

## APPENDIX A.—ACTUARIAL METHODOLOGY AND PRINCIPAL ASSUMPTIONS FOR THE HOSPITAL INSURANCE COST ESTIMATES<sup>1</sup>

The basic methodology and assumptions used in the estimates for the hospital insurance program are described in this appendix. In addition, sensitivity testing of program costs under alternative sets of assumptions is presented.

### A. PROGRAM COSTS

The principal steps involved in projecting the future costs of the hospital insurance program are (1) establishing the present cost of services provided to beneficiaries, by type of service, to serve as a projection base; (2) projecting increases in the cost of inpatient hospital services covered under the program; (3) projecting increases in the cost of skilled nursing facility and home health agency services covered under the program; and (4) projecting increases in administrative costs. The major emphasis will be directed toward the cost of inpatient hospital services, which accounts for approximately 95 percent of benefit expenditures.

#### 1. *Projection base*

The hospital insurance program is obligated, by law, to reimburse institutional providers for the reasonable cost of providing covered services to beneficiaries. In order to establish a suitable base from which to project the future costs of the program, the incurred reasonable cost of services provided must be reconstructed for the most recent period of time for which a reliable determination can be made. To do this, payments to providers must be attributed to dates of service, rather than to payment dates. In addition, the nonrecurring effects of any changes in regulations or administration of the program and of any items affecting only the timing and flow of payments to providers must be eliminated. As a result, the rates of increase in the incurred cost of the program differ from the increases in cash disbursements shown in tables 5 and 6).

The reasonable costs of covered services to beneficiaries are determined on the basis of provider cost reports. Payments to a provider initially are made on an "interim" basis; to adjust interim payments to the level of retroactively determined costs, a series of payments or recoveries is effected through the course of cost settlement with the provider. The net amounts paid to date to providers in the form of cost settlements are known; however, the incomplete data available do not permit a precise determination of the exact amounts incurred during specific periods of time. Due to the time required to obtain cost reports from providers, to verify these reports, and to perform audits (where appropriate), final settlements have lagged behind the liability for such payments or recoveries by as much as several years

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<sup>1</sup> Prepared by the Office of the Actuary, Social Security Administration.

for some providers. Hence, the final cost of the program has not been completely determined for the most recent years of the program, and some degree of uncertainty remains even for earlier years.

Additional problems are posed by changes in administrative or reimbursement policy which have a substantial effect on either the amount or incidence of payment. The extent and timing of the incorporation of such changes into interim payment rates and cost settlement amounts cannot be determined precisely.

The process of allocating the various types of payments made under the program to the proper incurred period—using incomplete data and estimates of the impact of administrative actions—presents difficult problems, the solution of which can be only approximate. Under the circumstances, the best that can be expected is that the actual incurred cost of the program for a recent period can be estimated within a few percent. This increases the error of projection directly, by incorporating any error in estimating the base year into all future years.

## 2. Hospital costs

The hospital insurance program reimburses participating hospitals for the reasonable cost of providing covered services to beneficiaries. Because of its cost reimbursement nature, the program essentially pays for the share of aggregate inpatient hospital costs which is allocated to beneficiaries. Hence, for analysis and projection purposes, trends in program costs can be separated conceptually into (a) increases in aggregate expenditures by hospitals for all patients in producing services of the types covered by the program and (b) changes in the share of these expenditures that are for hospital insurance beneficiaries and hence will be paid by the hospital insurance program.

Increases in aggregate inpatient hospital costs can be analyzed into three broad categories:

(a) Economic factors—the increase in unit costs that would result if hospitals' input cost increases (wage increases for hospital employees and price increases for goods and services purchased by hospitals) were the same as those for the general economy;

(b) Volume of services—the increase in total output of units of service (as measured by hospital admissions); and

(c) Unit input intensity—the increase in total costs due to increased labor and nonlabor input intensity (wage and price increases for hospital inputs which are more rapid than for workers and products in the general economy, plus increases in the number of hospital employees and amount of supplies and equipment used to produce a unit of service).

It has been possible to isolate some of these elements and to identify their roles in previous hospital cost increases. Table A1 shows the values of the principal components of the increases for historical periods for which data are available and the projected trends used in the estimates.

