

MENTAL HEALTH

Statistical Note No. 179

Use of Inpatient Psychiatric Services by Vietnam Era Veterans, United States, 1980

Laura J. Milazzo-Sayre, Paul R. Benson,
Marilyn J. Rosenstein, and Ronald W. Manderscheid

R. MANN LIBRARY
MAY 17 1991

October 1986

Overview

Of the approximately 1.3 million persons admitted for inpatient psychiatric care during 1980, 312,969 or 23 percent were U.S. military veterans. Fifty-one percent of these veterans were admitted to Veterans Administration medical centers (VAMCs); 23 percent, to non-Federal general hospitals; 20 percent, to State and county mental hospitals; and 6 percent, to private psychiatric hospitals (table A, percents not shown). Veterans who served

Table A. Percent distribution of veterans admitted to selected inpatient psychiatric services, by period of military service: United States, 1980

Period of military service	Inpatient psychiatric services				
	Total	State and county mental hospitals	Private psychiatric hospitals	Non-Federal general hospitals	VA medical centers ¹
Total veterans	312,969	63,893	19,435	70,746	158,895
Post Vietnam Era ...	12.6%	12.4%	9.5%	17.0%	11.1%
Vietnam Era	37.9	28.9	29.2	39.5	41.9
Post Korean Conflict	12.9	16.4	18.5	11.9	11.3
Korean Conflict	14.2	16.1	15.4	12.8	13.9
World War II	23.8	19.5	29.9	23.9	24.8
World War I	0.4	*	*	*	0.5
Any Other Time	2.6	3.8	4.0	5.1	0.8
Service Era Unknown.	2.1	8.2	3.4	0.4	*

¹Ten sample cases of active duty personnel are included in the total for VA medical centers.

*Five or fewer sample cases; estimate not shown because it does not meet standards of reliability.

Note: Veterans may have served in more than one period. Thus, percentages may add to more than 100%.

This publication may be reproduced without permission.

during the Vietnam Era comprised an estimated 118,705 persons or more than one-third (38 percent) of the total veteran population admitted for inpatient psychiatric care in 1980. This note examines the sociodemographic, clinical, and treatment characteristics of Vietnam Era veterans who were admitted to inpatient psychiatric care in 1980.

Background

Nine million Americans served in the armed forces of the United States during the Vietnam conflict, with approximately 4 million stationed in Indochina during some part of the 11-year war (Lipkin et al. 1982). The Vietnam veteran has been referred to as "the forgotten warrior" (Walker and Cavenar 1982). In recent years, however, this subgroup of veterans has received increased attention from governmental agencies, academic researchers, and mental health professionals (Figley 1978; Figley and Leventman 1980; Laufer et al. 1981; Blank 1982; Egendorf 1982; Sonnenberg et al. 1985). Popular and clinical accounts (Kovic 1976; Polner 1971; Lifton 1973), as well as several epidemiological studies (Wish et al. 1979; Helzer et al. 1979; Yager et al. 1984), have depicted Vietnam veterans, particularly combatants, as experiencing high levels of stress, depression, substance abuse, and other readjustment problems. It has been estimated that between 500,000 to 700,000 Vietnam Era veterans are in need of mental health services, and some researchers suggest that as many as 1.5 million or more Vietnam Era veterans may eventually be in need of psychiatric treatment of some kind (Blank 1980; Louis Harris and Associates 1980; Roche 1980). These estimates, however, have been criticized by some as an exaggeration of the actual mental health needs of Vietnam veterans (Van Putten and Yager 1984; Fleming 1985; Borus 1976).

This note provides the most recent national information on the use of inpatient psychiatric services by Vietnam Era veterans. It is based on four surveys conducted in 1980 by the Survey and Reports Branch, National Institute of Mental Health (NIMH). These surveys examined admissions to the inpatient psychiatric services of State and county mental hospitals, private psychiatric hospitals, and Veterans Administration medical centers (VAMCs), and discharges from the separate inpatient psychiatric services of non-Federal general hospitals. Although discharges rather than admissions were sampled in non-Federal general hospitals, the term "admissions" is used throughout this text (see Note at end of text). The sampling designs and procedures for the four surveys are described in the technical appendix to this note.

Readers should be aware of the limitations of these survey data. First, they only examine use of inpatient psychiatric services. Yet, research suggests that many Vietnam Era veterans receive mental health treatment on an outpatient basis (Egendorf 1982). Second, the data examine use of inpatient psychiatric services by Vietnam Era veterans, that is, those who served in the armed forces during U.S. involvement in the Vietnam conflict (August 1964 to April 1975). The present data do not differentiate between those veterans who served in Vietnam and those who served elsewhere during that era. Third, these data are not amenable to several refined crosstabulations because of small sample sizes. For example, small sample size prohibited analyses of differences by sex and type of non-Federal general hospital (public, nonpublic, and CMHC/multiservice) on such dimensions as diagnosis and length of stay.

Age-Sex-Race

Of the estimated 118,705 Vietnam Era veterans admitted to inpatient psychiatric care in 1980, most were male (98 percent), white (75 percent), and between the

ages of 25 and 34 (68 percent) (table 1, percents not shown). The largest percentage of Vietnam Era veterans was admitted to VAMCs (56 percent), followed by non-Federal general hospitals (24 percent), State and county mental hospitals (16 percent), and private psychiatric hospitals (5 percent) (table 1, percents not shown).

Where comparisons could be made across types of inpatient psychiatric services, results showed that the age distribution of Vietnam Era veterans varied by setting (table 1). The percentage of Vietnam Era veterans between the ages of 25 and 34 was higher in State and county mental hospitals (72 percent) and VAMCs (70 percent) than in private psychiatric hospitals (57 percent). By contrast, veterans between the ages of 35 and 44 comprised a larger percentage of those admitted to private psychiatric hospitals (34 percent) compared with VAMCs (23 percent) and State and county mental hospitals (21 percent).

Whites comprised a larger percentage of Vietnam Era veterans admitted to private psychiatric hospitals (86 percent) than to State and county mental hospitals (72 percent) and VAMCs (71 percent) (table 1). Similarly, a larger percentage of veterans admitted to non-Federal general hospitals was white (84 percent) compared with VAMCs. By contrast, blacks comprised a larger percentage of veterans admitted to VAMCs (28 percent) and State and county mental hospitals (26 percent) than to private psychiatric hospitals (14 percent). The relative frequency of black veterans was also higher in VAMCs than in non-Federal general hospitals (14 percent).

Comparisons of admission rates to the various inpatient psychiatric services in 1980 per 100,000 Vietnam Era veterans in the U.S. civilian population show that veterans in VAMCs had the highest overall rate (829 per 100,000) (table 1). The next highest admission rate occurred in non-Federal general hospitals (348), followed by State and county mental hospitals (230) and private psychiatric hospitals (71). At a more detailed level, this same general pattern was noted for veterans in the 25 to 34 and 35 to 44 age groups; it also occurred for males and whites. However, the pattern differed slightly for black veterans, whose admission rates to State and county mental hospitals and non-Federal general hospitals were not significantly different.

The admission rate for black veterans exceeded that of white veterans within each setting (table 1). Black veterans in VAMCs had the highest rate of admission (2,563 per 100,000). This rate was nearly 4 times the rate for whites admitted to this setting (674). In State and county mental hospitals, black veterans were admitted at more than 3 times the rate of whites (660 vs. 191).

Diagnostic Characteristics

The most frequent primary psychiatric diagnoses¹ among Vietnam Era veterans admitted in 1980 to the inpatient psychiatric services of State and county mental hospitals were alcohol-related disorders and schizophrenia (37 and 31 percent, respectively) (table 2). In this setting, these two diagnostic groups predominated among whites (41 and 26 percent, respectively) and veterans from other races (27 and 45 percent, respectively). Significant differences were not found, however, between the two racial groups in their diagnostic distributions.

Psychiatric diagnoses of schizophrenia and alcohol-related disorders also predominated among Vietnam Era veterans admitted to VAMCs (34 and 29 percent, respectively) (table 2), as well as among whites (30 and 31 percent,

respectively) and veterans from other races (42 and 25 percent, respectively) admitted to this setting. Among whites in VAMCs, affective disorders (14 percent) ranked as the third most frequent diagnostic group, while among veterans from other races, drug-related disorders (14 percent) ranked third. Unlike the results for State and county mental hospitals, significant diagnostic differences were found between the two racial groups in VAMCs; veterans from races other than white were more likely than whites to have diagnoses of drug-related disorders (14 percent vs. 6 percent, respectively) and schizophrenia (42 percent vs. 30 percent, respectively). Whites were twice as likely as veterans from other races to have diagnoses of affective disorders (14 percent vs. 7 percent, respectively).

