

BEFORE AND AFTER DEINSTITUTIONALIZATION: COMPARING STATE HOSPITALIZATION UTILIZATION, STAFFING, AND COSTS IN 1949 AND 1988

Paul G. Stiles, J.D., Ph.D., Dennis P. Culhane, Ph.D., and
Trevor R. Hadley, Ph.D.

ABSTRACT: The literature on deinstitutionalization (DI) and state hospitals is consistent in several areas: patient census' at state facilities declined, staffing ratios increased, costs decreased with a net savings for state treasuries, and the number of state hospitals remained fairly constant or declined slightly. However, virtually all studies use data collected after DI had begun and span only a few years. This article reports the results of data that spanned 39 years. Comparisons were made to examine the effects of DI on utilization, staffing, and costs (inflation and population adjusted) at state hospitals. Newly opened hospitals greatly outnumbered closed facilities over the time frame, thus there were considerably more hospitals in 1988 than in 1949. The data also confirm that state hospitals have emerged from DI as different institutions with a new treatment emphasis reflected in shorter stays and professionalized staff. However, this comes at a greatly increased cost.

Much of the literature on deinstitutionalization has used the state or the nation as the descriptive unit to document the major changes that have accompanied the national restructuring of state psychiatric inpatient care over the last four decades. No published study to date has used national facility-level data to document the shifts accompanying deinstitutionalization, nor have many studies examined historic data prior to the 1960s before deinstitutionalization was under way. Only one study (Kiesler &

Paul Stiles is with the Department of Mental Health Law and Policy, Florida Mental Health Institute. Dennis Culhane and Trevor Hadley are with the Center for Mental Health Policy and Services Research, Department of Psychiatry, University of Pennsylvania.

Address for correspondence: Paul G. Stiles, J.D., Ph.D., Department of Mental Health Law & Policy, Florida Mental Health Institute, 13301 Bruce B. Downs Blvd., Tampa, FL 33612.

Sibulkin, 1987) has investigated changes in the states' costs for state hospital care, adjusted for inflation and population, although that study is limited to comparing cost data from 1969 to 1981. This paper attempts to fill those gaps in the literature by reporting on a study of state and facility-level changes in state adult inpatient populations, staffing patterns, and state expenditures for state psychiatric hospitals using data spanning 39 years (from 1949 and 1988).

LITERATURE REVIEW

The literature on deinstitutionalization and the changing organization of state hospitals is consistent in finding declining censuses, increasing staff to patient ratios, modest, although declining costs for state inpatient care, and a fairly consistent number of state facilities over time. However, because of limitations in data and time-frames, several important gaps remain in this literature.

Average Daily Census

Perhaps the most dramatic effect of deinstitutionalization, and the most consistent finding of studies in this area, is the precipitous decline in the average daily patient census of state hospitals over the past few decades (Kiesler & Sibulkin, 1987). This decrease in state hospital census was a visible result of a number of social and political movements (Grob, 1991); however, one of the more practical and important causes of the census decline was the increased support of services outside the hospitals by the federal government including the development of community mental health centers. Medicare, Medicaid, and direct support of community mental health services by the federal government made it possible for states to shift some of the burdens (and costs) of caring for persons with mental disabilities to community based facilities (Brown, 1985).

Initially, as censuses declined, admission rates increased at state hospitals creating the perception of the "revolving door syndrome" (Brown, 1985, p. 50). Nevertheless, the combination of "back door" methods (*e.g.*, transfers of older patients to nursing homes in the late 1950s and 1960s) and "front door" methods (*e.g.*, inpatient diversion to community services and increased use of general hospital inpatient units for acute and intermediate care) were quite effective in reducing average daily census (Brown, 1985; Grob, 1991). The average length of stay per patient also declined during this time period from well over one year per episode in the 1960s to five months per episode in 1982 (Kiesler & Sibulkin, 1987).

