

The Role of Payment Source in Differentiating Nursing Home Residents, Services, and Payments

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In 1976, it cost \$10.6 billion to care for the over one million nursing home residents in the U.S. (Gibson et al, 1977). While public and private sources spent almost equal amounts, it is widely believed that differences exist between public and private patients in terms of need for institutionalization, services received, and rates of payment for care. This paper presents a descriptive analysis of data from a national probability survey, the 1976 Survey of Institutionalized Persons (SIP), and examines variations associated with source of payment for institutionalized long-term care.

Introduction

This paper addresses three questions. First, are publicly subsidized nursing home residents more functionally dependent, or more needy in other respects, than their private pay counterparts? Second, do public residents receive the same intensity of services as private residents when needs are similar? Third, are payments for care for public residents equivalent to those for private residents with similar needs?

The first section of this paper reviews findings from other studies that have examined the role of payment source in long-term care. The second section describes data and methodological issues associated with this study. Research results are then presented. The final section discusses some implications of the findings, limitations in the available data, and avenues for further investigation.

Background

Evidence has been accumulating to support the widely held notion that differences exist between public and private patients of nursing homes in terms of access, quality of care, and costs. These differences are thought to result from two causes: publicly subsidized nursing home services are subject to regulatory requirements, and public reimbursement rates are generally lower than the prices charged in the private market. Recent studies on the subject have also begun to unravel the complicated interrelationships of utilization, case mix, quality, and costs, as well as the influence of source of payment on these relationships. A major impetus for these studies has been the increasing numbers of nursing home residents and the increasing proportion of total nursing home care paid by the public sector.

While trends in nursing home use have been recorded by national nursing home studies (NCHS, 1977a, 1979) as well as analysis of specific States (Urban Institute, 1977), other efforts have been directed toward issues such as appropriate utilization and differential access. It is commonly accepted that a substantial portion of nursing home patients need not be located in an institution or that they are placed in institutions that provide higher levels of care than are required. (See Congressional Budget Office Report, 1977, for review of relevant studies.) Moreover, it is widely believed that such inappropriate placement stems from the absence of financial or social support systems to allow these individuals to remain in the community (GAO, 1979; Dunlop, 1976). By source of payment for care, inappropriate utilization has been found to be highest among Medicaid patients (GAO, 1979). As explained by GAO, Medicaid coverage is limited or nonexistent for services needed by the chronically impaired elderly in the community, yet its nursing home coverage is extensive and available to individuals who would not qualify for Medicaid outside of the institution. At the same time, the generally observed lower reimbursement rates of Medicaid, in comparison to private charges, hinder the accessibility of public patients to nursing homes (Scanlon, 1978; Bishop, 1979).

Characteristics of nursing home patients, particularly case mix, have been examined for descriptive purposes and as determinants of utilization and costs of long-term care. In comparison to acute care, measurement of case mix as a predictor of resource requirements is not well developed in long-term care. Dependencies in functional activities (such as bathing, dressing, walking, feeding), in addition to traditionally employed indicators, such as medical diagnoses, have been examined (U.S. DHEW (PACE), 1975; Densen and Jones, 1975; McCaffree et al., 1979). At the present, measurements of dependency as individual items or indices (Katz Activities of Daily Living [ADL] and Skinner and Yett Debility Index) provide the best predictors of resource requirements (McCaffree et al., 1979).

¹In this study, the terms "residents" and "patients" are used interchangeably.

In most studies, dependency measures have been employed as exogenous variables; in a subset of such studies, dependency measures and source of payment (normally constructed as a percentage of nursing home population that is private pay) have been examined simultaneously as predictor variables. Few straightforward analyses of case mix by payment source have been conducted. In one of these studies, Medicaid and non-Medicaid patients were examined in terms of medical diagnoses, long-term care problems, and activities of daily living (Shaughnessy *et al.*, 1980). While differences were found in some medical diagnosis groupings (that is, neoplasms, digestive system, and musculoskeletal and connective tissues) and overall profiles of long-term care problems, Medicaid and non-Medicaid patients were similar in terms of ADL.

The characteristic of institutions known as quality of care has proved "elusive" for researchers and practitioners concerned with old age institutions (Kart and Manard, 1976). Research on the quality of care in nursing homes has generally focused on structural indicators of the institution; measures of quality included number of patients per room, the number of staff hours per patient, and compliance with State and Federal regulations. Assessments of the relationship between payment source and quality of care have found that, in general, quality is positively associated with higher proportions of private patients (Anderson *et al.*, 1969; Levey *et al.*, 1973; Kosberg, 1973; Gottesman, 1974). Winn (1974) found no correlation, however, between the percentage of persons in a facility subsidized by public assistance and the number of equivalent nursing hours or employee hours per patient day.