Increases in economic factors can be divided into those for payroll and those for nonpayroll expenditures. Slightly more than half of hospital costs are for direct payroll expenses. This proportion has declined over the years, and a modest continuation in the decline is projected. The weighted averages of the economic factors in table A1 reflect these year-by-year proportions. Increases in average wages

remained relatively uniform in the period 1966-75, ranging from 5½ to 7 percent per year. Changes in the CPI during the same period generally varied between 3 and 6 percent, with the exception of substantially higher rates of increase in 1974 and 1975. The increases in both average wages and CPI beyond 1975 are based on assumptions used in projecting experience under the OASDI program.

Increases in volume of services (as measured by admissions) are separated into (1) a part due to population growth and (2) a part due to changes in the average number of admissions per capita. The population projection used in this report is based on assumptions used in projecting experience under the OASDI program. Admission incidence rates increased on average 1.7 percent during the 10-year pre-medicare period 1956-65; the trend since then has been relatively consistent, with most recent years exhibiting increases in excess of 2 percent per year. A continuation of this basic trend is projected for the next 5 years, with a gradual tapering during the following 5 years to an ultimate rate of increase that results solely from aging in the general population (i.e., admissions per capita by age and sex ultimately are assumed to be constant, so that the increases in overall average admissions per capita are due solely to changes in the mix of age and sex).

Unit input intensity changes can be analyzed and projected in terms of payroll and nonpayroll components in a manner similar to that for economic factors. The payroll component can be divided further between unit input intensity increases related to (1) the excess of average wage increases for hospital employees over average wage increases in the general economy and to (2) increases in the average number of hospital employees per admission.

For several years preceding the beginning of the hospital insurance program, average hospital wages and salaries (as derived from data reported by the American Hospital Association) increased at a rate of about 1 percent per year more rapidly than the rate of increase in earnings in OASDI-covered employment. During the 1967-71 period, this differential ranged between 2½ and 4½ percent. Several factors contributing to this sizable differential can be identified, including (a) the growth in third-party reimbursement of hospitals—through medicare, medicaid, and comprehensive private plans—is likely to have weakened hospital resistance to wage demands; (b) increased proportions of highly trained and more highly paid personnel; (c) an increased degree of labor organization and activity; and (d) the fact that hospital employees historically have earned less than similarly skilled workers in other industries. The wage increase differential was substantially decreased during the period 1972-74 when hospital costs were subject to the economic stabilization program, but it returned to a level in excess of 4 percent in 1975. Over the short term, a differential level which is generally consistent with experience over the last 10 years (excluding years subject to economic stabilization program controls) is assumed. Eventually the level of this differential would be expected to diminish significantly; and hence, the projection assumes only a modest continuation of the wage level intensity factor over the long run.

The number of hospital employees has continued to increase more rapidly than the number of admissions over the past 20 years. Increases in employee intensity averaged 2 percent per year during the 10 years preceding medicare. The early years of the program were marked by a substantial surge in employees per admission, followed by a period of only modest increases during the imposition of economic stabilization program controls. Many of the same factors which have impacted on hospital wage level differentials can be identified also as contributing factors to the increase in employee intensity; in addition, the increased number and complexity of services provided within a given admission have been significant factors. The projection assumes, in general, a continuation of the pre-medicare trend, dampened slightly to reflect a lower rate of industry growth than during the earlier period.

Nonlabor unit input intensity is a composite of several heterogeneous components. These include (a) price increases for goods and services that hospitals purchase which do not parallel increases in the CPI, (b) increases in the volume of medical and other supplies purchased and used per admission, and (c) increases in medical equipment and other capital assets employed in the provision of a hospital admission. Due to a lack of data, the nonlabor intensity factor cannot be separated into its component parts and must be treated as a residual. Historically, this factor has increased at a high rate and in an erratic fashion. Increases during the 1956-65 period averaged nearly 5½ percent; these were followed by an irregular series of increases during the period 1966-72 ranging between 6 and 18½ percent. The second and third years of the controlled period 1972-74 produced increases of only 2 to 3 percent, substantially below even the increases for the 10-year pre-medicare period. The projection assumes a gradual tapering of the nonlabor intensity factor over the 25-year valuation period, from a level consistent with experience during recent years (excluding years subject to economic stabilization program controls) to a level consistent with experience during the decade preceding medicare.

