A METHODOLOGY FOR DETERMINATION OF REASONABLE FTE COMPENSATION FOR HOSPITAL-BASED PHYSICIANS

James R. Cantwell
William J. Sobaski

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I. Statement of Purpose

This paper responds to a request from HCFA's Bureau of Program Policy to provide a method and estimates for reasonable full time equivalent compensation for hospital-based physicians (HBP). Estimates are needed for calendar year 1982 and 1983. Additionally, a methodology for projecting compensation for subsequent years was sought. These estimates are to be based on the best available data.

The paper in its present revised form incorporates more recent Consumer Price Index (CPI) projections than the January 1982 paper of the same title. It also incorporates a revised forecasting technique in light of comments received in response to the Federal Register publication of the proposed rule BPP-192-P on October 1, 1982.

The paper is divided into seven sections: (1) Introduction (2) Sources and Proposed Uses of Data on Physician Incomes, {3) Physician Net Income 1979, {4) Projection Methodologies including 1982 and 1983 Projections, {5) Adjustment for HBP Specialty and Location, (6) Reasonable Compensation and (7) Estimates for Future Years.

II. Sources and Proposed Uses of Data on Physician Compensation

A. Sources of Data

The American Medical Association's Periodic Survey of Physicians (PSP), the Medical Economics Continuing Survey of Physicians, and the Health Care Financing Administration's Survey of Physician's Practice Costs and Incomes are the three principal sources of nationwide information on physician's incomes. All provide specialty-specific, annual measures of physicians' incomes. But, they differ in the number of years for which income data are available, in the number and type of specialties for which data are reported, in the summary descriptive statistics reported, and in other respects. For example, while the AMA's PSP was conducted on an annual basis from 1966 to 1980, Medical Economics' Continuing Survey has been conducted intermittently since the 1930's and annually for the last several years. The three surveys conducted by the National Opinion Research Center (NORC) for HCFA collected data for calendar year 1976, 1977 and 1978. Additional detail on these three surveys are contained in Goldfarb, 1981 (for the AMA's PSP), Owens, 1981 (for Medical Economics) and Appendix A (for HCFA/NORC).

Although radiologists, anesthesiologists and pathologists (RAPs) are included in the samples for all three surveys, published income statistics frequently are not reported separately for these three specialties. In particular, Medical Economics does not report incomes for any of the three separately, choosing instead to include them in "all fields" and all surgical specialists. In contrast, AMA publishes income estimates for both anesthesiologists and (since 1975) radiologists. Pathologists' (and radiologists before 1975} incomes are

supressed and included only in the total for al1 physicians in the sample. Specialty-specific income estimates for RAPs could be made available from the HCA/NORC surveys, but only for three years--the most recent data being for calendar year 1973.

In January 1982, the AMA began publishing data on physicians' incomes and other practice characteristics from their Socioeconomic Monitoring System (SMS). Data are collected through quarterly telephone surveys. These data will not be used in this paper because trend data are needed for the methodology developed in Section IV. The SMS is a new survey and the results cannot simply be treated as a continuation of the AMA's PSP. In an article published in American Medical News (February 5, 1982, page 10), Roger Reynolds, Ph.D, a senior economist in the AMA Center for Health Policy Research, who is working on the SMS, stated "it may not be truly accurate to compare data obtained by mail with that acquired by telephone...

In addition to these recurring AMA, Medical Economics and HCFA/NORC data, there have been audits and special-purpose, one-time data collection efforts which provide some measures of HBP compensation. An example of the latter is the Arthur Anderson December 1977 report tit1ed "Study of Reimbursement and Practice Arrangements of Provider-Based Physicians." The report contains data on a total of 2,628 HBPs (1,190 full time equivalent HBPs in radiology, anesthesiology, pathology, cardiology, or emergency room specialties). The "...reported compensation data represent 'net income to the salaried HBP. To the HBP on a percentage arrangement, the reported compensation data represent 'gross' income, out of which the HBP has to pay certain expenses."