To date, most of the research on quality of care in nursing homes has not included indicators of individual patients' health status. In general, data have not been readily available to study quality in terms of appropriateness of care (process quality). In one study where such data were available, however, Shaughnessy *et al.* (1980) found that quality scores declined as age of patient, number of problems, and level of disability increased. In another study of Detroit area nursing homes, only a few patients had any nursing contacts at all, though 40 percent were reported to need some assistance in activities of daily living (Gottesman and Bourestom, 1974). Moreover, higher levels of observed activities or services from nursing home staff were found for residents in homes with lower proportions of public pay residents (Gottesman, 1974).

The effect of payment source on nursing home costs has been measured in several studies, which typically used the facility as the unit of observation. Multivariate techniques were employed to examine the predictive power of payment source in conjunction with other facility characteristics (such as size, ownership, certification level), services available and provided, and patient characteristics (such as ADL and diagnosis). The effects of payment source on cost, as measured by proportions of resident population supported by private (or public) sources, vary in terms of both direction and magnitude. Two studies of nursing homes in New York (Birnbaum *et al.*, 1979; Mennemeyer, 1979) found the proportion of nursing home residents who were private pay to be negatively associated with costs, while posi-

tive associations were found in two Massachusetts studies and a study of homes in Illinois. A positive association between cost and the proportion of private pay was also found in Colorado, even when case mix, other facility characteristics, and quality were controlled (Shaughnessy *et al.*, 1980). One explanation for the diverse results of these studies is that the association between percent of private patients and average cost is due to the confounding effect of the former with level of inputs of care (such as nursing hours). According to Bishop (1980):

... a private-pay oriented home may be seen as offering more "extra" inputs to care in market areas where private demand is strong and public rates of payment and input requirements are relatively low; and as offering fewer amenities and services relative to public-pay oriented facilities in areas where public input standards are strict and rates are generous relative to private demand for amenities.²

While the analysis of cost functions has dominated the economic literature on nursing home care, a few studies have examined the impact of patient and facility characteristics on charges for care. In one study (with data from the 1969 Resident Places Survey), Skinner and Yett (1973) found higher total monthly charges to be associated with higher debility levels, musculoskeletal and mental diagnoses, the Northeast region, and for-profit ownership of facilities. Further, they found that, in comparison with exclusively private residents, Medicare residents had higher monthly charges, while others with Medicaid or mixed public/private sources had lower monthly charges. In a more recent study of private charges (with 1973-74 National Nursing Home Survey data), Deane and Skinner (1980) also found positive relationships between charge and debility level, proprietary ownership, and region. Similar relationships between charges, ownership, and geographic region were found by Hing (NCHS, 1977b) in her analysis of nursing homes in 1964, 1969, and 1973-74 respectively. By source of payment, however, she found that while Medicare patients had the highest charges in 1973-74, the average charge for Medicaid residents was similar to that for residents using their own income.³

In summary, research is corroborating the widely held notions that differences exist between public and private patients of nursing homes in terms of access, quality, and costs. It is clear, however, that the interrelationships of these entities, and the effects of payment source on them, are not adequately understood at present.

Data and Methods

The 1976 Survey of Institutionalized Persons (SIP) was funded through the Office of the Secretary,

²Bishop cites findings from an analysis of the 1973-74 National Nursing Home Survey data as evidence supportive of this explanation (Birnbaum *et al.*, 1979). The analysis found that the percent of private pay patients was strongly related to nursing hours per patient day; average cost was higher as nursing hours were higher, and lower as the percent of private pay patients was higher, holding nursing hours constant.

³Classification of source of payment was based on the "primary" source of payment.

DHEW (now DHHS), and fielded by the U.S. Bureau of the Census during the spring of 1976. The three-stage design of the SIP included a nationally representative sample of long-term care facilities,⁴ a sample of residents from within these facilities, and a subsample of families of the residents. The present analysis uses only data from the residents' sample. While the SIP included persons of all age groups, this study is confined to those residents 60 years of age and over who were admitted to their current facility after the age of 60. The unweighted study sample contained 2,831 age-eligible persons residing in 725 facilities. Each respondent was weighted, however, to develop a nationally representative estimate of the population of institutionalized elderly which consists of approximately one million people. Variable distributions presented in the "Findings" section of this paper are expressed in terms of percentages.

The completeness, reliability, and validity of the actual SIP terms used for this analysis were assessed as rigorously as permitted by the available secondary data. Pertinent documentation is presented elsewhere (Soldo and Myllylouma, 1979; Mossey and Tisdale, 1979). Although the SIP data base suffered in general from missing data, items used in this study (residents' sociodemographic characteristics, functional health status, use of nursing and medical services, sources of payment, and total reimbursement for care) were the best available in the SIP in terms of completeness, reliability, and validity. A second limitation of the data base is the lack of sufficient gradation in response options offered in the survey. For example, response options for the questions on Intensity of service use were limited to "at least once a week," "at least once a month," "less than once a month," and "never."