Even though these declines in census and length of stay are well documented, questions remain. For example, although average census was de-

clining, did the increase in admissions offset the decline in length of stay producing similar "patients under treatment" rates? That is, were there similar numbers of people receiving treatment in state hospitals before and after deinstitutionalization despite the decline in average daily census? In at least one state (Massachusetts), the total number of persons under treatment in state hospitals did increase significantly between 1962 and 1971 despite the decline in average daily census (Greenblatt, 1976). Nevertheless, it remains unclear whether or not this was a national occurrence and what the magnitude of the phenomenon was over the course of several decades of deinstitutionalization.

Staffing Ratios

It is also the consensus in the literature, that within the smaller state hospitals created by census declines, staffing ratios increased (Brown, 1985; Grob, 1991). Several hypotheses about the causes of these increased ratios have been proffered including raised standards of care required for accreditation, and several scandals in the 1940s and 1950s. However, while there has been a focus on absolute increases in the number of staff at state hospitals, it is unclear what effect the declining number of patients (*i.e.*, census) had on the patient to staff ratios. One study (Lasky & Dowling, 1971), did find a significant correlation between "release rates" and staff ratios for the period of 1963 to 1967, but did not address the issue of census decreases. Thus, to what extent the staffing ratios increased due to census declines versus absolute increases in staffing levels remains unexamined. Moreover, the patterns of staffing increases is also unclear. Brown (1985) argues that staffs of state hospitals were "professionalized" during deinstitutionalization (p. 42); more "higher-level" professionals, such as physicians and psychologists, were hired at the expense of "lower-level" mental health aides and workers. Although at least one short term study (Witkin, 1981) supports this assertion, no long term national data has been forthcoming to verify it.

Costs

With the increased emphasis on federally supported community care and the shrinking censuses in state hospitals, one might presume that a net financial savings would be realized by the state treasuries. However, it is quite possible that increased costs associated with enhanced staffing requirements and growing maintenance expenses on older state facilities have dissipated any cost savings from deinstitutionalization (Brown, 1985). Kiesler and Sibulkin (1987), using aggregated national data, report a slight decline in total expenditures for state hospitals (using constant 1969 dollars) between 1969 and 1981 (from \$1,814,101 to \$1,762,497), and a three-fold increase in expenditures per patient day (from \$14 to \$40 in 1969

dollars), while the cost per inpatient stay remained the same in 1981 and 1969 (\$5,880 and \$5,894 respectively) (p. 212). The slight decline in state hospital expenditures appears to have continued through at least 1985 (Lutterman, Mazade, Wurster, & Glover, 1988). However, these studies use 16 years of data collected after the initial waves of deinstitutionalization. Given the great declines in average census and length of stay in state hospitals, would these trends be present over a longer time frame? Would we see even more dramatic declines in costs if we compared data from before and after deinstitutionalization?

Number of Facilities

Finally, Kiesler and Sibulkin (1987) report that the number of state mental hospitals has fluctuated at around 300 for the past four decades (p. 46) with a current decreasing trend since the mid-1970s. The data used in their analysis was obtained from the National Institute of Mental Health (NIMH), and apparently include both children's and adult facilities. However, for NIMH data prior to 1969, "little is known concerning how completely the various universes of facilities were covered" (p. 133). Using data obtained from a different source than Kiesler and Sibulkin's study, and focusing only on state hospitals for adults, does our facility specific information confirm their assertion that the number of hospitals has remained fairly constant?

Hypotheses

The objective of this paper is to address several of the above questions regarding census, staff ratios, costs of state hospitals, and number of state facilities by comparing a period before and after the initial waves of deinstitutionalization using facility specific data. Specific hypotheses include:

- Given the strong documentation of the decline in patient census, we expect to verify the precipitous decline in average daily census found by other investigators; however, we also expect to find similar numbers of people receiving treatment in state hospitals despite the census decline (*i.e.*, similar under treatment rates).
- We also anticipate confirming that staffing ratios have increased, but also expect to find a strong relationship between the ratio increase and the declines in patient census. We also expect to find a considerable "professionalization" of the staff over time within the state hospitals.
- Given the modest declines in costs per facility experienced over 15 years previously documented, we anticipate revealing an even larger cost savings as we will be examining data over a 39 year time frame.

