

MARITAL STATUS, EDUCATION AND OCCUPATIONAL DIFFERENTIALS IN MENTAL DISEASE

STATE PATTERNS IN FIRST ADMISSIONS TO MENTAL HOSPITALS
FOR ALL DISORDERS AND FOR SCHIZOPHRENIA,
NEW YORK AND OHIO AS OF 1950

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INTRODUCTION

THIS is the second of three papers dealing with first admissions to hospitals for mental disease for years centering on 1950 in terms of rates based upon appropriate populations from the census of 1950. The authors' purpose is to establish base lines for 1960-census-oriented analyses now being planned in several states and also to indicate whether current patterns of differentials are similar in states for which reasonably comparable data are available for the 1950-centered period. The first paper (by Lazarus, Locke and Thomas¹)

¹ Lazarus, Judith; Locke, Ben Z.; Thomas, Dorothy Swaine: Migration Differentials in Mental Disease: State Patterns in First Admissions to Mental Hospitals for All Disorders and for Schizophrenia. New York, Ohio, and California as of 1950, Milbank Memorial Fund *Quarterly*, January, 1963, XLI: 25-42.

Table 1. First admissions, ages 25-54, for schizophrenia and for all disorders to all hospitals for mental disease, New York State, 1949-1951 and to state hospitals for mental disease, Ohio, 1948-1952, by sex and marital status, by sex and education and by occupation of employed males; also corresponding populations, 1950.

	NEW YORK			OHIO		
	Admissions		Population	Admissions		Population
	Schiz.	All		Schiz.	All	
Males by Marital Status:						
1. Single	2,571	4,566	522,045	760	2,027	178,635
2. Married	1,652	5,181	2,526,095	766	3,890	1,338,340
3. Widowed	92	339	41,235	28	218	18,695
4. Separated	343	989	67,050	93	517	23,195
5. Divorced	153	516	40,165	175	998	46,985
6. Total	4,811	11,591	3,196,590	1,822	7,650	1,605,850
Females by Marital Status:						
7. Single	1,809	3,144	459,960	570	1,076	148,835
8. Married	2,978	7,277	2,640,100	1,474	4,029	1,373,250
9. Widowed	280	906	175,815	92	415	69,530
10. Separated	522	1,057	118,320	131	368	29,825
11. Divorced	314	677	75,120	263	711	67,830
12. Total	5,903	13,061	3,469,315	2,530	6,599	1,689,270
13. Both Sexes: Total	10,714	24,652	6,665,905	4,352	14,249	3,295,120
Males by Education:						
14. None	97	387	41,565	16	114	9,735
15. Elementary	2,027	5,281	1,105,745	713	3,607	543,985
16. High School	1,981	4,134	1,341,745	770	2,763	757,695
17. College	591	1,436	579,120	169	543	258,205
18. Total	4,696	11,238	3,068,175	1,668	7,027	1,569,620
Females by Education:						
19. None	130	477	56,220	12	84	10,480
20. Elementary	2,128	5,008	1,188,420	757	2,483	509,775
21. High School	2,799	5,701	1,663,975	1,263	2,879	914,170
22. College	667	1,475	451,215	247	550	226,895
23. Total	5,724	12,661	3,359,830	2,279	5,996	1,661,320
24. Both Sexes: Total	10,420	23,899	6,428,005	3,947	13,023	3,230,940
Males by Occupation:						
25. Prof.—Managerial	448	1,395	731,447	124	561	287,492
26. Clerical—Sales	701	1,573	472,745	129	608	189,248
27. Crafts—Operatives	1,507	3,532	1,123,336	542	2,623	722,969
28. Services	600	1,495	262,588	88	489	65,490
29. Farmers—Farm Laborers	122	326	80,122	139	437	97,477
30. Other Laborers	1,028	2,312	164,959	510	1,965	100,253
31. Total	4,406	10,633	2,835,197	1,532	6,683	1,462,929