DESCRIPTION OF THE STUDY VARIABLES

The primary variables and derived indexes considered in this analysis are briefly described below.

Activities of Daily Living (ADL)

Activities of daily living refer to self-care functions (dressing, bathing, using the toilet, eating, drinking, walking, getting out of bed) that are normally accomplished by persons in good health. Seven items in the SIP assessed the degree to which the resident

required help in completing these activities. They formed the basis for a modified version of the KATZ ADL scale (Katz *et al.*, 1963; Katz *et al.*, 1970).⁵ The derived ADL scale ranges from "independent in all self-care activities" to "dependent in all self-care activities." The range of values is classified into six categories in which (0) represents no dependency; (1), slight and irregular dependency; (2), moderate but irregular dependency; (3), moderate and regular dependency; (4), consistent dependency in most self-care activities; and (5), extreme dependency in all self-care activities.

A person's level of ADL is considered one indicator of his or her overall functional health status.⁶ ADL level is also an important indicator of need for services and therefore provides one estimate of an individual's need for institutional placement. The latter interpretation of the ADL scale scores takes primacy in this research. It is anticipated that the level of ADL dependency should be directly related to a person's use of services and indirectly related to the cost of providing residential care.

Use of Nursing Services

The SIP contained information on the need for and use of nursing services provided by a registered nurse (RN), licensed practical nurse (LPN), or aide. Three separate variables were coded: (0) "no need or use," (1) "less than once a week," and (2) "once a week or more." The validity of a "no need" response in the SIP cannot be tested; it cannot be determined if the response reflects the unavailability of care or some other judgmental criteria. Because of this ambiguity, "no need" and "no use" were combined to signify that a service was not received by the patient, whatever the reasons.

Use of Physician Services

Use of physician services was measured in the SIP in a manner similar to use of nursing services.

Reimbursement Amount

In this study, reimbursement amount is defined as the total amount of payment received by a facility, minus any funds which were designated for a resident's personal use.

Reimbursement Group

Sources of payment for the care of institutionalized elderly were recorded according to twelve possible categories in the SIP. Since the number of combina-

⁴In the SIP, long-term care facilities are those defined as personal care or treatment facilities in which the average length of stay exceeds 30 days. This includes free-standing units, as well as designated areas such as wards or wings of a larger facility. The facility sample was drawn from the 1973 Master Facility Inventory maintained by the National Center for Health Statistics. Post-survey analysis of the SIP data indicates that long-term psychiatric facilities are underestimated by as much as 75 percent (U.S. Bureau of the Census, 1978). The vast majority of older institutionalized persons reside in non-psychiatric nursing homes. Since this study is limited to the older age group, we believe that this limitation will have a minimal effect on the ability to generalize based on findings from the present study.

⁵The ADL scale is a Likert scale specifically describing the amount of assistance an individual needs in any or all of the seven self-care functions. The coefficient alpha for this scale is .94, considerably higher than the minimum .90 suggested for a scale with acceptable reliability. A full discussion of the development and testing of the ADL scale in the SIP can be found in Mossey and Tisdale, 1979.

⁶See Stewart *et al.*, 1978, for a discussion and review of the literature concerning the conceptualization and measurement of functional health status.

tions of payment sources was prohibitively large for analysis, we created four principal reimbursement categories: (1) retirement entitlement (such as pension or social security), (2) private (such as family or personal resources), (3) public (such as Medicare⁷ and Medicaid), and (4) a mixture of public and private or retirement entitlement sources. Individuals in the study population were grouped according to these four categories, depending on the sources of payment that were recorded on their administrative records.⁸ When a combination of public and either private or retirement entitlement sources was reported, the individual was assigned to "mixed: public/private." Where both retirement and private sources were recorded, the individual was placed in the "retirement entitlement" category.

This classification scheme was created to retain the capability to determine how nursing home residents supported exclusively by private funds differed from those subsidized exclusively by public programs, while reducing the large number of payment source combinations uncovered. Persons supported by retirement benefits are, strictly speaking, private paying. The "retirement entitlement" category was created to determine if persons with this source of payment differ from those supported by family resources.

Table 1 presents the listing of the twelve original payment sources delineated by the Census Bureau, the grouping of these sources into the classification scheme of this study, and the frequencies of the study population according to the classification scheme. It is apparent that other breakdowns by payment source are possible depending upon the objectives under study.⁹ The classification scheme described here appears to be suitable for a broad descriptive analysis of differences between publicly and privately funded nursing home residents.