- Finally, we expect to confirm Kiesler and Sibulkin's finding that the number of state hospitals has remained fairly constant or decreased slightly over the course of deinstitutionalization.

METHODS

Data Sources

In 1949, in response to growing public concern, the Governors' Conference (the annual meeting of the 48 state governors) directed its Council of State Governments to prepare a comprehensive report on the care and treatment of the mentally disabled (Grob, 1991). The following year, the Council issued its report based on data collected for the year 1949: *The Mental Health Programs of the Forty-Eight States: A Report to the Governors' Conference* (Council of State Governments, 1950). This 377 page document was quite comprehensive in scope including in-depth analyses of areas of state mental health programming such as state organization and administration, finance, plant and equipment, personnel, and care and treatment of patients. Most important for the current study is that the report also provided over 100 pages of state and facility specific data tables.

In the present study we compare the data from the Council of State Government's report with data collected from state hospitals in 1989 through the Inventory of Mental Health Organizations (IMHO) conducted by the NIMH's Survey and Reports Branch for the year 1988. We were able to match facility level information in both databases to compare census, staffing and expenditure patterns for specific hospitals and states.

Analyses

Before comparing facilities and states over time, a match of the facilities listed in 1949 with those state and county hospitals for adults recorded in the 1988 IMHO was conducted. The status of all facilities listed in 1949 but not found in the 1988 IMHO was verified by calling state mental health agencies. This procedure identified some facilities that continued to function as state hospitals but which had undergone a change of name. Thus, still existing, closed and newly opened facilities were identified for the analysis. As Alaska and Hawaii did not exist as states in 1949, both states were removed from the study and the two facilities associated with those states in 1988 were not counted as newly opened facilities. Finally, as the state mental health programs in 1949 did not report any exclusively forensic or children's facilities, 12 forensic and

23 children's facilities existing in 1988 but not in 1949 were not included in the facility level analysis.

A set of facility-specific comparisons were undertaken to examine changes in the utilization, staffing and costs of state hospitals over the study period. Regarding utilization, matched facilities were compared with univariate tests of significance (t-tests) on measures for average daily census, the total number of persons under treatment annually, total admissions, occupancy rate and deaths. Staff were subdivided by physicians, psychologists, social workers, registered nurses, and mental health workers, and staffing ratios (staff per average daily census) computed. Again, matched facility averages were compared over the study period with t-tests. The average annual expenditures of matched facilities were also compared (total and per average daily census), inflating the 1949 expenditures to 1988 dollars.

State level aggregations of census, revenue and expenditure data were also computed to take account of the development of new facilities in a state and their potential impact on state-wide utilization and costs of state hospitals. Once again, the utilization variables included average daily census, total under treatment, admissions and deaths, this time standardized by state population (rates per 1,000 population). Average state hospital expenditures and expenditures per capita were also compared by state, adjusting the 1949 expenditures to 1988 dollars; salary and maintenance expenditures were separately compared. Revenue sources (federal, client fees, and state) were also compared, inflating 1949 values to 1988 dollars, both in total dollars and per capita. As state revenue figures were not available for 1949, an estimate of each state's share was calculated by subtracting federal outlays and client fees from total expenditures.

RESULTS

The Number of Facilities

Table 1 shows that, regarding the number of adult state/county hospitals, contrary to the stable trend reported by Kiesler and Sibulkin (1987), and contrary to the slight decline that had been predicted here, there were not 300 state inpatient facilities at either point in this study. Inclusive of the 1949 and 1988 data points, a total of 287 state hospitals were reported ever in existence (this excludes the 12 forensic and 23 children's facilities removed from the analysis), 161 of which existed in 1949 and still existed in 1988. The opening of new facilities since 1949 (and still in operation in

TABLE 1
Number of State/County Hospitals

<i>Status Since 1949</i>	<i>Number</i>	<i>Percent^a</i>
Still Existing	161	56.10%
Newly Opened	85	29.62%
Closed	41	14.29%
Totals	287	100.01%

Note: The "Newly Opened" category does not include 12 exclusively Forensic state facilities and 23 exclusively children's state facilities reported in IMHO 1988.