Source: Populations from 1950 Census of Population, II, Characteristics of Population, Parts 32 and 35. First admissions for Ohio for a 4½ year period centering on April 1, 1950, from manuscript tables, NIMH; for New York from tabulations made at the University of Pennsylvania, based on punch cards supplied by the New York State Department of Mental Hygiene, for a 3-year period centering on April 1, 1950. There were no persons reported with unascertained marital status in the published census volumes, and persons in this category were excluded from admissions in the present table for both states. Persons with unascertained number of years of school completed were excluded from both population and admissions data for both states; and employed males with unascertained occupational classification were, correspondingly, omitted from the Ohio computations but were distributed proportionately by age for New York population as well as admissions. Inasmuch as the New York punch cards coded persons in the armed forces in the "service category" this group was added to the population so classified by the Bureau of the Census.

explored migration differentials in first admissions to mental hospitals by birthplace definition, among residents of three states—New York, Ohio and California—holding constant age, sex, and color or race. This, the second paper examines marital status and education differentials by sex and age, and occupational differentials by age among employed males in two of these states, New York and Ohio. The “color or race” control is omitted from the present analysis because the form in which the Ohio data were tabulated precluded this cross-classification. The effect of this omission will be suggested at the end of this paper and clarified in the third paper of the series, which is concerned with cross-classified New York State data.

The literature bearing on socio-economic differentials in the incidence of mental disease is voluminous and has been summarized by (among others) Locke, *et al.*² and by various authors at a round table sponsored by the Milbank Memorial Fund, *Causes of Mental Disorder: A Review of Epidemiological Knowledge, 1959.*³ Although the results from the many available studies are not additive—because of variations in definitions, in coverage, and in technique of analysis—they tend to support the hypothesis of an inverse relation between socio-economic status and the incidence of mental disease in general and of schizophrenia in particular. The present analysis proceeds, therefore, from this generalized hypothesis.

Table 1 shows, in summary form, the basic data on marital status, education and occupation used in the computation of average annual rates of first admission. The numerators of these rates consist of data on first admissions for 4½ years in Ohio, and for 3 years in New York. In Ohio admissions refer to state hospitals only but in New York they include admissions also to all private (licensed) hospitals for mental disease,

² Locke, Ben Z.; Kramer, Morton; Timberlake, Charles E.; Pasamanick, Benjamin and Smeltzer, Donald: Problems in Interpretation of Patterns of First Admissions to Ohio State Public Mental Hospitals for Patients with Schizophrenic Reactions, *Psychiatric Research Reports*, December, 1958, 10: 172–196.

³ CAUSES OF MENTAL DISORDER: A REVIEW OF EPIDEMIOLOGICAL KNOWLEDGE, 1959. [Proceedings of a Round Table Held at Arden House, Harriman, N. Y., October 27–28, 1959.] New York, Milbank Memorial Fund, 1961. 384 pp.

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to hospitals for the criminal insane, and to mental hospitals operated by the Veterans Administration. The data shown in this table are totals for ages 25-54 for "all disorders," and for

Table 2. Average annual standardized rates of first admission, ages 25-54, for schizophrenia and for all disorders, to all hospitals for mental diseases, New York State, and to state hospitals for mental diseases, Ohio, by sex and marital status, by sex and education and by occupations of employed males, per 100,000 population as of 1950.

	NEW YORK		OHIO	
	Schiz.	All	Schiz.	All
<i>Males by Marital Status:</i>				
Married	38	68	13	65
Widowed	136	293	46	278
Single	152	299	88	266
Divorced	142	437	88	468
Separated	190	501	90	495
<i>Females by Marital Status:</i>				
Married	37	92	23	66
Widowed	72	174	48	142
Single	124	228	79	159
Divorced	143	302	86	232
Separated	148	298	96	275
Both Sexes: Total	54	123	29	97
<i>Males by Education:</i>				
College	31	84	13	48
High School	45	101	20	81
Elementary	75	170	35	153
None	98	338	*	276
<i>Females by Education:</i>				
College	47	108	24	54
High School	52	116	28	70
Elementary	69	143	41	114
None	90	282	*	172
Both Sexes: Total	54	124	27	90
<i>Employed Males by Occupation:</i>				
Prof.—Managerial	21	63	10	43
Clerical—Sales	47	112	14	74
Crafts—Operatives	44	105	16	82
Services	79	190	31	165
Farmers—Farm Laborers	51	136	32	99
Other Laborers	203	466	108	441
Total	52	125	23	102