⁷While Medicare may be distinctly different from other public programs supporting nursing home care, we did not separate this group out because of the relatively small frequencies involved.

⁸For approximately nine percent of the SIP sample, source of reimbursement data was not reported. This percentage has been excluded from the analysis. When compared to the total sample, this group is observed to be slightly younger, disproportionately female, institutionalized more frequently for nonmedical reasons, somewhat more functionally impaired, and resident for a shorter duration.

⁹A different classification was used by the GAO (1979) in a report on Medicaid and the elderly which included an analysis of the SIP. In general, the GAO stratified Medicaid and non-Medicaid residents by the proportion of payment from personal resources.

TABLE 1
Classification of Specific Payment Sources
According to Study Reimbursement Categories and
Proportions of SIP Population by Study Categories

SIP Payment Source	Study Reimbursement Category	SIP Proportion
Insurance Plan Private Retirement Plan Veterans' Administration Social Security	Retirement entitlement	7.2%
Resident's Family Church All Other Sources	Private	22.4%
Medicare ¹ Medicaid Supplemental Security Income Other Public Assistance Payment Other Government Programs	Public	22.2%
Combination of any Public Source and any Retirement Entitlement or Private Source	Mixed private/ public	48.2%
	Total	100.0%

¹While Medicare may be distinctly different from other public programs supporting nursing home care, we did not separate this group out because of the relatively small frequencies involved. Where appropriate, the potential effects of Medicare are discussed in relation to the findings.

Findings

The study population was predominantly white, female, and very old (mean age = 81.3 years). Few residents were married at the time of the survey, with over 60 percent being widowed. Eighty percent required institutional placement for medical reasons; approximately one-third had a previous episode of institutionalization, and a majority (57 percent) had resided in their present location for less than two years. Four out of five persons in the study were residents of nursing homes, while the others lived in other long-term care facilities such as chronic disease hospitals and extended care units. In general, characteristics of the study population were consistent with those from other studies.

VARIATIONS IN FUNCTIONAL STATUS AND OTHER RESIDENT CHARACTERISTICS

Table 2 presents the frequency distribution of the study population according to functional status, as measured by ADL, for each of the reimbursement categories. For the total sample, levels of functional dependency are evenly distributed across the ADL scale, with the median value located between ADL 2

TABLE 2
Percent of SIP Elderly Persons (60+ admitted after the age of 60) by Reimbursement Groups and ADL Level

Reimbursement Group	ADL Level						Total
	0	1	2	3	4	5	
Retirement Entitlement	30%	18	16	13	13	11	100%
Private	13%	24	9	18	19	18	100%
Mixed: Public/Private	17%	19	19	17	14	14	100%
Public	13%	28	14	17	16	13	100%
Total Group	16%	22	15	17	16	14	100%

Sum of percentages may not equal 100 due to rounding

and ADL 3. A striking observation in this table is that the relatively low ADL levels of the "retirement entitlement" group suggest less "need" for institutionalized care by individuals supported by retirement benefits. It is also apparent from the table that patients paying for care exclusively from private resources are, on average, slightly more functionally dependent than those supported totally or partially by public funds; 37 percent of the private only group are rated as ADL 4 or 5, while 29 percent of the public only group are found at these levels. Hence, publicly subsidized residents in the SIP population are slightly less needy than their private paying counterparts, at least in terms of functional dependency.

In addition to the variations in functional dependency among the reimbursement groups, we found differences in other patient characteristics which are likely to be associated with need for institutional long-term care. Table 3 presents the observed frequency distributions within each reimbursement group for selected factors. The following highlights exemplify variations among the reimbursement categories.

Retirement Entitlement

This group is unique with respect to almost every characteristic considered. Specifically, it is characterized by a disproportionate number of males, of persons who are separated or divorced, of persons institutionalized for a long duration or for non-medical reasons, and as noted above, of persons who are relatively independent according to ADL. The overrepresentation of males in this group is not surprising since it could be expected that, in this cohort, more males than females would be beneficiaries of work-related retirement programs and pension plans. The higher proportion of separated and divorced persons—individuals who may not have extensive family networks—lends support to the notion that institutional care may be a way of satisfying housing and social needs.

Private

In contrast to the retirement entitlement group, older, married, more recently institutionalized persons, as well as those with extreme ADL dependency, are overrepresented among the private pay group. These characteristics may reflect several phenomena. First, because financial resources are private, there is greater flexibility in terms of purchasing non-institu-

tional services such as home care. There is also the potential for delaying institutionalization because of the availability of informal care provided by the spouse. Under either circumstance, one would expect that an eventual placement might be required; at that time the individual would be more likely to be older and disabled and in greater need of nursing home care. The relatively large proportion of private pay persons for shorter durations is consistent with the phenomenon of conversion from initial private paying status to public assistance status after private assets are depleted.¹⁰

Mixed: Public/Private

Because of the large size (45 percent of total) of this reimbursement group, it dominates the sample distribution for each of the variables shown in Table 3. Major deviations were not expected, and, for the most part, were not observed. Notably, however, this group displayed disproportionately more individuals who were institutionalized for less than one year. This group may, therefore, contain a substantial proportion of individuals using nursing homes for recuperative care and, as such, would be expected to have short lengths of stay while requiring intensive medical attention.