Among admissions to private psychiatric hospitals, Vietnam Era veterans diagnosed with affective disorders predominated (38 percent), followed by veterans diagnosed with alcohol-related disorders and schizophrenia (20 and 18 percent, respectively) (table 2). In this setting, the same general pattern held for whites, but not for veterans from other races, where significant differences were not found in the relative frequency of alcohol-related disorders, affective disorders, and schizophrenia. Where comparisons could be made, the diagnostic distributions did not differ significantly between the two racial groups in this setting.

In non-Federal general hospitals, alcohol-related disorders (29 percent), affective disorders (33 percent), and schizophrenia (24 percent) predominated over personality disorders (2 percent) (table 2). In this setting, the same general pattern was also noted for whites. Where comparisons could be made, the diagnostic distributions for the two racial groups did not differ significantly in this setting.

Comparisons across the various inpatient psychiatric services for selected psychiatric diagnoses showed significant variations (table 2). A greater percentage of Vietnam Era veterans admitted to State and county mental hospitals and VAMCs had diagnoses of alcohol-related disorders (37 and 29 percent, respectively) and schizophrenia (31 and 34 percent, respectively) compared with private psychiatric hospitals (20 and 18 percent, respectively). By contrast, a greater percentage of veterans admitted to private psychiatric hospitals and non-Federal general hospitals had diagnoses of affective disorders (38 and 33 percent, respectively) compared with State and county mental hospitals and VAMCs (8 and 12 percent, respectively). Veterans admitted to VAMCs were more likely than veterans admitted to non-Federal general hospitals to have diagnoses of personality disorders (7 percent vs. 2 percent, respectively).

When white Vietnam Era veterans were compared across the various inpatient psychiatric services, results showed similar variations in their diagnostic distributions (table 2). A greater percentage of whites admitted to State and county mental hospitals and VAMCs had diagnoses of alcohol-related disorders (41 and 31 percent, respectively) compared with whites admitted to private psychiatric hospitals (20 percent). By contrast, whites in private psychiatric hospitals (39 percent) and non-Federal general hospitals (34 percent) were about four times as likely as whites in State and county mental hospitals (9 percent), and about two and one-half times as likely as whites in VAMCs (14 percent) to have diagnoses of affective disorders. Whites in VAMCs were more likely than whites in private psychiatric hospitals to have diagnoses of schizophrenia (30 percent vs. 16 percent, respectively), and more likely than whites in non-Federal general hospitals to have diagnoses of personality disorders (7 percent vs. 2 percent, respectively).

Considerably fewer differences were noted for veterans from races other than white because of small sample sizes (table 2). Vietnam Era veterans from other races admitted to private psychiatric hospitals were about five times more likely to have diagnoses of affective disorders (34 percent) compared with those admitted to State and county mental hospitals (6 percent) and VAMCs (7 percent).

Prior Care

In 1980, most Vietnam Era veterans admitted to inpatient psychiatric services were readmissions (that is, they had received inpatient psychiatric care at some prior time) (table 3). In VAMCs, 85 percent of admissions were readmissions; in State and county mental hospitals, 80 percent; in non-Federal general hospitals, 77 percent; and in private psychiatric hospitals, 65 percent. Within each setting, most whites were readmissions, as were veterans from other races, with one exception. In private psychiatric hospitals, a significant difference was not found between first admissions and readmissions to inpatient psychiatric care for veterans from other races. When comparisons were made between the races in each of the settings, significant differences were not found in prior care patterns.

A significantly greater percentage of readmissions was found among Vietnam Era veterans in State and county mental hospitals and VAMCs (80 and 85 percent, respectively) than in private psychiatric hospitals (65 percent) (table 3). By contrast, a significantly greater percentage of first admissions was found in private psychiatric hospitals (35 percent) than in State and county mental hospitals and VAMCs (20 and 15 percent, respectively). This general pattern also occurred across these three inpatient psychiatric services for veterans from races other than white. However, for whites, the pattern was noted only between private psychiatric hospitals and VAMCs; a greater percentage of readmissions was found in VAMCs than in private psychiatric hospitals (84 percent vs. 66 percent, respectively), while a greater percentage of first admissions was found in private psychiatric hospitals than in VAMCs (34 percent vs. 16 percent, respectively). Percentages of first admissions and readmissions in non-Federal general hospitals did not differ significantly from those observed for the other three types of inpatient psychiatric services.

Source of Referral

Vietnam Era veterans admitted to State and county mental hospitals in 1980 were most likely to be referred to inpatient care by the courts or correction agencies (27 percent); however, this proportion did not significantly exceed that of self-referrals (18 percent) (table 4). This general pattern was observed for whites, but not for veterans from other races. Among this latter group, a single referral source did not predominate. Private psychiatrists and self-referrals were the most likely referral sources for Vietnam Era veterans admitted to private psychiatric hospitals (26 and 24 percent, respectively); these two sources predominated both among whites and veterans from other races admitted to this setting. Veterans admitted to non-Federal general hospitals were most likely to seek inpatient care themselves (32 percent); however, this proportion did not significantly exceed that of veterans referred by private psychiatrists (21 percent). This general pattern was also noted for whites. Among veterans from races other than white admitted to non-Federal general hospitals, a significant difference was not found between referrals made by family or friends and the police. In VAMCs, Vietnam Era veterans were most likely to seek inpatient care themselves (57 percent), followed by referrals from family or friends (17 percent). In this setting, the general pattern was

also noted for both racial groups. Where within-setting comparisons could be made between the two racial groups, significant differences were not found in referral patterns.

Comparisons across settings show that a significantly larger percentage of white Vietnam Era veterans was self-referred to VAMCs (57 percent) compared with whites in the other types of inpatient care settings (table 4). By contrast, courts or correction agencies were much more likely sources of referral to State and county mental hospitals than to VAMCs for white veterans (25 percent vs. 4 percent, respectively). Where additional comparisons could be made across settings for white Vietnam Era veterans, results showed that family or friends were a more likely source of referral to VAMCs than to State and county mental hospitals (16 percent vs. 9 percent, respectively); the police were more likely sources of referral to non-Federal general hospitals than to VAMCs (10 percent vs. 2 percent, respectively); and private psychiatrists and other physicians were more likely sources of referral to private psychiatric hospitals and non-Federal general hospitals than to VAMCs.

Comparisons across settings for Vietnam Era veterans from races other than white reveal that those admitted to VAMCs were more likely to be self-referred than were those admitted to private psychiatric hospitals and State and county mental hospitals (57 percent vs. 20 and 13 percent, respectively) (table 4). The police and courts or correction agencies were more likely sources of referral to State and county mental hospitals than to VAMCs for this racial group.

Types of Treatment²

Individual therapy was the type of treatment provided most often to Vietnam Era veterans admitted to private psychiatric hospitals (90 percent), non-Federal general hospitals (89 percent), and VAMCs (67 percent) (table 5). Drug therapy ranked as the second most frequent type of treatment for veterans admitted to non-Federal general hospitals (73 percent), while group therapy ranked second among veterans admitted to VAMCs (60 percent). In State and county mental hospitals, individual, group, drug, and activity therapies were provided to veterans with about equal frequency.

Similar patterns were found among white Vietnam Era veterans admitted to each type of inpatient psychiatric service, with the exception of non-Federal general hospitals; in this latter setting, a significant difference was not found between drug and group therapies (table 5). Where comparisons could be made in the types of treatment provided to veterans from races other than white, slight variations emerged for most settings. For example, in private psychiatric hospitals, individual therapy was provided more frequently than other types of treatment, except group therapy; in non-Federal general hospitals, individual therapy was provided more frequently than group therapy and social skill training, while in VAMCs, differences were not found among individual, group, and drug therapies. Where within-setting comparisons could be made between the races, significant differences were not found in treatment patterns.

Comparisons across settings show that white Vietnam Era veterans were more likely to receive individual therapy in private psychiatric hospitals (91 percent) and non-Federal general hospitals (88 percent) than in VAMCs (69 percent) and State and county mental hospitals (68 percent) (table 5). Whites were also more likely to receive family therapy in private psychiatric hospitals (16 percent) than in State and county mental hospitals (5 percent); more likely to receive drug therapy in non-Federal general hospitals

(71 percent) and private psychiatric hospitals (64 percent) than in VAMCs (52 percent); more likely to receive activity therapy in private psychiatric hospitals (65 percent) than in VAMCs (52 percent); and more likely to receive vocational training in VAMCs (11 percent) than in private psychiatric hospitals (3 percent).

Vietnam Era veterans from races other than white were more likely to receive individual and group therapy in private psychiatric hospitals (89 and 80 percent, respectively) than in VAMCs (62 and 59 percent, respectively) (table 5). In addition, veterans from other races were more likely to receive individual and drug therapy in non-Federal general hospitals (90 and 80 percent, respectively) than in VAMCs (62 and 53 percent, respectively).