An example of compensation data derived from audit is the September 1980 report ("Need for More Restrictive Policy and Procedures Covering Medicare Reimbursement for Medical Services Provided by Hospital-Based Physicians") prepared by the HHS Office of Inspector General Audit Agency. The report contains estimates of full time equivalent compensation in FY 1978 for radio1ogists, anesthesiologists and patho1ogists. The reviews were conducted in two states, Oklahoma and Louisiana.

The last source of physician income data to be discussed in this paper is the "Study of Physicians' Incomes in the Pre-Medicare Period-1965." This study, written by Zachary Dyckman, was prepared within the Social Security Admir1istration's Office of Research and Statistics and was published in January 1976. The source of income data was individual physician's income tax returns for calendar year 1965. Median and mean net incomes and the distribution of net income across several income brackets are reported by specialty--including radiology, anesthesiology and pathology.

B. Proposed Uses of Income Data

AMA data were used to estimate current (1979 or 1980 when available) levels of average income for all physicians, anesthesiologists, radiologists and other specialists. "Net income" data collected for the American Medical Association's 1979 Periodic Survey of Physicians (PSP) includes "all income from fees, salaries, retainers, etc., as well as the value of all fringe benefits paid on your behalf, e.g. Keogh Plans." We believe that this can be interpreted to mean that the PSP 1979 average net income data already includes most deferred income. Accordingly, we would recommend that no adjustment for deferred income be made to the PSP average net income data in the estimation of "reasonable FTE compensation rates." Additionally, these data were used to measure trends and dispersion (standard deviation) of physician incomes for those groups of physicians. The dispersion of recorded incomes will be one factor considered later in Section 6, when addressing the subject of reasonable compensation.

Medical Economics data were used as confirmation of the general level of income for the all-specialty category of physicians. Additionally, the Medica1 Economics income distribution pattern was used to guide and support proposals for converting mean income data into reasonable levels.

Data from the other sources discussed above were used to estimate the level of patholog1sts' incomes and its relative standing with respect to anesthesiologists, radiologists and all physicians' incomes. HCFA/NORC data were especially useful for this purpose.

The methodology to be followed contains five steps:

1. estimate the average (mean) income for a11 physicians;
2. determine an appropriate factor to project physicians historic income levels to future years (1982 initially);
3. determine the relationships between average income for all physicians (previously estimated above) and incomes of radiologists, anesthesiologists, pathologists and other specialists which hospitals might employ or otherwise use in delivering care to Medicare beneficiaries;
4. determine appropriate factors for adjusting average to reasonable levels of net income;
5. adjust specialty specific reasonable levels for geographic differences in costs.

III Physician Net Income, 1979

The first step in the proposed methodology is to obtain recent estimates of incomes for all physicians. AMA, Medical Economics and HCFA/NORC estimates of net income, presented in Table 1,

Tab1e 1

Average Income of All Physicians: By Source

	American Medical Assoc. PSP		Medical Economics	HCFA Contract Research
Year	Mean	(n)	Median.	Mean
1981			$86,210	
1980	$80,900	unknown	83,700	
1979	78,400	4,263	76,720	
1978	65,500	3,217	68,040	
1977	61,200	3,435	65,430	
1976	59,500	3,857	62,800	$63,600
1975	56,400	4,036	58,440	60,300
1974	52,000	3,706		
1973	48,600	4,011		
1972	47,200	3,341		
1971	45,300	3,191		
1970	41,300	2,712		

1/ David L. Goldfarb, "Trends in Physicians' Incomes, Expense, and Fees: 1970-1980," Table 1, page 114. in Goldfarb, D.L. (ed.), Profile of Medical Practice 1981 (Chicago: American Medical Association, 1981). Sample sizes (n) are from earlier editions of the Profile.

2/ Arthur Owens, "How's Inflation Treating You?, "Medical Economics" (September 28, 1981), page 173, and "Where Do You Fit In?," Medical Economics, (September 13, 1982), page 247.

3/ Frank A. Sloan, "Physicians Incomes and Workloads," Table 4-2, page 125, in Vanderbilt University's Final Report to HCFA "Analysis of Survey Data on Physician Practice Costs and Incomes," April 1981.

