental hospitals including Wayne County General, now called Eloise.

The data were collected by county and then the counties grouped into the following three groups: (1) the sparsely populated northern part of the state, that is, north of the so-called Bay City-Muskegon line. This group of counties is characterized by a mixed economic base of resort trade, mining, fishing, marginal forestry and farming; (2) the Standard Metropolitan Areas consisting of the urban-industrial counties of Southern Michigan; and (3) the Southern agricultural counties contiguous

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[12]Faris and Dunham, op. cit., p. 82.

to the Standard Metropolitan Areas.

Ten year age break-downs have been made as follows:

15-24
25-34
35-44
45-54
55-64
65+

The above age break down is used because it is the one most readily available from the State mental hospitals and is similar to the age break down used by Ødegaard,[13] Dayton,[14] and Malzberg[15] in their studies. Schizophrenia below the age of fifteen is numerically insignificant and hence is not included. The ten year age break downs stopped at the age 65 because of the paucity of cases at this and higher age levels.

Comparisons will be based on age standardized rates; crude rates will not be used as it is the aim of this study to control as many as possible of the factors known to be important in the incidence of schizophrenia. The limitations of hospital and census data are such that only nativity, sex, age, and marital status can be controlled. These, however, are among the most important factors affecting comparisons

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[13] Ø. Ødegaard, Op. cit., pp. 381-399.

[14] Benjamin Malzberg, "Social and Biological Aspects of Mental Disease," Utica New York: State Hospital Press, 1940.

[15] Neil A. Dayton, New Facts on Mental Disorders, Springfield, Ill: Charles C. Thomas Co. 1949.

of rates of schizophrenia in different populations.[16]

In computing each rate the numerator has been the number of first admissions for the area under discussion to all hospitals for mental disease, and the denominator has been the corresponding base population.[17] By applying the specific rates of first admissions of the various areas to a common standard, namely, the population of the State of Michigan age 15 years and over, as shown by the Federal census of April 1, 1950 we get the standardized rate.[18]

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[16] Malzberg and Lee, op. cit.

[17] Admittedly as Jaffe has pointed out, this produces somewhat of an unavoidable bias because the proper denominator for rates of first admission is not the total population but the population that has not previously been admitted as schizophrenics to hospitals for mental disease. (See U. S. Bureau of the Census, Handbook of Statistical Methods for Demographers, A. J. Jaffe, 1951, p. 50.)

[18] The statistical technique of standardization used in this study is the Direct Standardization which is expressed in the following mathematical formula devised by Dr. George Tokuhata of the Michigan Department of Mental Health.

$$\text{Standardized Rate} \quad \frac{\dfrac{\dfrac{Dxn}{Pxn} \times 1{,}000 \quad Pyn}{1{,}000}}{Pyn} \quad 1{,}000 \qquad \frac{\dfrac{Dxn}{Pxn} \; Pyn}{Pyn} \quad 1{,}000$$

Py . . . . Number of people in nth age group of standard population.

The writer is cognizant that the data are not close enough to the phenomena of schizophrenia to establish any clear cut case for the operation of definite causative factors. The method employed only enables one to view the data quantitatively in the community setting in which it occured. However, the ecological material and the relationship found between schizophrenia does enable the research worker to raise significant questions. As is well known in the public health field, the epidemiological study of a physical disease has often been the forerunner of control and eventual prevention of that

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[18] continued

Pxn . . . . Number of people in nth age group of sample population.
Dxn . . . . Number of schizophrenics in nth age group of sample population.
Pyn . . . Total number of people in standard population.

n . . . . . Number of age groups in a population.

The 1950 population of Michigan is used as the standard population. The actual operation of this method involves two processes: first, to compute the age specific schizophrenic rates for a sample population and, second to apply then to the standard population to obtain the number of hypothetical schizophrenics in the standard population. This implies that if a sample population being studied had the same age composition as the standard population, while retaining its observed age specific rates, the summarized figures (standardized rate) would represent the frequency with which schizophrenia would have occurred.

disease.[19] Not many would quarrel with the general proposition that the social setting in which men live and the things that they believe are correlated with many of the symptoms of mental pathology. Even a superficial review of hospital, police, and census reports shows that human groups differ widely in their observed rates of mental and personality disorders. There is far less agreement about what these variations mean. The question of why and how mental disorders are related to cultural pressures, therefore, requires intensive investigation. Even a partial answer might lead to insights that could result in improvements of presently inadequate methods of prevention, treatment, and cure. Mental disorders are definitely not distributed at random throughout the human race. If more can be learned about the precise nature of these population differences, plausible and experimentally testable hypotheses are likely to emerge which can put scientists on the trail of new knowledge in a field now enveloped in mystery and obscurity.[20]

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[19] H. Warren Dunham, "Some Persistent Problems in the Epiddemiology of Mental Disorders," American Journal of Psychiatry, 1953, Vol. 109, No. 8, pp. 567-575.

[20] Joseph W. Eaton and Robert J. Weil, "The Mental Health of the Hutterites," in Arnold M. Rose, Mental Health and Mental Disorder: A Sociological Approach, New York: W. W. Norton Co., 1955, pp. 224-225.

In the early years of this century the great psychiatrist, Adolf Meyer, then associated with the mental hospitals of New York State, directed attention to the influence of social conditions in generating mental disorders. He found that some counties in the state had much higher rates of admissions to mental hospitals than others, and he attributed the differences to variations in social conditions. The question to be answered, of course, is what are the social conditions that produce a high rate of mental disease.[21]

This type of study has been used for the following purposes:

1. To use distribution patterns of schizophrenia as certain kinds of evidence for a study of a community itself;
2. to utilize such studies as an aid in solving problems that administrations face in the handling of public health issues as they may be related to mental disease;
3. to develop certain hypotheses concerning the role of social factors in the development of various kinds of mental disorders;
4. and finally to use such studies as a basis for the development of preventive programs.[22]

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[21] Ernest M. Gruenberg, "The Epidemiology of Mental Disease," Scientific American, (March 1954) pp. 38-42.

[22] H. W. Dunham, op. cit., pp. 567-575.

SUMMARY

It is assumed that a statistical analysis of schizophrenic data is meaningful. In many instances certain information is lacking. Some cases of schizophrenia doubtless have been concealed. On the other hand, as previously stated, it is not felt that these factors will drastically affect the conclusions reached in the present study.

Various factors which may contribute to schizophrenia will be isolated and the schizophrenic rate for each isolated group will be determined. Indices such as sex, age, marital status, nativity, and ecological area will be utilized to indicate the relative effects of the various factors on the schizophrenic rate.

It is recognized that no absolute etiology can result from this study. The level of abstraction is above that of the individual case history level. If any complete etiology is to be developed, the individual case must be analyzed. However, an indication of the type of conditions which foster schizophrenic tendencies will be of great aid to the psychologist who attempts to analyze individual cases.

This study will contribute to our understanding of the subject in at least three ways. First, it will indicate the extent of the phenomenon in Michigan. Second,

it will indicate those groups in society which are particularly susceptible to schizophrenia. Third, by utilizing the data on several variables, those kinds of conditions which, whether primary or not in the promotion of schizophrenia, are at least underlying predisposing and precipitating factors, may be inferred.[23]

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[23] Widick W. Schroeder, "Suicide Differentials in Michigan," Unpublished M.A. Thesis, Michigan State University, 1951.

CHAPTER II

REVIEW OF LITERATURE

The majority of the studies concerning the distribution of mental disease in the United States have been conducted in urban communities. Almost all of the studies have been conducted in cities, counties, and health districts within cities, and nearly all of these have been in only one type of city, the commercial-industrial.

Not all studies of mental disorder have standardized or adjusted their rates for such significant variables as age and sex. Some psychiatric surveys offer only a general description of findings, presenting total numbers, percentages, or rates in terms of some specified population base, as if these data "speak for themselves". Whether or not rate differentials are "true" differences, and are not due to the probability of chance, cannot be determined from a mere description of the research findings. Furthermore, many studies have omitted cases obtaining private treatment, thus running a risk of serious bias in the results. The conditions that influence patients seeking privately rather than publicly supported psychiatric care and treatment can reasonably be expected to vary considerably in different locales within a society as complex as the United

States.[1]

Hence to avoid some of the sources of error listed above, this study will attempt to take into account not only areas within large commercial-industrial cities but will also take into account areas outside of urban areas. This study will also state explicitly how the mental disease rates were obtained and the rates will be standardized for the important variables of age, sex, marital status, and nativity.