Median Length of Stay³

A comparison of the overall median days of stay for Vietnam Era veterans admitted to the various inpatient psychiatric services in 1980 reveals that veterans admitted to non-Federal general hospitals had the shortest median stay (9 days) compared with VAMCs (20 days), State and county mental hospitals (18 days), and private psychiatric hospitals (15 days) (table 6). This general pattern also occurred for whites, but not for veterans from other races; this latter group did not show significant differences in median days of stay across the four inpatient settings.

In State and county mental hospitals, Vietnam Era veterans diagnosed with schizophrenia had the longest median stay (42 days) compared with veterans with other disorders (table 6). This general pattern of longer stays for those diagnosed with schizophrenia was also noted for whites admitted to this setting (52 days), and where comparisons could be made, for veterans from other races (22 days).

In private psychiatric hospitals, veterans with alcohol-related disorders had the longest stay (27 days). This general finding was also observed for whites in this setting (25 days), while among veterans from other races, those diagnosed with alcohol-related disorders had a median stay four times longer than that for veterans diagnosed with schizophrenia (28 days vs. 7 days, respectively).

Where comparisons could be made in non-Federal general hospitals, veterans diagnosed with alcohol-related and personality disorders showed much shorter stays relative to veterans with other disorders. Among whites admitted to non-Federal general hospitals, veterans diagnosed with affective disorders and schizophrenia had median stays twice as long as the median stay for white veterans diagnosed with alcohol-related disorders (12 and 11 days vs. 5 days, respectively). Among veterans from races other than white admitted to non-Federal general hospitals, those diagnosed with schizophrenia had a median stay over two and one-half times longer than veterans from other races diagnosed with alcohol-related disorders (37 days vs. 14 days, respectively).

In VAMCs, veterans diagnosed with drug-related disorders had the shortest median stay (13 days) compared with veterans with other disorders. In addition, veterans diagnosed with anxiety-somatoform-dissociative disorders had a longer stay in VAMCs (26 days) than veterans diagnosed with personality disorders (19 days). Among white veterans admitted to VAMCs, those diagnosed with drug-related disorders had a much shorter median length of stay (14 days) than did white veterans diagnosed with anxiety-somatoform-dissociative disorders (26 days), alcohol-related disorders (23 days), and schizophrenia

(21 days). Veterans from races other than white admitted to VAMCs with diagnoses of affective disorders had the longest median stay (40 day) compared with veterans with other diagnoses.

When within-setting comparisons were made between veterans from the two racial groups, results showed that in State and county mental hospitals, whites with a primary diagnosis of schizophrenia had a median stay over twice as long as that of veterans from other races with schizophrenia (52 vs. 22 days, respectively) (table 6). Similarly, in private psychiatric hospitals, whites diagnosed with schizophrenia had a median stay twice as long as that of veterans from other races with schizophrenia (14 vs. 7 days, respectively). Results also indicated that veterans from races other than white diagnosed with affective disorders had a longer median stay (21 days) in this setting compared with whites with affective disorders (15 days).

Unlike veterans from other races diagnosed with schizophrenia in State and county mental hospitals and private psychiatric hospitals, those in non-Federal general hospitals had a median stay three times longer than did whites with schizophrenia (37 vs. 11 days, respectively) (table 6). Similarly, veterans from other races with alcohol-related disorders also had a median stay in non-Federal general hospitals about three times longer than did whites with this type of disorder (14 vs. 5 days, respectively).

In contrast to veterans from other races with alcohol-related disorders admitted to non-Federal general hospitals, those admitted to VAMCs had a much shorter median stay than did whites with alcohol-related disorders (15 vs. 23 days, respectively) (table 6). By comparison, veterans from other races with affective disorders had a median stay in VAMCs about twice as long as did whites with this type of disorder (40 vs. 19 days, respectively).

Summary

Of the estimated 118,705 Vietnam Era veterans admitted to inpatient psychiatric care in 1980, most were male (98 percent), white (75 percent), and between the ages of 25 and 34 (68 percent). The largest percentage of Vietnam Era veterans was admitted to VAMCs (56 percent), followed by non-Federal general hospitals (24 percent), State and county mental hospitals (16 percent), and private psychiatric hospitals (5 percent).

Veterans in VAMCs had the highest overall admission rate (829 per 100,000 Vietnam Era veterans in the U.S. civilian population), followed by non-Federal general hospitals (348), State and county mental hospitals (230), and private psychiatric hospitals (71). The admission rate for black veterans exceeded that of white veterans within each psychiatric setting. Black veterans in VAMCs had the highest single admission rate (2,563 per 100,000).

Vietnam Era veterans admitted to State and county mental hospitals were most likely to have diagnoses of alcohol-related disorders (37 percent) and schizophrenia (31 percent). Veterans diagnosed with schizophrenia had the longest median inpatient stay (42 days) compared with those with other diagnoses. Most Vietnam Era veterans admitted to this setting were readmissions for inpatient care (80 percent); they were most likely to be referred to inpatient care by the courts or correction agencies (27 percent), with the exception of self-referrals (18 percent). Individual, group, drug, and activity therapies were provided to veterans with about equal frequency in this setting.

Among Vietnam Era veterans admitted to private psychiatric hospitals, those diagnosed with affective disorders predominated (38 percent). In this setting, veterans with alcohol-related disorders had the longest median stay (27 days). Most veterans were readmissions (65 percent). Private psychiatrists (26 percent) and self-referrals (24 percent) were the most likely referral sources for Vietnam Era veterans admitted to this setting. Individual therapy was the type of treatment provided most often (90 percent).

In non-Federal general hospitals, Vietnam Era veterans with diagnoses of alcohol-related disorders (29 percent), affective disorders (33 percent), and schizophrenia (24 percent) were admitted with greater frequency than veterans with diagnoses of personality disorders (2 percent). Veterans in this setting with diagnoses of affective disorders and schizophrenia had longer median stays (14 days and 12 days, respectively) relative to veterans with other disorders. Vietnam Era veterans admitted to non-Federal general hospitals had the shortest overall median inpatient stay (9 days) compared with veterans in the other three with inpatient settings. Most veterans admitted to non-Federal general hospitals were readmissions (77 percent); most were likely to be self-referrals (32 percent), with the exception of referrals made by private psychiatrists (21 percent); and most were provided individual therapy (89 percent).

Most Vietnam Era veterans admitted to VAMCs had diagnoses of schizophrenia (34 percent) and alcohol-related disorders (29 percent). Veterans diagnosed with drug-related disorders had the shortest median stay (13 days) in this setting compared with veterans with other disorders. Most Vietnam Era veterans admitted to VAMCs were readmissions (85 percent); they were most likely to be self-referrals (57 percent); and they were most likely to receive individual therapy (67 percent).

Footnotes

¹The diagnostic groupings used in this publication are defined as follows:

<u>Selected diagnoses</u>	<u>Combined DSM-II/ICDA-8*</u>	<u>Combined DSM-III/ICD-9-CM*</u>
Alcohol-related disorders	291; 303; 309.13	291; 303; 305.0
Drug-related disorders	294.3; 304; 309.14	292; 304; 305.1-305.9; 327; 328
Affective disorders	296; 298.0; 300.4	296; 298.0; 300.4; 301.11; 301.13
Schizophrenia	295	295; 299
Anxiety/somatoform/dissociative	300.0-300.3; 300.5-300.9	300.0-300.15; 300.2- 300.3; 300.5-300.81; 307.4 (except 307.46); 307.8; 308; 309.81
Personality disorders	301	300.16; 300.19; 301 (except 301.11 and 301.13); 312.3

***DSM-II** Diagnostic and Statistical Manual of Mental Disorders, Second Edition. Washington, D.C.: American Psychiatric Association, 1968.

ICDA-8 International Classification of Diseases, Adapted For Use in the United States, 8th Revision. PHS Pub. No. 1693. Washington, D.C.: U.S. Govt. Print. Off., 1967.

DSM-III Diagnostic and Statistical Manual of Mental Disorders, Third Edition. Washington, D.C.: American Psychiatric Association, 1980.

ICD-9-CM International Classification of Diseases, 9th Revision, Clinical Modification, Vol. I. DHHS Pub. No. (PHS)80-1260. Washington, D.C.: U.S. Govt. Print. Off., 1980.

²The surveys of State and county mental hospitals, private psychiatric hospitals, and Veterans Administration medical centers were designed to sample a cohort of admissions during a 1-month period who were then followed for an additional 3-month period. The treatment data reported for admissions to State and county mental hospitals, private psychiatric hospitals, and VAMCs include those types of treatment provided to admissions through their date of discharge or at the end of the 3-month followup period, whichever occurred first (see the technical appendix for details on the survey designs).