4/ Estimated by the physician respondent.

indicate that the estimates of averages are quite similar for any given year. For purpose of establishing 1979 net incomes, the AMA figure of $78,400 will be used. The standard error (for Table 41 of the 1981 Profile of Medical Practice) is $712. The sampling distribution of means is very nearly normal for-samples of size greater than 30, even when the parent population is non-normal. Consequently, we can have 95 percent confidence that the true mean income for physicians in 1979 was in the range $78,400 (the estimated mean) plus or minus 2X $712 (the estimated standard error). The 95 percent confidence range for mean net income in 1979 is $76,916 to $79,824.

IV. Projection Methodology and 1982 and 1983 Projections

A. Projection Methodology

Physicians' net incomes will be projected to 1982 using a methodology based on the observed (1970-1980) relationship between physicians' net incomes and the consumer price index. Between 1970 and 1980 physicians' estimated net incomes increased from $41,800 to $80,900, a 93.3 percent increase. Over the same period the yearly average consumer price index increased from 116.3 to 246.8, a 112.2 percent increase.

The following relationship will be estimated for the period 1970 to 1980:

$$(1) \quad y_t = \alpha_1 D + \alpha_2 CPI_t$$

where y_t = physicians' net income in year t

D = a dummy variable taking a value of 1 for the Economic Stabilization year (1971 - 1973) and 0 otherwise.

CPI_t = Consumer Price Index for all urban consumers in year t.

AMA's PSP data for 1970-1980 were used to obtain ordinary least squares estimates of the parameters of equation (1). The results are

$$(1') \quad y_t = \underset{(t=2.66)}{3534.32\ D} + \underset{(t=84.06)}{343.684\ CPI_t}$$

$$R^2 = .9758$$

The equation explains 97.58 percent of the observed variation in physicians' net incomes between 1970 - 1980.

Data Resources, Inc. provides near-term forecasts of the consumer price index. These forecasts are revised quarterly and are currently used by the Department of Health and Human Services in establishing limits for reimbursing hospitals under Medicare (Section 223). They

forecast that by the end of the second quarter of 1982 the consumer price index will increase to 286.6. This value will be used as an

estimate of the 1982 yearly average CPI. Consequently, our forecast of physician net income for 1982 is the fo1lowing

$$(2') \quad Y_{1982} = 343.684 \times 236.6$$
$$= \$98,500$$

This $98,500 may be compared with an estimate of $95,500 that would result from projecting the AMA-PSP 1979 estimate of physicians' mean net income by a compound rate of 6.8% (the same rate as occurred between 1970 and 1980).

It has been argued that the market for physician services is undergoing fundamental change as the number of physicians increases relative to population (GMENAC, 1980). Medical Economics data on physicians' median incomes from 1975 to 1980 indicate that overall physician real income in 1976 dollars fell from $62,800 in 1976 to $53,960 in 1981 (Owens, 1982).

In addition, it should be noted that the nominal 1979 net income of $77,400 reported by Glandon and Werner is $1,000 less than the nominal 1979 net income figure reported in the 1981 Profile of Medical Practice. Each is based on the 1980 Periodic Survey of Physicians. If the $1,000 is added to Glandon and Werner's estimate of 1979 net income then physician's real incomes will have risen somewhat over the 1970-1979 period. The 1979 value of $78,400 is used in the estimation of equation 2.

In summary, physician income data suggest a close association between the CPI and nominal net incomes of physicians. For the purposes of projecting physician's net incomes we will use equation (1') estimated over the period 1970- 1980. Table A compares equation (1') estimates with AMA's PSP estimates.

Table A

PSP and Estimated Phys1cian's Net Income

1. Projected by the physician respondent
2. From the AMA's Socioeconomic Monitoring System.

Year	AMA PSP	Equation (1) Estimates	Difference
1970	$41,800	$40,000	- 1,800
1971	45,300	45,200	-100
1972	47,200	46,600	-600
1973	48,600	49,300	700
1974	52,000	50,800	- 1,200
1975	56,400	55,400	- 1,000
1976	59,500	58,600	-900
1977	61,200	62,400	1,200
1978	65,500	67,200	1,700
1979	78,400	74,700	- 3,700
1980	80,900	84,800	4,100
1981	93,000	93,600	600
1982		98,500	
1983		105,500	

V. Adjustment for HBP Specialty and Location

There are significant inter-specialty differences in physician net income (Table 2). HBP incomes could be adjusted according to the 1979 relationships between each specialty's reported mean income, and the overall mean for all physicians. Specialty-adjusters derived from 1979 average net income data, are set out in Table 2. They are derived by dividing specialty specific mean net income by all physician mean net income in 1979.