Aggregate inpatient hospital costs—reflecting the composite of economic factors, volume of services, and unit input intensity—have exhibited a very rapid rate and irregular pattern of increases. Although the pre-medicare period produced an average rate of increase of approximately 10½ percent, typical rates in subsequent years have tended to vary between 12 and 19 percent.

Changes in the program's share of aggregate hospital costs result from (a) changes in the proportion of the population covered, including changes due to legislation; (b) changes in the relative number and value of services received by beneficiaries; and (c) the effect of administrative actions defining the services eligible for reimbursement and affecting the level of program payments. Historical and projected changes in the hospital insurance program's share of aggregate inpatient hospital costs appear in table A1, with changes in the proportion of the population covered netted from the other sources. As indicated in the table, the share of hospital costs allocated to beneficiaries has fluctuated somewhat in recent years.

The increases experienced in the proportion of the population covered reflect the more rapid rate of increase in the number of persons age 65 and over than in the total population of the United

States and, beginning in mid-1973, the coverage of certain disabled beneficiaries and persons with chronic renal disease. Increases in the proportion of the population covered are projected to continue, reflecting a continuation of the demographic shift into categories of the population which are eligible for hospital insurance protection.

Other sources which contribute to changes in the program's share of hospital costs include changes in the relative number and value of services received by beneficiaries and the effect of administrative actions defining covered services and affecting payment levels. Data are not available which would enable a quantitative separation between the two components for historical years. The projection assumes, over the long range, changes in these "other sources" only due to the effects of demographic shifts on the number of services received by beneficiaries as a proportion of the total number of hospital services provided for the entire population. Increases in the average age of beneficiaries and of persons not covered lead to higher expected levels of usage of hospital services by both groups, the net effect of which is reflected as changes in "other sources".

### *3. Skilled nursing facility and home health agency costs*

Historical experience with the number of days of care covered in skilled nursing facilities under the hospital insurance program has been characterized by wide swings. The number of covered days dropped very sharply in 1970 and continued to decline through 1972. This was the result of strict enforcement of regulations separating skilled nursing from custodial care. Because of the small fraction of nursing home care covered under the program, this reduction primarily reflected the determination that medicare was not liable for payment rather than reduced usage of services. The 1972 amendments extended benefits to persons who require skilled rehabilitative services regardless of their need for skilled nursing services (the former prerequisite for benefits). This change and subsequent related changes in regulations have resulted in significant increases in the number of services covered by the program. Some continuation of this pattern is assumed for the next 5 years, with only modest increases projected thereafter.

Increases in the average cost per day in skilled nursing facilities under the program are caused principally by increasing payroll costs for nurses and other skilled labor required. Projected rates of increase are assumed to be only slightly higher than increases in general wages throughout the 25-year projection period. The resulting increases in the cost of skilled nursing facility services are shown in table A2.

Program experience with home health agency costs has shown a generally upward trend. The number of days of care has fluctuated somewhat from year to year, with very sharp increases appearing in the last 3 years. Relatively large increases are assumed for the next 5 years, followed by a projected pattern of increases similar to that for skilled nursing facilities. Cost per service is assumed to increase at a rate only slightly higher than increases in general wages. The resulting home health agency cost increases are shown in table A2.

### *4. Administrative expenses*

The costs of administering the hospital insurance program have remained relatively small, in comparison with benefit amounts, throughout the history of the program. The ratio of administrative

expenses to benefit payments has generally fallen within the range of 2½ to 3 percent. The short range projection of administrative costs is based on estimates of workloads and approved budgets for intermediaries and the Social Security Administration. In the long range, administrative cost increases are based on assumed increases in workloads, primarily due to population growth, and on assumed unit cost increases of 5 percent per year (¾-percent less than the assumed ultimate rate of increase in general wages).