^aTotal percents do not add up to 100 due to rounding.

1988) outpaced closures, 85 to 41, leaving 246 non-forensic adult facilities in operation in 1988. In other words, there were 44 more adult state hospitals in operation in 1988 ($n = 246$) than in 1949 ($n = 202$), an increase of 22%.

Facility-Specific Comparisons

Comparing those facilities that continued to operate from 1949 through 1988, the utilization data show the predicted significant decline in average daily census and total persons under treatment (see Table 2). On average, facilities have approximately one-fifth of their 1949 patient census, and less than one-half of the total patients under treatment annually. Also, as found in previous research, admissions to these facilities have increased, with nearly double the average number of admissions in 1988 compared to 1949. The mean number of deaths in 1949 was far greater (nearly 15 times) the number of deaths per facility in 1988. Finally, state hospitals also report significantly lower occupancy rates in 1988 than in 1949, when, on average, occupancy exceeded their stated capacity.

Regarding staffing ratios, all of the staff categories showed an increase over the study period, as predicted. In particular, there were tremendous increases in the staffing ratios for psychologists and social workers (28.4 and 26 times greater respectively). The ratio of registered nurses to average daily census also showed a large increase (16.3 times greater), and relatively more modest increases in physicians and mental health workers (8.3 and 7.5 times greater respectively).

TABLE 2
State/County Hospitals in 1949 and 1988:
Facility Specific Comparisons

<i>Variables</i>	<i>1949 Mean (stand. dev.)</i>	<i>1988 Mean (stand. dev.)</i>	<i>t-value</i>	<i>p-value</i>
<i>Census Variables:</i>				
Ave. Daily Census	2330.95 (1681.66)	466.29 (359.83)	16.19	0.0001
Total Under Tx	4109.88 (2844.86)	1652.45 (1245.12)	12.20	0.0001
Admissions	712.21 (576.40)	1162.36 (1110.58)	-5.28	0.0001
Deaths	216.16 (227.11)	14.95 (21.77)	11.49	0.0001
<i>Staffing Variables (per ADC)</i>				
Physicians	0.0066 (0.015)	0.0550 (0.028)	-20.97	0.0001
Psychologists	0.0013 (0.004)	0.0369 (0.027)	-16.43	0.0001
Social Workers	0.0029 (0.011)	0.0753 (0.050)	-19.82	0.0001
Registered Nurses	0.0149 (0.037)	0.2429 (0.121)	-24.03	0.0001
MH Workers	0.1225 (0.060)	0.9159 (0.368)	-25.92	0.0001
<i>Expenditure Variables (1988 \$)</i>				
Expenditures per ADC	\$10,262.93 (11033.57)	\$67,989.34 (27512.31)	-27.34	0.0001
Expenditures per facility	\$20,791,647 (17,674,908.7)	\$30,044,508 (21,535,334.6)	-7.56	0.0001
Occupancy Rate	1.1287 (0.372)	0.9267 (0.112)	6.34	0.0001

A comparison of facility expenditures in 1949 and 1988 (inflation adjusted) revealed a significant increase in expenditures per facility, with the average facility cost increasing over \$9 million annually (45%) over the study period. The cost per average daily census skyrocketed from \$10,262 to \$67,989, given both the increase in absolute costs and the steep decline in census.

State-Level Comparisons

The state-wide comparisons similarly confirm the declining utilization of state hospitals adjusted for population (Table 3). Indeed, the average daily census rate and the total under treatment rate show a greater proportionate decline state-wide than the decline in the number of facilities remaining in operation for the study period. The increase in the admission rate to state hospitals over the time period, although still statistically significant, does not show the dramatic change exhibited by the census and under-treatment rates. Again, the death rate is much lower in 1988 than in 1949, possibly reflecting the declining use of state hospitals as long-term care facilities for the elderly.