Table 2

Average 1979 Net Income from Medical Practice
by Specialty and Specialty Adjusters, U.S.

Specialty	Mean Net Income	Specialty Adjustor
Total	$ 78,400	1.00
General or Family Practice	62,000	.79
Internal Medicine	76,200	.97
Surgery	96,000	1.22
Pediatrics	60,400	.77
Obstetrics/Gynecology	91,800	1.17
Radiology	98,000	1.25
Psychiatry	62,600	.80
Anesthesiology	91,400	1.17
Other	74,800	.95

Specialty adjustors are formed by dividing specialty specific net income by the mean net income for all physicians

Source: Profile of Medical Practice, 1981 Edition, Table 43.

We do not propose to use the specialty adjustors in Table 2 because they fail to account for geographic variation in physicians' incomes. Rather, we will develop and employ specialty-local1ty specific adjustors, again based on physicians' incomes. These are presented in Table 3. For any given specialty the weighted average of the specialty-locality adjustor would equal the nationwide specialty adjustor in Table 3. The lowest specialty-locality is .74 for general or family practitioners in metropolitan areas with populations greater one million people. The highest is 1.28 for radiologists in metropolitan areas with populations less than one million people.

Table 3

Average 1979 Net Income from Medical Practices
by Specialty and Location and Specialty-Locality Adjustor

	Non-Metropolitan		Metropolitan Less than One Million		Metropolitan Greater than One Million	
Specialty	Net Income	Adjustor	Net Income	Adjustor	Net Income	Adjustor
Total	$76,400	.97	$78,700	1.00	$78,800	1.01
GP/FP	69,200	.88	59,600	.76	57,700	.74
IM	75,800	.97	75,800	.97	76,500	.98
Surgery	91,400	1.17	96,200	1.23	97,300	1.24
Pediatrics	59,200	.75	69,900	.89	60,200	.77
Ob/Gyn	94,800	1.21	91,400	1.17	91,400	1.17
Radiology	94,100	1.20	100,000	1.28	97,700	1.25
Psychiatry	58,400	.74	60,300	.77	63,900	.82
Anest.	70,700	.90	93,400	1.19	93,200	1.18

1/Specialty-Locality adjustors are formed by dividing the specialty-locality specific net income by the 1979 mean net income for all physicians ($78,400).

Source: Profile of Medical .Practice, 1981 Edition, Table 43.

Hours Worked Adjustment

Application of specialty-locality specific adjustor should consider information about specialty and locality variation in hours worked per year. The Profile of Medical Practice contains data on average number of hours practiced per week by specialty and location. Specialty specific data on weeks worked by specialty are also presented, but no locational averages by specialty are shown. These data can be used to approximate hours worked per year by multiplying the specialty-location specific average hours practiced per week times the specialty (ignoring location variations) specific average weeks worked per year. Table 4 presents these averages for the same specialty-locality classes used in Table 2, while Table 5 shows the product.

Table 4

Weeks Practiced per Year and Hours Practiced per Week
by Specialty and Location

	Hours per week by Location			
Specialty	Weeks per Year	Non-metropolitan	Metro less than 1 million	Metro greater than 1 million
Total	46.9	51.7	50.1	48.7
GP/FP	47.3	52.3	47.4	45.4
IM	46.7	53.9	53.9	50.9
Surgery	46.7	54.6	51.8	51.3
Pediatrics	46.8	48.8	50.0	47.2
Ob/Gyn	47.5	50.9	50.5	50.2
Radiology	46.5	47.2	47.9	46.4
Psychiatry	47.0	45.5	46.0	45.3
Anesthesiology	46.5	46.1	51.4	50.6

Source: Profile of Medical Practice, 1981 Edition (Table 2 for Col. 1, Table 6 for Col. 2-4).