Industrialization and consequent urbanization have often been held as conditions related to an increase in the rate of mental disease.[2] As early as 1896 Franklin H. Giddings wrote that,

> The isolated farmer and his family have begun to be affected by the strain of modern life in a deplorable way. They are no longer ignorant of the luxuries of the towns, and a simple manner of life no longer satisfies them. The home must be remodeled and refurnished, the table must be varied; clothing must be in style; and the horses, carriages and harnesses must be more costly. The impossibility of maintaining this rate of expense under existing agricultural conditions embitters life and finally in many cases destroys the mental balance.[3]

Giddings however did not present any standardized statistics that showed just what the rural rates of mental disease were as compared with the urban rate.

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[1]E. Gartly Jaco, "Social Factors in Mental Disorders in Texas," Social Problems, Vol. 1, April 1957, pp. 322-328.

[2]Ibid., pp. 322-328.

[3]Franklin H. Giddings, Principles of Sociology, (New York: Macmillan Co., 1896) p. 349.

The question of urban-rural mental disease differentials to this day is not clear. There are very few comprehensive studies of urban-rural mental disease differentials that include patients in private hospitals and that include standardized data. Of the few that meet such specifications, there is not agreement as to the nature of the differences, as will be explained below.

The first authoritative statistical analysis of the environmental distribution of patients with mental disease may be found in the Bulletin on the Insane and Feebleminded in Institutions, 1910, published by the Bureau of the Census. In this report, communities with a population of less than 2,500 were considered rural; those with a population of 2,500 or more were regarded as urban. On the basis of total admissions to hospitals for the insane in the United States in 1910, it was shown that the rural rate was 41.4 per 100,000 corresponding population, compared with a rate of 86.0 in urban communities.[4] These rates included all mental diseases, among them schizophrenia. It must also be borne in mind that use of the simplified

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[4]Benjamin Malzberg, Social and Biological Aspects of Mental Disease, (Utica: New York State Hospital Press, 1940).

definition leaves much to be desired, as the Census Bureau recognized in 1950 in changing the definition of urban to a more comprehensive definition.

These general results were confirmed by the next census of the insane by the Bureau of the Census, which included data for 1922. An analysis of the place of residence of first admissions in 1922 showed that the urban population had a mental disease rate of 78.8 per 100,000 population compared with a rate of 41.1 for the rural population.[5]

In commenting upon the results of the 1922 census of the insane, the report stated:

> In general, these statistics indicate that there is relatively more insanity in cities than in county districts and in large cities than in small cities, although to some extent the differences may be accounted for by differences between city and county as regards the tendency to place cases of insanity under institutional care. The figures may also be affected in some degree by the accident of location of the hospitals for the insane.[6]

Studies made in New York State in the 1930's show that the proportion of admissions from a county in which a hospital is located is always greater than from other counties and that the proportion decreases with the

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[5]Malzberg, op. cit., p. 83.

[6]Bulletin on the Insane and Feebleminded in Institutions, Published by the Bureau of the Census, 1923.

distance from the hospitals. Malzberg claims that the influence of this factor upon the comparison between city and country, however, would not everywhere be uniform. He goes on to say that probably it does not go very far toward explaining the higher ratio of admissions from the urban population. Malzberg claims that it is undoubtedly true that the proximity of a hospital tends to affect the admission rate, but with the continued growth of hospital accomodations, the greater ease of transportation, and the establishment of hospital districts, the force of such environmental selection is weakened.[7] Today, it might be concluded that modern transportation and communication is such that distance from a mental hospital is rather meaningless in the determination of rates. In a study conducted in Texas in 1958, Jaco found an insignificant correlation between the incidence rates and number of psychiatric beds for the sub-regions. Consequently, he claims that the pattern of distribution of schizophrenic rates cannot be adequately explained by the availability of psychiatric facilities in different parts of the

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[7]Malzberg, op. cit., p. 84.

state.[8]

In 1930 in the state of New York the average annual rate of first admissions with dementia praecox was 19.0 per 100,000 with a minimum of 9.8 in rural areas and a maximum of 22.6 in New York City. A partial explanation, of the variations, according to Malzberg undoubtedly resides in the greater ease with which certain types of mental patients may be cared for at home in rural sections and in some smaller cities.[9] However, he presents this statement as a fact, but gives no empirical proof to support his statement. One could just as readily state that mental patients can escape detection and hospitalization better by residing in a big city slum area, than by living in a rural community where everyone is instantly aware of any unusual activity on the part of an individual.

Many authors have stated various reasons why they believe that the urban mental disease rate, and in particular the schizophrenic rate, is higher in the urban areas than in the rural areas.

Meyerson, writing in the American Journal of Psychiatry, states that mental disorders appear to be more

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[8]Gartly E. Jaco, "Incidence of Psychoses in Texas 1952-1953," Texas State Journal of Medicine, February, 1957, pp. 86-91.

[9]Malzberg, op. cit., p. 85.

prevelant where the population is mobile and heterogeneous than where it is stable and homogeneous, and where life-conditions are complex and precarious rather than simple and secure. Hence, because the urban areas are composed of a mobile, heterogeneous, and complex society the mental disease rate is higher.[10]

Lantz, in an article entitled "Population Density and Psychiatric Diagnosis," states that the mental disease rate is always higher in densely settled regions than in sparsely settled regions and hence the rural rate is lower than that found in urban areas.[11]

In his discussion of differences between rural and urban mental disease rates, Lemert argues that there can be little doubt but that the greater familism of rural people and the tendency of smaller communities to handle problems informally is involved here.[12] There may be some validity for this statement where mild

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[10] Abraham Meyerson, "Review of Mental Disorders in Urban Areas", American Journal of Psychiatry, Vol. 96, March, 1940, pp. 995-997.

[11] Herman R. Lantz, "Population Density and Psychiatric Diagnosis," Sociology and Social Research, Vol. 37, January-February, 1953, pp. 322-326.

[12] Edwin M. Lemert, "Legal Commitment and Social Control," Sociology and Social Research, May-June 1946.

forms of senile psychoses are involved. However, it is necessary to reiterate the statement of Dunham and Faris[13] that schizophrenic patients are so markedly mentally ill at the time of commitment that they can hardly be cared for at home, even if the members of the family desired to do so. To state that the greater familism of rural people and the tendency of smaller communities to handle problems informally explains the differences in rural-urban mental disease rates, if there is a difference, is in the opinion of the writer an hypothesis for which there is no proof. Besides there is a tremendous difference in saying that the greater familism of rural areas might make a slight reduction in the schizophrenic rate than stating, as Lemert does, that the greater familism of rural areas explains the difference. The former position might be tenuously held while the latter can hardly be seriously defended.

In the journal, Social Problems, Burgess writes that the growth of cities has resulted in a number of changes in our institutions and social relations which would seem to exert an adverse influence on the mental health of the population, and hence produce a higher rate of mental disease. He claims that the effects of urbanization can be most readily perceived by contrasting life in the city with the rural neighborhood.

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[13]Faris and Dunham, op. cit.

The change has been from low to high population density, from simple to complex and complicated social relations, from face-to-face intimacy to impersonal contacts, from primary to secondary social control, from a family centered economy to employment often in a gigantic industry, from a stable to an unstable home life, from the predominance of sacred to the growth of secular values. All these and other changes appear to have increased the stress and strain of adjustments in the city as compared with rural living. Burgess further says that certain aspects of urbanization, specifically, the greater complexity of living, the increasing instability of the family, the decline of the neighborhood, the growth of impersonal relations, loneliness and isolation, the slums of the city, the increasing tempo of city life, and the growing intensity of the struggle for success and the maximization of stimulus, seem to be related to the problems of individual adjustment and to a higher urban mental disease rate.[14] This point of view is in essential agreement with Wirth's "Urbanism as a Way Life" written in 1938. Neither Wirth, nor Burgess present statistics showing differences in the urban-rural mental disease rate. They both seem to assume a priori

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[14]Ernest W. Burgess, "Social Factors in the Etiology and Prevention of Mental Disorders," Social Problems, Vol. 1, 1953-54, pp. 53-56.

that these differences do exist between the rural-urban areas and that these differences of necessity do cause a higher mental disease rate in the urban areas.

Faris and Dunham, on the other hand, state that a relationship between urbanism and social disorganization and mental disease has long been recognized and demonstrated. They say that crude rural-urban comparisons of rates of dependency, crime, divorce and desertion, suicide, vice, and mental disease have shown these problems to be more severe in the cities, and especially in the large rapidly expanding industrial cities.[15] However, they produce no statistics from valid research to prove their contentions, at least in regard to mental disease. At best they should underline "crude rates."