(Standard for marital status and education = total population by 10-year age groups, 25-54, New York State, 1950; for occupation = male employed population [+ armed forces], by 10-year age groups, 25-54, New York State, 1950).

* Too few first admissions (<10) in one or more age groups to warrant standardization.

Source: Computed from data underlying Table 1.

schizophrenics. For marital status and education, they are subdivided by sex; for occupation of the employed, they are limited to males. The denominators consist of 1950 census populations similarly subdivided, omitting persons with "unascertained" educational status, inasmuch as this class was not tabulated for Ohio admissions. There were no cases of "unascertained" marital status in the census populations, but to be consistent with the Ohio procedure, they were omitted from the admissions data for New York also. No attempt was made to achieve complete comparability between New York and Ohio in respect to the occupation of employed males. The small numbers of New York residents who were in the armed forces had been coded as "service occupations" in the admissions data and this category was therefore also included in the basic population, and employed persons of "unascertained" occupations were distributed proportionately by age. In the Ohio tabulation of admissions such persons were excluded altogether; they are therefore excluded also from the basic population.

In Table 2 rates of first admission per 100,000 population are shown on an average annual age-standardized basis, with age-specific rates by 10-year age groups (25-34, 35-44, and 45-54) for each category standardized to conform with the percentage distributions of 1950 New York populations.⁴ Rates are not shown for two of the educational classes of schizo-

⁴The following percentage distributions of population aggregates in New York State were used for standardizing age-specific rates:

AGES	PER CENT DISTRIBUTIONS NEW YORK POPULATION (WITH EXCLUSIONS AS NOTED IN TEXT)		
	Marital Status Both Sexes	Education Both Sexes	Occupation of Employed Males
25-34	35.70	35.86	34.22
35-44	34.38	34.40	35.17
45-54	29.92	29.74	30.61
25-54	100.00	100.00	100.00

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phrenics in Ohio where there were fewer than 10 admissions in one or more of the age groups.

In Table 3 (and Figs. 1, 2 and 3 which are based on it) state-

Table 3. Relative annual standardized rates of first admission, ages 25-54, for schizophrenia and for all disorders to all hospitals for mental diseases, New York State, and to state hospitals for mental diseases, Ohio, by sex and marital status, by sex and education, and by occupation of employed males, as of 1950.

