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Prediction of hospital readmission among male problem drinkers using demographic variables.

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PREDICTION OF HOSPITAL READMISSION

AMONG MALE PROBLEM DRINKERS

USING DEMOGRAPHIC VARIABLES

A Thesis Presented

By

Richard L. Leavy

Submitted to the Graduate School of the
University of Massachusetts
in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE

December

1973

DEPARTMENT OF PSYCHOLOGY

PREDICTION OF HOSPITAL READMISSION

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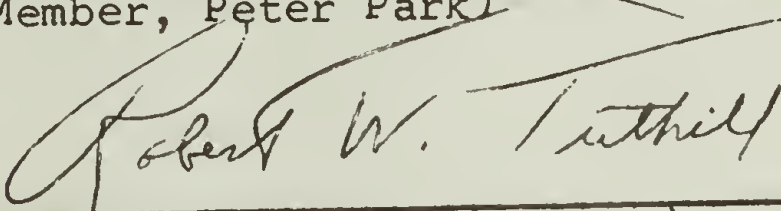
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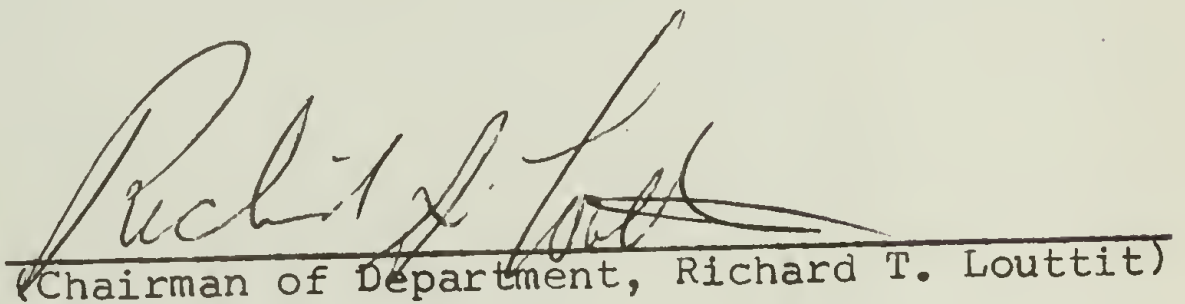
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November, 1973

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ABSTRACT

No study has identified the demographic characteristics which are associated with high risk of hospital readmission among problem drinkers. One hundred eighty-five male Ss discharged from a state hospital with alcoholic diagnoses were followed up for one year. Demographic information was taken from hospital files. Fifty-four of the Ss (29.2%) returned to an inpatient institution within the follow-up period. Four variables were predictive of high readmission rates: previous hospitalizations, marital status, age, and educational level. High-risk Ss had these characteristics: one or more previous hospitalizations, married, and between the ages of 35 and 45; or Ss with previous hospitalizations, married, and having less than 12 years of education. The results partially support the notion that drinkers with relatively low social achievement are more liable to be readmitted. Several explanations are given for the surprisingly high readmission rates among marrieds.

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INTRODUCTION

Epidemiology of Alcoholism

A substantial literature exists on the epidemiology of alcoholism. The pioneer work of Jellinek (1947, 1960) collected huge amounts of data on the prevalence of excessive drinking, patterns of drinking, and the characteristics of those drinkers. Large-scale surveys of the general American population have been done (Keller and Efron, 1955; Chafetz, 1967) to determine the demographic factors which are associated with excessive drinking. Demographic factors are population characteristics such as age, religion, marital status, etc.

In studies of drinking in urban areas, the work of Bailey, Haberman, and Alksne (1965) stands out. These investigators held extensive interviews with over 1,000 households in a sample survey of drinking patterns in New York City. Bailey et al. found that in households in which one or more members was a problem drinker the population characteristics of that household were significantly different than non-drinking households. This was true on a variety of demographic dimensions. Socioeconomic level was described as a function of income, occupational status, and educational level. Drinking households were generally found to have lower levels of attainment on all three of these indicators relative to non-drinking neighbors. Drinking households were

also more likely to be broken homes, the drinker often being either single, separated, or divorced. Family friction was generally assessed to be higher in the household of a problem drinker than a non-problem drinker.

Due perhaps to the time, energy, and money expenditures involved in doing house-to-house demographic surveys, few have been done. Instead, investigators frequently turn their attention to the population characteristics of the institutionalized drinker.

Alcoholism in State Hospitals

Researchers would rather examine the institutionalized drinker than the at-home drinker for three good reasons. One, there is far less difficulty in acquiring a sizeable subject population. Two, in most cases most of the demographic data sought can be collected from easily accessible hospital files. And three, a vast number of persons with alcohol problems utilize state hospital services. Perhaps only in recent years has there been an examination of the proportion of drinkers hospitalization in state facilities. U.S. Department of Health, Education and Welfare statistics (1968) indicate that during the past decade approximately 25% of all males in state mental hospitals have been problem drinkers. In a survey of California state hospitals, 20% of all hospital admissions were found to have alcohol-related diagnoses. More than 80% of these admissions represented a

second experience at a psychiatric institution, one-half were returnees to the same institution (Hayman in Barton, 1964).

At Boston (Mass.) State Hospital, McCourt, Williams, and Schneider (1971) found that 28.8% of new patients were given a diagnosis of some form of alcoholism. McCourt et al. consider this figure an underestimate. They noted that "if drinking effects are not apparent at times of admission, alcoholics with an associated psychiatric condition are likely to receive a diagnosis other than alcoholism " (p. 1086).

McCourt et al. also gave a partial profile (in demographic terms) of the hospitalized alcoholic. They noted that admission of drinkers peaked at ages 35 to 54, and that rarely was an admission recorded for a drinker over 65 years of age.

With that as an introduction, let us examine the findings of studies concerned with hospitalized drinkers.

Demographic Studies of Hospitalized Drinkers

The findings of demographic studies in institutions are a patchwork quilt. Settings of research vary--institutions can be located in urban, suburban, or rural areas--a factor which may or may not reflect the background of patients. Institutions can be private or public; studies sometimes combine the two in reporting results. Subjects under study have run the gamut from strictly alcoholics manifesting psychotic behaviors to those only showing arrest records. Studies have limited subjects to only one sex, one ethnic or racial back-

ground, one type of marital status, etc. For the purpose of this study only research involving urban males in public institutions will be reported. The rationale for this should become apparent later on.

Gorwitz, Bahn, Warthen, and Cooper (1970) collected data on alcoholics in Maryland psychiatric institutions. One of their major findings was that the frequency of hospital admissions was positively correlated with high population density in the community of the subject. The prevalence of drinking was higher in cities than suburbs, and the rate of admission to hospitals was higher as well. What was not made clear was whether this differential finding was based on differences in pathology or on differences in the availability of hospital services. It is possible that more urban Ss were admitted simply because of proximity to a hospital. Regardless, the association of high population density and frequency of hospital admission has been replicated in Ohio psychiatric facilities by Locke and colleague (Locke and Duvall, 1964; Locke, 1965). Another finding of Gorwitz et al. was that black alcoholics have fewer hospital admissions per year than do white alcoholics. Blacks were admitted, on the average, 1.27 times/year while whites were admitted an average of 1.36 times/year.

In New York hospitals, Moon and Patton (1963) noted the relative lack of formal education among alcoholics. Fully 73.3% of their subjects had not graduated from high school.

In addition, a large proportion of their subjects were not or had never been married. Of 1,074 males, 27.4% were single, 36.1% were married, 20.8% were separated, 7.5% were divorced, and 7.4% were widowed. Sixty-four percent of the subjects were single, divorced, separated, or widowed.

The vocational characteristics of the hospitalized male alcoholic have been studied by Etheridge and Ralston (1967). Their work compared hospitalized alcoholics with hospitalized nonalcoholics, chiefly schizophrenics. Alcoholics were underrepresented in skilled occupations and were heavily overrepresented as laborers. A lower incidence of hospitalization for alcoholism was noted among men with training and skill than among subjects who were at the lower rungs of vocational status.

Follow-up Studies and Readmission

One source of demographic information is the follow-up study. A follow-up study is generally employed by the originator of an alcohol rehabilitation program who seeks to report the success or failure of his treatment program. Commonly the investigator will send out questionnaires to discharged patients of the treatment program. The questionnaire will ask for demographic information as well as data on patterns of drinking, chiefly duration of abstinence. Abstinence is used as a measure of success, intemperance as a measure of failure. In a few cases, researchers have reported

readmission to a treatment facility as a measure of success or failure. Selzer and Holloway (1957) did a six-year follow-up and found that 37% of the answering sample was readmitted at another hospital, 23% specifically for an alcohol problem. Rohan (1970) reported that 25% of his patients returned to an institution within roughly one year of discharge. Neither investigator compared the demographic characteristics of the returners with those of the nonreturners. One wonders what it is about returning individuals which leads to their readmission while other drinkers manage to stay out of the hospital.

Mindlin (1959) identified several prognostic factors for therapeutic outcome. Her subjects were both males and females who had therapy at an outpatient facility. Abstinence was the indicator of successful outcome. Mindlin used a complex formula to arrive at positive and negative weightings for demographic characteristics. Under "Occupation," professional, clerical, and skilled classifications were weighted +1; unskilled jobs -1. Married subjects were rated $+\frac{1}{2}$; separated and divorced Ss -1. Subjects with "good" economic resources scored +1; those with "fair" resources $-\frac{1}{2}$; those with "poor" resources -1. Furthermore, Mindlin examined the characteristics of 42 inpatient therapy failures (returned to heavy drinking) and 68 outpatient therapy successes (remained abstinent). Of the failures, 0% were married, 36% were single, and 60% were separated and divorced.

A hypothetical person with a high risk of failure could be composed. He would be: separated or divorced, low in socioeconomic status, frequently arrested (20 or more times), of below-average intelligence, and showing signs of organic damage.

Rosenblatt and associates have noted an association among age, marital status, and multiple psychiatric admissions. Of 567 male patients diagnosed alcoholics, 42.5% had been admitted more than once (Rosenblatt, Gross, and Chartoff, 1971). Significantly more disrupted marriages were found in the multiple-admission group than in the single-admission group. Of special importance was the decade 35-44 years of age. Far more Ss in that age group who were separated, divorced, or widowed were in the multiple-admission group ($p < .01$). Reanalyzing the data of Vallance (1965), Rosenblatt, Gross, Malenowski, Broman, and Lewis (1971) achieved similar differences, though not with statistical significance. Rosenblatt et al.'s work is not of the follow-up variety, however. Rather than isolating drinkers who return to the hospital after a period of time, he is focusing on drinkers with multiple hospitalizations. While these populations are not mutually exclusive, neither are they entirely overlapping ones.

Summarizing the work of Mindlin and Rosenblatt et al., we see marital status as a potent predictor. Marital status seems to tap some measure of drinking chronicity. Those who

are married have the best chances for continued sobriety following psychotherapy; they are also least likely to have multiple psychiatric admissions for alcoholism. Those who are single, separated, or divorced run a significantly higher risk of "getting in trouble" with alcohol again.

Only one study has been done which attempted to use demographic variables as predictors of hospital readmission. Gynther and Brilliant (1967) followed up for one year 40 married and 40 non-married drinkers who were discharged from a St. Louis treatment clinic. Their results fly in the face of Mindlin and Rosenblatt's predictions. Significantly more married Ss were readmitted to psychiatric facilities than were divorced, separated, or widowed Ss ($p .01$). In addition, Gynther and Brilliant found no correlation between amount of drinking and risk of rehospitalization. They noted:

"... a point which deserves consideration is our failure to find any outstanding differences between patients who were readmitted, often more than once, and those who were not readmitted in a 12-month period. Part of the explanation seems to lie in the fact that readmission is not wholly determined by the patient's state of sobriety. That is, some discharged patients apparently continue to drink heavily but are not readmitted for a variety of reasons (e.g., indulgent wife, protective family). Others may be readmitted the first time they raise a glass" (p. 57).