Public

Public reimbursement for care was the primary financial arrangement for 22 percent of the institutionalized elderly in 1976. This group contains a disproportionate number of younger and single persons and of those placed for medical reasons. While they are functionally less dependent than the private pay residents, a higher proportion of them were associated with a medical reason for placement. That more public than private residents are medically needy is questionable, however, in light of the general requirement of a medical need designation for public support of nursing home care. The relatively youthful and non-married status of these patients is consistent with the widely accepted notion that absence of spouse is conducive to institutionalization.

¹⁰This process of conversion of nursing home residents from private to public pay is well documented in the recent report on long-term care prepared by the Government Accounting Office, 1979.

TABLE 3
Percent of SIP Elderly Persons (60 + admitted after age 60) by Reimbursement Category and Age, Sex, Marital Status, Duration of Placement, and Reason for Placement

Reimbursement Group	Age	%	Sex	Marital Status		Duration of Placement (years)		Reason for Placement		
				%		%		%		
Retirement Entitlement	60-69	12	Male	44	Married	13	Less than 1	36	Medical	59
	70-79	30	Female	56	Widowed	63	1-2	13	Family	27
	80-89	50			Sep/Div	12	2-5	35	Other	14
	90 +	9			Single	12	6+	15		
Private	60-69	6	Male	31	Married	24	Less than 1	46	Medical	76
	70-79	29	Female	69	Widowed	63	1-2	20	Family	15
	80-89	45			Sep/Div	0	2-5	25	Other	9
	90 +	19			Single	12	6+	9		
Mixed: Public/Private	60-69	11	Male	31	Married	12	Less than 1	33	Medical	81
	70-79	26	Female	69	Widowed	68	1-2	20	Family	12
	80-89	49			Sep/Div	6	2-5	37	Other	8
	90 +	14			Single	14	6+	10		
Public	60-69	17	Male	30	Married	13	Less than 1	43	Medical	88
	70-79	29	Female	70	Widowed	58	1-2	19	Family	6
	80-89	41			Sep/Div	8	2-5	30	Other	6
	90 +	12			Single	20	6+	8		
Total	60-69	11	Male	32	Married	15	Less than 1	38	Medical	80
	70-79	28	Female	68	Widowed	64	1-2	19	Family	12
	80-89	47			Sep/Div	6	2-5	33	Other	8
	90 +	14			Single	15	6+	10		

Sum of percentages may not equal 100 due to rounding

Our findings are supportive of widely held beliefs that long-term care facilities are used by a substantial proportion of the institutionalized elderly for reasons other than those dictated by medical needs or functional dependencies. Further, it is apparent that reasons for placement may reflect, in many cases, available sources of financial support for care. In particular, we found that publicly subsidized residents are younger and/or less functionally dependent than their private paying counterparts.¹¹ This result is consistent with the notion that certain public policies provide incentives for low income elderly to be placed in institutions rather than to remain in the community (GAO, 1979).

VARIATIONS IN USE OF STAFF SERVICES BY PAYMENT SOURCE

The frequency of staff services used varied, as expected, by staff type. Distributions of the use of staff by reimbursement categories are presented in Table 4. Virtually all patients (90 percent) required the assistance of aides, while the proportions of persons in the study population using more specialized personnel were 80, 68, and 82 percent for physicians, RNs, and LPNs, respectively. As seen in this table,

residents supported by retirement entitlements used all staff categories less than the population in general. This is consistent with the finding noted above that these individuals are considerably less ADL dependent than the other groups. Patients supported exclusively by public funds use nursing categories and physicians more than the other reimbursement groups. The "mixed group," because of its dominant size, was not expected to show much deviation from the total population distribution, but we found that persons in this group are more frequent users of physician services than those supported exclusively by private funds. Among the receivers of some services, physicians were seen relatively infrequently (12 percent "once a week or more" in contrast to 68 percent "less than once a week"), while RNs, LPNs and aides were seen almost always "once a week or more."

To address the question of whether use of services varied among reimbursement categories when needs were similar, we examined the frequency of staff use while holding ADL constant. Table 5 presents the distribution of physician services by reimbursement categories, frequency of use, and ADL. It is apparent from the table that physicians see higher proportions of publicly subsidized residents than private pay residents, regardless of ADL. A particularly striking observation, however, is that 74 percent of public residents with no functional dependencies received some physician care, in contrast to 41 percent for their counterparts who pay for care with private funds.