## B. FINANCING

In order to analyze costs and to evaluate the financing of a program supported by payroll taxes, program costs must be compared on a year-by-year basis with the taxable payroll which provides for these costs. Since the vast majority of total program costs relates to insured beneficiaries and since general revenue appropriations and premium payments are available to support the uninsured segments, the remainder of this report will focus on the financing for insured beneficiaries.

### 1. *Taxable payroll*

Taxable payroll increases can be separated into a part due to wage increases in covered employment and a part due to increases in the number of covered workers. The taxable payroll projection used in this report is based on assumptions used in projecting experience under the OASDI program. Increases in taxable payroll assumed for this report are shown in table A2. The average wage increase component of this projection is the same as that shown in table A1.

### 2. *Relationship between program costs and taxable payroll*

The single most meaningful measure of program cost increases, with reference to the financing of the system, is the relationship between program cost increases and taxable payroll increases. If the rates of increase in both series are the same, a level tax rate over time will be adequate to support the program. However, to the extent that program costs increase more rapidly than taxable payroll, a schedule of increasing tax rates will be required to finance the system over time. Table A2 shows the resulting increases in program costs relative to taxable payroll over the 25-year projection period. These relative increases are projected to be about 6 percent during the 1977-79 period, with gradual reductions thereafter to an ultimate level of approximately 3 percent per year. The result of these increases over the duration of the projection period is a continued increase in the year-by-year ratios of program expenditures to taxable payroll, as shown in table A3.

## C. SENSITIVITY TESTING OF COSTS UNDER ALTERNATIVE ASSUMPTIONS

Over the past 20 years, aggregate inpatient hospital costs for all patients have increased substantially faster than increases in average wages and prices in the general economy. As indicated in table A1, the 10-year period preceding medicare was characterized by an average 10.4 percent increase in hospital costs, nearly 7½ percent higher than the increases attributable to general wage and price increases. The 1966-71 period experienced substantially higher

increases in total hospital costs, averaging 16 percent per year. Of this increase, general economic factors accounted for only 5½ percent; the remaining 10½ percent reflected increases in the volume of services provided and in unit input intensity. Even during the 1972-74 period of economic stabilization program controls, hospital costs increased at an average rate of about 12½ percent, over 5½ percent higher than the amount attributable to increases in average wages and in the CPI. Experience for the fully decontrolled year 1975 shows an increase in hospital costs of nearly 19 percent, of which almost 11 percent is in excess of increases in general economic factors. Preliminary indications for 1976 show continued hospital cost increases of approximately 19 percent, about 12 percent higher than the 7 percent increase attributable to wages and prices in the general economy.

The sustained, high rates of hospital cost increases in the past raise serious questions concerning future cost increases which might be anticipated. Under conventional economic wisdom, the hospital industry would not be expected to sustain growth relative to the general economy, of the order of magnitude experienced during the last 20 years, indefinitely into the future. However, the growth pattern has persisted for a long period of time and shows no indication of subsiding. The most reasonable pattern of cost increase assumptions for the future, then, would fall between the two extremes of (1) an indefinite continuation of the past levels of excess of hospital cost increases over general economic factors and (2) a decline in the near term to hospital cost increase levels approaching those for the economy as a whole.

In view of the uncertainty of future cost trends, projected costs for the hospital insurance program have been prepared under three alternative sets of assumptions. A summary of the assumptions and results is shown in table A3. The set of assumptions labeled "Alternative II" forms the basis for the detailed discussion of hospital cost trends and resulting program costs presented throughout this report. It represents an intermediate set of cost increase assumptions, compared with the lower cost and more optimistic alternative I and the higher cost and less optimistic alternative III. Increases in the economic factors (average wages and CPI) for the three alternatives are consistent with those underlying the OASDI report.

As noted earlier, the single most meaningful measure of hospital insurance program cost increases, with reference to the financing of the system, is the relationship between program cost increases and taxable payroll increases. The extent to which program cost increases exceed increases in taxable payroll will determine how steeply tax rates must increase to finance the system over time.

Under alternative II, program costs in the short run are projected to increase approximately 5½ to 6 percent faster than increases in taxable payroll, gradually decreasing to an ultimate difference in increases of 3 percent. Program expenditures, which are currently about 2 percent of taxable payroll, increase to a level in excess of 5½ percent by the year 2000 under alternative II assumptions. Hence, if all of the projection assumptions are realized over time, hospital insurance tax rates by the end of the 25-year period will have to be substantially higher than those provided in the present financing schedule (3 percent of taxable payroll, for 1968 and later).