Table 5

Hours Practiced per Year by Specialty and Location

Specialty	Non-metropolitan	Metro less than 1 million	Metro greater than 1 million
Total	2424.7	2349.7	2284.0
GP/FP	2473.8	2242.0	2147.4
IM	2571.0	2517.1	2377.0
Surgery	2549.8	2419.1	2395.7
Pediatrics	2283.8	2340.0	2209.0
Ob/Gyn	2417.8	2398.8	2384.5
Radiology	2208.8	2227.4	2227.4
Psychiatry	2138.5	2162.0	2129.1
Anesthesiology	2146.7	2390.1	2352.9

Source: Calculation from Table 4 (hours per week times weeks per year).

Estimated average hours practiced per year ranged from 2129.2 hours to 2571.0 hours-- a 20.76 percent difference between the lowest and highest classes. The specialty-locality average annual incomes and adjustors shown in Table 3 somewhat mask these wide differences in annual hour worked by specialty and locality class. Although the Table 3 data accurately portray aggregate actual earnings, these earnings are based on different total hours worked across specialties and location.

In many applications, a standardization of the time worked is desirable. For example, an annual 1979 net income of $100,000 for a radiologist may appear to be reasonable when compared with Table 3. However, if that net income were the result of only 500 hours worked over the year, it might not seem reasonable. To permit significant hours worked differences to be considered, we present, in Table 6, the specialty-locality adjustors which would apply to a 2080 hour work year for each specialty-locality class. These were calculated by weighting the Table 3 adjustors by the quotient of 2080 hours divided by the Table 5 annual average hours worked per category.

Table 6

FTE (2080 hours per year) Specialty-Locality Adjustors

Specialty	Non-metropolitan	Metro less than 1 million	Metro greater than 1 million
Total	.83	.89	. 92
GP/FP	. 74	.71	.72
IM	. 78	.80	.86
Surgery	.95	1.06	1.08
Pediatrics	.68	.79	.73
Ob/Gyn	1.04	1.01	1. 02
Radiology	1.13	1.20	1.17
Psychiatry	.72	.74	.80
Anesthesiology	.87	1.04	1.04

*Pathology adjustors are estimated to be 95.4 percent of radiology adjustors.

Source: Specialty-locality adjustors from Table 3 times 2080 ÷ specialty-locality specific total hours worked per year (from Table 5).

Pathologists

There is scant published data on income of pathologists. The PSP includes pathologists among those in "other and unspecified." Values for that category are not published, but can be derived from the published data. Medical Economics does not publish separate pathologists' incomes from its survey.

HCFA has sponsored or conducted three relevant published studies:

Study of Physician Income in the Pre-Medicare Period, 1965, by Zachary Dyckman, USDHEW, SSA, ORS, HEW PUB No SSA, 76-11932.

Study of Reimbursement and Practice Arrangements of Provider based Physician, by Arthur Anderson, Inc. 1977 (NTIS Assession Number PB 2Pl125/AS)

"Hospital-Based Physicians: Current Issues and Descriptive Evidence" by Bruce Steinwald, in Health Care Financing Review, Summer 1980.

The latter is the most current. From it, we would propose establishing a ratio for pathologists' average compensation relative to radiologists' average compensation per hour of medical activity. It suggests that pathologists' adjusted net income per hour of medical activity was 95.4 percent of that for radiologists ($35.83 for pathologists, $37.55 for radiologists, 1976-77 combined averages). This figure is quite similar to the 95 percent derivable from the Arthur Anderson study, which found averages of $98,400 for FTE pathologist compensation and $103,200 FTE radiologist compensation for 1976. The 1965 comparable incomes found by Dyckman were $30,704 for pathologists, and $37,626 for radiologists. We would propose using the 95.4 percent factor derived from the Steinwald study to adjust the specialty-locality adjusters found for radiologists. This results in pathologist specialty locality adjusters of 1.08 (i.e., 1.13 x .954 which yields 1.08), 1.14 and 1.12 for nonmetropolitan, small metropolitan and large metropolitan areas, respectively.