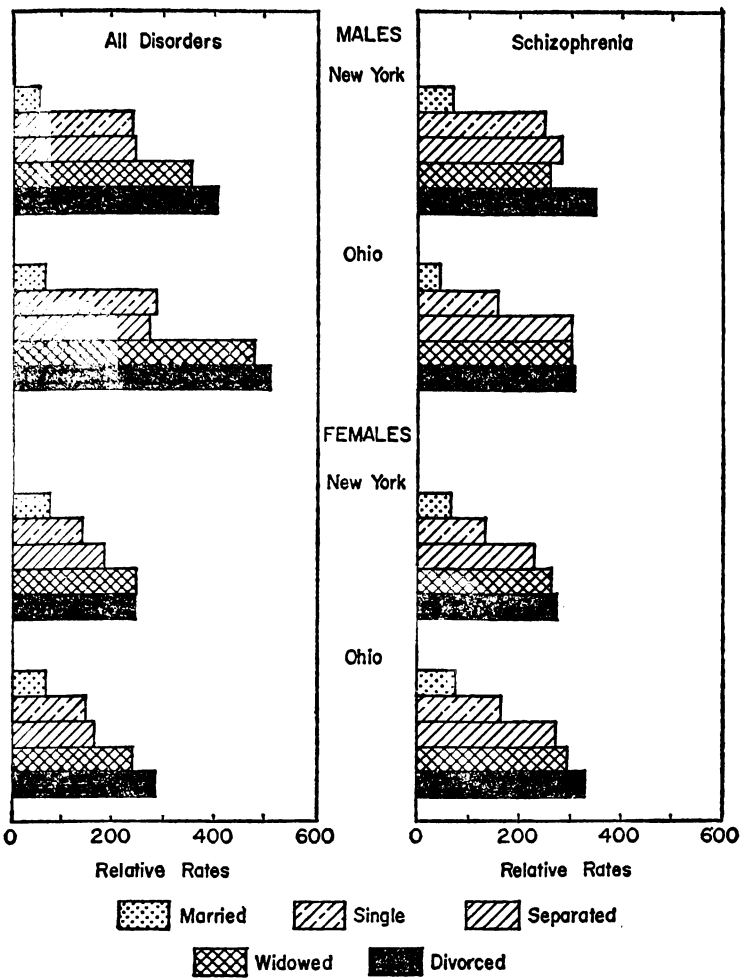
	NEW YORK		OHIO	
	Schiz.	All	Schiz.	All
<i>Males by Marital Status:</i>				
Married	70	55	45	67
Widowed	252	238	159	287
Single	281	243	303	274
Divorced	263	355	303	482
Separated	352	407	310	510
<i>Females by Marital Status:</i>				
Married	69	75	79	68
Widowed	133	141	166	146
Single	230	185	272	164
Divorced	265	246	297	239
Separated	274	242	331	284
Both Sexes: Total	100	100	100	100
<i>Males by Education:</i>				
College	57	68	48	53
High School	83	81	74	90
Elementary	139	137	130	170
None	181	273	*	307
<i>Females by Education:</i>				
College	87	87	89	60
High School	96	94	104	78
Elementary	128	115	152	127
None	167	227	*	191
Both Sexes: Total	100	100	100	100
<i>Employed Males by Occupation:</i>				
Prof.—Managerial	40	50	43	42
Clerical—Sales	90	90	61	73
Crafts—Operatives	85	84	70	80
Services	152	152	135	162
Farmers—Farm Laborers	98	109	139	97
Other Laborers	390	373	470	432
Total	100	100	100	100

(Standardized rates for each sex-marital status, and for each sex-educational class in each state as shown in Table 2 as percentages of standardized total rate for both sexes; and for each occupational class in each state as percentages of standardized total rate for employed males.)

* See note on Table 2.

Source: Computed from Table 2.

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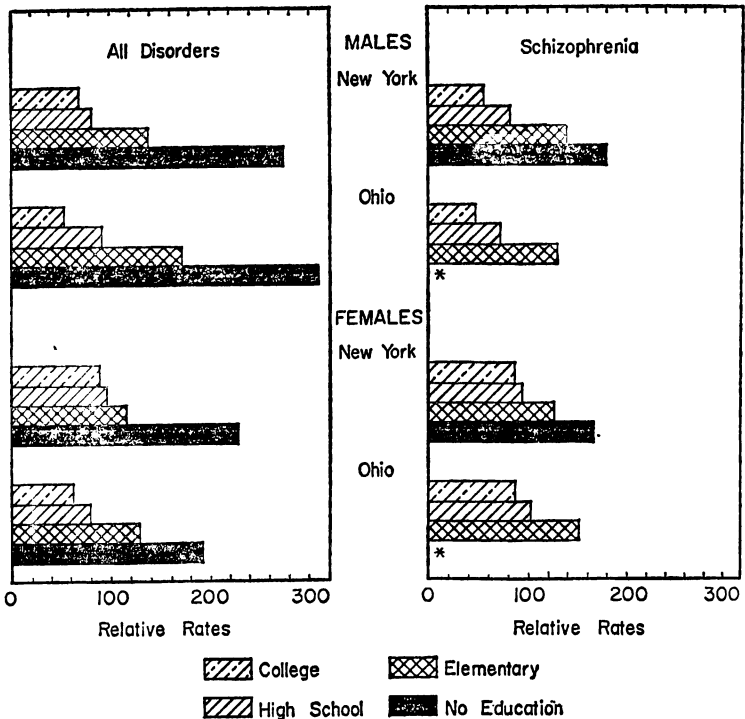