¹¹This finding is not consistent with Shaughnessy's analysis of nursing home residents in Colorado but may be due to methodological differences, such as our separation of "retirement entitlement" residents from "private."

TABLE 4
Percent of SIP Elderly Persons (60+ admitted after age 60) by Use of MD, RN, LPN, and Aide Services

Reimbursement Category	Frequency of Use	MD Use %	RN Use %	LPN Use %	Aide Use %
Retirement Entitlement	No need/use	28	45	33	26
	Less than 1/wk	57	3	0	0
	1/wk or more	15	52	67	73
Private Only	No need/use	31	35	24	9
	Less than 1/wk	57	3	0	1
	1/wk or more	12	62	76	90
Mixed: Public/Private	No need/use	17	33	17	10
	Less than 1/wk	71	1	1	0
	1/wk or more	12	66	82	90
Public Only	No need/use	15	24	11	5
	Less than 1/wk	72	1	1	1
	1/wk or more	12	75	88	94
Total	No need/use	21	32	18	10
	Less than 1/wk	68	2	1	1
	1/wk or more	12	66	81	90

Sum of percentages may not equal 100 due to rounding

TABLE 5
Percent of SIP Elderly Persons (60+ admitted after age 60) by ADL, Frequency of Physician Use, and Reimbursement Category

ADL	Frequency of Use	Reimbursement Categories				Total
		Retirement	Private	Mixed	Public	
0	No need/use	62	61	38	26	43
	Less than 1/wk	36	33	54	71	51
	1/week or more	2	7	8	3	6
1,2	No need/use	16	34	17	21	21
	Less than 1/wk	62	60	76	70	71
	1/week or more	22	6	7	9	8
3,4,5	No need/use	13	23	10	6	13
	Less than 1/wk	66	62	74	75	70
	1/week or more	21	16	16	19	17

Sum of percentages may not equal 100 due to rounding

It is also notable that within this ADL subset, the proportion of public residents who are seen by physicians "once a week or more" is less than half of that of their private counterparts. The relatively extensive, if infrequent, use of physician services by public residents is consistent with the notion that such services may be used in many cases to satisfy regulatory requirements. Because of the unavailability of data to detect medical or other long-term care problems unassociated with ADL, reasons for the differential use of physician care by payment source could not be examined further with the SIP data.¹²

¹²Medical diagnosis information was collected by the SIP, but coding procedures used resulted in highly aggregated groupings that could not be used for analysis.

As was seen in Table 4, there is little variation in the frequency of use of RNs, LPNs, and aides among the residents who received at least some services from these members of nursing home staffs. We therefore compared the proportions of residents who received "some services" by reimbursement categories, while holding ADL constant. As was the case with physician care, Table 6 shows that higher proportions of publicly subsidized residents received some care from RNs, LPNs and aides, respectively, than did their private paying counterparts. Similarly, the most striking differences in frequency of use for each of the provider categories are observed in the ADL 0 subset. While long-term care problems unassociated with ADL may be the reason for the relatively higher proportions of public patients receiv-

ing staff care, other reasons may be equally convincing. For instance, care received by public residents may reflect the available staffing patterns of the facilities in which they are placed, rather than staff services actually needed.¹³

In summary, our analysis of variations in the use of staff service found substantial differences among reimbursement categories in terms of proportions with "no need/use" (in contrast to "some use"). In general, residents subsidized by public funds received more care than their private paying counterparts, regardless of ADL; particularly striking differences were observed in the ADL 0 subset. Among those residents who received some care, virtually everyone received RN, LPN, and aide care, respectively, "once a week or more," while physicians were generally seen "less than once a week," regardless of reimbursement category.

VARIATIONS IN PAYMENT AMOUNTS

Results from our analysis support the findings of other studies that payment amounts differ by payment source and that private residents tend to pay higher rates than public residents (Skinner and Yett, 1973; Birnbaum *et al.*, 1979). For the SIP population for whom both payment source and payment amount data were available, the average reimbursement rate for care in 1976 was \$555.¹⁴ The highest rate, \$590, was found for the private only residents, while the lowest rate was recorded for those in the retirement entitlement category. Average payments of \$536 for residents supported only by public sources, and \$556 for the mixed public/private category, were lower than the amount paid by private only.

¹³A combination of Medicare/Medicaid certification requirements and anticipated case-mix may result in higher staffing levels than is required, given the actual case-mix.