As shown in Table 4, states' total expenditures for state hospitals increased significantly over the study period, adjusted for inflation, despite steep declines in state hospital utilization. This is due primarily to a more than tripling in expenditures on salaries, as would be suggested by the absolute increase in staffing ratios observed earlier. Maintenance expenditures remained fairly constant from 1949 to 1988. Adjusting expenditures by population reveals that the per capita cost of state hospitals has significantly increased over the study period (by over 50%), again attributable to increased salary costs, and which greatly outbalanced a significant decline in per capita maintenance costs.

Changes in total inflation adjusted client fee revenues for state hospitals fail to show any significant change over the study period; however, both the federal and state revenue shares increased significantly. Similarly,

TABLE 3
State/County Hospitals in 1949 and 1988:
State by State Comparisons

<i>Census Variables per 1000</i>	<i>1949 Mean</i>	<i>1988 Mean</i>		
<i>State Population</i>	<i>(stand. dev.)</i>	<i>(stand. dev.)</i>	<i>t-value</i>	<i>p-value</i>
<i>Census Variables:</i>				
Average Daily Census	2.7330 (0.872)	0.3926 (0.201)	20.43	0.0001
Total Under Treatment	4.0900 (1.427)	1.8479 (1.051)	9.17	0.0001
Admissions	0.8970 (0.412)	1.4525 (0.984)	-3.55	0.0001
Deaths	0.2567 (0.145)	0.0106 (0.011)	11.67	0.0001

TABLE 4
State/County Hospitals in 1949 and 1988: Adjusted State by State Comparisons

Variables	Inflation Adjusted ^a			Inflation and Population Adjusted ^b			
	1949 Mean (St. Dev.)	1988 Mean (St. Dev.)	t-value	1949 Mean (St. Dev.)	1988 Mean (St. Dev.)	t-value	p-value
<i>Expenditures</i>							
Salary	34,176,552 (69,493,594)	114,839,172 (193,447,479)	-4.32	8.44 (5.323)	20.92 (12.114)	-8.91	0.0001
Maintenance	26,948,798 (40,246,034)	21,990,390 (30,352,068)	1.70	7.76 (3.283)	4.14 (2.279)	7.80	0.0001
Total	60,309,715 (107,793,934)	137,234,624 (227,732,957)	-4.09	16.10 (8.077)	25.27 (14.285)	-5.72	0.0001
<i>Revenue</i>							
Federal	539,078 (456,099)	5,579,809 (13,185,083)	-2.66	0.22 (0.112)	0.91 (1.015)	-4.56	0.0001
Client Fee	5,098,165 (10,275,197)	6,483,746 (11,700,659)	-1.39	1.47 (1.573)	1.20 (1.069)	1.08	0.287
State	53,979,938 ^c (99,226,794)	112,728,706 (184,376,847)	-4.06	14.35 (7.237)	20.41 (12.436)	-4.15	0.0001

^aAll figures in 1988 dollars. ^bAll figures in per capita 1988 dollars. ^cState revenues in 1949 were unavailable, therefore they were estimated by subtracting federal outlays and client fees from total state hospital expenditures in each state.

population adjusted revenues show a significant increase per capita from both federal and state sources and no change in revenues from client fees. The result is apparent even though a fairly liberal estimate of state revenues designated to state hospital care in 1949 was used (and thus any increase in costs over time would be tempered).

DISCUSSION

Provision of mental health care in state run and financed hospitals has changed much over the course of deinstitutionalization (DI), and this study has attempted to document and examine some of those changes by comparing facility and state data from before DI began (1949) with data from after the initial waves of DI. Both our facility specific and per capita state level data strongly confirmed the precipitous decline in the average daily census and absolute increase in admissions documented by others over the course of DI. However, our hypothesis that we would find similar under-treatment rates was not supported by the data. The great decline in census rates was not offset by the much less dramatic increase in admission rates and thus the under-treatment rate was cut more than in half on average nationally. Therefore, 39 years of DI did indeed reduce the number of persons coming in contact with or receiving treatment at state hospitals.