There have been a few studies that have produced different results. Lemert found that the urbanized industrial counties in Michigan had lower rates of schizophrenia than many non-urbanized counties.[16] Schroeder and Beegle found that the farmers in Michigan

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[15] Robert E. L. Faris and H. Warren Dunham, Mental Disorders in Urban Areas, (Chicago: University of Chicago Press, 1939).

[16] E. M. Lemert, "An Exploratory Study of Mental Disorders in a Rural Problem Area," Rural Sociology, Vol. 13, October, 1948, pp. 548-554.

had higher rates of suicide than people with city occupations.[17]

Houser and Beegle have suggested that the high suicide rate of rural males is derived from the frustration and personal disorganization which have resulted from the conflict in the rural and urban values. They offer the hypothesis that the frustration and personal disorganization which have resulted from the conflict in the rural and urban values have been most among farmers where the rural way of life had been most satisfying, and consequently the most idealized.[18] However, as Warner states, suicide might be avoided by a psychosis or a neurosis.[19] If this is true than the above statement of Houser and Beegle would be just as apropos to schizophrenia as to suicide and hence one would expect a high rate of rural schizophrenia.

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[17]Widick W. Schroeder and J. Allan Beegle "Suicide: An Instance of High Rural Rates," Rural Sociology, March 1953, pp. 45-52.

[18]Schroeder and Beegle, op. cit., pp. 45-52.

[19]William L. Warner, "The Society, The Individual and His Mental Disorders," American Journal of Psychiatry, Vol. 97, 1937, pp. 275-284.

Mangus and Seeley in their study in Ohio[20] conclude that personality disorders occur as often among farm people as they do among non-farm residents, and perhaps more often. They claim that from the point of view of mental health, farm residence is probably an advantage for younger children, but that the advantage is lost with increasing age. They argue that this might be due in part to migration of disproportionately large numbers of better adjusted youths away from farms and from farm occupations.

Loomis and Beegle in their book, Rural Sociology: The Strategy of Change, state that the incidence of mental ailment in rural areas is equal to or greater than that of urban areas, which is in essential agreement with the findings of Lemert.

Lemert,[22] in contrast to many of the studies done on rural-urban distribution, found relatively high rates in the predominately rural, sparsely populated Upper Peninsula of Michigan. This finding contradicts Lantz's contention

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[20] A. R. Mangus and John R. Seely, "Mental Health Needs in a Rural and Semi-Rural Area of Ohio," in Arnold M. Rose, Mental Health and Mental Disorder: A Sciological Approach, New York, (W. W. Norton & Co., 1955) pp. 203-214.

[21] Charles P. Loomis and J. Allan Beegle, Rural Sociology: The Strategy of Change, (Englewood Cliffs, N. J., Prentice-Hall, Inc., 1957) p. 351.

[22] Edwin M. Lemert, "An Exploratory Study of Mental Disorders in a Rural Problem Area," Rural Sociology, Vol. 13, October, 1948, pp. 548-554.

that the mental disease rate is always higher in densely settled regions than in sparsely settled regions. These non-industrial, non-urbanized counties had higher rates than the Standard Metropolitan Areas of the lower penninsula. However, this writer believes that there are inaccuracies in Lemert's data that would change his results. Lemert writes that he did not include the first admissions to the Veterans Administration hospitals because he included these men when they were admitted to the state hospitals. He forgot to add, however, that Veterans Administration patients are rarely admitted by the state authorities to state hospitals. Hence several hundred patients were omitted from Lemert's study and almost all of these, according to the writer's statistics, came from Standard Metropolitan Areas in the southern part of the state.

Hence one can readily observe that the information on rural-urban mental disease differences are contradictory and much more research in this particular area is needed. One can state from the information at hand that at this time no sweeping generalizations concerning differences can be made.

MARITAL DIFFERENTIALS

Several studies have been done on the distribution of mental disease among the various marital groups; that is, differentials between married, separated, divorced, single, and widowed.

Jaco[23] found in Texas that the rates for both sexes were highest for the divorced, followed in order by the separated, single, widowed, and married.

Malzberg[24] in his study of New York found that the married had the minimum standardized schizophrenic rate of 15.4, and the single had the maximum rate of 55.4, the latter being in excess at the ratio of 3.6 to 1. The divorced in his study had the high rate of 51.3, which did not differ significantly from that of the single. He found that the widowed population had an intermediate rate.

In his study on mental disease and schizophrenia in particular, Dayton[25] found that the married have the least chance of developing mental disorders of any marital group. The widowed, the single and the divorced, in increasing order, show a higher incidence of mental disorder.

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[23] Gartly E. Jaco, "Incidence of Psychoses in Texas 1952-1953," Texas State Journal of Medicine, February, 1957, pp. 86-91.

[24] Malzberg, op. cit.

[25] Neil A. Dayton, New Facts on Mental Disorders, (Springfield, Ill. C. C. Thomas Co., 1940).

The evidence from various sources seems clear that the married population had much lower rates of schizophrenia than any of the other marital groups.

Jaco believes that the fact that the divorced, separated, single, and widowed had higher rates than married persons lends support to Durkheim's concept of anomie. In psychiatric terms, the psychotic reaction to anomie can be described essentially as a loss or confusion of personal identity. Such a condition can feasibly, according to Jaco, be regarded as related to mental aberration as much as to such other symptoms of disorganization as suicide.[26] The inference is that married people would not fall into a state of anomie as rapidly as the other marital groups.

Mowrer,[27] on the other hand, writes that the fact that the rate for single persons is higher than that for the married does not necessarily mean that marriage tends to prevent mental disease. It may mean only that less stable personalities tend to remain unmarried. He claims that this interpretation seems all the more plausible when one observes that the divorced have the

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[26]Gartly E. Jaco, "Social Factors in Mental Disorders in Texas," Social Problems, April, 1957, pp. 322-328.

[27]Ernest Mowrer, Disorganization-Personal and Social, (New York: J. D. Lippincott Co. 1942).

highest rate, suggesting that when the unstable personalities marry, they tend to get divorces, personality disorganization being an important factor in domestic discord.

The widows and widowers in all the studies had a rate of schizophrenia between that found for the married and the single and divorced. Malzberg[28] thought it a matter of significance that widows and widowers had higher rates of mental diseases than the married. Since, according to Malzberg, both groups had similar mental characteristics to begin with, the differences in rates of mental disease must be due to the sorrows and tribulations consequent upon the death of a closely related individual, and to the subsequent difficulties of economic readjustment on the part of the widows.

Jaco[29] writes that widows and widowers have higher rates of schizophrenia because the husband or wife is no longer there to act as the buffer between the incipient mental condition and the prying eyes of a curious and unfeeling world. He also thinks that the psychoses might be precipitated by the shock of the

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[28] Malzberg, op. cit.

[29] Gartly E. Jaco, "Social Factors in Mental Disorders in Texas," Social Problems, April, 1957, pp. 522-528.

death of a loved one. He also adds that often the necessity of living alone, the struggle of depending on oneself exclusively, and the many economic difficulties constituted too great a load to permit the preservation of mental balance. He states that in some cases, the strain imposed upon the spouse by the mental disorder in the patient was actually the cause of the widowhood.

Most of the studies found that the divorced had the highest rate of schizophrenia. It is possible that certain of these patients carried an incipient mental disorder into marriage and that the developing mental symptoms were the basic cause of the divorce. A second possibility involves persons who have been on the borderline of mental disease but who have been protected for years by the spouse and when the spouse leaves with a divorce, the mental disease is brought out into the open. In a third group one might possibly find that the emotional disturbances incident to the divorce proceedings precipitated the psychoses. A fourth possibility is that the train of events following the divorce acted as a causative factor. Probably the majority of cases are combinations of the four situations.

While it is possible that a pre-psychotic person may also be one who is likely to get divorced or remain single, it is equally possible that the marital situation may precipitate a predisposed individual into mental stress or conflict. This is a "chicken-or-the-egg" question. There is no need to seek a single cause, nor are multiple etiological answers necessarily invalid.[30]

In most of the studies on the distribution of schizophrenia the single persons had the second highest rate with only the divorced having a higher rate. However those who remain single throughout life have undoubtedly gone through a certain selective process, and hence a different rate is to be anticipated. One could hardly expect the single and married mental disease rates to be similar.

AGE DIFFERENTIALS

In the comprehensive studies done on the distribution of schizophrenia, age was found to be a very important characteristic.[31] Among those less than 15 years of

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[30]Gartly E. Jaco, "Social Factors in Mental Disorders in Texas," Social Problems, April, 1957, pp. 322-328.