Source: Table 3

Fig. 1. Relative rates of first admission, ages 25-54, to hospitals for mental disease, New York and Ohio, as of 1950, by sex and marital status.

wise patterns have been determined by expressing each standardized rate for each diagnostic category as a relative (per cent) of the corresponding total standardized rate. The reasons for using relatives have been elaborated in our first paper, where we emphasized especially the fact that there is greater

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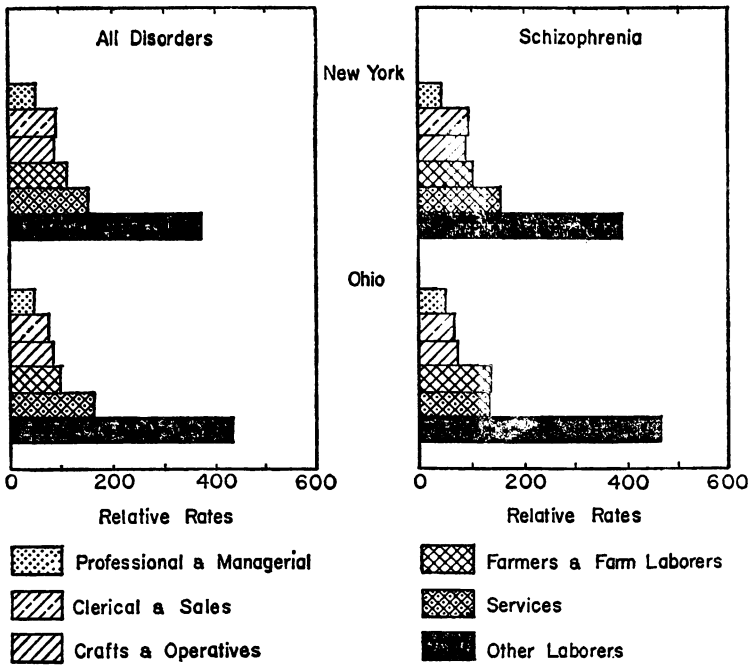
* See note on Table 2

Source: Table 3

Fig. 2. Relative rates of first admission, ages 25-54, to hospitals for mental disease, New York and Ohio, as of 1950, by sex and education.

coverage in New York⁵ than in Ohio. For this reason alone the actual rates cannot be regarded as efficient indicators of the relative "incidence" of mental disease in the two states. The reasons for restricting the age range were also discussed in the first paper. To have included younger ages would have introduced a biasing factor simply because marital status, education and occupation are all age-selective: we used our cut-off point of age 25 to obtain populations where the opportunities to have completed education, to have married, and to

⁵ About 20 per cent of the first admissions in New York are to non-state hospitals and approximately the same proportion in Ohio. In the latter state, however, data are not available on the characteristics of these patients.



Source: Table 3

Fig. 3. Relative rates of first admission, ages 25-54, to hospitals for mental disease, New York and Ohio, as of 1950, by occupation of males.

have achieved a “career occupation” would be maximized. We excluded older ages to avoid other types of biasing factors (because of retirement, death of spouse, and so on). Moreover, there were obviously significant differences in administrative procedures among states in the admission of older patients, and clear-cut evidence, both in admissions and in census data, of a statistically distorting bias in the increasing proportion of persons whose status is “unascertained” among persons of older ages.

