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HI Trust Fund:**Actuarial Methodology and Principal Assumptions**

Editor's Note: *The following excerpt is taken from Section II.F, "Actuarial Methodology and Principal Assumptions," in the 1998 Annual Report of the Board of Trustees of the Federal Hospital Insurance Trust Fund. Copies of the HI 1998 Annual Report are available from Sol Mussey (410-786-6386).*

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This section describes the basic methodology and assumptions used in the estimates for the HI program under the intermediate assumptions. In addition, sensitivity testing of program costs under two alternative sets of assumptions is presented.

Assumptions

Both the economic and demographic assumptions underlying the projections shown in this report are consistent with those in the 1998 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Disability Insurance (OASDI) Trust Funds. These assumptions are described in more detail in that report.

Program Cost Projection Methodology

The principal steps involved in projecting the future costs of the HI 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 payments for inpatient hospital services under the program; (3) projecting increases in payments for skilled nursing, home health, and hospice services covered under the program; (4) projecting increases in payments to managed-care plans; and (5) projecting increases in administrative costs. The major emphasis is directed toward expenditures for fee-for-service inpatient hospital services which account for approximately 67% of total benefits.

Projection Base

In order to establish a suitable base from which to project the future costs of the

program, the incurred payments

for services provided must be reconstructed for the most recent period 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, legislation, 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 disbursement shown in Tables II.D1 and II.D2 (not shown).

For those expenses still reimbursed on a reasonable cost basis, the costs for covered services 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 a specific period 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 original costs by as much as several years for some providers. Hence, the final cost of services reimbursed on a reasonable cost basis has not been completely determined for the most recent years of the program, and some degree of uncertainty remains even for earlier years.

Even for inpatient hospital operating payments paid for on the basis of diagnosis-related groups (DRGs), most payments are initially made on an interim basis, and final payments are determined on the basis of bills containing detailed diagnostic information which are later submitted by the hospital.

Additional problems are posed by changes in legislation or regulation, or in administrative or reimbursement policy, which can 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 solutions to 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 projection error directly, by incorporating any error in estimating the base year into all future years.

Payments for Inpatient Hospital Costs

Beginning with hospital accounting years starting on or after October 1, 1983, the HI program began paying almost all participating hospitals a prospectively determined amount for providing covered services to beneficiaries. With the exception of certain expenses reimbursed on a reasonable cost basis, as defined by law, the payment rate for each admission depends upon the DRG to which the admission belongs.

The law contemplates that the annual increase in the payment rate for each admission will be related to a hospital input price index, which measures the increase in prices for goods and services purchased by hospitals for use in providing care to hospital inpatients. In other literature, the hospital input price index is also called the hospital market basket. For fiscal year 1998, the prospective payment rates have already been determined. The projections contained in this report are based on the assumption that for fiscal years 1999–2002, the prospective payment rates will be increased by the increase in the hospital input price index, less the percentages specified by Public Law 105–33, the Balanced Budget Act of 1997. For the fiscal years 2003 and later, current statute mandates that

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the annual increase in the payment rate per admission equal the annual increase in the hospital input price index.

Increases in aggregate payments for inpatient hospital care covered under the HI program can be analyzed into five broad categories:

1. Labor factors—the increase in the hospital input price index which is attributable to increases in hospital workers' hourly earnings (including fringe benefits).
2. Nonlabor factors—the increase in the hospital input price index which is attributable to factors other than hospital workers' hourly earnings, such as the cost of energy, food, and supplies.
3. Unit input intensity allowance—the amount added to or subtracted from the input price index (generally as a result of legislation) to yield the prospective payment update factor.
4. Volume of services—the increase in total output of units of service (as measured by hospital admissions covered by the HI program).
5. Other sources—a residual category, reflecting all other factors affecting hospital cost increases (such as intensity increases).

Table II.F1 shows the estimated values of the principal components of the increases for historical periods for which data are available and the projected trends used in the estimates.

**TABLE II.F1
Components of Historical and Projected Increases in HI Inpatient Hospital Payments***

Calendar Year	Labor			Nonlabor			Unit Input Intensity Allowance†	Units of Service			Other Sources	HI Inpatient Hospital Payments
	Average Hourly Earnings	Hospital Hourly Earning Differential	Hospital Hourly Earnings	CPI	Hospital Price Input Intensity	Nonlabor Hospital Prices		Input Price Index	HI Enrollment	Managed Care Shift Effect		
Historical Data:												
1984	6.9%	-1.1	5.7%	3.5%	0.6%	4.1%	5.1%	1.8%	-1.0%	-2.7%	7.3%	11.5%
1985	5.2	-0.6	4.6	3.5	-1.2	2.3	3.6	1.6	-0.8	-6.6	7.9	5.1
1986	4.7	-1.1	3.6	1.6	0.2	1.8	2.9	2.3	-0.6	-4.9	6.1	2.8
1987	4.5	-0.5	4.0	3.6	-0.3	3.3	3.7	1.7	-0.2	-2.9	4.5	4.0
1988	6.3	-1.9	4.8	4.0	1.6	5.7	5.2	2.5	0.1	-2.1	-1.8	1.0
1989	3.2	2.0	5.3	4.8	0.2	5.0	5.2	2.0	0.2	-3.3	6.9	9.8
1990	4.5	1.1	5.5	5.2	-1.9	3.2	4.6	2.1	-0.4	3.4	-1.0	9.0
1991	3.9	0.8	4.7	4.1	-1.2	2.8	4.0	2.2	-0.1	0.9	-0.3	6.2
1992	5.9	-1.9	3.9	2.9	-0.9	2.0	3.2	1.9	-0.4	0.3	7.0	12.0
1993	2.1	1.4	3.5	2.8	-0.6	2.2	3.0	2.1	-0.6	-1.4	2.4	5.2
1994	2.8	0.3	3.1	2.5	-0.5	2.0	2.7	2.6	-0.9	4.6	0.1	8.6
1995	3.5	-0.9	2.6	2.9	-1.1	4.0	3.1	1.4	-2.0	1.4	2.9	6.1
1996	4.4	-1.5	2.8	2.9	-1.5	1.4	2.3	1.7	-2.6	3.4	0.9	5.0
Projections:‡												
2000	3.5	0.0	3.5	2.6	-0.4	2.2	3.0	1.2	-8.6	3.8	1.1	-1.6
2005	4.5	0.0	4.5	3.4	0.0	3.4	4.1	1.5	-0.8	0.6	0.6	6.0
2010	4.5	0.0	4.5	3.5	0.0	3.5	4.2	1.9	0.0	0.1	0.6	6.9
2015	4.5	0.0	4.5	3.5	0.0	3.5	4.2	2.7	0.0	-0.3	0.7	7.5
2020	4.5	0.0	4.5	3.5	0.0	3.5	4.2	2.7	0.0	-0.3	0.8	7.6

*Percent increase in year indicated over previous year, on an incurred basis.
 †Reflects the allowances provided for in the prospective payment update factors.
 ‡Under the intermediate assumptions.
 Note: Historical and projected data reflect the hospital input price index which was recalibrated to a 1987 base year in 1990.