[31]See especially Neil L. Dayton, New Facts on Mental Disorders, (Springfield, Ill. C. C. Thomas Co., 1944) Benjamin Malzberg, Social and Biological Aspects of Mental Disease, (Utica, N. Y: State Hospital Press, 1940).

age schizophrenia is almost non-existent. Hence very few studies report on the incidence of schizophrenia below the age of 15. In the interval 15 to 24 years of age, schizophrenia was the leading mental disease. It continued to grow in frequency in the next higher age group 25-34. After 35 years of age the rate of schizophrenia declines in frequency until the rate becomes very low after the 60th year and almost becomes non-existent in the older age groups of 60+. In this particular area, age distribution of schizophrenia, the research reports have been consistent with one another and have reported the distribution as stated above.[32] Hence we see that age is an important variable and any studies that do not standardize for age differences can be very misleading.

NATIVITY DIFFERENTIALS

Several writers have found that the foreign born population has a higher ratio of schizophrenia than the native born. Malzberg,[33] in his study in New York,

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[32]See especially Neil L. Dayton, New Facts on Mental Disorders, (Springfield, Ill: C. C. Thomas Co. 1940) Benjamin Malzberg, Social and Biological Aspects of Mental Disease, (Utica, N. Y.: State Hospital Press, 1940).

[33]Malzberg, op. cit.

found that the native born has a standardized rate of 22.2 per 100,000 population, and the foreign born had a rate of 32.8. Dayton also found that the foreign born has a higher rate of schizophrenia than the native born. Both of these studies, however, were made more than a decade ago and Malzberg's almost twenty years ago. Malzberg and Dayton both used pre-World War II data. Whether or not we have been having a different type of immigrant since World War II, who has a different type of social structure, and consequently a different mental disease rate, remains to be seen.

SOCIO-ECONOMIC CLASS DIFFERENTIALS

There has been a lot of research in recent years on the distribution of schizophrenia by social class and occupation. The most prolific writers in this area have been Hollingshead and Redlich who have been doing their research in New Haven, Conn.

First, Hollingshead and his group of sociologists delineated the class structure of New Haven; second they interviewed, as controls, a five percent sample to the community's population; third the team took a census of psychiatric patients; fourth, both the sample population and the psychiatric patients were classified

into five socio-economic strata.[34] To delineate the class structure Hollingshead and his fellow sociologists devised a classification of five social levels, based on three factors: education, occupation, and the person's place of residence. A patient in Social Level one, for example is a person with a college education, holds a top professional or executive job, and lives in a well-to-do residential area. The classification drops proportionally through five groupings so that a patient in Social Level five is a person with an elementary (or less) education, is a semi-skilled or unskilled worker, and lives in a poor section of the community.[35]

The association between social class and prevalence of schizophrenia in the community's population was measured by an Index of Prevalence so constructed that if the number of patients in a class was proportionate to the total population of the class in the community the index would be 100. Instead of an equal distribution of patients by class the following pattern was found. In class I the index figure was 23, in class II 33,

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[34]August B. Hollingshead and Frederick C. Redlich, "Social Stratification and Schizophrenia," American Sociological Review, Vol. 19, pp. 302-306.

[35]"Schizophrenia and the Class Structure," Science Digest, August, 1952, p. 32.

in class III 48, in class IV 84, and in class V 246.[36] The proportion of schizophrenics is 11 times greater among patients in Social Level five than among patients in Social Level I.

One can conclude that Hollingshead and Redlich found that there are definite connections between particular types of social environments in which people live, as measured by their social class rating, and the emergence of particular kinds of psychiatric disorders, as measured by psychiatric diagnosis. They found a very significant inverse relationship between social class and schizophrenia.[37]

Hollingshead and Redlich disproved the hypothesis that the lower social classes have a higher rate of schizophrenia because of a drift to the lower classes by members of the higher classes when they become psychotic, by showing that 91% of the patients in their study were in the same class as their parental families; further that there is a much greater mobility upward than downward

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[36] August B. Hollingshead and Frederick C. Redlich, "Schizophrenia and Social Structure," American Journal of Psychiatry, Vol. 110, pp. 695-701.

[37] August B. Hollingshead and Frederick C. Redlich, "Social Stratification and Psychiatric Disorders," American Sociological Review, Vol. 18, pp. 163-169.

within the small minority who do change their class positions. This study clearly shows that few schizophrenics move downward in class level.[38] This study also showed that the lower the class, the greater the tendency for schizophrenic patients to reach the attention of a psychiatrist through the instrumentality of the law.[39]

Tietze, Lemkau, and Cooper in their study of mental disease and socio-economic status also found that there is relatively more schizophrenia in the "lower" social-economic groups. They found that among workers and farmers schizophrenia is much more common than manic-depressive psychosis, whereas in the business and the professional group more manic-depressive than schizophrenics are found.[40]

In a study of 12,168 male first admissions from Chicago to public and private mental hospitals, Clark shows that the age adjusted commitment rates by

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[38] August B. Hollingshead and Frederick C. Redlich, "Schizophrenia and Social Structure," American Journal of Psychiatry, No. 110, pp. 695-701.

[39] Ibid.

[40] Christopher Tietze, Paul Lemkau, and Marcia Cooper, "Schizophrenia, Manic-Depressive Psychoses and Social-Economic Status," American Journal of Sociology, Vol. 48, pp. 167-175.

occupational groups are negatively correlated with the factors of occupational income and occupational prestige. He found that there is a real association between high income and high prestige, on one hand, and low psychosis rates on the other hand. The findings of Clark, as those of Hollingshead, Redlich, Tietze, Lemkau, and Cooper, indicate that the occupational-psychoses rates fall into a pattern with an inverse relationship between psychoses rates and the factors of occupational income and occupational prestige.[41]

Jaffe and Sharas in a study done in 1939 subdivided the population into two economic classes. The one "class," the term they used, consisted of single-home and two-flat buildings, with an equivalent median rental under $50 per month. The other "class" consisted of single-home and two-flat buildings with an equivalent median rental over $50 per month. They found that the poorer person's chance of being admitted to a hospital for schizophrenia was greater than that for the higher class.[42]

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[41]Robert Clark, "Psychoses, Income and Occupational Prestige," American Journal of Sociology, Vol. 54, 1954, pp. 433-440.

[42]A. J. Jaffe and E. Shanas, "Economic Differentials in the Probability of Insanity," American Journal of Sociology, Vol. 44, 1944, pp. 534-539.

MENTAL DISORDERS IN URBAN PLACES

The first comprehensive study on the distribution of mental disease in an urban place was done by Faris and Dunham in Chicago.[43] They found that "insanity areas" do exist within a city. One of their major findings was that the schizophrenic cases showed a high degree of concentration at the center of the city. They found that there was an inverse relationship between distance from the center of the city and the rate of schizophrenia. Their work was duplicated in many other cities. In St. Louis, Milwaukee, Omaha, Kansas City, and Peoria the same results were obtained. While there is some variation among the cities, probably to be expected in communities of varying size and situation, still there is sufficient evidence to support the conclusion that insanity areas exist within cities.[44]

SOCIOLOGICAL THEORIES ON THE ETIOLOGY OF SCHIZOPHRENIA

Several sociologists have attempted theoritical formulations to the etiology of mental disease. Read Bain, a sociologist, speaks of "Our Schizoid Culture," and regards irrational contradictory norms of America as "neurotic and psychotic societal behavior." Other sociologists,

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[43]Faris and Dunham, op. cit.

[44]Charles W. Schroeder, "Mental Disorders in Cities," American Journal Sociology, Vol. 48, 1948, pp. 40-47.

also state the idea that the exposure of an individual to conflicting or contradictory norms and values renders him especially prone to schizophrenia. For example, Green writes, "A consistent view of self is not easy to maintain when---as is especially characteristic of our large cities---sexual, ethical, family, and community standards glaringly contrast as one moves from one group to another. Upon accepting an invitation to dinner at the home of a new acquaintance, one must often be prepared either to bow one's head while grace is said or to accept a cocktail and laugh at a smutty story. A psychic readiness to adapt to ever changing situations is not for some a source of personality conflict, but for others it constitutes a painful compromise with self."[45] He states that the diversity and inherent contradictions of modern American urban culture and productive of personality conflict, which can result in schizophrenia.[46]

Of the several hypotheses relating the frequency of mental disorder to social conditions, none has been more persistently enunciated, than that which proposes that schizophrenia is the outgrowth of social isolation; and no one has been as profuse in writing about it as

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[45] Arnold W. Green, Sociology, (New York: McGraw-Hill Book Co., 1956) p. 150.