Two other negative results are important. Neither educational level nor IQ variables manifested significant dif-

ferences between returners and non-returners. The latter result runs counter to the finding by Mindlin that below average intelligence is an indicator of poor prognosis. The former variable, educational level, is frequently correlated with economic resources. As such, this negative result also differs with Mindlin's prediction that poor economic resources are associated with poor prognosis.

Two methodological factors tend to reduce the credibility of the Gynther and Brilliant study. The sample population was small. N equalled 80: 40 married Ss and 40 unmarried Ss. This sample seems too small from which to draw firm conclusions. Secondly, the researchers were unable to find Ss who matched meaningful operational definitions of "married." Of the 40 "married" Ss, 23 had been divorced or widowed before. The "unmarried" category did not discriminate among single, widowed, separated, or divorced subjects.

A Formulation of the Problem

Most of the demographic research on alcoholism has focused on urban areas. Confirmed findings (Locke and Duvall, 1964; Gorwitz et al., 1970) indicate that drinkers from urban communities have a higher probability of chronic readmission to institutions. If we seek to understand the characteristics of the chronic returner, we must look at subjects from urban environments.

Males are overwhelmingly predominant in the hospitalized alcoholic population; commonly there are six males hospitalized with alcoholic diagnoses to every female (Keller and Efron, 1960). To study the hospitalized drinker research must emphasize the male, hospitalized drinker.

These two, well-documented findings form the rationale for this study's focus. Male, hospitalized drinkers from urban-suburban communities were the subjects of the investigation.

Given this population, the important question is this: what demographic factors influence the risk of subjects' returns to the hospital? Clues for answering this question exist in the research previously cited. However, the patchwork quilt nature of those clues inhibits the drawing of firm conclusions. Forewarned of the lacking in parallel methodology, measures, and subject populations, let us summarize the results of those studies.

Socioeconomic variables

Occupation--Rates of readmission were higher among hospitalized alcoholics with unskilled jobs (Etheridge and Ralston, 1967).

Poor economic resources were found to be a strong indicator of poor therapy outcome (Mindlin, 1959).

Educational level--Educational level does not discriminate between returners and non-returners (Gynther and Brilliant, 1967).

IQ does not discriminate between returners and non-returners (Gynther and Brilliant, 1967).

Below-average intelligence is associated with poor therapeutic outcome (Mindlin, 1959).

Race

Black males have lower rates of readmission than white males, but are admitted for the first time at a younger age (Gorwitz et al., 1970).

Marital Status

Marriage is a positive indicator of therapeutic outcome (Mindlin, 1959).

Marriage is associated with single psychiatric admission Ss; divorced, separated, or widowed Ss are more likely to have multiple admissions (Rosenblatt et al., 1971).

Marriage is positively associated with hospital readmissions. More married Ss return to the hospital after a one-year follow-up (Gynther and Brilliant, 1967).

Age

The decade 35 to 44 years of age is a critical period for multiple psychiatric admissions. Subjects with disrupted marriages in this age group have significantly more psychiatric admissions than subjects with disrupted marriages in other age groups (Rosenblatt et al., 1971).

Hospital admissions among alcoholics peak at ages 35 to 54. Rarely are drinkers admitted who are 65 or older (McCourt et al., 1971).

The Present Study

The present investigation is a follow-up study which employs demographic variables as predictors of hospital readmissions among problem drinkers. The goal of this research

is twofold. The first task is to fully characterize the male problem drinker who returns to an inpatient facility within a year of discharge as opposed to the discharged drinker who does not return within a year of discharge. On this basis, the second task is taken on: to identify certain demographic factors which are associated with high-risk- and low-risk-of-return.

Given the findings summarized above, the investigation began with one general hypothesis and five specific hypotheses stemming from the general one. The general hypothesis was that when determinants of social success indicate an individual is a failure, he will be more vulnerable to stress, and thereby be more likely to have a readmission at a hospital within one year of discharge.

The general hypothesis was translated into workable units of "determinants of social success" (and failure). It was hypothesized that among socioeconomic variables, low levels of education, unemployment, and low-status occupations would be associated with high risk of readmission. It was hypothesized that racial characteristics would discriminate returners and non-returners. Blacks were expected to have disproportionately high risk of readmission. Among marital status variables, it was hypothesized that single, separated, divorced, and widowed subjects would be more likely to return to the hospital. It was thought that living alone would increase drinking behaviors generally inhibited by spouses,

and that, concomitantly, hospital readmission rates would increase over those of married subjects. Among age variables no clear hypotheses were made. A rejection or support of the Rosenblatt et al. finding that 35-44 years of age is a high-risk time of life was hoped for. Lastly, previous hospitalizations for psychiatric problems was hypothesized to be associated with high-risk subjects. It was thought that previous experience with admissions procedures, and a familiarization with hospital routine would increase the chances of a subsequent readmission.

METHOD

Subjects

The subjects were 185 males discharged from the Northampton State Hospital, Northampton, Massachusetts, with some form of alcoholic diagnosis. Ninety per cent of the subjects were diagnosed as excessive drinkers who showed no additional psychiatric disorders. Ten per cent of the subjects were given multiple diagnoses, e.g., drinking was associated with schizophrenia or some other forms of psychopathology. Regardless of the length of hospitalization, all subjects were discharged from Northampton between January 1, 1971, and December 31, 1971. Subjects were from three units of the hospital representing three geographically contiguous areas in western Massachusetts: Springfield, Holyoke-Chicopee, and Westfield, Massachusetts. These communities are best described as fairly homogeneous, urban-suburban areas. This was not a sampling procedure. The 185 Ss represent all of the males with alcoholic diagnoses discharged from the three units in 1971.

At Northampton State Hospital there is no separate ward for problem drinkers. The subjects, therefore, were not a part of any alcohol rehabilitation program. Generally treatment at the hospital includes a "drying out" period during which tranquilizers and vitamins are dispensed to counteract

the emotional and physical problems commonly associated with long "benders."

The mean age of Ss was 43.5 years. Subjects ranged in age from 15 to 73 years. Nearly one-third of the Ss (33.0%) were between the ages of 35 and 44.

The average number of years of formal education in the subject population was 9.8. Fifty-nine per cent of the subjects received less than a high school education; less than 10 per cent went beyond high school.

Almost one-quarter (24.9%) of the Ss were single. Forty per cent were married at time of hospital admission; thirty-five per cent were either separated, divorced, or widowed. These last categories were relabeled "Marriage Lost" since the spouses of the subjects were lost either through separation, divorce, or death. This does not necessarily mean that such subjects were living alone; data on living conditions were unavailable.

All of the Ss had a hospital admission terminating in the year 1971. Fifty-four per cent of the subjects had no previous admission, meaning they had not had a psychiatric hospitalization before the one ending in 1971. More than one-quarter (25.9%) had one previous admission; one-fifth of the Ss had two or more previous admissions.

Forty-two per cent of the subjects were not employed at the time of their hospital admission. Twenty-one per cent of the Ss reported no regular occupational classification.

Those who held a job at present or in the past were most likely to be blue-collar workers: 25.8% in skilled trades, 34.1% in unskilled labor.

Based on the diagnoses made by hospital psychiatrists, we can infer a broad spectrum of physical, psychological and social disabilities caused by drinking in the subject population. At one pole of the continuum are the subjects diagnosed "Simple Drunkenness" or "Alcoholic Intoxication" which suggests an absence of chronicity and major ramifications. At the other pole, diagnoses such as "Alcohol Addiction" or "Alcoholic Deterioration" are founded on impressions of severe physical and psychological dependence. Rather than use individual diagnoses as descriptive points on this continuum, we have grouped diagnoses which are similar in their description of drinking severity. Thus the categories "Mild," "Moderate," and "Severe" diagnoses were created.

"Mild diagnosis" incorporates the APA Diagnostic and Statistical Manual-II diagnoses of "Simple Drunkenness," "Alcoholic Intoxication," and "Episodic Excessive Drinking." At best "Mild diagnosis" refers to a person caught being drunk and brought to the hospital almost by mistake. At worst, Episodic Excessive Drinking, the patient is intoxicated as "frequently as four times during the year" (APA DSM-II, 1968, p. 45). In this study, 11.9% of Ss had "Mild diagnoses."

"Moderate diagnosis" consists solely of "Habitual Excessive Drinking." This, the DSM-II defines as being intoxicated 12 or more times per year and being "recognizably under the influence more than once a week, even though not intoxicated" (p. 45). Thirty-one per cent of Ss were so diagnosed.

"Severe diagnoses" are considered to be "Alcohol Addiction," "Alcoholic Hallucinosiis," and "Alcoholic Deterioration." Such diagnoses indicate the clear presence of withdrawal symptoms when the patient is without alcohol. Organic damage (in brain and liver) is frequently behaviorally apparent. Usually the patient cannot go even one day without drinking. Forty per cent of the Ss were given these diagnoses.

Left with a residual of diagnoses--Non-Psychotic Brain Syndromes, Drinking associated with Schizophrenia, etc.--a miscellaneous category, "Other diagnoses," was created. It accounted for the remaining 15.9% of the subjects.

TABLE 1 indicates the diagnoses subsumed under the new labels "Mild," "Moderate," "Severe," and "Other." In addition, TABLE 1 presents the proportion of the total N accounted for by each individual diagnostic category. The proportion accounted for by the new, larger groupings is indicated as well.

In the second section of TABLE 1 the demographic data described previously is summarized. TABLE 1 represents a complete demographic profile of all the Ss in the study.

TABLE 1

Demographic Profile of Subjects

Section One: Diagnostic categories and the proportion of each in the subject population

<u>New Heading</u>	<u>Individual Diagnoses (from DSM-II)</u>	<u>% of total N each group represents</u>
Mild Diagnosis (11.9%)	<ul style="list-style-type: none"> Simple Drunkenness Alcoholic Intoxication Episodic Excessive Drink- ing 	<ul style="list-style-type: none"> 1.6 1.6 8.7
Moderate Diagnosis (31.5%)	<ul style="list-style-type: none"> Habitual Excessive Drink- ing 	<ul style="list-style-type: none"> 31.5
Severe Diagnosis (40.7%)	<ul style="list-style-type: none"> Alcohol Addiction Alcoholic Hallucinosi Alcoholic Deterioration 	<ul style="list-style-type: none"> 35.3 1.6 3.8
Other Diagnoses (15.9%)	<ul style="list-style-type: none"> Non-Psychotic Organic Brain Syndrome Drinking associated with Schizophrenia Drinking associated with Personality Disorders Drinking associated with Epilepsy 	<ul style="list-style-type: none"> 6.0 3.3 5.4 1.0
		100.00

TABLE 1 (Continued)

Demographic Profile of Subjects

Section Two: Other demographic categories and the proportion of each in the subject population

AGE \bar{x} = 43.5 years

24 years or younger	4.3%
25-34	16.7%
35-44	32.9%
45-54	27.0%
55-64	15.6%
65 years or older	<u>3.5%</u>
	100.0%

MARITAL STATUS

Married	40.5%	
Single	24.9%	Single or Marriage Lost (59.5%)
Separated	8.1%	
Divorced	24.3%	
Widowed	<u>2.2%</u>	
	100.0%	