Deaths in 1949 were nearly 15 times the number of deaths per facility in 1988. This likely reflects improved health care in general, as well as the declining census and use of state hospitals as long-term care facilities for the elderly. However, as the percentage drop in deaths greatly exceeded the drop in average daily census, the reduction in deaths may also reflect the change from custodial care in state hospitals (with its accompanying extended lengths of stay) to a greater focus on therapeutics and treatment.

Staffing at state hospitals (per average daily census) significantly increased for all employment categories over the study period. The ratio increases far exceed the proportionate decline in average daily census (down 80%), suggesting that increasing staffing ratios are a result of absolute increases in staffing levels as well as a consequence of declining average daily census. Thus, our hypothesis that increasing staff ratios resulted primarily from declining census is not confirmed. However, it does appear that there has been a "professionalization" of the staff at state hospitals over the course of DI with staffing ratios for psychologists and social workers greatly outpacing the increases for mental health workers and nurses. Thus, our hypothesis regarding the increased professionalization of staff is confirmed.

The absolute increase in staffing as well as the professionalization of state hospital staff may be the result of greater focus on accreditation of hospitals and the increased focus on, and improvement of, treatment protocols accompanying such accreditation evaluations. It is also likely that the staffing changes are reflecting the move away from the custodial nature of state hospitals prior to DI, to the more treatment and goal focused approach to working with patients currently used.

Regardless of the reason for the staffing changes, the increased numbers and greater professionalization of staff would be predicted to lead to increased costs to employ that staff. Indeed our data show that costs in state hospitals, and particularly staff costs, have skyrocketed at both the facility and state levels of analysis. To cover those costs, revenues (population adjusted) show a significant increase per capita from both federal and state sources. On average, citizens are paying over 40% more to state treasuries for state hospital care in 1988 than in 1949, and are paying over 400% more for state hospitals through the federal government. Therefore, not only has there been no observable savings from DI, but there has been increased costs to the state and federal governments over the course of DI to run state hospitals.

The decline in state hospital costs found by other studies (Kiesler & Sibulkin, 1987; Lutterman, Mazade, Wurster, & Glover, 1988) is not supported by our data. However, as our data points span 39 years (1949-1988), including a pre-DI data point, and the other studies examined data spanning only 16 years (1969-1985), the differences in results are reconcilable. Although there has been a slight decline in costs of state hospitals in recent years, over the entire course of DI, costs of state hospitals have increased dramatically. Thus, to the degree that cost savings was a goal of DI, it was not achieved.

Perhaps the most striking findings in our study is that although the patient census decreased, more state hospitals (over twice as many) opened than closed over the study period. Our data is limited by having only two data points; some hospitals may have both opened and closed within the 39 year study period, which may explain some of the discrepancy between our count and Kiesler and Sibulkin's (1987) count. Nevertheless, our primary finding is clear: there were more adult state hospitals operating in 1988 (*i.e.*, after DI) than in 1949 (*i.e.*, before DI).

We have been at least partially successful at filling some of the gaps in the literature regarding deinstitutionalization and state hospitals. We have documented changes in patient census, staffing and costs from before DI and after DI. Over the course of DI there were fewer patients in state hospitals (decreased census), but more people entering them (increased admissions). However, increased admissions did not offset the declining cen-

suses, thus under-treatment rates also decreased. Staffing was also increased and professionalized, and combined with a growing number of facilities, brought about greatly increased costs. Thus, deinstitutionalization brought about no savings for states.

Our data suggest that state hospitals have emerged from deinstitutionalization as different institutions with a new treatment emphasis reflected by shorter stays and professionalized staff. They are now part of a system of community based public and private agencies and institutions, rather than being the primary provider of psychiatric care. Future research should examine the appropriateness and effectiveness of this new role for the modern state hospital. As states continue to shift away from hospital based mental health care to a focus on community interventions, such investigations will serve to greatly assist policymakers in developing more clinically effective and cost efficient programs to treat mentally disabled persons in a modern integrated system of care.

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