In the computation of any rates in which the numerators come from one source and the denominators from another, there is always a question as to comparability of classification. This is true even for such clear-cut measures as birth and death

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rates, and strenuous efforts are now being made to match census and vital statistic records. In regard to hospitalized patients for mental disease, pilot studies are also in progress for name-by-name matching of admission records with census schedules. For interstate comparisons and for historical statistical analyses, in general, matching of this sort is impractical if not impossible, and we must necessarily use these data with only such checks as can readily be made for internal consistency. We have no evidence of the extent to which hospital record-keeping follows the criteria set up by the Bureau of the Census for population enumeration, nor do we consider the census data to be beyond reproach in respect to validity and reliability. In regard to marital status, we question the completeness of reporting such socially disapproved categories as "separated" and "divorced" and we suggest that misreporting in favor of the more conventionally acceptable categories of "single," "widowed" and "married" may be appreciable, and that the distortion probably varies from one social class to another. Such classifications may indeed be more accurate in hospital than in census records. In regard to both educational level and occupation, there is evidence of upgrading in census enumerations, again with a high probability of selective upgrading from one class to another. For these and other reasons, the weakest "rates" that we present, in terms of possible classification discrepancies between numerator and denominator, are probably for occupations. The census procedure follows a time-oriented labor force concept whereas persons admitted to mental hospitals are necessarily classified in terms of "usual" or "last" occupation inasmuch as they are all out of the labor force at the time of admission and perhaps even at the time of the onset of the illness, prior to admission. Our "rates" by occupational classes should indeed be considered more appropriately as "ratios" rather than as "exposure to risk" rates. With due regard to the many inconsistencies and uncertainties of the basic data, let us examine the patterns of differentials in the three characteristics presented in Figs. 1, 2 and 3.

MARITAL STATUS DIFFERENTIALS

As Tables 2 and 3 show, rates of first admission for all disorders were consistently very low among the married of both sexes in both states; intermediate among the widowed and the single; and very high among the separated and the divorced. These patterns are strikingly demonstrated in Fig. 1. The relative magnitude of the differentials, determined from the underlying tables, is as follows:

In New York, widowed, single, divorced and separated males had rates of first admission that were 4.3, 4.4, 6.4 and 7.4 times as great, respectively, as those of the married; the sequence, in the same order and in the same terms, for Ohio males was 4.3, 4.1, 7.2 and 7.6. In both New York and Ohio, the pattern for females was the same as for males, but the differentials were somewhat narrower than for males. Thus, the widowed and the single in both states had rates from slightly less than 2 to $2\frac{1}{2}$ times those of the married among females, but among males the rates were 4 to $4\frac{1}{2}$ times those of the married. Correspondingly, the separated and the divorced had rates only 3 to 4 times as great as the married among females but $6\frac{1}{2}$ to $7\frac{1}{2}$ times as great among males.

So far as schizophrenia is concerned, the patterns are much the same as those for all disorders. The range was considerably narrower among males in New York—from only 3.6 times the married for the widowed to 5.0 times the married for the separated, compared with a range for the same status differential of 4.3 to 7.4 times the married among persons hospitalized for all disorders. Among New York females, however, the range was slightly wider for schizophrenics than for the "all disorders" category, that is, 2.0 to 4.0 versus 1.9 to 3.3 times the married for the widowed and the separated, respectively. Among Ohioans of both sexes, the patterning was much the same as among New Yorkers but, perhaps because of fewer observations, the progression was less regular.