¹⁴Serious problems with missing data were found with payment information in the SIP. Information on source of support was not available for approximately nine percent of the cases, while payment amounts were not available for approximately 10 percent of the cases. The average payment amount for the cases with payment amount information, \$594, was attributed to those cases missing such information.

As discussed above, private residents were found to be more dependent and to receive less staff service than the public residents. On average, they also appeared to pay more for care. To address the question of whether payment amounts varied among reimbursement categories when needs were similar, we examined payment amounts while holding ADL constant. Table 7 shows that payment amount increases with ADL ($r = .27$), regardless of reimbursement category. This relationship might be expected, since higher levels of functional dependency should be associated with higher levels of resource utilization and, correspondingly, with amount of payment.

It is apparent from Table 7 that at almost every ADL level, private residents pay more than their counterparts supported by either public only or mixed public and private sources. The only exceptions to this pattern are found among the subset of residents who are totally dependent in activities of daily living (that is, ADL 5); in this subset, the average public reimbursement is higher than the average private payment. It is also notable that while private ADL 5 residents pay less than others who are slightly less dependent (that is, ADL 3, 4), public payments for ADL 5 residents are dramatically higher than for those with less ADL dependency. The simplest explanation for this anomaly is that ADL alone does not sufficiently capture variations in intensity of service requirements or of corresponding charges for care. One alternative explanation, however, is that the anomaly in Table 7 is a function of the relative resource requirements of totally dependent and less severely dependent residents and present public nursing home reimbursement policies. Specifically, since ADL 5 in this study signifies dependency in all activities of daily living, it is not unreasonable to assume that most of the residents in this group are bedridden most of the day and might require less staff time than residents who are less debilitated and more mobile (Winn, 1975). If this theory is valid, it can explain, in part, the lower payment amount of private ADL 5 residents, relative to less dependent private residents. In contrast, public reimbursement for an individual's nursing home care is not a direct function of that individual's need;

TABLE 6
Percent of SIP Elderly Persons (60+ admitted after age 60) Who Received Some Care by RNs, LPNs, and Aides Respectively, by Reimbursement Category and ADL

ADL	Staff Category	Retirement Categories				Total
		Retirement	Private	Mixed	Public	
0	RN	21	32	35	73	40
	LPN	36	47	48	80	52
	Aide	38	60	56	85	59
1,2	RN	62	56	68	64	64
	LPN	71	54	84	85	78
	Aide	86	90	96	94	94
3,4,5	RN	75	77	79	90	81
	LPN	88	90	95	96	93
	Aide	91	99	99	98	98

TABLE 7
Payment Amounts by Reimbursement Category and Activities of Daily Living (ADL)

Reimbursement Category	ADL					
	0	1	2	3	4	5
Retirement	\$422	\$469	\$567	\$435	\$529	\$584
Private	530	543	584	642	632	601
Mixed (Private/Public)	475	520	571	585	606	597
Public	504	520	527	562	555	621
Total	\$483	\$513	\$564	\$586	\$597	\$601

rather, it is generally based on either average cost of care to all patients in a facility or to some group average or ceiling amount. Since publicly subsidized ADL 5 residents are likely to be placed in the most highly skilled homes, which happen to be the homes likely to receive the highest reimbursement rates, the average payment rate associated with such residents will be the highest, regardless of the actual costs of their care. The precise reasons for the relatively higher payments for public ADL 5 residents remain unclear, however, since data are not available in the SIP to adequately explain this deviation from the pattern in Table 7.¹⁵

Since amount of payment for medical care is known to reflect geographically linked determinants of cost (such as input prices), we examined variations in payment amount within census regions to control for some of the differences attributable to geography.¹⁶ Our analysis uncovered that, with few exceptions, the public/private payment pattern in each region was similar to that for the U.S. as a whole; payments by private patients were higher than those for public patients when needs were similar. Consistent with results from other studies (Skinner and Yett, 1973; NCHS, 1977), we also found that institutional long-term care was the most expensive in the Northeast and least expensive in the South.

SUMMARY OF FINDINGS

Our analysis of SIP found variations among the reimbursement categories in patient characteristics, services received, and payment amounts. The retirement entitlement group was relatively less dependent, received less staff service, and paid less for care at all ADL levels. The private only group was slightly more dependent than the population in general (a higher proportion of the private residents were at the ADL 4 and 5 levels), received less staff service than either public only or mixed public/private residents, and paid higher rates. Because of its dominant size (48 percent), the mixed group showed the least variation from the population as a whole. The public only group was found to be similar to the mixed group in terms of

ADL dependency, but received more RN and LPN services. In general, private payments were found to be higher than public reimbursements.