Alternatives I and III contain assumptions which result in program costs increasing, relative to taxable payroll increases, approximately 2 percent less and 2 percent more rapidly, respectively, than the results under alternative II. Under alternative I, program costs ultimately increase 1 percent more rapidly than increases in taxable payroll. By the year 2000, program expenditures under this alternative would be slightly greater than  $3\frac{1}{2}$  percent of taxable payroll. Hence, hospital insurance tax rates required by the end of the valuation period would be greater than those currently scheduled, even under the optimistic alternative I assumptions. Under alternative III, program costs ultimately increase 5 percent more rapidly than increases in taxable payroll. The result of this differential is a level of program expenditures in the year 2000 which is slightly over 8 percent of taxable payroll, 5 percent higher than the 3 percent tax rate currently scheduled.

TABLE A1.—COMPONENTS OF HISTORICAL AND PROJECTED INCREASES IN HOSPITAL COSTS<sup>1</sup>

[In percent]

Calendar year	Economic factors			Volume of services <sup>2</sup>		Unit input intensity <sup>2</sup>				Aggregate inpatient hospital costs <sup>4</sup>	HI share		HI inpatient hospital costs
	Average wages	CPI	Weighted average <sup>3</sup>	Total population	Admission incidence	Wage level	Employee intensity	Nonlabor intensity	Weighted average <sup>3</sup>		Proportion of population	Other sources	
Historical data:													
1956-65	3.7	1.6	3.0	1.6	1.7	1.0	2.0	5.3	4.1	10.4			
1966	5.5	3.0	4.6	1.1	.5	-4.6	8.2	8.4	5.5	11.7			
1967	5.7	2.8	4.7	1.1	-.7	3.4	6.2	18.4	13.5	18.6			
1968	6.4	4.2	5.7	1.0	.1	3.3	4.4	11.6	9.7	16.5	0.6	7.5	24.6
1969	6.6	5.4	6.6	1.0	2.6	2.6	3.5	9.9	8.2	18.4	.5	-3.7	15.2
1970	5.4	5.9	6.0	1.1	2.4	4.5	1.3	8.3	7.3	15.8	.5	-5.3	12.0
1971	6.6	4.3	5.9	1.0	2.0	3.5	-.1	6.1	4.8	13.7	.6	-.8	13.5
1972	7.0	3.3	5.6	.9	1.2	1.1	.2	11.3	5.8	13.5	.7	-3.3	10.9
1973	6.5	6.2	6.6	.7	2.4	-1.8	.0	3.1	0.4	10.1	5.3	1.0	16.4
1974	6.6	11.0	9.0	.7	3.0	-.8	2.3	2.0	1.8	14.5	6.0	3.1	23.6
1975	6.3	9.1	8.0	.7	1.0	4.2	2.5	10.5	9.0	18.7	2.2	1.6	22.5
Projection:													
1976	7.5	5.8	7.1	.7	2.1	2.0	2.8	12.5	9.1	19.0	1.8	-2.0	18.8
1977	8.4	6.0	7.6	.7	1.5	2.5	2.0	9.0	7.1	16.9	1.8	-.4	18.3
1978	8.1	5.4	7.2	.7	1.5	2.5	2.0	8.0	6.6	16.0	1.7	-.3	17.4
1979	7.8	5.3	6.9	.7	1.5	2.5	1.5	8.0	6.3	15.4	1.6	-.2	16.8
1980	7.1	4.7	6.3	.7	1.4	2.5	1.5	8.0	6.3	14.7	1.6	-.2	16.1
1985	5.8	4.0	5.0	.7	.8	1.5	1.5	6.0	4.7	11.2	1.4	-.2	12.4
1990	5.8	4.0	5.0	.6	.7	1.0	1.5	5.5	4.3	10.6	1.2	-.1	11.7
1995	5.8	4.0	4.9	.5	.7	.5	1.0	5.5	3.9	10.0	.7	-.1	10.6
2000	5.8	4.0	4.9	.4	.2	.5	1.0	5.5	3.9	9.4	.4	-.1	9.7

<sup>1</sup> Percent increase in year indicated over previous year.