Alternative Specialty Classification

HCFA's several surveys of physician practice costs and incomes in 17 specialties could be used to provide adjusters for a greater range of specialties than are possible from the PSP publications. These include Allergy, Cardiovascular Disease, Dermatology, Gastroenterology, Neurological Surgery, Orthopedic Surgery, Otolaryngology, and Urology. In essence, these would be refinements of the PSP "Interna1 Medicine," "Surgery" and "Other" categories.

Regardless of whether only AMA Periodic Survey of Physicians data are used or whether it is supplemented with HCFA data, there will remain a number of small specialties for which no data are available to support calculation of locality adjustments based upon average net earnings and hours worked for these "other" specialties. Accordingly, we will not propose such adjustments.

VI. Reasonable Compensation

By reasonable compensation is meant the range of incomes that would be expected if all pertinent causes of income variation were taken into account. This determination requires consideration of more factors than physician specialty, location and hours worked. Legitimate differences in income may also arise from differences in productivity or performance skill and other factors. For example, necessary night or weekend work may justly earn some premium.

We shall present three of the many possible alternatives for calculating an upper bound of the range of reasonable incomes per 2080 annual "normal" hours worked per specialty and locality class. Alternative one would hold this limit to the estimated average (mean). Alternative two would employ a common statistical measure (the standard deviation) to estimate the upper bounds. The third alternative would be an arbitrary percentage adjustment. Physician income data suggests that the distribution of income is skewed so that average(mean) earnings are higher than median incomes (Table 7).That is, the majority of doctors in each major specialty earn less than an average income for that specialty.

Table 7

U.S. Physicians' Median and Mean Net Income, 1979

	Median Income	Man Income	Percent Difference
Total	70,000	78,400	12%
GP/FP	58,000	62,000	7%
Internal Med	69,500	76,200	10%
Surgery	86,000	96,000	12%
Pediatrics	58,000	60,400	4%
Ob/Gyn	82,000	91,800	12%
Radiology	85,500	98,000	15%
Psychiatry	60,000	62,600	4%
Anesthesiology	84,000	91,400	9$
Other		74,800	

Source: AMA PSP

We have used the standard error of the mean net income reported in the Profile of Medical Practice to estimate a conventional statistical range of physician-incomes, i.e. the mean ± one standard deviation. This yields an upper bound for 1979 net income of approximately $125,400, unadjusted for specialty, locality or hours worked.

An alternative adjustment factor of 12 percent would produce a national base roughly double the 1979 difference between the median and average

of all physicians. This 12 percent may be compared with the 60 percent factor that would arise from using the 1979 PSP standard deviation for all physicians net income expressed as a percentage of the mean. Table *8* illustrates the range of ceilings that would result from three alternative adjustment factors and two alternative methods of estimating 1982 average FTE net income.

Table 8

Average Annual and FTE Physician Compensation Levels, 1982

	Method of Estimating 1982 Average	
	Assuming	Assuming
A. U.S. Averages, all MDs	CPI Forecast	6.8% Compounded
No adjustment	$ 98,500	$ 95,500
12% adjustment	110,300	107,000
60% adjustment	157,600	152,800
B. FTE Levels, U.S. Averages, all MDs		
No adjustment	87,700	85, 000
12% adjustment	98,200	95,200
60% adjustment	140,300	136,000
C. FTE Levels, Highest Specialty-Locality (Radiologists Small Metro)		
No adjustment	118,200	114,600
12% adjustment	132,400	128,400
60% adjustment	189,100	183,400
D. FTE Levels. Lowest Specialty-Locality (Pediatricians, Nonmetro)		
No adjustment	67,000	64,500
12% adjustment	75,000	72,800
60% adjustment	107,200	104,000

Source: Levels in Section B are 89 percent of entries in Section A. Section C and D apply specialty-locality adjustors from Table 6 to Section A income forecasts.

Rate of Return

The rate of return to medical education provides one measure of whether physician net incomes are reasonable. Economists in particular would suggest that this provides an objective measure of the economic incentives associated with the choice of a medical career, and hence a way of objectively defining what is meant by the term reasonable. Lifetime income streams by specialty are adjusted for hours worked and compared with lifetime training costs. The private rate of return is the discount rate which would equate discounted physicians' earnings to discounted private cost of training over a period of time running from the onset of training to retirement.