RACE

Black	8.7%
White	<u>91.3%</u>
	100.0%

EMPLOYMENT STATUS

Working	58.2%
Not Working	<u>41.8%</u>
	100.0%

OCCUPATIONAL CLASSIFICATION

Professional	7.4%
Clerical	5.5%
Blue Collar, skilled (e.g., carpenter, plumber, etc.)	25.9%
Blue Collar, unskilled (e.g., laborer)	34.1%
Retired	5.5%
No Occupation	<u>21.6%</u>
	100.0%

TABLE 1 (Continued)

Demographic Profile of Subjects

Section Two: Other demographic categories and the proportion of each in the subject population

PREVIOUS ADMISSIONS $\bar{x} = 1.1$ admissions prior to 1971 admission

0 admissions prior to 1971 admission	53.6%
1 admission prior to 1971 admission	25.9%
2 admissions prior to 1971 admission	8.1%
3 admissions prior to 1971 admission	3.8%
4 or more admissions prior to 1971 admission	<u>8.6%</u>
	100.0%

EDUCATIONAL LEVEL $\bar{x} = 9.8$ years

0-8 years	31.4%	} Not High School Graduate (59.0%)
9-11 years	27.6%	
12 years	23.8%	} High School Graduate (33.5%)
13 or more years	9.7%	
Unknown	<u>7.5%</u>	
	100.0%	

UNIT

Springfield	46.2%
Holyoke-Chicopee	37.5%
Westfield	<u>16.3%</u>
	100.0%

DIAGNOSTIC COMPLEXITY

Single diagnosis (Drinking only)	90.2%
Multiple diagnosis (Drinking plus other forms of psychopathology)	<u>9.8%</u>
	100.0%

On the variables age, educational level, and marital status the subjects in this study matched well with the samples of hospitalized drinkers reported in previous studies. The age characteristics compare quite favorably with five previous investigations. The mean age of Ss in three studies (Rohan, 1970; Gynther and Brilliant, 1967; and McCourt et al., 1971) were, respectively, 44.2 years, 41.1 years, and 44.8 years. The median age of Ss in the Rosenblatt et al. study (1971) was 39.1 years. The mean age of the Ss in the present study was 43.5 years.

Gynther and Brilliant (1967) and Rossi, Stach, and Bradley (1963) reported mean educational levels of Ss as 10.6 years and 9.1 years, respectively. The present study's mean educational level, in years, is 9.8.

From the percentages of married, single, separated, divorced, and widowed subjects in five previous studies (Rohan, 1972; Gorwitz et al., 1970; Rossi et al., 1963; Moon and Patton, 1963; and Malzberg, 1960) the following mean per cents were computed: 42% married; 22% single; 13% separated; 18% divorced; and 6% widowed. Comparison with this study--40% married, 25% single, 8% separated, 24% divorced, and 2% widowed--shows close parallels in all categories. The percentage of divorced Ss in this study is perhaps a bit high, the percentage of widowed Ss a bit low.

Procedure

Method of data collection and type of data variables:

Information on the 185 subjects was taken from the "face sheets" of their hospital files at Northampton State Hospital. Subjects were not directly contacted or interviewed. From the twenty-two items of information listed on a hospital face sheet, nine demographic factors were selected as potentially predictive characteristics of returners. The factors were: age at discharge, race, marital status, educational level, occupational classification, employment status, number of previous admissions to any psychiatric facility, hospital unit, and diagnosis at discharge. These factors have most frequently been used in previous demographic research on alcoholics.

For the purposes of this study, "Discharge" is defined as a doctor-approved discharge (formal termination of hospital services) or an indefinite visit (leave from the hospital with the doctor's expectation that the patient will be successful in outside adjustment). Regardless of the duration of the hospitalization, all Ss were discharged within the calendar year, 1971. Subjects were followed up for twelve months following discharge.

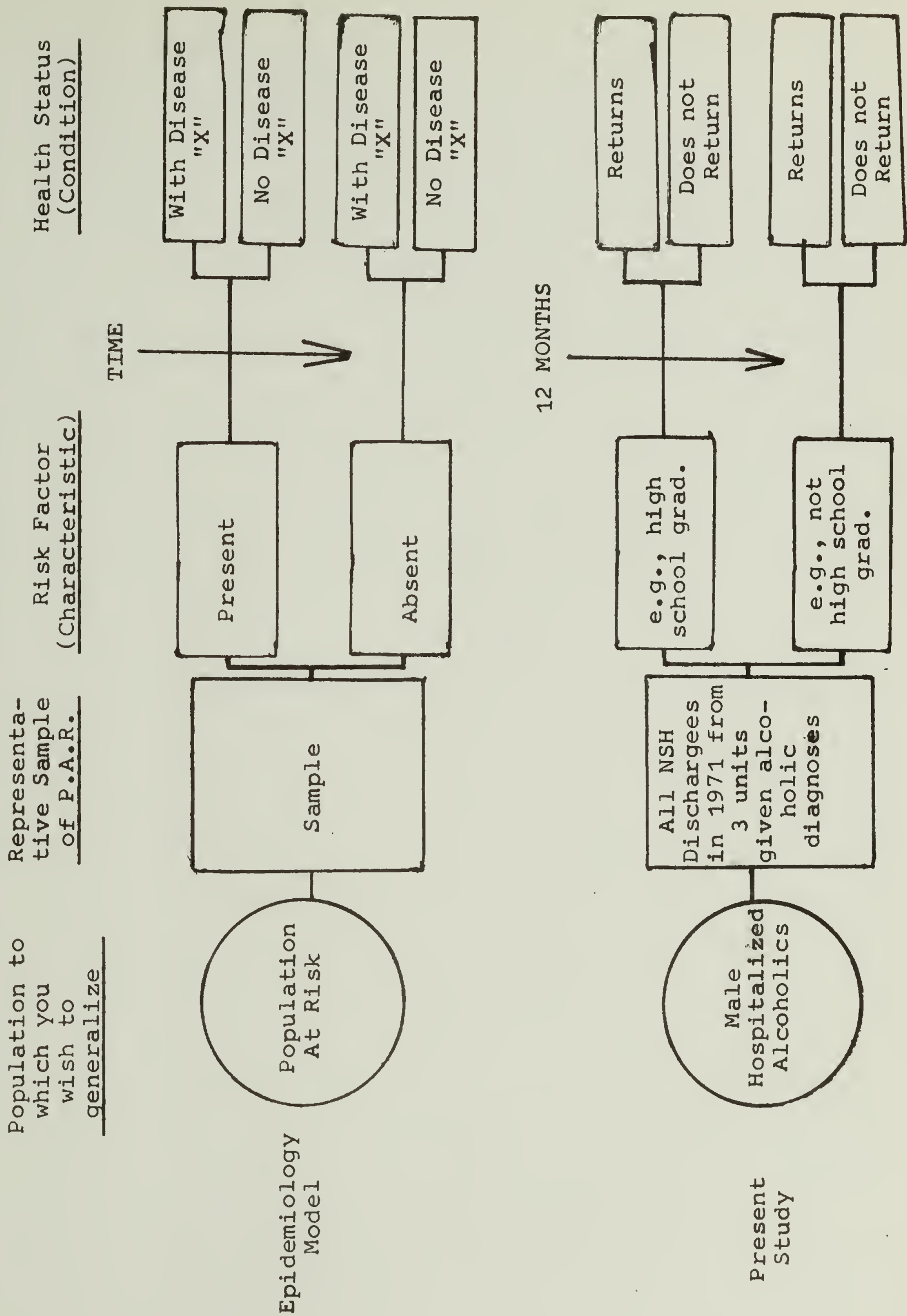
Rationale for research procedure: To assess the association of certain demographic characteristics with hospital readmission, a research procedure called a "retrospective co-

hort study" (MacMahon and Pugh, 1970) was used. Commonly utilized in epidemiological research in public health, a cohort study examines a group of individuals who share a "common exposure . . . (and who are) followed-up through time to determine the disease frequency associated with that exposure" (MacMahon and Pugh, p. 95). Certain modifications of semantics and concept are necessary to apply the cohort model to psychological research. Thus, the subjects in the present study have a common experience rather than "exposure"--their discharge from Northampton State Hospital during 1971. The retrospective aspect of the study involves the researcher knowing before hand that the subjects had this past hospital experience. In addition, the data collected were previously recorded by hospital staff. A cohort study seeks to ascertain the differential consequences of a characteristic or "risk factor" in the development of a pathological reaction. In this study we must broaden the usage of "pathological reaction" to mean a readmission to an inpatient psychiatric facility.

FIGURE 1 outlines the general structure of a retrospective cohort study and specifically relates that structure to the requirements of the present research. This figure is adapted from the model presented by Tuthill (1971).

An epidemiological researcher typically wishes to make generalizable statements concerning predictive demographic characteristics and their relation to hospital readmission.

FIGURE 1. Cohort Study Model (Logical Flow-Chart)



It is necessary for the target of that generalization to be clearly delineated. In this case, it is male problem drinkers hospitalized in state mental institutions. The generic term for this target group is the Population at Risk (P.A.R.).

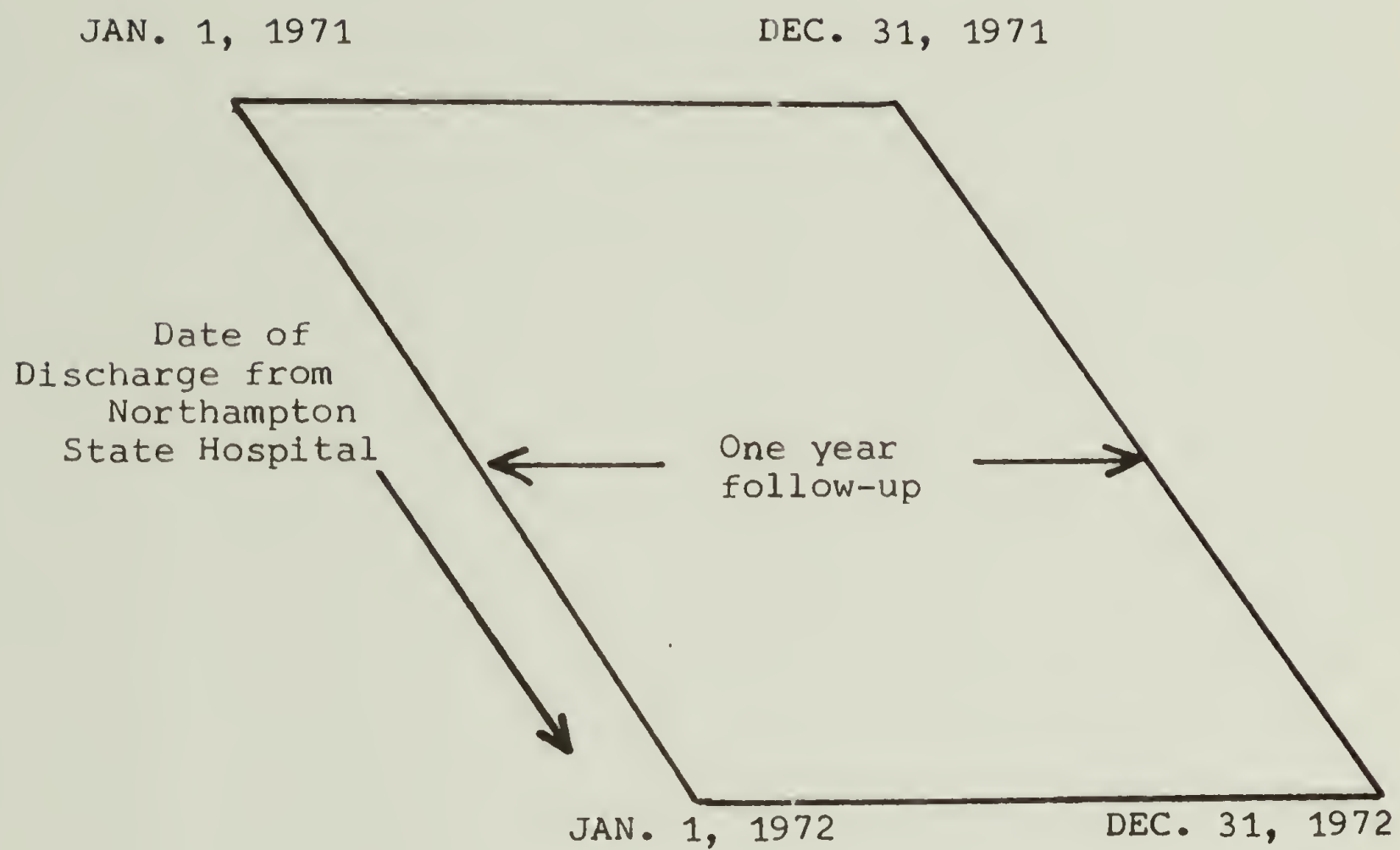
A sample of the P.A.R. is made the subject of research. In the present study, our sample is 185 males all discharged from Northampton during 1971 with an alcoholic diagnosis. These Ss came from only three units of the hospital.