<sup>2</sup> Based on data from the American Hospital Association through 1975.

<sup>3</sup> Weighted average of the individual components, with adjustments for the effects of compounding. The weightings are based on the proportions of aggregate inpatient hospital costs which are for

payroll and for nonpayroll expenses. The adjustments for the effects of compounding are necessary to compensate for the fact that the various components actually are multiplicative, rather than additive as illustrated in this table.

<sup>4</sup> Includes hospital costs for all patients.

TABLE A2.—RELATIONSHIP BETWEEN INCREASES IN TOTAL HI PROGRAM COSTS AND INCREASES IN TAXABLE PAYROLL<sup>1</sup>

[In percent]

Calendar year	HI benefit costs				HI administrative costs <sup>3</sup>	Total HI program costs <sup>3</sup>	HI taxable payroll	Ratio of costs to payroll <sup>4</sup>
	Inpatient hospital <sup>2</sup>	Skilled nursing facility	Home health agency	Weighted average				
1977.....	18.9	16.5	35.4	19.2	-1.2	18.7	11.5	6.5
1978.....	17.9	16.3	25.2	18.0	9.8	17.9	11.3	5.9
1979.....	17.2	15.7	22.4	17.3	8.4	17.2	10.7	5.9
1980.....	16.5	14.4	17.7	16.5	8.2	16.4	10.3	5.5
1985.....	12.7	10.0	10.2	12.6	7.8	12.5	6.7	5.4
1990.....	11.8	8.7	8.7	11.7	7.3	11.6	6.7	4.6
1995.....	10.7	8.2	8.2	10.6	6.7	10.6	6.5	3.8
2000.....	9.7	7.5	7.5	9.6	6.2	9.6	6.3	3.1

<sup>1</sup> Percent increase in year indicated over previous year.<sup>2</sup> This column differs slightly from the last column of table A1, since table A1 includes all persons eligible for HI protection while this table excludes noninsured persons.<sup>3</sup> Costs attributable to insured beneficiaries only. Benefits and administrative costs for noninsured persons are financed through general revenue transfers and premium payments rather than through payroll taxes.<sup>4</sup> Percent increase in the ratio of program expenditures to taxable payroll. This is equivalent to the differential between the increase in program costs and the increase in taxable payroll.

TABLE A3.—SUMMARY OF ALTERNATIVE COST PROJECTIONS FOR THE HOSPITAL INSURANCE PROGRAM

[In percent]

Calendar year	Increases in aggregate inpatient hospital costs <sup>1</sup>				Changes in the relationship between costs and payroll <sup>2</sup>			Expenditures as a percent of taxable payroll
	Average wages	CPI	Volume and intensity	Total	Program costs <sup>3</sup>	Taxable payroll	Ratio of costs to payroll	
<b>Alternative I:</b>								
1977.....	8.4	6.0	9.3	16.9	18.7	11.5	6.5	1.99
1978.....	8.2	5.3	8.2	15.4	17.3	11.4	5.3	2.10
1979.....	7.9	4.6	7.2	13.7	15.5	11.0	4.1	2.18
1980.....	6.6	4.1	6.8	12.3	14.0	9.9	3.7	2.26
1985.....	5.3	3.0	4.5	8.6	9.9	6.3	3.4	2.76
1990.....	5.3	3.0	3.8	7.9	9.0	6.2	2.6	3.17
1995.....	5.3	3.0	3.3	7.4	7.9	6.0	1.8	3.49
2000.....	5.3	3.0	2.7	6.8	7.0	5.8	1.1	3.70
<b>Alternative II:</b>								
1977.....	8.4	6.0	9.3	16.9	18.7	11.5	6.5	1.99
1978.....	8.1	5.4	8.8	16.0	17.9	11.3	5.9	2.11
1979.....	7.8	5.3	8.5	15.4	17.2	10.7	5.9	2.23
1980.....	7.1	4.7	8.4	14.7	16.4	10.3	5.5	2.35
1985.....	5.8	4.0	6.2	11.2	12.5	6.7	5.4	3.19
1990.....	5.8	4.0	5.6	10.6	11.6	6.7	4.6	4.02
1995.....	5.8	4.0	5.1	10.0	10.6	6.5	3.8	4.84
2000.....	5.8	4.0	4.5	9.4	9.6	6.3	3.1	5.64
<b>Alternative III:</b>								
1977.....	8.4	7.0	9.3	16.9	18.7	11.5	6.5	1.99
1978.....	7.9	5.7	9.3	16.5	18.4	11.2	6.5	2.12
1979.....	8.1	7.6	8.0	16.4	18.2	9.2	8.2	2.29
1980.....	8.2	5.9	8.9	16.3	18.0	10.0	7.3	2.46
1985.....	6.3	5.0	7.9	13.7	15.1	7.3	7.3	3.50
1990.....	6.3	5.0	7.5	13.3	14.3	7.2	6.6	4.81
1995.....	6.3	5.0	6.8	12.6	13.2	7.0	5.8	6.36
2000.....	6.3	5.0	6.1	11.9	12.1	6.7	5.1	8.10