[46] Ibid., p. 151.

R. E. L. Faris.[47] More recent statements have suggested that isolation is a result of incongruent intra-familial and extra-familial orientations toward the child and represents a stage in a "typical process" for schizophrenics. This "typical" process for schizophrenics is said to involve the following stages:

Parental oversolicitude produces the "spoiled child" type of personality; and leads to a certain isolation from all but the intimates within the family.

The next stage is persecution, discrimination or exclusion by children outside the family. The most usual reaction to this persecution is to feel unhappy but with no immediate depreciation of establishing friendships.

Often the children try for years to make friends. Eventually there is a resignation---a withdrawal from a hopeless goal. From this time on their interest in sociability declines and they slowly develop the seclusive personality that is characteristic of the schizophrenic. They confine their social activities to their own families, or take increased interest in reading, music and art.

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[47]Robert E. L. Faris, Social Psychology, (New York: The Ronald Press, 1952).

Finally, the symptoms of schizophrenia are ascribed to the lack of social experience in the person so isolated. Not being experienced in intimate personal contacts with a larger number of other persons he is deficient in his understanding of the reaction of others and responds unconventionally and inappropriately to them. He mistakes unintentional slights for active persecution. He interprets his own failure as due to interference by others.[48]

One of the most commonly emphasized characteristics of pre-schizophrenic life is a parent (usually the mother) who is variously characterized as over-protective, domineering, over anxious, over solicitious, inconsistent and ambivalent toward the patient as a child.

The importance of the "domineering, over-protective mother," in the etiology of schizophrenia does not necessarily rest upon a Freudian conceptualization, however, and most investigators who have emphasized the mother-child-relationship in pre-schizophrenia have not done so within a specifically Freudian framework.[49]

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[48]Melvin L. Kohn, and John A. Clausen, "Social Isolation and Schizophrenia," American Sociological Review, Vol. 20, 1955, pp. 405-410.

[49]William F. Ogburn and Meyer F. Nimkoff, Sociology, (New York: Houghton Mifflin Co., 1950).

However there has been no proof that such frustrations have a part in the etiology of schizophrenia, nor even that such frustrations are "associated with" schizophrenic psychosis.[50]

The concentration of schizophrenia in the lower social strata of society is consistent with an hypothesis which emphasizes the frustration of aspiration, the loss or denial of a complimentary status and the "self blame" that sometimes accompanies them. Such an hypothesis is also consistent with some case study materials and anthropological data.[51] Bleuler states that "... the overt symptomatology certainly represents the expression of a more or less successful attempt to find a way out of an intolerable situation...".[52]

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[50]Herbert L. Costner, "Differential Rates of Hospitalization for Schizophrenia in a Rural Population," Unpublished MA Thesis, Ind. U., 1956.

[51]Herbert L. Costner, Ibid.

[52]Eugene Bleuler, Dementia Praecox, or the Group of Schizophrenias, English edition translated by Joseph Zinken, (New York: International U. Press, 1950) p. 460.

Emile Durkheim's analysis of suicide statistics shows that there is social support ot individuals who undergo severe personal trauma, and that suicide rates are a function of anomie---the absence of such social support.[53] As was stated before Durkheim was able to demonstrate that certain kinds of suicide (and mental disorders should be added) were due to the fact that society itself had partly disintegrated, and the individual who formerly had a satisfactory adjustment to the society could no longer adapt himself, even though he made what had once been the proper responses. Such an individual "feels like a fish out of water" and one course of action for him is suicide. However, suicide might be avoided by a psychosis or neurosis.[54]

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[53] Emile Durkheim, Suicide, Translated by John A. Spaulding and George Simpson, (Glencoe, Ill: The Free Press, 1951).

[54] William L. Warner, "The Society, The Individual and His Mental Disorders," American Journal of Psychiatry, Vol. 94, 1937, pp. 275-284.

CHAPTER III

ANALYSIS OF DATA

Five major factors influencing the magnitude and trend of schizophrenic rates are considered. These factors, namely, age, sex, marital status, nativity, and area of residence, are functionally significant in relation to differential schizophrenic rates observed among first admission patients.

As stated previously the rates for the state of Michigan are based upon first admission cases of schizophrenia from the records of the two largest private mental hospitals, all of the state institutions, and the Veterans Administration Hospital at Battle Creek, for the years 1949, 1950 and 1951. The population of Michigan as reported by the 1950 census was multiplied by three to give a comparable population base.[1] The population was divided

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[1]This of course could result in a slight margin of error as the population thus obtained may not be the exact population for those three years. However as the figures dealt with are very large it is assumed that the margin of error would be too slight to seriously affect the results. The writer is aware that similar results could have been obtained by using the 1950 population as the base and then dividing the result by three. However it is the opinion of the writer that the former method is more accurate, even though the rates obtained from both methods do not vary more than .01 per 100,000 population.

into the number of schizophrenics and then multiplied by 100,000 to secure the various rates. Hence the rates discussed below represent the number of schizophrenics per 100,000 persons in the state of Michigan.

AGE

In order to obtain a clear indication of the distribution of schizophrenia according to age, the population was divided into six separate age categories (15-24, 25-34, 35-44, 45-54, 55-64 and 65 and over). Rates were then computed for each age group.

The hypothesis with respect to age composition is that the probability of acquiring schizophrenia is not random throughout the population. Hence, the hypothesis would lead us to expect variations in the rate of schizophrenia by age.

The results show that the age group 25-34, with a rate of 45.00, has the highest incidence of schizophrenia. See Table I. A steady decrease is shown in every subsequent age group, the lowest rate being 7.36 in the 65 and over age group. The 15-24 age group exhibits the third highest rate, of 39.68.

TABLE I

CRUDE SCHIZOPHRENIC RATE BY AGE IN THE STATE OF MICHIGAN 1949-50-51

AGE GROUP	RATE OF SCHIZ. PER 100,000 POP.
15-24	30.68
25-34	45.00
35-44	33.52
45-54	18.92
55-64	11.82
65+	7.36

Table I shows that there is a very rapid drop in the rate of schizophrenia after the age of 44. The results show conclusively that middle age and older people are not as suceptable to schizophrenia as young adults. It is necessary to point out that children and early adolescents were not included in this study because schizophrenia is relatively infrequent among these age groups.

The results validate the hypothesis, as stated, that the rate of schizophrenia is not random throughout the population by ten year age groups.[2] The results obtained

[2]In studies of this type, statistical analysis is not used to determine whether or not a difference between two or more figures is significant. Since the whole universe was used and not a random sample of the universe, differences appearing are considered to be real differences. We are not arguing here for Hana C. Selvin's position, as stated in his article, "A Critique of Tests of Significance in Survey Research"

are similar to almost all studies done on the age distribution of schiziophrenia. In a study done in New Jersey, Frankel found the highest incidence rate to be in the 25-34 age group.[3] The same general results are reported

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[2]Continued

Vol. 22 of the American Sociological Review of Oct., 1957, however correct or incorrect he may be, when he says that the conditions under which, "... tests of significance may validly be used are almost impossible of fulfilement in sociological research..." The writer is agreeing only to the extent that in this particular work such large population figures are used that any test devised will show practically any difference to be significant. As Selvin states, "A 1 per cent difference may be significant at the .001 level if the sample is large enough, yet such a small difference is essentially meaningless for sociology at present." Hence, rather then expend effort on tests that will show a significant difference no matter what the results are, statistical devices were not utilized.

Selvin does mention the suggestion of Margaret J. Hagood and Daniel O. Price in their book, Statistics for Sociologists, that total populations be considered as "samples" from still larger hypothetical universes of possibilities. However Selvin says that, "This concept is difficult to grasp intuitively, and it is largely unnecessary...". He states further that tests of significance are useless and meaningless when used to test the difference of survey projects that take in the whole universe and not just a random sampling of a universe.

[3]Ernest Frankel, "Outcome of Mental-hospital Treatment in New Jersey; A Statistical Review of State Mental Hospital Activities," Mental Hygiene, Vol. 32 (July, 1948) p. 461.

in numerous other studies. Landis and Page,[4] in a study using data from all the state mental hospitals in all the states of the United States, found that the age group from 20-40 had the highest rate of schizophrenic incidence. Malzberg,[5] using data from all institutions for mental disease in New York from 1929-31, Pollock[6] using data from New York institutions for the mentally ill from 1912-18, Slater[7] using data from mental hospitals in England and Wales in 1932, and Ødegaard[8] using data of Norwegian born immigrants in the Rochester State Hospital District of Minnesota, 1889-1929, all conclude

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[4]Carney Landis and James D. Page, Modern Society and Mental Disease, (New York: Farrar and Rinehart, Inc., 1938) pp. 44 & 163.