The general epidemiological model then calls for the collection of data on a specific aspect of that sample. In a lung cancer research study, the sample might be divided into "Smokers" and "Non-smokers." In the present study a variety of variables were subdivided. These subdivisions were not necessarily analogous to the presence-absence dichotomy in most epidemiological studies. Marital Status, for example, is divided three ways: "Married," "Single," and "Marriage Lost." In FIGURE 1, the example given is Educational Level --one group of Ss has high school diplomas, another does not.

A specified time period elapses between the common exposure or experience of the cohort and their "follow-up." In the present study this time lag was one year. However, since Ss were discharged at various times throughout 1971, an individualized follow-up was done. From day of discharge, each subject was followed-up until that day the next year. FIGURE 2 illustrates the follow-up time procedure.

FIGURE 2

Follow-up Procedure for Subjects



Lastly, Ss are checked to see if the disease was contracted during the follow-up period. In this case, the "disease" is readmission to one of the two inpatient psychiatric institutions in the Northampton area--Northampton State and the Veterans Administration Hospital in nearby Leeds, Massachusetts.

Further procedural considerations: With one exception, the Northampton State Hospital and the Veterans Administration Hospital are the only public institutions designed for psychological treatment in the catchment area including Springfield, Holyoke-Chicopee, and Westfield. The exception is Springfield Hospital in Springfield, Massachusetts. Springfield Hospital maintains an inpatient psychiatric unit. However, problem drinkers are not easily admitted to this unit: drinkers are not attractive subjects for psychotherapy. In addition, the charges for services at the hospital are probably out of the economic range of the majority of the subjects in this study.

There are different admissions policies at the two institutions which were checked. At Northampton no patient can be refused admission. In addition to voluntary patients, problem drinkers can be involuntarily brought to the hospital by police or court officers. Northampton will admit these court-related cases. In contrast, the VA reserves the right to refuse admittance to court-related cases. Non-veterans,

obviously, are denied admission. Further, the Alcohol Rehabilitation Program at the VA refuses to accept any drinker who is drunk when applying for admission.

After data on hospital readmission was collected, two subsets of the total population were formed: men who were readmitted at one of the two institutions ("returners"), and those who were not readmitted ("non-returners"). It is important to keep in mind the number of psychiatric admissions Ss in each of these subgroupings have experienced. All "non-returners" with no previous admissions have had only one hospitalization--the one at Northampton ending sometime during 1971. All "returners" have had at least two hospitalizations, the one at Northampton in 1971 and another at either Northampton or at the VA Hospital sometime during the year of follow-up. "Returners" with a single previous admission, therefore, have been hospitalized three times.

Data analysis: Each demographic variable was subdivided. The specific subdivisions are displayed in TABLE 1 (p. 19). Expected frequencies were calculated for the number of returners and non-returners in each subdivision. Then, tallies were made of the observed number of Ss who were returners and non-returners. The performance of chi-square analyses assessed the statistical significance of these frequency differences.

Initially a priori hypotheses about the predictiveness of particular variables guided the making of subdivisions. However, the overriding goal of maximizing the identification of high- and low-risk sub-populations necessitated a procedural change. For example, expecting to discriminate returners and non-returners on the basis of marital status, single, married, divorced, separated, and widowed Ss were checked to determine readmission. But, when the rate of readmission among single, divorced, separated, and widowed Ss was found to be similar, and different than married Ss, the new subdivisions became "Married" and "Single or Marriage Lost."

Thus, the hypothesis-testing procedure of data analysis was dropped in favor of a more "shotgun" approach. Whatever characteristics identified a high- and low-risk group, such characteristics were focused upon.

When two or three variables were used in combination, chi-square tests were done to assess interaction effects.

RESULTS

Of the total pool of 185 subjects, 54 (29.2%) returned to either of the two psychiatric institutions within a year of discharge. Forty-one men (22.1%) returned to Northampton State Hospital; thirteen men (7.1%) were admitted to the Veterans Hospital. Since the veterans showed no significant differences on any demographic variables, we shall report results on all 54 Ss as a pooled group. It should be mentioned that while not a difference of statistical significance, the veterans were somewhat older than the state hospital admittants (veterans' mean age: 46.2 years versus state hospital admittants' mean age: 42.3 years).

The best variables for predicting readmission were found to be previous admission, marital status, age, and educational level. Each variable was subdivided in a manner which could best separate returners from non-returners. The goal was always to maximize the separation of a high-risk-of-return group from a low-risk-of-return group. However, no subdivision was made so small as to be meaningless. As a rule of thumb, subdivisions always included 10 subjects or more (5.4% of the total). When subdivisions showed the same or nearly the same readmission rate, they were pooled into a larger, more inclusive grouping. In the four most predictive variables, maximal subdivision was achieved by forming two subgroupings. The following gives further rationale for such subgrouping procedures.

Previous Admission Variable

As the number of previous admissions increased, so did the rates of readmission. This increasing function can be graphed as an almost perfect linear relationship. TABLE 2 and FIGURE 3 illustrate this. The division "No previous admission/one or more previous admissions" separated the population sufficiently to achieve moderate statistical significance with a chi-square test ($\chi^2 = 5.22$, $df = 1$, $p < .025$). Subjects with no previous admissions returned 22.2% of the time versus one or more previous admissions' return rate of 38.2%.

Marital Status Variable

Originally marital subcategories were made as follows: married, single, separated, divorced, and widowed. It was later found that the readmission rates of single, separated, divorced, and widowed Ss were roughly equal (single, 23.9%; separated, 26.8%; divorced, 24.6%; and widowed, 0%). Thus, these categories were pooled into a group labeled "Single or Marriage Lost" (S/ML). Compared with married subjects, these Ss showed lower readmission rates. Married subjects returned 36.8% of the time versus S/ML subjects' return rate of 23.8%. The division "Married/Single or Marriage Lost" achieved marginal statistical significance ($p < .08$).

TABLE 2

Rate of readmission associated with
number of previous admissions

<u>Number of Previous Admissions</u>	<u>% of total N group represents</u>	<u>group N</u>	<u>Number of returners</u>	<u>Readmission rate</u>
0	54.1	99	21	22.2%
1	25.9	48	14	29.2%
2	8.1	15	6	40.0%
3 or more	13.0	24	11	45.8%

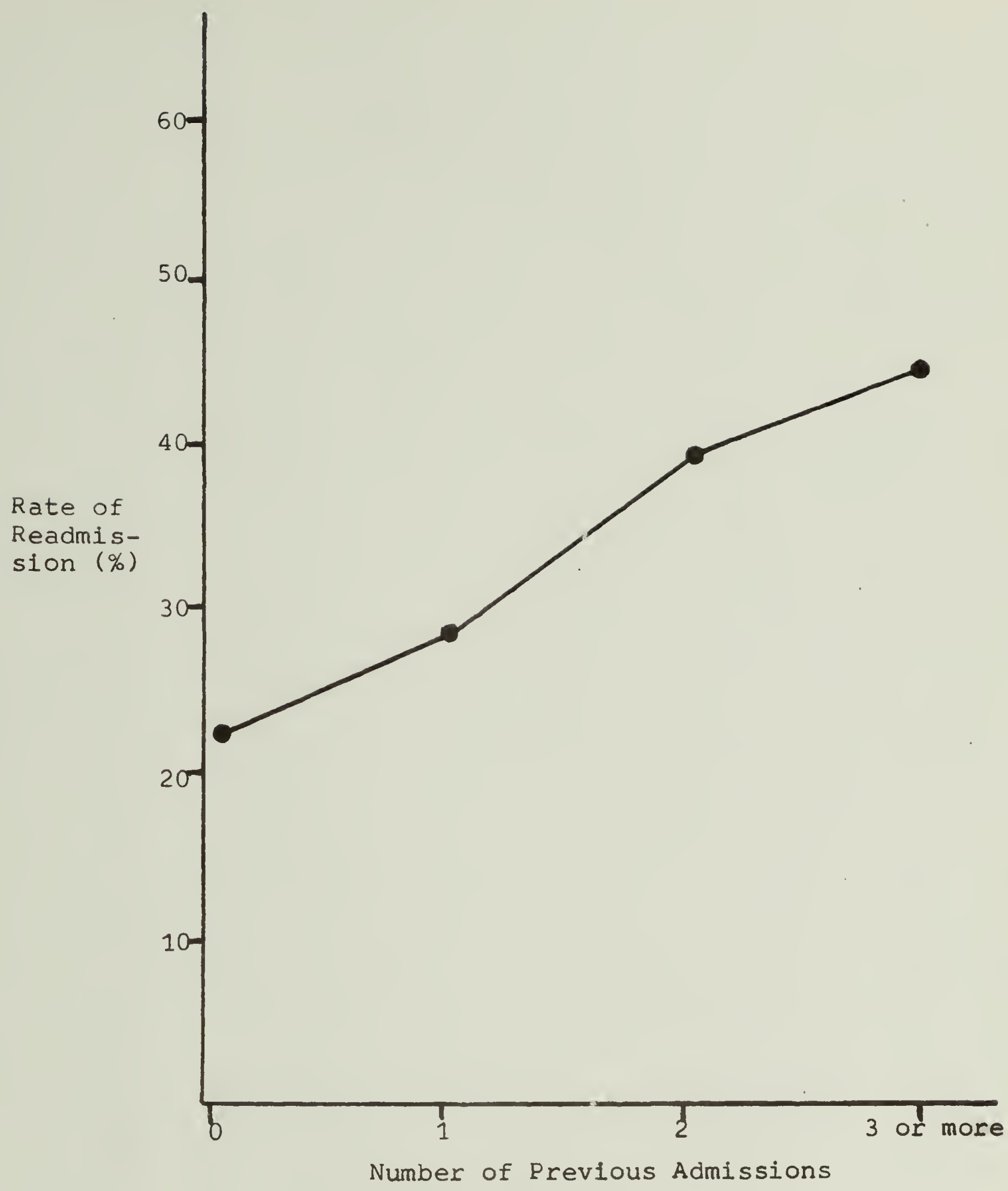


FIGURE 3

Rate of readmission associated with
number of previous admissions

Age Variable

Subjects between the ages of 35 and 45 were found to have a high rate of readmission (36.2%). To maximize the difference between this high-risk group and low-risk groups, the high-risk group (35-45) spans eleven years rather than the more common ten-year subdivisions of other studies. Interestingly, Ss both younger than 35 and older than 45 had fairly similar readmission rates (Younger, 28.3%; Older, 24.2%). With the logic employed earlier, a pooled group labeled "Less than 35 or More than 45 years" was created. As compared with the 35 to 45 year age group, the Less than 35 or More than 45 year old group had lower readmission rates. Thirty-five to forty-five year olds returned 36.2% of the time versus Less than 35 or More than 45 year olds' return rate of 25.0%. These differences were not statistically significant.