<sup>1</sup> Percent increase in the year indicated over the previous year. Includes hospital costs for all patients.<sup>2</sup> Percent increase in the year indicated over the previous year.<sup>3</sup> Includes cost attributable to insured beneficiaries only.

## APPENDIX B.—DETERMINATION AND ANNOUNCEMENT OF THE INPATIENT HOSPITAL DEDUCTIBLE FOR 1977<sup>1</sup>

Pursuant to authority contained in section 1813(b)(2) of the Social Security Act (42 U.S.C. 1395e(b)(2)), as amended, I hereby determine and announce that the dollar amount which shall be applicable for the inpatient hospital deductible, for purposes of section 1813(a) of the act, as amended, shall be \$124 in the case of any spell of illness beginning during calendar year 1977. Changes in the amount of the inpatient hospital deductible also affect certain other cost-sharing provisions under the hospital insurance program. Thus, for spells of illness beginning in 1977, the daily coinsurance for the 61st through the 90th days of hospitalization (one-fourth the inpatient hospital deductible) will be \$31; the daily coinsurance for the lifetime reserve days (one-half of the inpatient hospital deductible) will be \$62; and the daily coinsurance for the 21st through the 100th days of extended care services (one-eighth of the inpatient hospital deductible) will be \$15.50.

The new inpatient hospital deductible represents a 19-percent increase over the current \$104 deductible. While I have no discretionary authority in determining the deductible, it is important for me to point out that this increase is due in large measure to the continued inflation in health care costs. For the first 8 months of calendar year 1976, hospital costs have been increasing over twice as fast as the overall cost of living.

A statement of the actuarial bases employed in arriving at the amount of \$124 for the inpatient hospital deductible for 1977 follows.

The law provides that for spells of illness beginning in calendar years after 1968 the inpatient hospital deductible shall be equal to \$40 multiplied by the ratio of (1) the current average per diem rate for inpatient hospital services for the calendar year preceding the year in which the promulgation is made (in this case, 1975) to (2) the current average per diem rate for such services for 1966. The law also provides that such current average per diem rates shall be determined by the Secretary of Health, Education, and Welfare from the best available information as to the amounts paid under the program for inpatient hospital services furnished during the year by hospitals who are qualified to participate in the program, and for whom there is an agreement to do so, for individuals who are entitled to benefits as a result of insured status under the old-age, survivors, and disability insurance program or the railroad retirement program. In addition, the law provides that if the amount so determined is not an even multiple of \$4, it shall be rounded to the nearest multiple of \$4.

The data used to make the necessary computations of the current average per diem rates for calendar years 1966 and 1975 are derived from individual inpatient hospital bills that are recorded for all bene-

<sup>1</sup> This statement was published in the Federal Register for Sept. 30, 1976 (vol. 41, No. 191, p. 43220).

beneficiaries in the records of the program. These records show for each bill, the number of inpatient days of care, the interim reimbursement amount, and the interim cost (the sum of interim reimbursement, deductible, and coinsurance). Tabulations are prepared which summarize the data from these bills by the year in which the care was provided. The resulting average interim per diem rates accurately reflect interim costs on an accrual basis.