[5]Malzberg, op. cit.

[6]Horatio M. Pollock, "Frequency of Dementia Praecox in Relation to Sex, Age, Environment, Nativity, and Race," Mental Hygiene, Vol. 10, (July, 1926) p. 598.

[7]E. Slater, "The Incidence of Mental Disorder," Annals of Eugenics, Vol. 6, (1934-1935), p. 180

[8]Ø. Ødegaard, "Emigration and Insanity: A Study of Mental Disease Among the Norwegian Born Population of Minnesota," Acta Psychiatrica et Neurologica, Vol. 5, (1932).

that the 20-40 age group is productive of the highest rate of schizophrenia, with the very highest rates in the late twenties and early and middle thirties.

SEX

Another hypothesis, stated earlier in this study, was that females in Michigan have a higher rate of schizophrenia than males. The findings in previous research has been inconsistent as to whether males or females have higher schizophrenic rates. In conformity with the hypothesis that urban centers have a higher rate of schizophrenia than rural areas, one would hypothesis that females will have a higher rate of schizophrenia than males. The reason for this is that urban areas have a low sex ratio and the rural areas a high sex ratio. Hence one would expect females to have a higher ratio of schizophrenia than males. Urban, rural-nonfarm, and rural-farm sex ratios in Michigan in 1950 stood at 99, 104, and 114 for the three residence groups, respectively.[9]

As shown in Table II, females in Michigan for the years reported had a higher rate of schizophrenia than males.

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[9] J. Allan Beegle and Donald Halsted, "Michigan's Changing Population," Special Bulletin 415, June, 1957, Michigan State University Agricultural Experiment Station, E. Lansing, Mich., p. 25.

TABLE II

SCHIZOPHRENIC RATES BY SEX IN THE STATE OF MICHIGAN 1949-50-51

SEX	RATE OF SCHIZ. PER 100,000 POP.	
	CRUDE RATES	AGE STANDARDIZED RATES
Male	27.30	27.58
Female	28.61	28.48

As indicated in Table II the crude rate for females is 28.61, or 1.31 per 100,000 higher than for males. When the rates are standardized for age there is only a slight change in the rates. As can be seen from Table II the standardized rate for females was 28.48 which represents a difference of .90 per 100,000 over the male rate of 27.58. A difference of .90 between the two figures is so slight that one can doubt the meaningfulness of the difference, and conclude that sex was not a very important factor in the schizophrenic rates in the years 1949, 1950 and 1951.

As stated before, the findings have been inconsistent as to whether or not males have higher schizophrenic rates than females. In the studies by Landis and Page,[10]

[10] Landis and Page, op. cit., pp. 44 & 163.

by Malzberg,[11] and by Pollock[12] it was found that males had higher rates than females. However in a study of state hospitals in Georgia, Green and Jacob[13] found that females had a higher rate of schizophrenia than males. Slater[14] in his studies in England and Wales, and Ødegaard[15] in his studies of Norwegian immigrants both found that females had higher rates of schizophrenia than males. Hence, the fact that this study in Michigan revealed a small difference between the sexes is consistent with previous research in that neither sex has had a consistently higher schizophrenic rate. Whether or not the hypothesis, as stated above, has been validated is open to dispute. The writer's conclusion is that it has not been validated since the

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[11]Malzberg, op. cit., p. 80.

[12]Pollock, op. cit. p. 598.

[13]J. E. Greene and J. S. Jacob, "Conditions in the Milledgeville State Hospital (Bulletin of the University of Georgia, No. 9a, Vol. XXXIX Athens, Ga., July, 1939) pp. 32-33.

[14]Slater, op. cit.

[15]Ødegaard, op. cit.

difference of only .90 per 100,000 population is not sufficiently large. A difference of this slight magnitude may be due to the human element involved in collection and compilation of data.

NATIVITY

Throughout the literature on schizophrenia one finds consistent reports that the foreign born population has higher schizophrenic rates than the native-born population. In this study, however, the crude rates show a tremendous difference, with the foreign-born having a much lower rate than the native-born. See Table III.

TABLE III
SCHIZOPHRENIC RATES BY NATIVITY IN THE STATE OF MICHIGAN 1949-50-51

NATIVITY	RATE OF SCHIZ. PER 100,000 POP.	
	CRUDE RATES	AGE STANDARDIZED RATES
Native-born	29.65	28.23
Foreign-born	18.49	25.91

The crude rates show a very large difference of 10.16 per 100,000 between the native-born and foreign-born. When the rates are standardized for age, as could anticipated, the native-born rate declined while the

foreign-born rate increased by more than 7.00 per 100,000. See Table III.

Even after standardization, the native-born population has a higher schizophrenic rate than the foreign-born, and this is contrary to the findings of other studies. In his study of the New York state hospitals, Malzberg[16] found that the native-born had a schizophrenic rate of 22.2 while the foreign-born had a rate of 32.8. Hence he found that the foreign-born had a very substantially higher rate than the native-born, a difference of 10.6 per 100,000.

Pollock,[17] in his study done in 1926, found that the native-born had a schizophrenic rate of 12.2 while the foreign-born had a schizophrenic rate of 26.8. Again in this study a very large disparity between the native-born and foreign-born rates is shown.

Even after standardization, the native-born population of Michigan has a higher schizophrenic rate than the

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[16] Malzberg, op. cit.

[17] Horatio M. Pollock, "Frequency of Dementia Parecox in Relation to Sex, Age, Environment, Nativity, and Race," Mental Hygiene, Vol. 10, (July, 1926) pp. 596-611.

foreign-born. In view of previous evidence, it would seem all the more unusual that in Michigan the foreign-born has a lower rate of schizophrenia than the native-born.

MARITAL STATUS

The rates of schizophrenia according to marital status in this study in general follows the findings of previous research. As can be seen in Table IV, the divorced had the highest crude rate, 82.45, the separated the second highest 80.19, followed by the single with a rate of 52.36. The widowed had a lower rate (13.30 per 100,000) than the married (17.71 per 100,000 population).

TABLE IV

SCHIZOPHRENIC RATES BY MARITAL STATUS IN THE STATE OF MICHIGAN 1949-50-51

MARITAL STATUS	RATE OF SCHIZ. PER 100,000 POP.	
	CRUDE RATES	AGE STANDARDIZED RATES
Divorced	86.90	85.25
Separated	80.19	75.25
Single	51.54	65.92
Married	18.20	17.34
Widowed	13.10	32.70

When the rates are standardized by age one major change occurs, namely, that the rates of the widowed rose from 13.10 to 32.70. As can be seen in Table IV, even after standardization, the divorced and separated still have the highest rates.

The rates shown in Table IV in general are supported by the findings in almost all studies of schizophrenia. Several studies, however, have found that single persons have the highest rate of schizophrenia. In this study, however, the single have a considerably lower rate than the separated and the divorced. The hypothesis that the married persons in Michigan will have a lower rate of schizophrenia than the single, separated, divorced, or widowed has been validated.

These results emphasize the fact found in many other studies that the married element in our society has consistently lower rates of schizophrenia than the other marital status groups in our society. Leta Adler, writing in Social Forces, states the hypothesis that, "The emotional security and social stability afforded by married life makes for low incidence of mental illness".[18]

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[18] Leta Adler, "The Relationship of Marital Status to Incidence of and Recovery from Mental Illness," Social Forces, Vol. 32, December, 1953.

Whether this is true or whether the low incidence of schizophrenia among the married element is due to a selective process prior to marriage is a debatable point. It could, however, be a combination or both. The higher schizophrenic rate of the widowed would tend to support the hypothesis that marriage does produce emotional security. When one marriage partner is removed through death one finds less emotional stability as measured by schizophrenia. Bellin and Hardt[19] state that,

> ... loss of spouse may be viewed as tending to disrupt the established modes of satisfying a variety of needs, as well as establishing with traumatic import the recognition of one's own mortality. Futhermore, bereavement introduces a new social role, widowhood, not only is this role generally evaluated negatively, but the normative expectations attached to it are vague and contradictory. To the extent that some selection of individuals into the single and divorced groups takes place on the basis of their lack of personal adjustment the differences in the rates of mental disorder between the single and divorced and the married groups may have little to to with the differential stresses and satisfactions intrinsic to the various marital statuses. It is much less obvious as to how the married and the widowed categories may be differentially selective of individuals on the basis of mental disorders".[20]

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[20] Bellin and Hardt, op. cit., pp. 155-162.