Educational Level Variable

Subjects were divided into two categories: "Not a high school graduate" (less than 12 years of education) and "High school graduate" (12 years or more). Those without a high school diploma were found to have higher rates of readmission than those who attained 12 or more years of education. High school graduates returned 24.2% of the time versus a return rate of 31.8% for non-high school graduates. This difference was not statistically significant.

If we were to employ only one variable in attempting to predict readmission, Previous Admission would be our best indicator. TABLE 3 shows a rank ordering of the variables which best predict readmission when used alone. In addition, TABLE 3 summarizes the results given above.

To further maximize our predictive ability, these variables (Previous Admission, Marital Status, Age, and Educational Level) were used in tandem combinations to better identify high- and low-risk Ss. Each of the four variables was paired with the others to form new subcategories. Of the six possible combinations, the use of Previous Admission and Marital Status variables was the most predictive ($\chi^2 = 10.55$, $df = 3$, $p < .025$). TABLE 4 shows all six combinations of two variables. Combinations are listed in order of their ability to discriminate between groups with high readmission rates and low readmission rates. Only two-variable combinations involving marital status proved to discriminate with statistical significance.

Lastly, using the four best predictive variables in combinations of three, a "tree" diagram was constructed. TABLE 5 shows the "tree" when Previous Admission, Marital Status, and Educational Level variables are used to further subdivide the population. At the top of TABLE 5 we start with the total population of 185 Ss. Knowing nothing but that they have

TABLE 3

Rank ordering of predictor variables
(using only one variable)

<u>Variable</u>	<u>Group N</u>	<u>Number of returners</u>	<u>Readmission Rate</u>
1. Previous Admission			
No Previous Admission	99	22	22.2% *
One or more Previous Admission	86	33	38.4%
2. Marital Status			
Single/Marriage Lost	109	26	23.8%
Married	76	28	36.8% N.S.
3. Age			
Less than 35 or more than 45 years	116	29	25.0%
35 to 45 years	69	25	36.2% N.S.
4. Educational Level			
High school graduate	62	15	24.2%
Not high school graduate	110	35	31.8% N.S.

*Difference statistically significant at the .025 level
($\chi^2 = 5.22$, $df = 1$).

N.S. Difference is not statistically significant.

TABLE 4

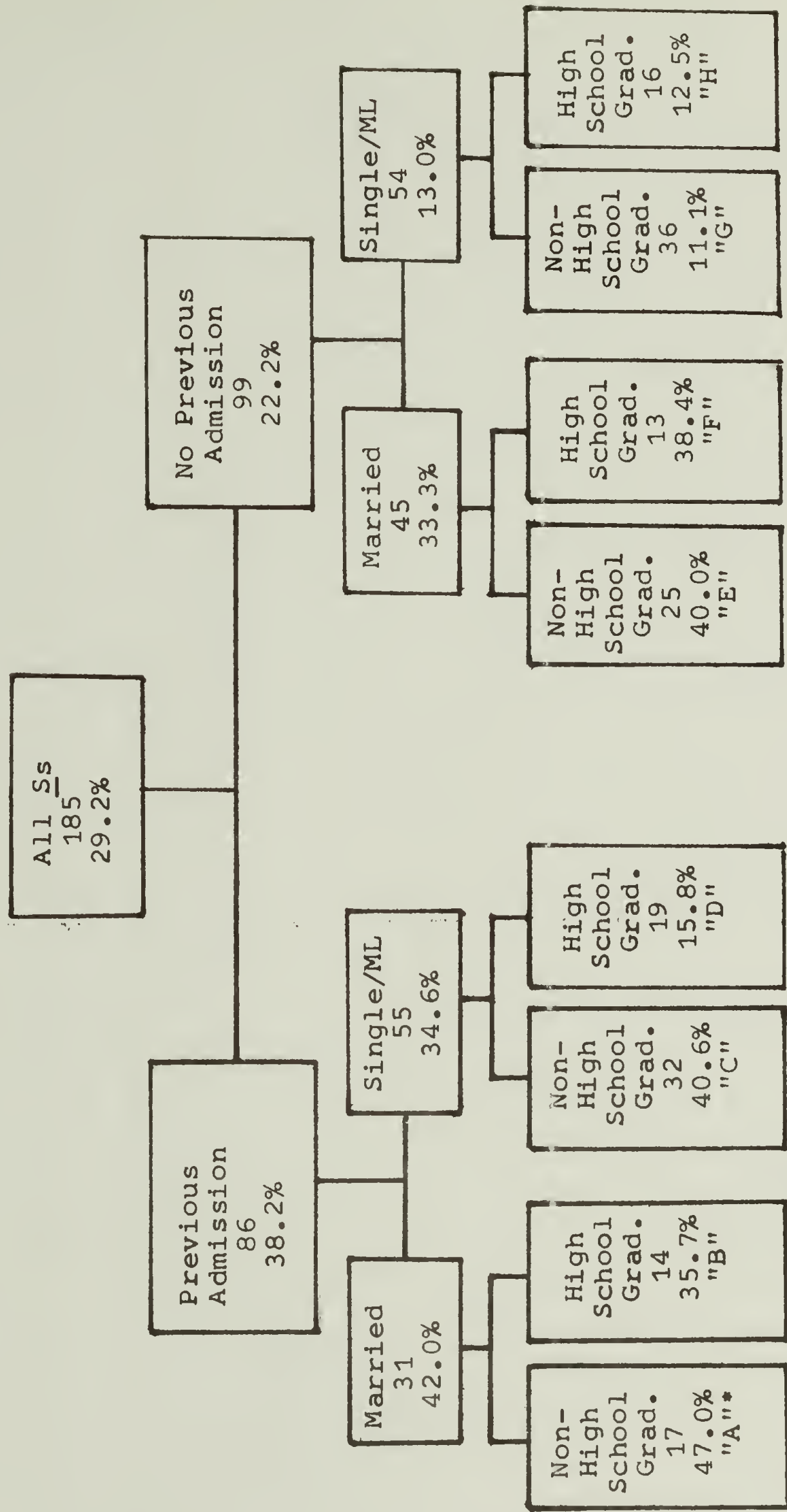
Rank ordering of predictor variables
(using combinations of two variables)

Variables

1. Marital Status/Previous Admission	$x^2=10.55$, df=3, $p<.025$
2. Marital Status/Age	$x^2= 9.73$, df=3, $p<.05$
3. Marital Status/Education	$x^2= 9.16$, df=3, $p<.05$
4. Previous Admission/Age	$x^2= 7.55$, df=3, N.S.
5. Previous Admission/Education	$x^2= 6.49$, df=3, N.S.
6. Age/Education	$x^2= 3.57$, df=3, N.S.

TABLE 5. "Tree" diagram using three variables

(Previous Admission, Marital Status, and Educational Level)



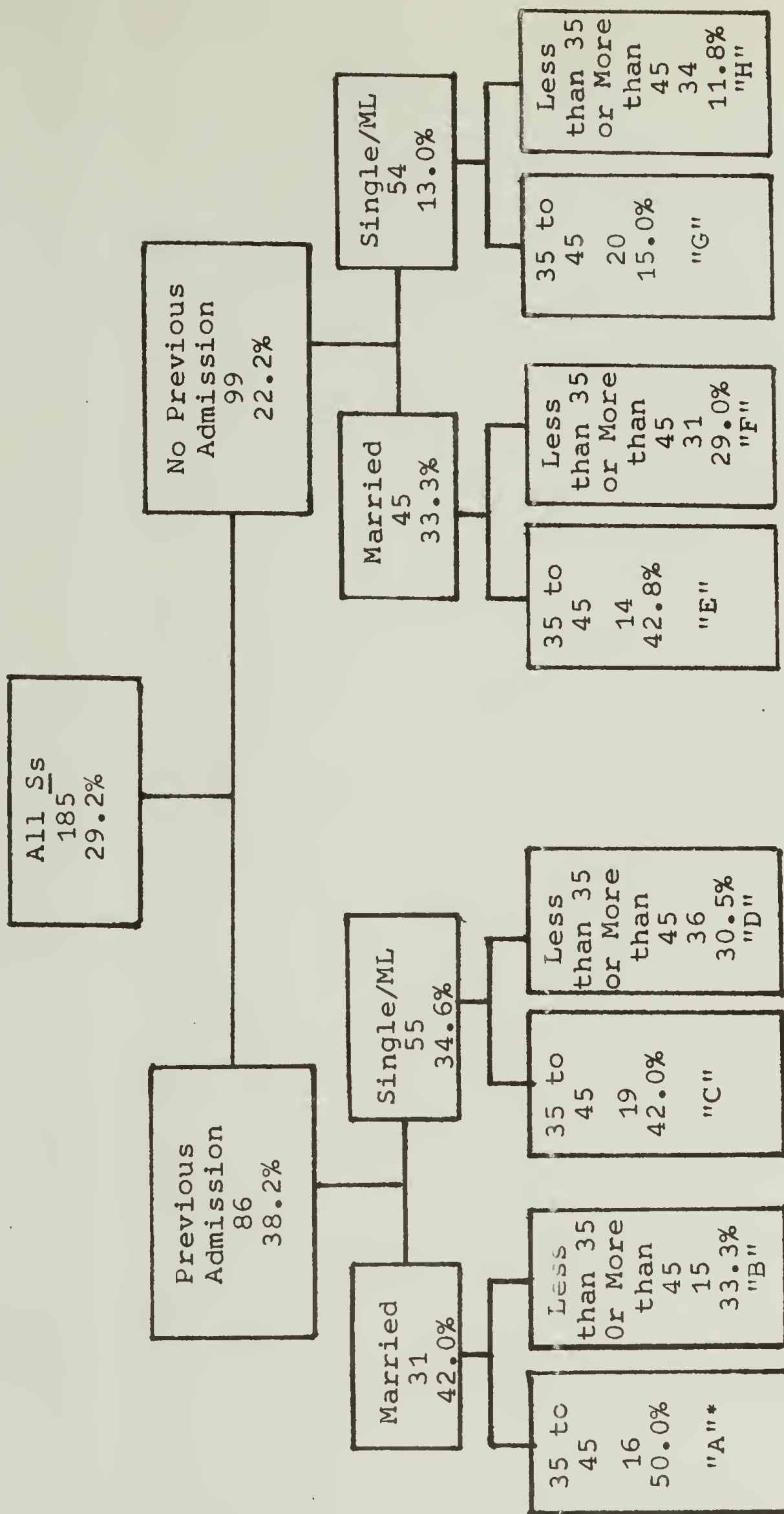
Note: The first number in each box indicates the number of subjects in the box. The percentage refers to the return rate for that box. For example, in box "A" there are 17 Ss who are not high school graduates, who are married, and who have previous admissions. Of these 17 Ss, 47% returned to an institution within one year.