In order to properly reflect the change in the average per diem hospital cost under the program, the average interim cost (as shown in the tabulations) must be adjusted for the effect of final cost settlements made with each provider of services after the end of its fiscal year to adjust the reimbursement to that provider from the amount paid during that year on an interim basis to the actual cost of providing covered services to beneficiaries. To the extent that the ratio of final cost to interim cost is different in the current year than it was in 1966, the increase in average interim per diem costs will not coincide with the increase in actual cost that has occurred. The best data available indicate that this adjustment, however, does not change the computation of the deductible for 1977 by enough to result in an amount different from the \$124 stated.

The current average per diem rate for inpatient hospital services for calendar year 1975, based on tabulated interim costs, is \$117.65; the corresponding amount for 1966 is \$37.92. These averages are based on approximately 85 million days of hospitalization in 1975 and 30 million days in 1966 (last 6 months of the year). The ratio of the 1975 rate to the 1966 rate is 3.103; when this ratio is multiplied by \$40, an amount of \$124.12 is produced, which must be rounded to \$124. Accordingly, the inpatient hospital deductible for spells of illness beginning during calendar year 1977 is \$124.

Dated: September 28, 1976.

MARJORIE LYNCH,  
*Acting Secretary.*

APPENDIX C.—DETERMINATION AND ANNOUNCEMENT  
OF THE HOSPITAL INSURANCE MONTHLY PREMIUM  
RATE FOR THE UNINSURED AGED, FOR THE 12-MONTH  
PERIOD BEGINNING JULY 1, 1977<sup>1</sup>

Pursuant to authority contained in section 1818(d)(2) of the Social Security Act (42 U.S.C. 1395i-2(d)(2)), I hereby determine and promulgate that the monthly hospital insurance premium, applicable for the 12-month period commencing July 1, 1977, is \$54.

Section 1818 of the Social Security Act, added by section 202 of the Social Security Amendments of 1972 (Public Law 92-603), provides for voluntary enrollment in the hospital insurance program (part A of Medicare) by certain uninsured persons 65 and older who are otherwise ineligible. Section 1818(d)(2) of the act requires the Secretary to determine and promulgate, during the final quarter of 1976, the dollar amount which will be the monthly part A premium for voluntary enrollment, for months occurring in the 12-month period beginning July 1, 1977. As required by statute, this amount must be \$33 times the ratio of (1) the 1977 inpatient hospital deductible to (2) the 1973 inpatient hospital deductible, rounded to the nearest multiple of \$1, or if midway between the multiples of \$1, to the next higher multiple of \$1.

The purpose of the premium formula is to adjust the original \$33 premium for changes in the cost of providing hospital care. The ratio of the inpatient hospital deductibles does this approximately, since the deductible as calculated under section 1813(b)(2), is based on the average daily cost of providing hospital care under the hospital insurance program. However, the deductible is calculated (by law) from data reflecting program experience in an earlier year. The increase in the 1977 deductible, and thus the increase in the premium now being promulgated for the period July 1977 to June 1978, results from the increase in hospital per diem costs in calendar year 1975 over 1974. In addition, the premium calculation fails to adjust for changes in the hospital utilization rate and for changes in nonhospital costs under the program. For these reasons, the premium can only be a rough approximation to actual per capita program costs.

Under section 1813(b)(2) of the act, the 1977 inpatient hospital deductible was determined to be \$124. The 1973 deductible was actuarially determined to be \$76, although the 1973 deductible was actually promulgated to be only \$72 to comply with a ruling of the Cost of Living Council. The premium for the 12-month period ending June 30, 1978 has been calculated using the \$76 deductible for 1973, since this appears to satisfy most closely the intent of the law. Thus, the monthly hospital insurance premium is \$33 times (124/76) equals \$53.84, which is rounded to \$54.

Dated: December 8, 1976.

DAVID MATHEWS, *Secretary*.

<sup>1</sup> This statement was published in the Federal Register for Dec. 15, 1976 (vol. 41, No. 242, pp. 54823-54824).