³In table 6, median length of stay for Vietnam Era veterans is reported by race and selected primary diagnoses for each type of inpatient psychiatric service. In the surveys of State and county mental hospitals, private psychiatric hospitals, and VAMCs, length of stay for Vietnam Era veterans was calculated based on admission cohorts; 10 percent of the Vietnam Era veterans admitted to State and county mental hospitals, 2 percent of the Vietnam Era veterans admitted to private psychiatric hospitals, and 6 percent of the Vietnam Era veterans admitted to VAMCs were still in treatment at the end of

the survey period. Median length of stay is a positional measure that divides all admissions into two groups of equal size. Fifty percent of all admissions have a length of stay shorter than the median; 50 percent, a length of stay that is longer than the median. Results are comparable across the four types of inpatient psychiatric services surveyed. However, it should be noted that a positional measure, such as median length of stay, will produce results that may differ from other measures of central tendency, such as mean length of stay.

Notes

Since admissions to the separate inpatient psychiatric services of non-Federal general hospitals have relatively short lengths of stay, the patient characteristics of admissions and discharges are essentially equivalent. Hence, this publication refers to all patients as admissions.

The analyses of patient diagnosis, referral source, and types of treatment received have excluded comparisons made with the category "other," as shown in tables 2, 4, and 5. The "other" category has been included on the tables in order to report its contribution to each percentage distribution. However, since this is a residual category, its inclusion in the analysis section of this report would not provide useful comparisons.

Post-Traumatic Stress Disorder (PTSD)

In the surveys of State and county mental hospitals, private psychiatric hospitals, and VAMCs, the reported diagnosis for each sample patient was the patient's final primary psychiatric diagnosis at the end of the 3-month study period or at the time of the patient's discharge from the inpatient service, whichever occurred first. In the survey of non-Federal general hospitals, the patient's final primary psychiatric diagnosis at time of discharge from the inpatient service was reported.

If an anxiety, depressive, organic, or substance abuse disorder developed following a traumatic event (i.e., military combat during the Vietnam Era), these mental disorders may have been reported as the primary psychiatric diagnosis rather than the diagnosis of Post-Traumatic Stress Disorder (PTSD).

It should be noted that the diagnostic category PTSD is classified in DSM-III and ICD-9-CM, but not in DSM-II. All three diagnostic manuals were used in the 1980 surveys. In tables 2 and 6 of this publication, PTSD is included in the diagnostic category, "anxiety/somatiform/dissociative." The number of sample patients with a final primary psychiatric diagnosis of PTSD was too small to provide reliable national estimates.

The authors: Paul R. Benson, Ph.D., Department of Sociology, Tulane University, partially developed this report under contract number 83-MO-545405-01D. The DBAS staff members, L.J. Milazzo-Sayre, M.J. Rosenstein, and R.W. Manderscheid, Ph.D., prepared parts of the text, provided substantive analysis and the detailed statistical tables, and edited the report.

References

- Blank, A.S. Apocalypse terminable and interminable: Operation outreach for Vietnam veterans. Hospital and Community Psychiatry 33:913-918, 1982.
- Borus, J.F. The re-entry transition of the Vietnam veteran. In: Goldman, N.L., and Segal, D.R., eds. The Social Psychology of Military Service. Beverly Hills: Sage, 1976. pp. 27-44.
- Egendorf, A. The postwar healing of Vietnam veterans: Recent research. Hospital and Community Psychiatry 33:901-908, 1982.
- Figley, C.R., ed. Stress Disorders Among Vietnam Veterans: Theory, Research, and Treatment. New York: Brunner/Mazel, 1978.
- Figley, C.R., and Leventman, S., eds. Strangers at Home: The Vietnam Veteran Since the War. New York: Praeger, 1980.
- Fleming, R.H. Post Vietnam syndrome: Neurosis or sociosis? Psychiatry (48)2:122-139, 1985.
- Helzer, J.E.; Robins, L.N.; Wish, E.D.; et al. Depression in Vietnam veterans and civilian controls. American Journal of Psychiatry 136:526-529, 1979.
- Kovic, R. Born on the Fourth of July. New York: McGraw Hill, 1976.
- Laufer, R.S.; Yager, T.; Frey-Wouters, E.; et al. Legacies of Vietnam. Vol. 3, Post-War Trauma: Social and Psychological Problems of Vietnam Veterans. Washington, D.C.: U.S. Govt. Print. Off., 1981.
- Lifton, R.J. Home from the War. New York: Vintage, 1973.
- Lipkin, J.O.; Blank, A.S.; Parson, E.R.; and Smith, J. Vietnam veterans and posttraumatic stress disorder. Hospital and Community Psychiatry 33:908-912, 1982.
- Louis Harris and Associates. Myths and Realities: A Study of Attitudes Toward Vietnam Era Veterans. Report prepared for the Veterans Administration for the Senate Committee on Veterans Affairs, 1980. Committee Print 29.
- Polner, M. No Victory Parades: The Return of the Vietnam Veteran. New York: Holt, Rinehart, and Winston, 1971.
- Roche Report. Front Psychiatry 10, No. 5:12-13. Nutley, N.J.: Hoffman-LaRoche, April 1, 1980.
- Sonnenberg, S.M.; Blank, A.S.; and Talbott, J.A. The Trauma of War: Stress and Recovery in Vietnam Veterans. Washington, D.C.: American Psychiatric Association, 1985.
- Van Putten, T., and Yager, J. Posttraumatic stress disorder: Emerging from the rhetoric. Archives of General Psychiatry 41(4):411-413, 1984.

Walker, J.I., and Cavenar, J.O. Forgotten warriors: Continuing problems of Vietnam veterans. In: Cavenar, J.O., and Brodie, H.K.H., eds. Critical Problems in Psychiatry. New York: Little Brown, 1982. pp. 223-243.

Wish, E.D.; Robins, L.N.; Hesselbrock, M.; et al. The course of alcohol problems in Vietnam veterans. Current Alcohol Research 4:239-256, 1979.

Yager, T.; Laufer, R.; and Gallops, M. Some problems associated with war experience in men of the Vietnam generation. Archives of General Psychiatry 41(4):327-333, 1984.

Table 1. Number, percent distribution, and rate per 100,000 Vietnam Era veterans in the civilian population¹ for Vietnam Era veterans admitted to selected inpatient psychiatric services, by age, sex, and race: United States, 1980

Age, sex, and race	Inpatient psychiatric services			
	State and county mental hospitals	Private psychiatric hospitals	Non-Federal general hospitals	VA medical centers
	Number			
Total	18,459	5,675	27,979	66,592
Age				
18-24	1,098	155	*	1,912
25-34	13,274	3,239	17,200	46,797
35-44	3,821	1,939	7,823	15,221
45-54	*	263	1,766	2,007
55-64	*	*	*	592
65 and over .	-	-	-	*
Sex				
Male	18,117	5,589	27,729	65,118
Female	*	*	*	1,474
Race				
White	13,336	4,879	23,539	47,034
Black	4,824	782	3,881	18,742
Other	299	*	*	816
	Percent distribution			
Total	100.0%	100.0%	100.0%	100.0%
Age				
18-24	5.9	2.7	*	2.9
25-34	71.9	57.1	61.5	70.3
35-44	20.7	34.2	28.0	22.9
45-54	*	4.6	6.3	3.0
55-64	*	*	*	0.9
65 and over .	-	-	-	*
Sex				
Male	98.1	98.5	99.1	97.8
Female	*	*	*	2.2
Race				
White	72.2	86.0	84.1	70.6
Black	26.1	13.8	13.9	28.1
Other	1.6	*	*	1.2
	Rate per 100,000 Vietnam Era veterans in civilian population			
Total	229.7	70.6	348.1	828.6
Age				
18-24	328.7	46.4	*	572.5
25-34	271.2	66.2	351.4	956.2
35-44	181.4	92.0	371.3	722.4
45-54	*	53.9	362.0	411.4
55-64	*	*	*	323.0
65 and over .	-	-	-	*
Sex				
Male	232.7	71.8	356.2	836.5
Female	*	*	*	584.7
Race				
White	191.0	69.9	337.1	673.5
Black	659.7	106.9	530.8	2563.2
Other	104.7	*	*	285.8

¹Population estimates used as denominators in rate computations for total, age, and sex are from "Veterans in the United States, a Statistical Portrait from the 1980 Census," Office of Information Management and Statistics, Veterans Administration, October 1984. Population estimates used as denominators in rate computations for race are from the Office of Information Management and Statistics, and have been adjusted to sum to the total number of Vietnam Era veterans in the U.S. civilian population during 1980.

*Five or fewer sample cases; estimate not shown because it does not meet standards of reliability.

Note: Percentages may not add to 100% due to rounding.