* Letters are for labelling purposes only.

all been discharged with alcoholic diagnoses and that they are men, we see they have a 29.2% return rate. With the inclusion of previous admission data we separate a higher-risk-of-return group from a lower-risk-of-return group (Previous admission = 38.2% returning, 86 Ss; No Previous admission = 22.2% returning, 99 Ss). Each of these categories are further broken down by including marital status data. Men with previous admissions are subdivided into those who are married and those who are single, separated, divorced, or widowed (Single/ML). Likewise, two subdivisions are made among men with previous admissions. By such subdivisions we can locate a high-risk group (Previous admission and married--42% of whom return) and a low-risk group (No Previous admission and Single/ML--13% of whom return). By including a third subdivision, utilizing educational level, we expand our "tree" and maximize the separation of high- and low-risk groups. Data on the educational level of thirteen subjects was unavailable. Therefore, the number of subjects in boxes "A" through "H" do not tally with those in the categories above them. In the tree including age (TABLE 6) there is no missing data. Note that box "A" represents the highest-risk group in the diagram. To facilitate understanding these tree diagrams, the variable associated with higher risk of readmission is always placed on the left side of the diagram. Thus, the highest risk groups will always be located in box "A", the lowest risk group in box "H".

TABLE 6. "Tree" diagram using three variables

(Previous Admission, Marital Status, and Age)



* Letters are for labelling purposes only.

A chi-square test was performed on the eight resulting categories of the three diagrams, boxes "A" through "H". The differences across these eight groups was significant at the .025 level when the three variables were Previous Admission, Marital Status, and Educational Level ($x^2 = 16.50$, $df = 7$). When the third variable was Age the differences were statistically significant at the .05 level ($x^2 = 14.42$, $df = 7$).

The eleven years 35 to 45 appear to be critical ones for hospital readmission. In all subcategories, across both marital status and previous admission variables, Ss of this age group showed higher rates of readmission. These differences are not sufficient for statistical significance, but a constant effect can be noted.

High school diplomas are apparently associated with lower rates of hospital readmission. In all but one subcategory, the acquisition of less than 12 years of formal education was associated with higher readmission rates. None of these differences was of statistical significance. However, in the category "Previous Admission and S/ML" those who had twelve years of education (TABLE 5, box "H") were more likely to be readmitted. This difference was small, and perhaps was entirely due to chance.

Other variables indicated high- and low-risk groups as well. The combination of Marital Status and Employment

Status showed an interesting, though non-significant, interaction effect. "Employment Status" was subdivided as: "not working at time of admission" and "working at time of admission." For this analysis, Marital Status was subdivided: "single", "married", and "marriage lost". When single Ss were working their rate of readmission was around 1 in 10. When single Ss were not working the risk was more than 1 in 3. For marriage lost Ss, the effect was exactly the reverse --marriage lost Ss who were working were readmitted more often than those who were out of work (ML and working, 28.2% versus ML and not working, 19.3%). Married subjects' readmission rates were seemingly unaffected by the variable of employment status. TABLE 7 summarizes these results, FIGURE 4 illustrates them.

Psychiatric diagnosis showed a direct relation with risk of return. The more severe the diagnosis, the higher the risk. However, this finding represents something of a tautology since the arrival at a diagnosis of, say, Habitual Excessive Drinking is based on the fact that the patient has had more frequent bouts with intoxication than a patient who would be diagnosed "Episodic Excessive Drinking." While there is no causal connection between amount of drinking and frequency of hospitalization, a correlation surely exists. This study utilized a new approach of pooling several diag-

TABLE 7

Rate of readmission associated with marital status
and employment status

<u>Category</u>	<u>% of total N group represents</u>	<u>Group N</u>	<u>Number of Returners</u>	<u>Readmission Rate</u>
Working and				
Single	11.3	21	2	9.5%
Married	24.3	45	16	35.6%
Marriage Lost	21.1	39	11	28.2%
Not Working and				
Single	12.4	23	8	34.7%
Married	16.7	31	12	38.7%
Marriage Lost	14.0	26	5	19.3%

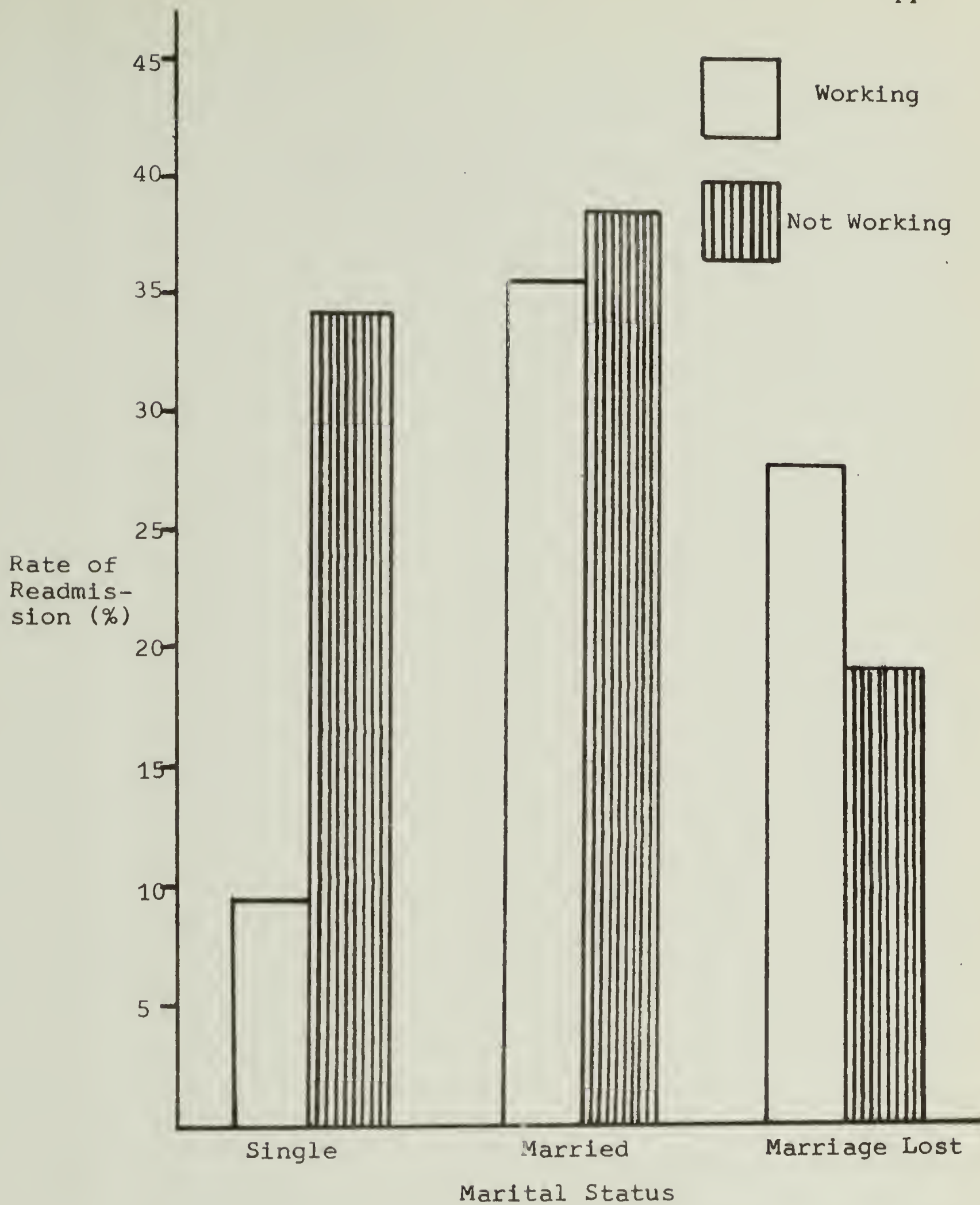


FIGURE 4

Rate of readmission associated with marital status
and employment status

noses to be relabeled "Mild", "Moderate", "Severe", and "Other" diagnoses. For a breakdown of which APA diagnostic categories qualify for which pooled label, consult the Subjects section (p. 18). Diagnostic severity had a unidirectional effect on readmission rates--as the patient was seen as more severely addicted, his chances for hospital readmission increased. The difference in readmission rates among diagnostic groupings was, however, less than statistically significant. TABLE 8 summarizes these results. It is interesting to note that the "Other" category included a sizeable number of subjects and represents a fairly high-risk-of-return category.

The categorizations that have previously been alluded to are not independent of, or mutually exclusive to additional subgroupings of subjects. In the case of three diagrams a certain symmetry was maintained in subdividing groups, i.e., the eight resulting boxes represent all possible combinations of three variables. However, if we attempt to find the best possible predictor combinations of variables regardless of symmetry, we arrive at the highest-risk categories of Ss in this study. Likewise, we arrive at the lowest-risk categories of subjects. TABLE 9 lists the highest and lowest risk groups when any and all information is utilized. In the high-risk groupings, the categories are listed in descending

TABLE 8

Rate of readmission associated with diagnostic severity

<u>Category</u>	<u>% of total N group represents</u>	<u>Group N</u>	<u>Number of Returners</u>	<u>Readmission Rate</u>
Mild				
Diagnosis	11.9	22	3	13.6%
Moderate				
Diagnosis	31.5	58	16	27.6%
Severe				
Diagnosis	40.7	75	24	32.0%
Other				
Diagnoses	16.2	30	9	30.0%

TABLE 9

I. Highest rate of readmission categories

<u>Category</u>	<u>Group N</u>	<u>Number of Returners</u>	<u>Readmission Rate</u>
1. Four or more previous admissions	17	10	58.8%
2. Previous admission/ Married/35-45 years	16	8	50.0%
3. Previous admission/ Married/Not a high school graduate	17	8	47.0%

II. Lowest rate of readmission categories

<u>Category</u>	<u>Group N</u>	<u>Number of Returners</u>	<u>Readmission Rate</u>
1. Single/Mild diagnosis	10	1	10.0%
2. Single/Employed	21	2	10.5%
3. No previous admissions/ Single or ML/Not a high school graduate	36	4	11.1%
4. No previous admissions/ Single or ML/Less than 35 or more than 45 years	34	4	11.8%

order of risk. In the low-risk groupings, the categories are listed in ascending order of risk. Again, be reminded that these groups are not mutually exclusive and exhaustive.

DISCUSSION

The results of this investigation indicate that four demographic factors are useful predictors of hospital readmission among discharged drinkers. Those factors are previous psychiatric hospitalizations, marital status, age at discharge, and educational level. Let us examine the specific relationship of each variable to risk of hospital readmission.

Previous Admission

Used alone, previous admission was the most powerful variable capable of discriminating high-risk subjects from low-risk subjects. This finding is supported by the recent work of Lorei and Gurel (1973) who found that the single most powerful predictor of hospital readmission among schizophrenic patients was the number of previous hospitalizations those patients had. Number of previous admissions was found to correlate significantly with readmission ($r = +.14$). (Curiously, the second most powerful indicator was prehospitalization abuse of alcohol.)

In the present study all of the subjects who returned to the hospital and who had a previous admission had experienced three hospitalizations. Those who had no previous admissions and did not return had only been hospitalized once. Perhaps this variable identifies the more pathological drinker: he

who drinks most, disrupts most, is hospitalized most.