AREA

As stated in chapter I and II, the findings on urban and rural differences in mental disease rates have not been consistent. In attempting to clarify the situation, the writer divided the state into areas on the basis of their proximity to Standard Metropolitan Areas, assuming that if a definite urban-rural difference exists that the difference would appear between the areas delineated. Hence, the state was divided by county units, into three categories. One category consists of all Standard Metropolitan Areas, that is, all counties having a city of at least 50,000 population within its boundaries, or has met other specified qualifications set forth by the census bureau in 1950. Another category consists of all contiguous counties, that is, counties that had a Standard Metropolitan Area on any of its borders. The third category consists of all non-contiguous counties, that is, counties that did not have a Standard Metropolitan Area on any of their borders.

It has been stated repeatedly that there is a marked difference in rural and urban life patterns, with rural society having much more cohesion or integration than the

urban society, and that more anomie exists in urban society. By anomie is meant that the ends of action become contradictory, inaccessible or insignificant. It is characterized by a general loss of orientation and accompanied by feelings of "emptiness" and apathy.[21] Durkheim in his monograph on suicide[22] was one of the first sociologists to state the principles of social integration and anomie. At no point in Durkheim's comments is there an explicit connotative definition of social integration, much less an operational definition. Running throughout Durkheim's comments on the nature of social integration is the suggestion that the concept has to do with the strength of the individual's ties to his society. In formal terms, the stronger the ties of the individual members to a society, the lower the schizophrenic rate of the society.[23]

Some authors claim that despite the fact that rural

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[21] Elwin H. Powell, "Occupation, Status, and Suicide: Toward A Redifinition of Anomie," American Sociological Review, Vol. 23, April, 1958.

[22] Emile Durkheim, Suicide, Translated by John A. Spaulding and George Simpson, (Glencoe, Ill: The Free Press, 1951).

[23] Jack P. Gibbs and Walter W. Martin, "A Theory of Status Integration and Its Relationship to Suicide," American Sociological Review, Vol. 23, April, 1958.

and urban "worlds" are merging, and that the rural society presents wide variations, it can still be said that rural life partakes more of the characteristics of the familistic Gemeinschaft, and urban life of the contractual Gesellschaft.[24] Hence Leacock suggests that one might be led to expect much more integration in the rural areas.[25] She continues that there is greater precision and stability in social roles in rural society, less marked status striving, more intimate and personal forms of authority, greater security of primary group ties, the specification of norms for all life situations, and that the relative homogeneity of the rural population reduces the risk of value conflict. Hence, there would be more integration in the rural areas and less in the urban areas.[26]

Many others have written about the supposedly higher rates of mental disease in urban areas due to a lack of integration. Leighton writes that, "... psychiatry on the one hand and the social sciences on the other were re-

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[24]For a clear exposition of the concepts Gemeinschaft and Gesellschaft see; F. Toennies, Fundamental Concepts of Sociology: Gemeinschaft and Gesellschaft, translated and supplemented by Charles P. Loomis, New York, 1940.

[25]Eleanor Leacock writing in, "Explorations in Social Psychology, edited by Alexander H. Leighton, John A. Clausen and Robert N. Wilson, (New York: Basic Books, Inc., 1957) p. 314.

[26]Ibid., p. 316.

cording from different points of view the difficulties involved in adjusting to our contemporary urbanized and industrialized form of life. The city became the sinner and was compared to a somewhat ideal version of rural living. 'The rural codes and customs have direct and sustaining influence;' wrote the author of a textbook on rural sociology in the forties, 'Life is personal and its crisis call out personal responses from neighbors. There is thus less chance of maladjustment then in the city, where primary groups do not come to the aid of the distressed.'"[27]

Gist and Halbert[28] write that there is reason to believe that the urban milieu is more conducive to mental disabilities than rural society and that there is reason to believe that the urban type of social structure does lead to a higher rate of mental disease.

Clinard writes about the impersonality and lack of social integration of the urban world as producing a type of society which seemingly is more prone to mental disorders.[29]

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[27]Leighton, Clausen, and Wilson, op. cit., p. 316.

[28]Noel P. Gist and L. A. Halbert, Urban Society, (New York: Thomas Y. Crowell Company, 4th ed. 1956).

[29]Marshall B. Clinard, Sociology of Deviant Behavior, (New York: Rinehart & Co., Inc., 1957).

If it is true, that urban areas have less integration than rural areas, and if a lack of integration can cause mental disease, as stated by several authors referred to in chapter two, then we can hypothesize that the rate of schizophrenia will vary directly with the amount of urbanity.

It was felt that if there was any relationship between an urban like environment and the rate of schizophrenia that this relationship would probably appear in different rates for the different social categories.

One hypothesis stated was that the rate of schizophrenia in Michigan would be higher in Standard Metropolitan Areas than areas outside such Standard Metropolitan Areas.

This hypothesis is supported since both the crude and standardized rates were higher for the Standard Metropolitan Areas than for the other areas. See Table V.

TABLE V

SCHIZOPHRENIC RATE BY AREA IN THE STATE OF MICHIGAN
1949-50-51

AREA	RATE OF SCHIZ. PER 100,000 POP.	
	CRUDE RATES	AGE STANDARDIZED RATES
S. M. A.	30.75	30.13
Contiguous Counties	20.96	21.36
Non-Contiguous Counties	24.89	26.83

The crude rates show the Standard Metropolitan Areas having a 9.59 rate higher than the contiguous counties and 5.86 rate higher than the non-contiguous counties.

Similar results remain after standardization for age differences as Table V shows.

Due to age standardization, the Standard Metropolitan Area rate decreased very slightly, or a drop from 30.75 to 30.13 per 100,000. The other categories had a slight increase, with the non-contiguous counties having the highest increase of all. The contiguous counties increased from 20.96 to 21.36, a very slight increase of .40 per 100,000. The non-contiguous counties, however, had increased from 24.89 to 26.83, an increase of 1.94 per 100,000.

Another hypothesis stated was that the rate of schizophrenia in Michigan would be higher in counties contiguous to Standard Metropolitan Areas than in those counties non-contiguous to Standard Metropolitan Areas. This hypothesis was not validated by the results of the study, as can be seen from Table V. The contiguous counties had a crude schizophrenic rate of 20.96 while the non-contiguous counties had a crude schizophrenic rate of 24.89. Hence the non-contiguous counties had a crude schizophrenic rate of 3.98 higher than the contiguous counties. When the rates were standardized they not only did not come closer together but the non-contiguous county rate increased more than the contiguous county rate as can be seen in Table V. Hence the hypothesis stating that the rate of schizophrenia in Michigan would be higher in counties contiguous to Standard Metropolitan Areas than in those counties non-contiguous to Standard Metropolitan Areas has not been validated by the results of the research.

This would seemingly mean that the major hypothesis stating that the probability of acquiring schizophrenia varies according to urban and rural residence has not been validated by the evidence given here. While it is

true that the Standard Metropolitan Area category had a higher schizophrenic rate than the other categories, the fact that the contiguous counties had a substantially lower rate than the non-contiguous counties would seem to indicate that the probability of an area having a high or low schizophrenic rate does not necessarily depend upon its urbanity as expressed by distance from large metropolitan areas.

One may say that the differences found between the areas might be due to differences in sex ratio or more importantly due to the different marital composition of the various populations. To determine if these could have any appreciable effect upon the rates, all areas were standardized for sex and marital composition.

If we standardize the various areas for marital status the difference between the areas still remain as can be seen in Table VI.

TABLE VI

MARITAL STATUS STANDARDIZED RATES BY AREA IN THE STATE OF MICHIGAN 1949-50-51

AREA	RATE OF SCHIZ. PER 100,000 POP.
S.M.A.	29.93
Contiguous County	20.61
Non-Contiguous	23.71

Hence we can see that if marital status is taken into consideration the specific rates change slightly, but the general differences between areas still remain.

If we standardize the various areas for sex the differences between the areas also remains as can be seen in Table VII.

TABLE VII

SEX STANDARDIZED RATES BY AREA IN THE STATE OF MICHIGAN 1949-50-51

AREA	RATE OF SCHIZ. PER 100,000 POP.
S.M.A.	30.74
Contiguous Counties	20.95
Non-Contiguous	24.87

Table VII indicates that if sex is taken into consideration the specific rates again change slightly but the general differences between the areas still remain.

This study has demonstrated that the schizophrenic

rate in Michigan does not have a direct relationship to urbanity.