Original from
CORNELL UNIVERSITY

Table 2. Percent distribution of Vietnam Era veterans admitted to selected inpatient psychiatric services, by race and selected primary diagnoses: United States, 1980

Race and selected primary diagnoses	Inpatient psychiatric services			
	State and county mental hospitals	Private psychiatric hospitals	Non-Federal general hospitals	VA medical centers
Total	18,459	5,675	27,979	66,592
Alcohol-related disorders...	37.0%	19.6%	29.1%	29.4%
Drug-related disorders	7.4	4.8	*	8.7
Affective disorders	8.3	38.5	32.8	11.8
Schizophrenia	30.9	18.3	24.1	33.7
Anxiety/somatoform/ dissociative	*	2.9	*	3.5
Personality disorders	6.2	4.9	2.4	6.7
Other	9.8	10.9	11.0	6.2
White	13,336	4,879	23,539	47,034
Alcohol-related disorders...	40.8%	19.6%	30.7%	31.2%
Drug-related disorders	8.5	4.6	*	6.5
Affective disorders	9.1	39.2	33.8	14.0
Schizophrenia	25.5	16.4	21.7	30.4
Anxiety/somatoform/ dissociative	*	3.1	*	4.3
Personality disorders	6.1	5.7	2.1	6.9
Other	9.8	11.5	11.0	6.7
All other races	5,123	796	4,440	19,558
Alcohol-related disorders...	27.1%	20.2%	20.4%	24.8%
Drug-related disorders	*	*	-	14.1
Affective disorders	6.2	34.0	*	6.6
Schizophrenia	45.0	30.5	37.0	41.9
Anxiety/somatoform/ dissociative	*	*	-	1.5
Personality disorders	6.7	-	*	6.1
Other	*	*	*	5.0

*Five or fewer sample cases; estimate not shown because it does not meet standards of reliability.

Note: Percentages may not add to 100% due to rounding.

Table 3. Percent distribution of Vietnam Era veterans admitted to selected inpatient psychiatric services, by race and prior inpatient psychiatric care: United States, 1980

Race and prior inpatient psychiatric care	Inpatient psychiatric services			
	State and county mental hospitals	Private psychiatric hospitals	Non-Federal general hospitals	VA medical centers
Total	18,459	5,675	27,979	66,592
First admissions¹	19.9%	35.0%	22.9%	14.6%
Readmissions¹ ...	80.1	65.0	77.1	85.4
White	13,336	4,879	23,539	47,034
First admissions¹	23.2%	34.1%	24.2%	15.7%
Readmissions¹ ...	76.8	65.9	75.8	84.3
All other races ...	5,123	796	4,440	19,558
First admissions¹	11.4%	40.3%	16.0%	11.8%
Readmissions¹ ...	88.6	59.7	84.0	88.2

¹First admissions are defined as admissions with no prior inpatient psychiatric care; readmissions, as admissions who have received prior inpatient psychiatric care.

Table 4. Percent distribution of Vietnam Era veterans admitted to selected inpatient psychiatric services, by race and source of referral: United States, 1980

Race and source of referral	Inpatient psychiatric services			
	State and county mental hospitals	Private psychiatric hospitals	Non-Federal general hospitals	VA medical centers
Total	18,459	5,675	27,979	66,592
Self	18.2%	23.6%	32.5%	57.0%
Family or friend	9.3	11.4	15.3	16.7
Police	9.5	3.7	10.7	2.3
Court or correction agency	27.0	1.6	2.9	3.7
Private psychiatrist	*	26.0	21.0	0.8
Other physician	5.8	8.7	7.3	2.4
Outpatient psychiatric clinic or service	4.2	5.6	2.9	4.8
Alcohol treatment facility	5.4	3.3	*	1.8
Other	20.1	16.1	6.1	10.4
White	13,336	4,879	23,539	47,034
Self	20.1%	24.2%	33.6%	57.2%
Family or friend	8.6	11.5	11.5	16.5
Police	8.1	*	9.7	2.5
Court or correction agency	25.4	*	*	3.9
Private psychiatrist	*	27.4	23.5	1.0
Other physician	5.5	9.3	8.7	2.4
Outpatient psychiatric clinic or service	4.0	4.4	2.9	4.4
Alcohol treatment facility	6.2	3.3	*	2.0
Other	21.4	15.6	6.1	10.1
All other races	5,123	796	4,440	19,558
Self	13.1%	20.1%	*	56.6%
Family or friend	11.1	*	35.5	17.4
Police	13.2	*	15.6	1.8
Court or correction agency	31.3	*	*	3.2
Private psychiatrist	-	17.7	*	*
Other physician	*	*	-	2.4
Outpatient psychiatric clinic or service	*	*	*	5.8
Alcohol treatment facility	*	*	*	1.4
Other	16.7	19.1	*	11.0

*Five or fewer sample cases; estimate not shown because it does not meet standards of reliability.

Note: Percentages may not add to 100% due to rounding.

Table 5. Percent distribution of Vietnam Era veterans admitted to selected inpatient psychiatric services, by race and type of treatment: United States, 1980

Race and type of treatment	Inpatient psychiatric services			
	State and county mental hospitals	Private psychiatric hospitals	Non-Federal general hospitals	VA medical centers
Total	18,459	5,675	27,979	66,592
Individual therapy	69.4%	90.5%	88.6%	67.1%
Family therapy	4.2	15.2	14.1	8.4
Group therapy	60.0	67.0	51.9	60.2
Drug therapy	58.5	63.4	72.8	52.3
Detoxification	26.8	18.5	16.4	23.2
Activity therapies	54.9	63.6	52.6	50.3
Self-care skill training	11.7	11.3	11.6	11.5
Social skill training ..	27.1	27.8	26.8	21.0
Vocational training	5.0	2.4	*	10.0
Education	10.2	7.1	*	9.4
Other ¹	8.1	13.6	8.3	7.9
White	13,336	4,879	23,539	47,034
Individual therapy	67.7%	90.8%	88.2%	69.1%
Family therapy	4.8	15.7	13.7	9.7
Group therapy	61.9	64.8	52.0	60.6
Drug therapy	56.2	63.8	71.4	52.0
Detoxification	30.0	19.7	19.3	22.9
Activity therapies	51.0	64.6	50.7	51.7
Self-care skill training	11.7	10.6	12.2	11.1
Social skill training ..	29.3	28.1	25.1	21.3
Vocational training	6.4	2.8	-	10.7
Education	10.8	6.6	*	9.3
Other ¹	9.3	13.2	7.7	6.8
All other races	5,123	796	4,440	19,558
Individual therapy	73.7%	88.6%	90.5%	62.3%
Family therapy	*	*	*	5.4
Group therapy	55.2	80.4	51.6	59.3
Drug therapy	64.6	61.1	80.5	53.2
Detoxification	18.4	*	*	24.0
Activity therapies	65.0	57.3	62.9	46.9
Self-care skill training	*	16.0	*	12.5
Social skill training ..	21.3	25.6	35.9	20.3
Vocational training	*	-	*	8.1
Education	8.5	*	*	9.8
Other ¹	5.1	15.5	*	10.7

¹This category includes approximately four percent or less of Vietnam Era veterans for whom "no psychiatric treatment" was rendered during their hospitalization.

*Five or fewer sample cases; estimate not shown because it does not meet standards of reliability.

Note: Patients may have received more than one type of treatment. Thus, percentages may add to more than 100%.

Table 6. Median days of inpatient stay (excluding deaths) for Vietnam Era veterans admitted to selected inpatient psychiatric services, by race and selected primary diagnoses: United States, 1980

Race and selected primary diagnoses	Inpatient psychiatric services			
	State and county mental hospitals	Private psychiatric hospitals	Non-Federal general hospitals	VA medical centers
Total	18	15	9	20
Alcohol-related disorders...	16	27	5	21
Drug-related disorders	13	14	*	13
Affective disorders	14	17	14	22
Schizophrenia	42	9	12	21
Anxiety/somatoform/dissociative	*	15	*	26
Personality disorders	14	16	3	19
White	20	15	9	21
Alcohol-related disorders...	16	25	5	23
Drug-related disorders	9	14	*	14
Affective disorders	14	15	12	19
Schizophrenia	52	14	11	21
Anxiety/somatoform/dissociative	*	15	*	26
Personality disorders	21	16	1	18
All other races	17	17	14	19
Alcohol-related disorders...	16	28	14	15
Drug-related disorders	*	*	-	11
Affective disorders	14	21	*	40
Schizophrenia	22	7	37	20
Anxiety/somatoform/dissociative	*	*	-	20
Personality disorders	14	-	*	19

*Based on five or fewer sample cases; median days of stay not shown because it does not meet standards of reliability.