At this point, however, we might recall the comments of Gynther and Brilliant (1967) who suggested that rehospit-alization may have little to do with quantities of alcohol drunk or frequency of intoxication. More conservatively, perhaps those Ss with previous admissions simply have more experience with hospitals, and this factor alone explains risk of readmission. They know there are available inpatient facilities for "drying out". They are familiar with staff, physical layout, and procedures. Perhaps the first admission cannot break down the barriers to quick readmission, but two hospitalizations make the third more probable. Having been there twice, are previous admittants more likely to take the same actions after another drinking binge? We might be dealing with matters of habit strength, the learning of a set of actions. This learning paradigm presupposes a reinforcer to account for the increased probability of readmission. How might hospitalization in a state mental hospital or Veterans Administration psychiatric installation be a reinforced event? There are several possible answers:

Previous hospitalizations might be conceived of as "successful" treatment by the patient. Hospitalization usually results in at least temporary abstinence, and if sobriety is a prime consideration, the hospitalization could be seen positively in this light. This may represent a break in the cycle of drinking benders. Quite possibly there is a carry-

over of sobriety following discharge. Hospitalization may also mean a relatively pleasant time away from work, family, and neighborhood stresses. But for most subjects we cannot assume that psychiatric hospitalization is an altogether agreeable experience. Even conceived of as a hotel, Northampton State Hospital is anything but plush. This there may be an alternative explanation: psychiatric hospitalization may be paradoxically reinforcing precisely because of its discomforts. Hospitalization may be seen as a sort of just dessert--punishment for past irresponsible behavior. The problem drinker can atone for his misdeeds by spending time in psychiatric institutions with the "crazies", even heaping upon himself the social stigma of mental illness. As a source of assuaging guilt, the hospital experience becomes a ticket to future drinking bouts. Having paid his debt, the drinker returns to drinking only to have to atone later on. And so the revolving door keeps turning.

Hospitalizations may be a reinforced response for the patient's family. Just as time away from family stresses may be desired by the patient, so the patient's absence from the home may be desired by the family members. We can imagine these periods as respites from frequent marital conflicts over drinking and other highly charged issues. This readmission might be sought by both patient and family as a sort of imposed vacation from squabbles.

Hospital admission could be conceived as punishment as well. Vindictive family members may use the hospital as something less severe than imprisonment, but as something just as effectively punishing. In addition, commitment to state hospitals is a far simpler process than legal proceedings. In the guise of treatment, the wife or parent can make the patient pay for his drinking. The principal coin of this realm is personal status and esteem. Having once reduced the wealth of the patient in those currencies through a previous admission, the wife or parent knows the power of the hospital in making such devaluations whenever necessary. Naturally, should the atonement motives hypothesized above exist in the patient, hospitalization becomes an attractive action to both parties.

Approaching the phenomenon with less cynical eyes, hospitalization can be seen by family as a beneficial and humane therapy. The very real dangers of withdrawal can be significantly moderated under hospital care. Sobriety, at least short-term sobriety, can be assured. Medications are available to reduce the experience of anxiety and shakiness. Malnutrition and other medical complaints can be attended to. Contacts can be made at the hospital for outpatient care both at the hospital itself and in Alcoholics Anonymous. The logic of readmission may then be: treatment is available there, but last time he didn't take full advantage of it.

On the other hand, readmission may have nothing to do with the motivations and conceptions of patient and family. Conceivably, the police authorities in the patient's community make a sizeable number of decisions concerning hospital readmission. During the follow-up period of this study it was still legal in Massachusetts for police officers to pick up men on drunkenness charges and admit them to the state hospital involuntarily. Since June 1, 1973, Massachusetts law prohibits police from arresting, or admitting intoxicated citizens. If assistance is required, police are now to take inebriates to the detoxification center in Springfield, Massachusetts (Handlin, 1973). The former ruling invited a cyclical pattern of admission and readmission. Once having brought a particular drinker to the hospital, a police officer might be more likely to repeat the procedure should similar circumstances (intoxication) occur.

Some comments on the applicability of interpretations presented so far are in order. It is unlikely that one of the interpretations of data given here is "correct" and that the rest are "incorrect". It is more likely that discrete high-risk sub-populations in the population at risk are best described by one explanation and not by another. The motives, values, and situations which underlie a certain group's hospital readmission are perhaps best assessed by one particular interpretation of the data. Other interpretations pertain to other sub-populations and situations. Combinations of inter-

pretations are entirely feasible as well. For example, a family with ambivalent attitudes toward the problem drinker may opt for hospital readmission both because of spiteful motivations and a desire to assist the man in attaining sobriety. It is unreasonable to assume that the cause can be identified on the basis of data from this study, or in foreseeable studies, for that matter. What we can present are possible causes, interpretations which singly and in combination seem to explain the phenomenon of hospital readmission. Throughout the discussion which ensues it is preferable for the reader to keep this flexible, non-exclusive framework in mind.

Marital Status

The marital status results are probably the most interesting in this study. They are, at least, non-intuitive; at most, controversial. We noted in the results section that married men are more likely to return than either single men or men whose marriages were dissolved for one reason or another. This result supports the finding of Gynther and Brilliant (1967) that more married Ss than non-married Ss returned to a psychiatric treatment center within a year of discharge. It tends to reject the Mindlin (1959) proposal that marriage is a strong, positive predictor of good therapeutic outcome. As well, it differs with the Rosenblatt et al. (1971, 1971) evidence that men with disrupted marriages

are most likely to have multiple psychiatric admissions.

There are three basic explanations for the present study's finding: 1) marital strife exacerbates drinking; 2) the wife is the vehicle for the husband's hospital readmission; and/or 3) married persons have relatively less mobility than single or marriage-lost persons.

The first explanation suggests that the wife is a contributing factor in the husband's drinking. This explanation represents a further assumption: that there is an actual difference in pathology between married and non-married drinker. Informally, we can call this the "she-drives-him-to-drink" hypothesis. This hypothesis has been frequently proposed in the psychological literature. The research on the personalities of wives of alcoholics is so large, it nearly matches that on the alcoholic himself. Many trait clusters have been proposed, but the most common is that of a dominant, demanding woman with striking personality deficits of her own. Various models of alcoholism (Siegler, Osmond, and Newell, 1968) present explanations for the dysfunctional interpersonal relationship of alcoholic and wife so frequently noted. One particular model (Berne, 1964) cogently describes the interaction as a life-struggle in terms of a deadly serious "game". In the game "Alcoholic", the drinker plays the central role, but he needs a supporting cast which includes two vital roles: "Persecutor" and "Rescuer". The Persecutor berates the drinker for the evil of

his ways. The Rescuer shows interest in the drinker's problems and pleads with him to change. Most important for our purposes here, both roles of Persecutor and Rescuer may be played by the wife--at one point threatening her husband with separation or divorce; at another, sympathizing with him and begging him to go to the hospital for treatment. Regardless of the validity of role assessments in the Berne model or the personality characteristics of the wife (Edwards, Harvey, and Whitehead, 1973, present an excellent critical review), the conflicts, which are present in any marriage must logically be exacerbated by the drinking of the husband.

Married men are obviously more likely to be fathers as well as husbands. The stresses of that role: decision-making, added financial burdens, questions of child-rearing practices, unexpected child reactions, and parent-child antagonisms, are likewise intensified when the father gets in trouble with alcohol. The usefulness of such concepts are suspect, however. Theorists are hard-pressed to separate the cause and effect properties of marital strife. Disharmony may cause excessive drinking or it may be produced by excessive drinking. The neurotic personality of alcoholics' wives may be either a cause or an effect of the husbands' drinking.

Since our findings that married men are more likely to be readmitted flies in the face of some past research, we may lean toward another explanation. Marriage may make no difference in pathology, but the existence of a wife may prove

to be a vehicle for the husband's readmission. Single and marriage-lost drinkers generally have few sober observers of their drunken behaviors. They are more commonly loners or participants in the barroom drinking group. Rather than disapproval, their drinking may be reinforced behavior in the tavern peer-drinker culture. These men live alone or with no one concerned enough to bring them to the hospital. The married drinker has a constant observer, and including children, several observers. The same disruptive drinking behavior tolerated in the single man's world, is here less likely to be tolerated. Thus, action--in the form of hospitalization--is taken at a lower threshold point than for single or marriage-lost men. For those who live alone, such intervention may only be made by the police. The motivations for hospitalizing the husband may be manifold, as we have discussed so far, but the wife irrefutably represents a ready, perhaps willing, agent for the instigation of admission procedures.

The personal characteristics of psychiatric patients have been found to be non-predictive of rehospitalization (Jansen and Nickles, 1973). More important factors appear to be the role of family and community agents. The influence of wives in making the decision to hospitalize their husbands has been widely confirmed in the literature dealing with general psychiatric populations (Clausen and Yarrow, 1955; Freeman and Simmons, 1963). The interpersonal dealings of wives

and ex-patient husbands play a powerful role in the post-hospital adjustment of the discharges. The parameters of deviant, hospitalizable behavior are typically defined by the patient's wife and children (Schwartz, 1957; Scheff, 1966). The critical decision to rehospitalize the problem drinker may well follow this model and be made by the drinker's wife rather than any other person, including the drinker.

Freed (1968a) posits that problem drinkers are particularly unable to resolve conflict or make key decisions. The most crucial decision for the drinker, of course, is whether to stop drinking. Failing to take leadership roles and immobilized by the conflict of sobriety versus habit, the drinker has his decision made for him by his wife. Once hospitalized the drinker has most decisions made for him by staff. He welcomes the hospital as a refuge (Freed, 1968b). Even after being discharged from the hospital, the drinker remembers it as a place where conflicts are resolved before they arise. Perhaps this is an additional reason why drinkers with previous admissions are more prone to quick readmissions. In any case, the married problem drinker is a logical candidate for high risk of return due to the forces postulated above. He seeks the structured environment of the hospital, and he has a wife who, as with general psychiatric populations, generates influence in making the decision to hospitalize the patient.

In his personal experience on hospital wards this researcher has seen the melding of these viewpoints. Increases in drinking bring a response from the wife in the form of an ultimatum: "go to the hospital for help or I'm leaving you". The hospitalization is then reinterpreted by the drinker as a vacation away from tormenting spouse and kids. In contrast, the single or marriage-lost drinker has neither the ultimatum presented to him nor the attraction of escaping from spouse and children. Thus, frequency of admission can be based either on the pathology of the drinker or the interest and availability of the vehicle to the hospital (his wife) or both.

There is a completely different interpretation of the data. The higher rates of readmission among married men may be based on the living patterns of marrieds. Relative to single, separated, divorced, or widowed men, married men are less likely to move their place of residence. Single and marriage-lost subjects who moved out of the catchment area of the hospital might very well be drinking and being hospitalized. But having moved out of the area they would appear to us to be staying sober. Naturally, the only way to clear up this matter would be to follow-up by mail or telephone the original cohort of subjects.

Age

The eleven years, 35 to 45 years of age, seems to be

crucial years in the lives of drinkers. The readmission rates, especially of married and previously admitted subjects, between 35 and 45 were dramatically high (roughly 1 chance in 2). This result confirms the findings of Rosenblatt et al. (1971) and McCourt et al. (1971) that admissions among problem drinkers peak during this point in middle age. Rosenblatt et al. emphasized the particular vulnerability of non-married subjects. In this regard, the finding of the present study is a rejection of the marital status aspect of Rosenblatt et al.'s work. It seems reasonable to propose that the years 35 to 45 are, for all men, years characterized by the challenge of immensely important questions. Most of the questions revolve around past events, present dissatisfactions, and future prospects. Erikson (1950) has written that the issue of middle age is a quest for "generativity", a term he uses to explain not only the importance of children in the lives of adults, but the place of creativity and productivity. In the case of problem drinkers the past events which elicit anxiety deal with drunken behavior around children and unreconciled fights with spouse, parents, employers, and other significant persons. The present may highlight disaffection with the marriage, the job, the neighborhood, and oneself. And the future holds the only really important questions: "Can I stop drinking?" and "Will it make any difference if I do?"