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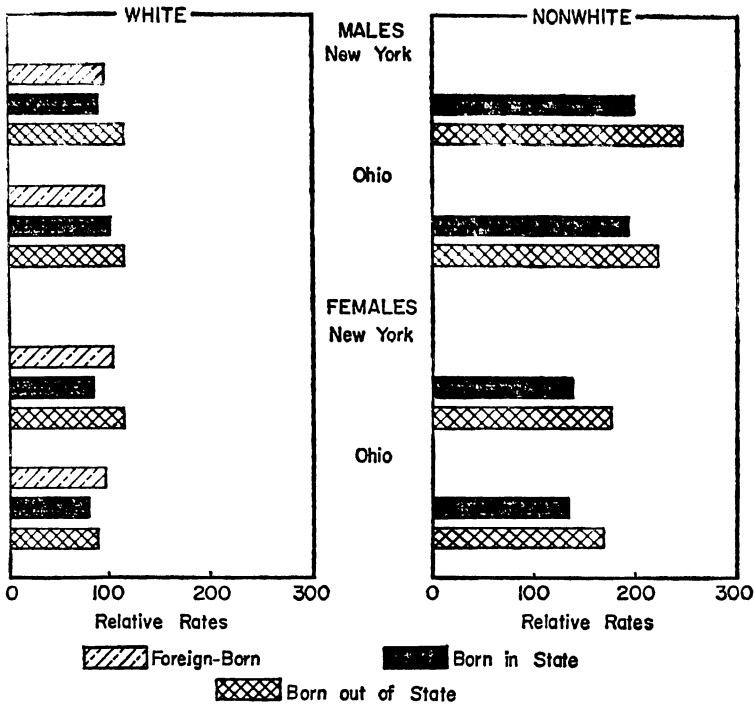
Referring again to Tables 2 and 3 (and to Fig. 2), a clear-cut inverse relation is evident between the level of schooling and rates of first admission for both sexes in both states, for all disorders, and also for schizophrenia. For all disorders, the rate for male New Yorkers with no schooling was 4.0 times that of the college-educated; and the multiples of college-educated rates were 2.0 for persons with only elementary school education and 1.2 for those who had completed some work in high school. Among males, the margins were somewhat wider in Ohio than in New York (that is, 5.8 for the class that had no schooling compared with 4.0; 3.2 in Ohio but 2.0 in New York for those educated in elementary schools; and 1.7 versus 1.2 for the two states among those with high school education.) Among New York and Ohio females, multiples of the college-educated proceeded similarly, from 2.6 to 1.3 to 1.1 in the former state; and from 3.2 to 2.1 to 1.3 in the latter.

With the exception of the "no schooling" category (which is of questionable reliability in any case), the patterns are the same for schizophrenia as for all disorders, with wider differences among educational levels in New York for the schizophrenics, and somewhat narrower differences in Ohio.

OCCUPATIONAL DIFFERENTIALS

We followed census procedure in classifying the occupations of employed males in six broad categories, four of which form a hierarchy, from professional-managerial classes at the top, to clerical-sales personnel to craftsmen-operatives (or skilled and semiskilled laborers) at intermediate levels, to "other" (or unskilled) laborers at the bottom. As Tables 2 and 3 (and Fig. 3) show, this hierarchical arrangement is reflected in an inverse relation with rates of first admission, both for all disorders and for schizophrenia in both states, from low rates in the professional-managerial to very high in the unskilled labor category. Expressing the rates for the lower occupational

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Source: Table 3. Lazarus, Locke and Thomas, *Op. cit.*

Fig. 4. Relative rates of first admission, all disorders, ages 20-59, to hospitals for mental disease, New York and Ohio, as of 1950, by sex, nativity and birthplace.

classes as multiples of those in the highest class, that is, the professional-managerial, we find, for all disorders in both states, multiples of 1.7 to 1.9 for clerical-sales and skilled-semiskilled labor but of no less than 7.4 in New York and 10.3 in Ohio for unskilled labor. The corresponding range for schizophrenia was from 1.4 to 2.2 for the intermediate occupational classes as multiples of the rates for the highest occupational class, and extremely high multiples of 9.7 to 10.8 for unskilled laborers. Regarding the service and farming classes which are neither well-defined hierarchically nor strictly comparable for the two states, it may merely be noted that they tend to assume intermediate positions between the extremes.