Technical Appendix

1980 Patient Sample Surveys Psychiatric Inpatient Services State and County Mental Hospitals Private Psychiatric Hospitals Veterans Administration Medical Centers Non-Federal General Hospitals

Survey Designs and Procedures*

A. Survey Designs

Scope of the surveys

The surveys of admissions to State and county mental hospitals and private psychiatric hospitals were conducted during the period July 1980 to October 1980 by the Survey and Reports Branch (SRB), National Institute of Mental Health (NIMH), in cooperation with State mental health agencies. The survey of admissions to Veterans Administration (VA) medical centers was conducted during the period February 1981 to May 1981 by SRB, NIMH, in cooperation with the VA. The survey of discharges from the separate psychiatric inpatient services of non-Federal general hospitals was conducted during the month of February 1981 by the American Hospital Association (AHA) under contract to NIMH. The target populations included all patients admitted to the psychiatric inpatient services of State and county mental hospitals, private psychiatric hospitals, and VA medical centers, and all discharges from the separate psychiatric inpatient services of non-Federal general hospitals located in the 50 States and the District of Columbia.

Total additions to State and county mental hospitals consist of admissions (new and readmissions) and returns from long-term leave. The survey population included only new admissions and readmissions and excluded returns from long-term leave, whereas totals used in ratio adjustment (described below) included returns from long-term leave. The exclusion of these latter cases from the survey population could produce a slight upward bias in the estimates; however, since the number of returns from long-term leave was small in relation to other types of admissions, such bias should be negligible. Hereafter, the term admissions is used.

Sampling frames and sample sizes

The sampling frames (universes) for the surveys consisted of all hospitals reported in the most recent NIMH Inventory of Mental Health Organizations at the time of the surveys. This inventory collected data on services, caseload, staffing, and expenditures. The caseload data on admissions or discharges formed the basis for the stratification of the universe of hospital inpatient services, as described below.

For State and county mental hospitals, the original universe for the survey consisted of 274 hospitals. The target sample consisted of

*Prepared by Survey and Reports Branch, Division of Biometry and Applied Sciences, National Institute of Mental Health.

169 hospitals. Of these, 10 refused to participate, and 3 were out of scope: 1 had closed, and 2 had been incorrectly classified. Thus, 156 hospitals participated in the 1980 survey and provided data for 4,867 sample inpatient admissions.

For private psychiatric hospitals, the original universe consisted of 180 hospitals. The target sample consisted of all 180 hospitals. Of these, 26 refused to participate. Thus, 154 hospitals participated in the 1980 survey and provided data for 6,958 sample inpatient admissions.

For VA medical centers, the original universe consisted of 121 centers with psychiatric inpatient services. The target sample consisted of all 121 centers. Of these, 4 refused to participate. Thus, 117 centers participated in the 1981 survey and provided data for 4,751 sample inpatient admissions.

For non-Federal general hospital separate psychiatric inpatient services, the original universe consisted of 1,060 hospitals. The target sample consisted of 294 hospitals. Of these, 47 refused to participate and 13 were out of scope: 4 had closed and 9 had been incorrectly classified. Thus, 234 hospitals participated in the 1981 survey and provided data for 5,101 sample inpatient discharges.

Sample designs

The private psychiatric hospital and VA medical center surveys used a one-stage stratified probability design as described below.

In the private psychiatric hospital survey, hospitals were divided into two primary strata, defined by the annual number of admissions reported in the 1978 Inventory, as shown in table I. Hospitals in the small stratum were requested to include in the sample all patients admitted during the month of July 1980. Hospitals in the large stratum were requested to include only those admissions whose patient case number ended with an odd digit.

In the VA medical center survey, centers were stratified by size into three primary strata, defined by the annual number of inpatient admissions reported in the 1978 Inventory, as shown in table I. Each center was asked to list all inpatient admissions during the month of February 1981 on a form provided by NIMH and to complete patient questionnaires for each admission appearing on one of the predesignated sample lines. The listing booklets were designed with differential sampling fractions, so that larger programs sampled a smaller proportion of their admissions, thus maintaining approximately equal reporting levels among all centers. Sampling was systematic, with a random start within the first sampling interval.

The State and county mental hospital and the non-Federal general hospital surveys used stratified probability designs selected in two stages, as described below.

In the State and county mental hospital survey, all hospitals in States identified by the Indian Health Service as having a large proportion of Native American population were selected into a certainty stratum. Hospitals in the following States were included in the certainty

stratum: Alaska, Arizona, Colorado, Idaho, Kansas, Montana, Nevada, New Mexico, North Dakota, Oklahoma, Oregon, South Dakota, Utah, Washington, and Wyoming. Remaining hospitals were stratified by size into four primary strata, defined by the annual number of inpatient admissions reported in the 1979 Inventory, as shown in table I.

In the non-Federal general hospital survey, all hospitals were stratified by three ownership/auspice categories (public, nonpublic, and multiservice/CMHC) and by five size categories, defined by the annual number of inpatient discharges reported in the 1978 Inventory, as shown in table I.

In these two latter surveys, hospitals in each primary stratum were listed by State, and sampling of hospitals was systematic, with a random start within the first sampling interval.

The second sampling stage consisted of the selection of a sample of patients admitted to sample hospitals during the month of July 1980 for State and county mental hospitals and of patients discharged during the month of February 1981 for non-Federal general hospital separate psychiatric inpatient services. Hence, each sample hospital reported data for a cluster of patients included in the second-stage sample. As described above for the VA medical center survey, each sample hospital selected the sample patients through use of listing booklets with predesignated sample lines and sampling fractions appropriate to size strata.

Data collection and instruments

The sample hospitals completed patient questionnaires on each designated sample patient. Most items were obtained from the hospital records by medical records administrator staff. The data collection instruments contained similar data items for each survey, although they were structured somewhat differently. The form used in the survey of non-Federal general hospitals was a one-part form, while those used in the surveys of State and county mental hospitals, private psychiatric hospitals, and VA medical centers were two-part forms. The first part of the form requested information pertaining to the admission of the patient and was completed at the time of admission, upon discharge, or at the end of the study period. The second part of the form requested data about the treatment of the patient, as well as a discharge summary if the patient was discharged. This second part was completed at the end of the 3-month study period or at the time of the patient's discharge from the inpatient service, whichever occurred first. In the survey of non-Federal general hospitals, both the individual questionnaires for discharged patients and the listing booklet were mailed by the sample hospitals to AHA for editing and processing. For the remaining three surveys, these materials were mailed to NIMH.

B. Limitations of the Designs

Nonresponse

As in any survey, there were three possible types of nonresponse:

1. failure of a sample hospital to participate in the survey

2. failure to obtain data on a patient designated as a sample case
3. failure to obtain specific items of information (age, diagnosis, etc.) for individual sample patients.

Estimates presented in this report were adjusted for the failure of a sample hospital to respond through the use of an adjustment factor (number of selected hospitals divided by number of respondent hospitals) in conjunction with inflation by the inverse of the first stage sampling fraction. The number of sample hospitals that did not respond to the surveys is detailed in table I, by strata. No instances occurred of failure to obtain data on an admission designated as a sample case in the State and county mental hospital and private psychiatric hospital surveys. In the remaining two surveys, data were adjusted for failure to obtain data on patients designated as sample cases (48 cases in VA medical centers and 4 cases in non-Federal general hospitals) by use of an adjustment factor (number of designated sample cases divided by the number of respondent sample cases within the same hospital). Data were adjusted for nonresponse to specific items as follows: records were sorted on a core set of variables, such as sex, age-category, diagnostic-category, stratum, region, and patient number, and the value of the variable from the previous record was substituted for the unknown value. Unless otherwise footnoted, the percentage of cases with missing data was 5 percent or less for any given variable.

Seasonality

Data collected in this survey were inflated to represent the annual number and characteristics of admissions or discharges for the types of inpatient services surveyed, as described below. However, patients were sampled only for a 1-month period. Seasonal variations in the number and characteristics of patient admissions or discharges were not considered in the estimation or variance calculations used for these surveys.

C. Estimation

Estimation was carried out in three steps:

1. Within each primary stratum, patient records were weighted by the product of the inverse of the sampling fraction(s), the nonresponse adjustment factor(s) (described above), and the ratio of total annual admissions or discharges (described below) to total sample-month admissions or discharges. This weight has the effect of inflating sample cases to annual facility totals and inflating sample facility totals to stratum totals.

2. Within each primary stratum, weights developed in step one were multiplied by a stratum-level ratio adjustment factor defined as the ratio of the total annual admissions or discharges for all hospitals in the stratum, to the inflated total count of admissions, as calculated from the procedure described in step one. The purpose of this ratio adjustment was to take into account all relevant information in the estimation process, thereby reducing the variability of the estimate. The effect of this ratio adjustment was to bring the estimates derived from the sample into agreement with the known total number of admissions or discharges.

3. Resulting stratum level estimates were summed across strata to derive totals and subtotals for different domains of interest.