By the year 40 most adults have had fifteen to twenty years of experience with adulthood's two major preoccupations --marriage and job. After so many years, the initial excitement of both has probably worn off. Without the motivation to keep the marriage viable, or to keep working at the job, the drinker may let them both take a back seat to drinking. A flurry of psychiatric hospitalizations could be a clear call for help or a statement of future purposes.

The above are rather high level inferences about the correlates of admission risk and the ages 35 to 45. We need infer less at a physical level. By this age the problem drinker begins to notice the first unmistakable signs of physiological damage (Chafetz, 1967). After 10, 15, or 20 years of drinking, liver dysfunction saps the patient of energy, minimal brain damage can show up in impaired perceptual and cognitive functioning, hyperirritability and insomnia become more prevalent, as do episodes of delirium tremens and convulsions (Thompson, 1956). In this way we can explain increased hospitalizations for 35 to 45 year-olds over younger men. However, shouldn't the risk of readmission increase past age 45? shouldn't 55 to 65 year-olds have a still higher risk? Not necessarily. On the other side of 45, the people around the drinker (family and friends) may be less interested in his being helped at the hospital. They have, as perhaps he has himself, given up hopes of continued sobriety. An implicit decision has most likely been made by this time:

to be a drunkard and slowly commit suicide, or to "stay on the wagon." Any in-between road takes energy which has long since been used up. Thus we have a more optimistic explanation for lower readmission rates in older age groups--these men have quit drinking. A pessimistic explanation is that they are dying of alcoholism with no one, not even themselves, being interested enough for them to be hospitalized and "dried out". The differential rates of readmission in this study should not be confused with the issue of mortality. True, the age distribution of Ss indicates that there were fewer hospitalized older drinkers than middle-aged subjects. This is a difference of the total population, a difference attributable to cirrhosis of the liver, cardiovascular diseases, and general nutritional deficiencies associated with alcoholic deterioration. The differential rates of readmission discussed above concern only the survivors.

The variable of age interacts with marital status. By the age of 35 to 45, with the marriage on the rocks, heavy drinking and consequent hospitalizations coincide. Many of these marriages end in separation or divorce at this point in life. Here we have another explanation for lower readmission rates after age 45. When the marriage dissolves the drinker goes off to live alone, thus bringing to bear all the factors which retard hospitalization in single and marriage-lost persons previously described.

Educational Level

This variable, along with occupation and employment status, comprise a collective estimate of socioeconomic status (SES). Educational level proved to be the only predictive aspect of SES related to readmission. Occupation failed to discriminate high- and low-risk subjects. Employment status also failed to discriminate high- and low-risk groups. Expanded discussion of employment status follows.

Subjects without high school diplomas were more likely to return to the hospital within a year of discharge. The educational level finding differs with the Gynther and Brilliant (1967) result that educational level shows no association with either returners or non-returners. The present study's finding does offer some tangential support for the Mindlin (1959) notion that below-average intelligence correlates with poor therapy outcome. This is a large inferential step to take, however. It assumes that persons who continue through high school have higher IQs than persons who drop out earlier. There are loopholes of considerable size in such an assumption.

The risk of hospital readmission among non-high school graduates was higher when those subjects were also married and had one or more previous admissions. The best explanation for this may be a combination of financial pressure and social status.

All subjects who were not high school graduates were blue-collar workers or men without occupations. Presumably,

money is quite tight for these men, especially those with families. Undoubtedly using up this money in buying alcohol brings an outcry from the wives of these men. Drinking, rather than masking problems of family finances, exaggerates the difficulties. The husband may find himself trapped by his drinking habit--drunkenness temporarily eases the pain of social pressure but magnifies the need for drinking by increasing that very source of pressure. As a breadwinner, the problem drinker without education may perceive himself a failure. The wives of these alcoholics are liable to amplify and exacerbate this judgment of self-contempt. In desperation or in spite (or both) the wives of low SES drinkers may bring their husbands to the hospital.

As an indicator of SES, lower educational attainment may also reflect the neighborhood of the patient. With some assurance we can expect that those who are extremely deprived of education live in poor housing and in high-crime areas. Residents of such neighborhoods have a higher frequency of contact with the police than more upper-class suburbanites. An association, if a tenuous one, may be made between lower educational level Ss and police pick-ups for drunkenness, hence higher rates of rehospitalization. Conversely, those well-educated subjects of higher SES would infrequently be brought to a state mental hospital. Private institutions are available in the area to accommodate the excessive drinker who can pay for services.

Other Variables

At the outset of this study hypotheses were made concerning the predictiveness of five variables. Those variables were: previous admissions, educational level, marital status, age, race, and employment status. The first two variables proved to be predictive characteristics in the direction anticipated, that is, when Ss had previous admissions or low educational attainment their chances of readmission were higher than Ss who did not show this "risk factor". Marital status proved to be predictive, but in an unexpected direction. Instead of single and divorced subjects having higher rates of readmission, married subjects were higher risks. While no specific hypotheses concerning age were made, results support the contention of several authors that 35 to 45 years of age is a critical period for hospital readmission. The two final variables failed to be significant predictors.

The data on racial characteristics of Ss presented an extremely skewed distribution. Over 90% of the subjects in the study were white. Thus, further subdivision of the 15 black Ss into "returner" and "non-returner" categories seemed unproductive. Simply put, we are unable to make statements about the predictive value of the variable "Race" due to the statistical infrequency of black, hospitalized drinkers at Northampton State Hospital.

When used alone, the variable "Employment status" did not discriminate high- and low-risk Ss. However, when used in combination with marital status an interesting interaction was noted, though an interaction with less than statistical significance differences (see TABLE 7). Single, working Ss and marriage-lost, non-working Ss have relatively low rates of readmission. The reverse is true of single, non-working Ss and marriage-lost, working Ss. It remains a puzzle as to what factors in the work or marital situation of these Ss reasonably explains the differences. The finding that married subjects maintain high readmission rates regardless of employment status is more readily interpretable. Apparently, the factors surrounding marriage override any influence from the work setting. Marital strife and/or the vehicle notion of the wife admitting her husband to the hospital seem more powerful concepts in accounting for rehospitalization risk than the husband being either employed or unemployed.

SUMMARY AND CONCLUSIONS

As stated in the Introduction, a general hypothesis guided the establishment of specific expectations concerning demographic variables in this research. That hypothesis was: when determinants of social success indicate an individual is a failure, he will be more vulnerable to stress, and thereby be more likely to have a readmission at the hospital within one year of discharge. The results of this study partially support that hypothesis. Subjects with previous psychiatric admissions and low levels of educational attainment are more frequently readmitted within a one year follow-up. However, the marital status variable did not bear out the conclusion that all social determinants of failure predict rehospitalization. Unexpectedly, single and separated, divorced, and widowed subjects had fewer readmission than marrieds. Two explanations for this result are favored. Married drinkers have a sober observer of their drunken behavior and a ready vehicle for hospital readmission in the person of the wife. She may possess the needed leverage for hospitalization by threatening divorce if treatment is not accepted. A second explanation argues that the relative mobility of single and marriage-lost drinkers may mask their readmission rates. Such subjects may be receiving hospital treatment somewhere out of the catchment area, while more demographically stable

married subjects return to the area hospitals which were checked.

The reliability of the results obtained in this study is open to question. Replication of the research results would significantly add to the notion that they are common and generalizable. But rather than approaching the reported results and interpretations as definitive statements about problem drinkers in general, perhaps we should see it as a kind of consumer research on the use of this area's psychiatric hospitals. We seek to know: who uses the hospitals? how often? and with what characteristics is the user best described? If we take this viewpoint we can avoid two large problems.

The first problem is methodological. Because data was taken from hospital records certain flaws were inborn to the study. For one, we can never be sure that all of the information is accurate. Judgmental errors made on the day of admission, always a stressful time, are mostly likely not corrected. Secondly, we cannot be certain how many subjects moved out of the catchment area, nor what characteristics these persons have. We have proposed that they might be more likely single or marriage-lost persons. Further, we have no assurance that "married" subjects were not at one time separated or widowed or divorced. Thus, a combined category may be disguised with the label "married"--one group having been married only once, the other more than once.

Using hospital files also means contending with missing data. We cannot know the nature of the previous psychiatric admissions listed, nor if they are a complete listing. The doubt lingers that not all of these past hospitalizations were brought on by drinking. Neither can we know the educational level of some thirteen subjects--it was not recorded in the files. Quite conceivably this group with missing data has some special, non-random distribution of other variables. We cannot know for sure.

The second problem is conceptual. We cannot jump from the level of the sample to the level of a population at risk without some overgeneralizing. It is encouraging that the profile of all subjects in this study compare nicely with previous studies' subject populations. Nevertheless, we are essentially bound to the source of our data. This is a study about the consumers of two area psychiatric institutions. Any explanations for the high- and low-risk of certain categories of patients is only good for this geographic locale and the community which feeds both hospitals. Whether or not drinkers return to a hospital is a function of more than their drinking or even the descriptors of their lives. It is tied to the reputation of the hospital, the inter-agency contacts with police, industry, church, and hospital, the admissions procedure of the hospital, the treatment offered there, and so on.

So what are the conclusions we can rightfully draw from this research?

1) This study indicates what files at Northampton State Hospital show concerning the characteristics of problem drinkers at the hospital. It identifies those who are most likely to return within one year of hospital discharge.

2) This study found statistically significant differences in the readmission rates (risk of return) of certain subjects on the basis of four major demographic factors. High-risk Ss had these characteristics: one or more previous psychiatric hospitalizations; married; between the ages of 35 and 45; and having less than 12 years of formal education. The maximal separation of high- and low-risk subjects was made by employing the four variables in three-variable sequence, i.e., Ss with previous admissions and marriage and 35 to 45 OR Ss with previous admissions and marriage and less than 12 years of education.

As a cautionary note to end this discussion, here is what CANNOT be inferred from this study:

1) That those who are readmitted are "worse" drinkers than those who do not return. We cannot even tentatively state that increased frequency of hospitalization reflects increased consumption or intoxication.

2) That anything here learned is applicable to female drinkers, non-hospitalized drinkers, non-urban drinkers, hospitalized patients with non-drinking problems or that compari-

sons with any other psychiatric institution are entirely valid. The above inferences await considerable replication and validation of findings presented here.

A Final Word

All too frequently research studies become insignificant added drops to a sea of unintegrated facts. Rather than be a research project for its own sake, it is hoped that the identification of certain demographic characteristics associated with high risk of readmission will be used by area psychiatric institutions. Results will be made available to those institutions. One pragmatic use of this study's findings is in discharge planning. Consider the predictors here identified in the light of the Northampton State Hospital discharge procedure. A social worker or psychiatrist tries to decide whether a problem drinker is ready to be discharged, is liable to "make it" on the outside. Perhaps the decision is made on the basis of subjective impressions of patient improvement or on other factors not directly related to the patient--ward space, the receptivity of the patient's family. Whatever the present method of decision-making, it is safe to assume that the rationale is not based on objective, testable measures. Traditions in decision-making become self-perpetuated, not self-evaluated. The profiles of high- and low-risk alcoholics obtained in this study were solely gleaned from Northampton file information. Face sheets are easily

accessible information forms for practically all staff members. The staff of Northampton State Hospital might profit from the present research by utilizing previous admission, age, educational level, and marital status data in an equation of discharge judgment. As Morris has said, "One of the main uses of the epidemiological method is that it helps social institutions apply the scientific method to their own workings . . . " (in Edwards, 1973, p. 48). If this study were so applied it would transform this research project from being a static exercise in facts-gathering into a dynamic application of knowledge.

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