CHAPTER IV

SUMMARY AND CONCLUSIONS

The empirical basis for this study of schizophrenic differentials in Michigan consisted of 3,881 first admission schizophrenics. The data were obtained from all the State Mental Hospitals, the Veterans Administration Hospital at Battle Creek, and the two largest private hospitals in Michigan for the years 1949, 1950, and 1951. These data were coded and punched on IBM cards and analyzed by machine methods. The following information was utilized in this study; county of residence, age, sex, nativity, and marital status.

In the analysis of data for Michigan it is assumed that a statistical analysis of schizophrenia is meaningful. The author does not agree with the contention of some workers that the data are too inadequate to merit credence. Perhaps, some cases of schizophrenia have been concealed. It is felt however that the data collected are representative of the entire universe.

In this report Durkheim's theory of anomie was hypothesized as having a functional relationship in producing a higher rate of schizophrenia in urban places. Various authors were quoted stating that with an increase in urbanism there is an increase in social disorganization, and consequently an increase in schizophrenia. Therefore, one hypothesis stated was that there is a direct relationship between urbanity and the rate of schizophrenia. To test this hypothesis the state of Michigan was divided into three separate areas, all three areas being in different stages of urbanization. The criterion of urbanization used was the nearness to, or the inclusion of, a Standard Metropolitan Area.

The above stated hypothesis was not validated as the data did not show a direct relationship between urbanity and the rate of schizophrenia. Hence one is led to the conclusion that urban living per se is not more conducive to mental illness than rural living.

Another hypothesis stated was that the incidence of schizophrenia is not random throughout the population

in regard to marital status, nativity, sex, and age.

The population of the state of Michigan and the schizophrenics were subdivided into 10 year age groupings. It was found that the rate of schizophrenia was highest in the age group 25-34, and that there was a real difference in the rates between all the age groupings. The schizophrenic rate declined steadly after the 25-34 age group, with every subsequent age group having a lower rate of schizophrenia than the one preceding it.

The population of the state of Michigan and the schizophrenics were separated by sex, and the age standardized rate for each sex computed. It was found that the difference between the sexes was so slight that it was not considered to be a real difference. The females had a slightly higher (.90 per 100,000 population) rate than the males.

The population of the state of Michigan and the schizophrenics were also separated on the basis of nativity. Separate schizophrenic rates, age standardized, for the native born and the foreign born

population were computed. It was found that there was a real difference between the native born and the foreign born rates of schizophrenia, with the foreign born having a substantially lower schizophrenic rate than the native born.

The population of the state of Michigan and the schizophrenics were separated on the basis of marital status. Separate age standardized schizophrenic rates for the various marital groups; divorced, separated, single, widowed, and married were computed. The results show that the divorced had the highest rate followed by the separated, single, widowed, and married.

The writer therefore found that the incidence of schizophrenia is not random throughout the population in regard to marital status, nativity, and age. However, in the author's opinion, no real difference in the incidence of schizophrenia was found between the sexes.

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APPENDIX

TABLE I

AGE OF SCHIZOPHRENICS AND GENERAL POPULATION

AGE	NO. OF SCHIZ.	GENERAL POP.
15-24	849	922,277(3)
25-34	1,408	1,042,819(3)
35-44	903	897,891(3)
45-54	418	736,123(3)
55-64	201	566,461(3)
65+	102	461,650(3)

TABLE II

SEX OF SCHIZOPHRENICS AND GENERAL POPULATION

SEX	NO. OF SCHIZ.	GENERAL POP.
MALE	1,902	2,321,653(3)
FEMALE	1,979	2,305,568

TABLE III

AGE AND SEX OF SCHIZOPHRENICS

AGE	15-24	25-34	35-44	45-54	55-64	65+
MALE	479	695	436	155	86	51
FEMALE	370	713	467	263	115	51

TABLE IV

NATIVITY OF SCHIZOPHRENICS AND GENERAL POPULATION

NATIVITY	NO. OF SCHIZ.	GENERAL POP.
NATIVE	3,552	4,227,724(3)
FOREIGN	329	399,497(3)

TABLE V

AGE AND NATIVITY OF SCHIZOPHRENICS

AGE	15-24	25-34	35-44	45-54	55-64	65[1]
NATIVE	835	1,356	812	339	131	79
FOREIGN	14	52	91	79	70	23

TABLE VI

MARITAL STATUS OF SCHIZOPHRENICS AND GENERAL POPULATION

MARITAL STATUS	NO. OF SCHIZ.	GENERAL POP.
SINGLE	1,485	945,286(3)
MARRIED	1,679	3,158,620(3)
SEPARATED	173	71,905(3)
WIDOWED	130	325,685(3)
DIVORCED	311	125,725(3)
UNKNOWN	103	----------

TABLE VII

AGE AND MARITAL STATUS OF SCHIZOPHRENICS

AGE	15-24	25-34	35-44	45-54	55-64	65+
SINGLE	642	471	231	79	43	19
MARRIED	151	707	493	221	78	29
WIDOWED	1	14	20	28	30	37
DIVORCED	16	110	90	55	30	10
SEPARATED	20	72	34	15	9	3
UNKNOWN	19	34	15	20	11	4

TABLE VIII

SCHIZOPHRENICS AND GENERAL POPULATION BY AREA

AREA	NO. OF SCHIZ.	GENERAL POP.
STANDARD METR. AREA	2,865	3,105,658(3)
CONTIGUOUS COUNTIES	641	1,019,397(3)
COUNTIES NOT CONTIGUOUS	375	502,166(3)

TABLE IX

MARITAL STATUS OF SCHIZOPHRENICS AND GENERAL POPULATION IN THE STANDARD METROPOLITAN AREAS

MARITAL STATUS	NO. OF SCHIZ.	GENERAL POP.
SINGLE	1,047	621,113(3)
MARRIED & SEPARATED	1,392	2,179,301(3)
WIDOWED & DIVORCED	333	301,789(3)
UNKNOWN	103	

TABLE X

MARITAL STATUS OF SCHIZOPHRENICS AND GENERAL POPULATION IN THE CONTIGUOUS COUNTIES

MARITAL STATUS	NO. OF SCHIZ.	GENERAL POP.
SINGLE	247	207,696(3)
MARRIED & SEPARATED	314	337,577(3)
WIDOWED & DIVORCED	70	99,908(3)
UNKNOWN	0	---------

TABLE XI

MARITAL STATUS OF SCHIZOPHRENICS AND GENERAL POPULATION IN COUNTIES NOT CONTIGUOUS

MARITAL STATUS	NO. OF SCHIZ.	GENERAL POP.
SINGLE	191	116,477(3)
MARRIED & SEPARATED	146	337,577(3)
WIDOWED & DIVORCED	38	49,713(3)
UNKNOWN	0	---------

TABLE X

SEX OF SCHIZOPHRENICS AND GENERAL POPULATION IN STANDARD METROPOLITAN AREAS

SEX	NO. OF SCHIZ.	GENERAL POP.
MALE	1,368	1,550.729(3)
FEMALE	1,497	1,554,929(3)

TABLE XIII

SEX OF SCHIZOPHRENICS AND GENERAL POPULATION IN CONTIGUOUS COUNTIES

SEX	NO. OF SCHIZ.	GENERAL POP.
MALE	336	515,096(3)
FEMALE	305	506,301(3)

TABLE XIV

SEX OF SCHIZOPHRENICS AND GENERAL POPULATION IN COUNTIES NOT CONTIGUOUS

SEX	NO. OF SCHIZ.	GENERAL POP.
MALE	198	257,868(3)
FEMALE	177	244,338(3)

TABLE XV

AGE OF SCHIZOPHRENICS AND GENERAL POPULATION IN STANDARD METROPOLITAN AREAS

AGE	NO. OF SCHIZ.	GENERAL POP.
15-24	609	611.753(3)
25-34	1,062	732,022(3)
35-44	681	620,858(3)
45-54	319	512,761(3)
55-64	143	370,181(3)
65+	51	258,083(3)

TABLE XVI

AGE OF SCHIZOPHRENICS AND GENERAL POPULATION IN CONTIGUOUS COUNTIES

AGE	NO. OF SCHIZ.	GENERAL POP.
15-24	152	213,432(3)
25-34	210	217,267(3)
35-44	138	183,979(3)
45-54	66	146,863(3)
55-64	34	126,197(3)
65+	41	131,659(3)

TABLE XVII

AGE OF SCHIZOPHRENICS AND GENERAL POPULATION IN COUNTIES NOT CONTIGUOUS

AGE	NO. OF SCHIZ.	GENERAL POP.
15-24	88	97,092(3)
25-34	136	93,530(3)
35-44	84	93,054(3)
45-54	33	76,499(3)
55-64	24	70,083(3)
65+	10	71,908(3)