D. Reliability of Estimates

Background

Because estimates presented in this report are based on sampling, they are likely to differ from figures that would have been obtained from complete enumerations of the universes using the same instruments. Results are subject to both sampling and nonsampling errors. Nonsampling errors include biases due to inaccurate reporting, processing, and measurement, as well as error due to nonresponse and incomplete reporting. These types of errors cannot be measured, but have been minimized to the extent possible through the procedures used for data collection, editing, and quality control.

The sampling error (standard error) of a statistic is inversely proportional to the square root of the number of observations in the sample. Thus, as the sample size increases, the standard error decreases. The standard error measures the variability that occurs by chance, because only a sample rather than the entire universe is surveyed. The chances are about two out of three that an estimate from the sample differs by less than one standard error from the value that would be obtained from a complete enumeration. The chances are about 95 out of 100 that the difference is less than twice the standard error, and about 99 out of 100 that it is less than three times as large.

In this report, statistical inference is based on the construction of 95-percent confidence intervals for estimates (0.05 level of significance). All statements of comparison in the text relating to differences such as "higher than," "less than," etc., indicate that the differences are statistically significant at the 0.05 level or better. Terms such as "similar to" or "no difference" mean that statistically, no difference exists between the estimates being compared. Lack of comment on the difference between any two estimates does not imply that a test was completed and there was a finding of no significance.

Calculation of Standard Errors

Standard errors were calculated for a broad range of subtotals within age, sex, and race subclasses through the use of SESUDAAN: Standard Errors Program for Computing of Standardized Rates from Sample Survey Data developed at the Research Triangle Institute by B.V. Shah. This procedure computes estimated sampling variance through the use of a Taylor series approximation. As applied to data from the present surveys, variance estimates for subtotals were calculated for each primary stratum and then summed across strata to derive standard errors for domains of interest. The variance estimate for each primary stratum includes both the between-facility and the within-facility components of variance, with corrections for finite populations applied at both sampling stages. Since preliminary work suggested that use of stratum-level ratio adjustment did not appreciably affect the variance estimates, all variance estimates were calculated on ratio-adjusted subtotals.

Relative standard errors of subtotal estimates

The relative standard error of a subtotal estimate is obtained by dividing the standard error of the estimate by the estimate itself and is expressed as a percent of the estimate. Approximate relative standard errors for aggregate subtotal estimates are presented in figure I. Approximately 30 curves were generated for each survey by inputting the relative variance and the inverse of weighted aggregate totals obtained from SESUDAAN into the GLM (General Linear Models) procedure in SAS (Statistical Analysis System). GLM uses the method of least squares to obtain the a and b parameters (listed in table II) and the predicted relative variance. From this, the predicted relative standard error was calculated and plotted against aggregate subtotal estimates using the Gplot procedure in SAS/GRAPH. The 30 curves generated were very similar, and the generalized curves presented in figure I represent the most conservative of the set of curves for each survey. These generalized relative standard error curves indicate the magnitude of the relative standard error for estimates of various sizes and should be interpreted as approximate rather than exact for any specific estimate.

Alternatively, the relative standard error, $RSE(x)$, for a subtotal estimate may be calculated directly using the following formula, where x is the size of the estimate and a and b are the parameters listed in table II. Direct computation will produce more precise results than use of the approximations in figure I. Direct computation should be used when comparing specific subgroups of non-Federal general hospitals (i.e., public, nonpublic, multiservice), since the curve shown in figure I represents the aggregate of all three subgroups of general hospitals.

$$RSE(x) = \sqrt{a + \frac{b}{x}} \cdot 100$$

Relative standard errors of rates

The approximate relative standard error for a rate, in which the denominator is the United States population or one or more of the age-sex-race subgroups of the United States population, is equivalent to the relative standard error of the numerator of the rate, as presented in figure I.

Relative standard errors of estimated percentages

The approximate relative standard error of an estimated percentage, expressed in percentage terms, may be determined by use of figure II. The relative standard error of the percent is obtained from the appropriate curve, and may be interpolated for percentages based on denominators not shown in the figure. These relative standard errors should be interpreted as approximate rather than exact for any specific percentage.

Alternatively, relative standard errors for percents, $RSE(p)$, may be calculated directly using the following formula, where p is the percentage of interest, x is the base of the percentage, and b is the parameter listed in table II.

$$RSE(p) = \sqrt{\frac{b}{x} \cdot \frac{(100-p)}{p}} \cdot 100$$

Relative standard errors of medians

In this report, medians were calculated on ungrouped data using the PROC UNIVARIATE procedure from SAS. The sampling variability of an estimated median depends on the form of the distribution as well as the size of the base upon which it is calculated. An approximate method for calculating the standard error of the median when the underlying population is normally distributed is to multiply the standard error of the mean by a factor of 1.2538. For estimated medians in this report, estimates were converted into logs in order to normalize distributions, and standard errors of the mean were calculated. The antilogs were then taken, and the resultant standard errors were multiplied by 1.2538 to obtain an approximate standard error for the median. Confidence intervals were then calculated around the median obtained from PROC UNIVARIATE using this estimated standard error.

Alternatively, 95-percent confidence intervals for medians may be approximated as follows:

1. Determine the relative standard error, expressed in percentage terms, of the estimate of 50 percent from the relevant distribution in figure II;
2. Convert the relative standard error to the standard error, i.e.,

$$\frac{RSE \cdot EST}{100}$$

3. Add to and subtract from 50 percent twice the standard error determined in step (2);
4. Using the distribution of the characteristic, calculate the values from the distribution corresponding to the two points established in step (3). These values will be the upper and lower limits for the 95-percent confidence interval.

Estimates of differences between two statistics

The standard error of a difference is approximately the square root of the sum of the squares of each standard error considered separately. This formula will represent the actual standard error quite accurately for the difference between separate and uncorrelated characteristics, although it is only a rough approximation in most other cases.

Estimates of statistical sums

The standard error of the sum of a number of independent estimates is the square root of the sum of the squares of the standard errors of the separate estimates.

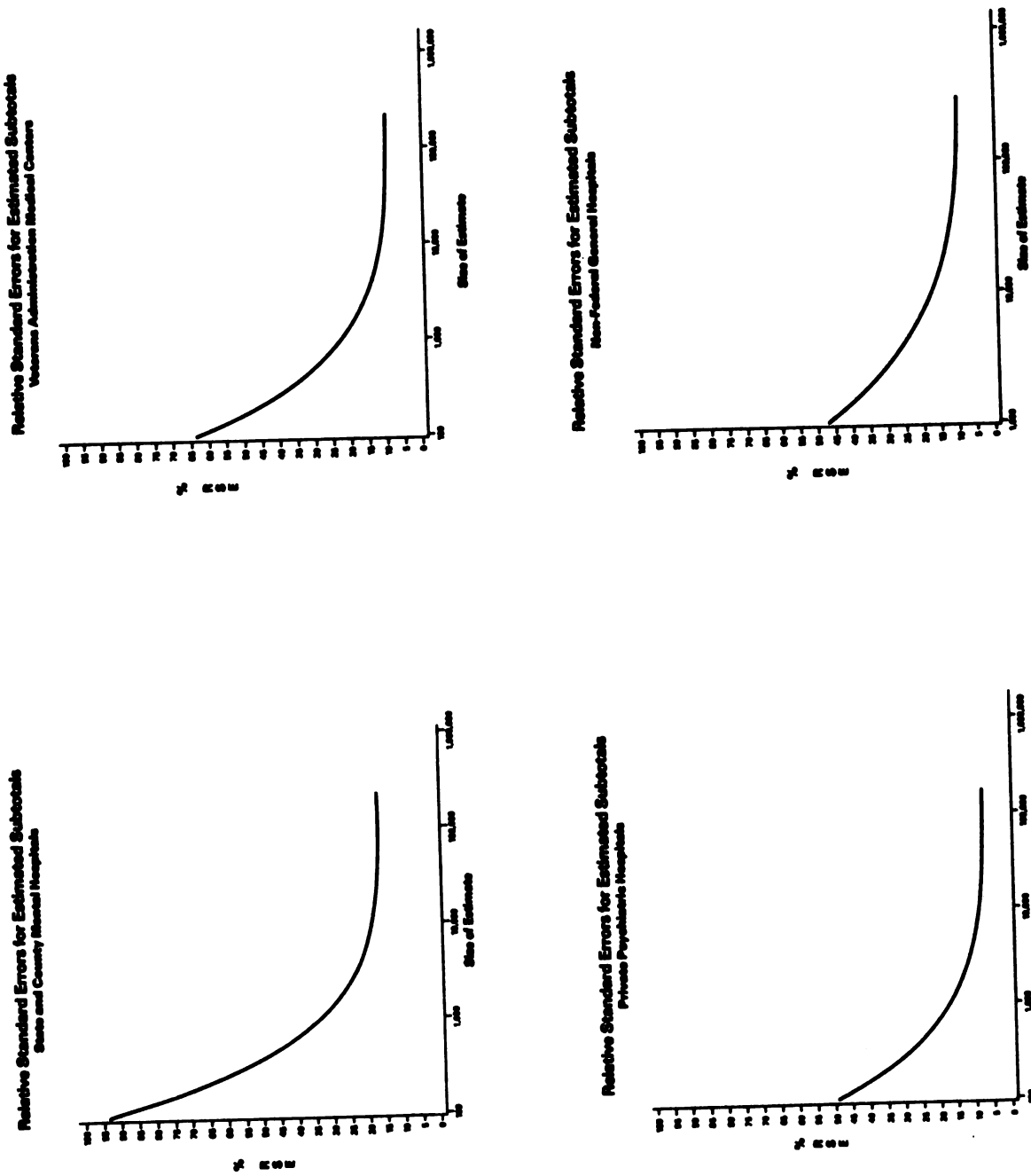
Table I. Universe and sample counts for State and county mental hospitals, private psychiatric hospitals, VA medical centers, and the separate psychiatric inpatient services of non-Federal general hospitals, by primary strata