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COMPARISONS WITH MIGRATION DIFFERENTIALS

In our first paper, migration status was defined initially in nativity terms—natives of the United States versus foreign born, and then for the natives by birth place,—that is, the in-state versus out-of-state born. The native-foreign differentials were analyzed for whites, with sex and age held constant; the in-state, out-of-state-born differentials were analyzed for both native whites and native nonwhites, again with sex and age held constant. It was demonstrated that among whites, the native-foreign differential was narrow and inconsistent among states and between the sexes; that among natives in general and for both sexes the color differential was overwhelmingly important but that, even when color was held constant, along with sex and age, status as an interstate migrant was an important determinant of admission to hospitals for the mentally ill. (See Fig. 4). Thus, the multiples of specified migrant groups with reference to in-state born residents (nonmigrants) were for all disorders in New York and Ohio:

	<i>New York</i>	<i>Ohio</i>
<i>White Males</i>		
Foreign Born	1.1	0.9
Out-of-state Born	1.3	1.2
<i>Nonwhite Males</i>		
Out-of-state Born	1.2	1.2
<i>White Females</i>		
Foreign Born	1.2	1.2
Out-of-state Born	1.4	1.1
<i>Nonwhite Females</i>		
Out-of-state Born	1.3	1.3

With the minor exception of foreign born males in Ohio, each class of migrants had a higher rate than the corresponding in-state born (nonmigrant) category, but the magnitude of the differential—measured in this way—is small indeed compared with those presented in sections B, C and D above. No migrant

class had age-sex-color-controlled rates as much as $1\frac{1}{2}$ times the comparable nonmigrant group, whereas the marital status multiples were lower than 2 in only one and exceeded 6 in a fourth of the 16 possible comparisons, with the married as the point of reference; the educational differentials approximated the low levels of migration differentials in only a third of the possible comparisons, with the college educated as the point of reference; and the hierarchically-arranged occupational groups for each of the states, always exceeded the migration-differential multiples.

SUMMARY AND CONCLUSIONS

There were clear inverse relations between rates of first admission to hospitals for mental disease in both New York and Ohio, in respect to two sorts of socio-economic variables:

1. Residential stability—instability, with low rates in general for the more stable (nonmigrant) elements of the population and higher rates for migrants. Family stability—instability, with low rates for the married and much higher rates in order for the widowed and the single, and for the divorced and the separated.

2. Performance and status, as measured both by level of schooling and occupational class, with low rates for the higher educational levels and high rates for the lower levels; with low rates for the professional-managerial occupational class, intermediate rates for clerical-sales personnel and the higher skills of labor, and very high rates for unskilled laborers.

We emphasize the fact, however, that color controls were not available for the present analyses and that the unfavorable position of nonwhites in respect to economic status and family stability in both New York and Ohio introduces a spurious element in our comparisons. In both states, nonwhites represented about 1 in 15 of the total population aged 25–54, but they accounted for 1 in 3 to 2 in 5 of the separated, 1 in 6 of the widowed, and about 1 in 10 of the divorced in both states. Their educational status as a disadvantaged minority group

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is demonstrated forcibly by proportions they represented of the persons with "no schooling" (14 per cent of the males and 8 per cent of the females of this age group in New York and no less than 26 per cent of the males and 14 per cent of the females in Ohio falling into this category). Equally striking is the economic disadvantage of the employed males, their proportions in the unskilled labor category reaching 16 per cent in New York and 26 per cent in Ohio, whereas they represented only 2 per cent of the most favored "professional-managerial" class.

The extent to which socio-economic differentials in mental disease persist when adequate cross-classification is introduced, and the implications of these findings are discussed in the last paper of this series, by Everett S. Lee.⁶

⁶ Socio-economic and Migration Differentials in Mental Disease. [To be published in the July, 1963 issue of the Milbank Memorial Fund *Quarterly*.]