Discussion

In this paper, we presented a descriptive analysis of data from a 1976 national survey of the institutionalized elderly. Because of the national scope of the SIP, data from the survey were not as detailed as we would have wished, particularly in regard to long-term care problems and costs. In addition, since the sampling procedure of the SIP did not attempt to obtain representative samples of residents within facilities (in many cases, only one resident in the resident sample was selected from a home in the institution sample), neither "within homes" nor "between homes" comparisons were possible. Consistent with findings from other studies of this population, which were based on earlier national surveys or information collected at the State or local levels, our research indicated that differences exist between public and private residents in terms of need for care, services received, and payment amounts.

Our analysis of patient characteristics by reimbursement category indicated that each group had unique characteristics and that many of the observed variations tended to reflect the effects of circumstances related to the sources of reimbursement themselves. The analysis of services received, while holding ADL constant, sought to assess whether the amount of staff services was commensurate with "need" and whether differences existed between public and private residents in terms of "appropriateness" of services. In general, we found a large proportion of persons, regardless of reimbursement category, who had low ADL scores (that is, 0 or 1), but who nevertheless received staff services. While our measures of need and services were limited, the results of the analysis suggest the possibility of some excessive use of service. Perhaps more significant, however, is that the findings also suggest the presence of inappropriate placement in long-term care institutions.¹⁷ Along with

¹⁵For example, SIP data on facility certification were too incomplete and ambiguous to be included in the analysis.

¹⁶More detailed geographic breakdowns are not available in the SIP.

¹⁷In a related analysis of the SIP which focused on the suitability of placement in institutions, Soldo and Campbell (1979) determined that persons who were inappropriately placed tended to be "overplaced."

other researchers (Lavor, 1977; GAO, 1979) we are led to believe that many nursing home residents need not have been institutionalized if suitable alternatives had been available.

At each ADL level, public residents were found to receive more physician and nursing services than their private pay counterparts. As we noted earlier, this contrast may reflect differences in care needs unrelated to ADL. It might also be due, in part, to location of public residents in certified facilities which are required to provide minimum levels of services for these residents. Individuals with the resources to pay for their own care, on the other hand, may have greater flexibility in "shopping around" for suitable facilities, given their perceived needs. Moreover, since payment for care is derived from personal resources, they may be more rigorous in selecting care that does not exceed their needs. Although we were able to make general comparisons of service use among the reimbursement categories, it is clear that SIP data are not sufficient to draw conclusions about whether the observed differences reflect excessive services received by public residents or insufficient services received by private residents.

We found a positive association between ADL and payment, regardless of the source of payment. While this finding is consistent with the notion that payment for care reflects severity of illness, it would be misleading to draw firm conclusions, because of the facility-oriented nature of public reimbursement systems and the absence of information on quality of care. The amount received by a facility can vary greatly due to the characteristics of the reimbursement system—and these vary greatly by State—and to the characteristics of all other patients in the facility. Since the individuals in the SIP sample are not expected to be representative of all patients in their respective facilities, and the facilities are not identifiable by State location, we were unable to account for the effects of reimbursement policies on the observed associations between ADL and payment amount. Moreover, even the payment amount-ADL relationship observed for private residents had to be viewed in the context of public policies, since almost all nursing homes serve both public and private residents.

Although our analysis of SIP presented a national overview of differences between public and private residents in terms of personal characteristics, services received, and payment amounts, it is obvious that more detailed data are required to research these issues adequately. In general, however, deficiencies in our knowledge about long-term care lie not only in the

limitations associated with the absence of readily available data, but in the "state of the art" of how to analyze long-term care issues. For example, assessments of resource requirements have been hampered by the absence of adequate measures of patient need. While functional dependencies are generally accepted to be the best indicators of need at the present, they have not been able to unilaterally explain "case mix-related" variations in costs. In a similar vein, while quality of care continues to have paramount importance in concerns about the well-being of residents and is emerging as a significant factor in cost function analyses, it remains an elusive entity. Essential dimensions of quality, as well as measurement techniques, have yet to be established. From the perspective of public nursing home policies, evaluation of the appropriateness of reimbursement rates will be limited until a better description of the product purchased can be provided.

In conclusion, an increase in the number of the elderly using institutional long-term care can be predicted from demographic trends. Since concomitant public expenditures for such care can also be expected, research to better understand the behavior of both the providers and recipients of long-term care is required to enhance the formulation of public policies. On the basis of our research, two general areas for further investigations appear to be particularly important. First, theoretical models of nursing home behavior which incorporate refined notions of the interrelationships of case-mix, quality, and costs need to be developed. Empirical testing of such models should naturally follow. Second, further analyses of population-based data are required to understand the decision-making process leading to the selection of institutional or non-institutional long-term care. Our analysis of SIP suggested that a portion of the institutionalized elderly was unsuitably placed, according to ADL, but other information was needed to corroborate this notion and, subsequently, to determine if institutionalization could have been avoided in those cases.

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