Primary strata	Number of hospitals					Number of patients in actual sample
	Universe	Sample	Responding in scope	Out of scope	Non-responding	
Annual Admissions						
State and county mental hospitals						
Total, all strata .	274	169	156	3	10	4,867
0-999	123	61	55	1	5	1,806
1,000-2,499	86	43	40	1	2	1,339
2,500-4,999	33	33	31	-	2	885
5,000+	7	7	6	-	1	132
Indian Health (all sizes) ...	25	25	24	1	-	705
Private psychiatric hospitals						
Total, all strata .	180	180	154	-	26	6,958
0-719	105	105	90	-	15	3,596
720+	75	75	64	-	11	3,362
Veterans Administration medical centers						
Total, all strata	121	121	117	-	4	4,751
0-1,000	52	52	50	-	2	2,171
1,000-2,499	47	47	45	-	2	1,725
2,500+	22	22	22	-	-	855
Annual Discharges						
Non-Federal general hospitals						
Total, all strata .	1,060	294	234	13	47	5,101
Public						
Total, all strata .	160	73	55	2	16	1,118
0-399	51	17	12	-	5	330
400-799	53	18	14	-	4	301
800-1,499	36	18	12	2	4	248
1,500+	14	14	11	-	3	196
Unknown	6	6	6	-	-	43
Nonpublic						
Total, all strata .	727	129	106	4	19	2,338
0-399	246	31	25	1	5	810
400-799	315	39	34	-	5	723
800-1,499	132	33	26	1	6	515
1,500+	17	17	15	-	2	201
Unknown	17	9	6	2	1	89
Multiservice/CMEC						
Total, all strata .	173	92	73	7	12	1,645
0-399	51	25	21	2	2	501
400-799	51	26	19	-	7	435
800-1,499	30	15	12	-	3	216
1,500+	10	10	10	-	-	118
Unknown	31	16	11	5	-	375

Table II. Parameters for calculating approximate standard errors of estimated numbers and percentages for selected characteristics from the 1980 patient sample surveys of State and county mental hospitals, private psychiatric hospitals, VA medical centers, and the separate psychiatric inpatient services of non-Federal general hospitals

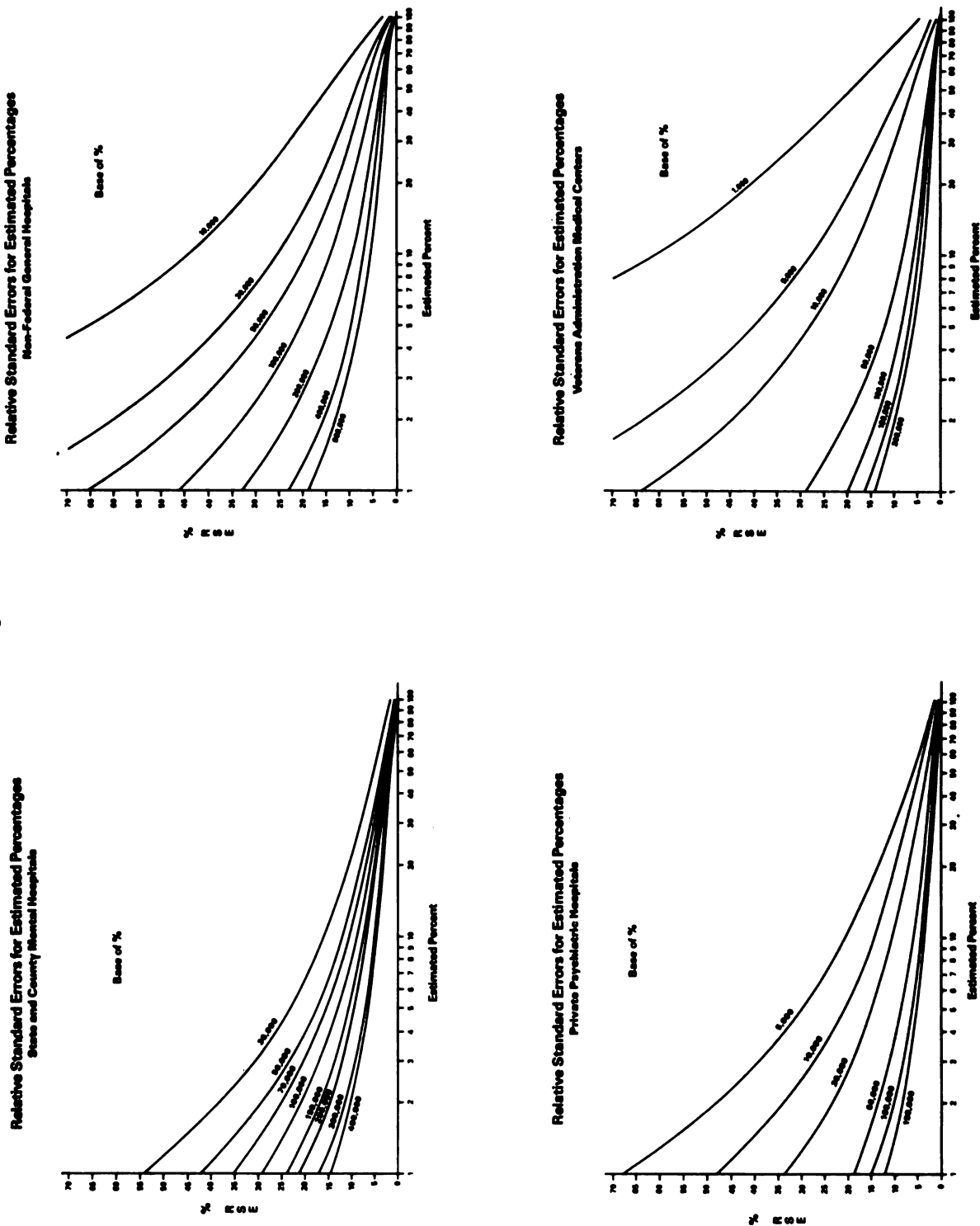
Type of characteristic	Parameter	
	a	b
State and county mental hospitals		
Admissions		
Age by sex by race	0.00207	109.987
Age by sex and race by:		
Diagnosis	0.02286	92.598
Payment	0.02486	95.669
Length of stay	0.01446	94.612
Private psychiatric hospitals		
Admissions		
Age by sex by race	0.00026	25.728
Age by sex and race by:		
Diagnosis	0.00174	24.380
Payment	0.00555	23.293
Length of stay	0.00137	23.001
Veterans Administration medical centers		
Admissions		
Age by sex by race	0.00130	39.737
Age by sex and race by:		
Diagnosis	-0.00524	46.270
Length of stay	0.00512	40.630
Veteran Status	0.00245	39.796
Non-Federal general hospitals		
Discharges		
Total hospitals		
Age by sex by race	0.00246	204.005
Age by sex and race by:		
Diagnosis	0.00684	204.844
Payment	0.00706	220.418
Length of stay	0.00363	210.455
Public hospitals		
Age by sex by race	0.00770	130.805
Nonpublic hospitals		
Age by sex by race	0.00615	255.056
Multiservice/CMHC hospitals		
Age by sex by race	0.01845	47.318

Figure 1



Example: For private psychiatric hospitals, an estimate of 10,000 admissions (on scale at bottom of figure) has a relative standard error of approximately 8% (read from scale at left side of figure), or a standard error of 800 (8% of 10,000).

Figure II



Example: For private psychiatric hospitals, an estimate of 20% (on scale at bottom of figure) for a base of 60,000 has a relative standard error of approximately 5% (read from scale at left side of figure). The standard error in percentage points is equal to 20% x 5%, or 1.0 percentage points.