Examples of studies which have calculated private rates of return to medical education include Dresch (1981), Sloan (1976) and Lindsay (1973). The Lindsay study results are not widely accepted because it employed inflated estimates of physicians hours worked which bias the resulting rates of returns. But this work is of interest because of its review of studies performed before 1973. The other two studies support the thesis that, in Dresch's words:

> "By comparison to alternative occupations, physician training has been found to be an extremely profitable investment... In addition to compensating the physician for his or her differential work effort and covering normal interest on his/her investment (foregone earnings plus tuition, fees and other out-of-pocket schooling expenses), lifetime earnings are found to contain a substantial element of pure economic profit (for example, monopoly rent)"....

Although rate of return may provide the theoretically correct methodology, we do not propose to calculate rate of returns for hospital-based physicians for two reasons. First, it is not a wide1y understood methodology and there is still some debate about the appropriate method for adjusting for hours worked. Second, the data to estimate rates of return for HBPs are not available.

VII. Estimates for Future Periods

We considered three basic options for determining future year limits on FTE reasonable compensation:

(1) Forecasting from AMA-PSP trends
(2) Using the Consumer Price Index (CPI)
(3) Using the Medicare Economic Index (MEI)

We believe (2)--the CPI--will be easiest to use and will effectively serve the purpose. But there would be no administrative problem in employing any of these measures.

In our first illustration, we used forecast 1982 CPI data (as used in National Health Expenditure estimates for future years) to project AMA-PSP data to 1982. We recommend use of the latest calendar year CPI change to adjust the estimates to fiscal years of institutions. The calendar 1982 CPI change would be used for determining reasonable FTE compensation estimates for fiscal years beginning after July 1, 1983.

We prefer CPI over MEI because:

(1) The MEI weights are derived from several years of study of office-based physician practices,

(2) The CPI changes over the period 1970-80 were highly correlated with changes in physician net incomes in the same period,

(3) CPI is published regularly and accepted widely.

We chose not to consider use of a special MEI for hospital affiliated physician FTE compensation because:

(1) Such an index would measures practice cost changes for a mix of elements that is known to vary widely from case-to-case among hospital-affiliated physicians.

(2) The use of a special index--i.e. a reweighting of the standard MEI elements--for this purpose invites calculation of other MEI's (region, specialty, type of practice, etc.) which would only further complicate program administration.

(3) Appropriate reliable data for construction of such indices are not available from any known source and would be very costly to acquire.

(4) On average, the special index would probably have a similar long run value as the standard MEI.

We favor eventually conducting periodic studies of practice costs and incomes of hospital-affiliated physic1ans and analysis of the findings to develop precise estimates. However, each of these surveys and studies would be quite expensive. Even so, such future surveys are clearly desirable.

Summary

The method we propose is as follows:

a. Use 1970-1980 physician net incomes from the American Medical Association Periodic Survey of Physicians as published in Profile of Medical Practice 1981 as the basis for forecasting 1982 phys1c1an-net incomes.

b. Project 1970-1980 data to 1982 ($98,500) by using CPI forecasts and the 1970-80 relationship between PSP average net income and CPI. (An alternative that yields lower levels ($95,500) might use the compound growth rate found in the 197n-80 PSP averages).

c. Adjust the average for HBP FTE specialty locality adjustors by using factors (range .68 to 1.20) calculated from the 1979 PSP average income and total hours by specialty and locality. For pathologists use compensation relationships found in HCFA studies (the illustration uses 95.4% of the radiology adjuster).

d. Adjust the results again by a factor to account for other normal variation due to productivity and other legitimate causes of variation. Resulting 1982 levels are shown in Table 9 using factors of zero, twelve percent and sixty percent. Table 9 presents 1982 estimates of FTE reasonable limits using these three factors for nonmetropolitan, small metropolitan and large metropolitan areas, respective1y. Table 7 showed that use of the mean, rather than the median, will result in levels which cover a majority of physician in each specialty, overall roughly 60 percent. Hence, use of the "mean," even without further adjustment is "reasonable."

Table 10 presents estimates of FTE annual average net compensation limits for 1982 and 1983 for each specialty type in the three geographic areas. using the CPI forecast and a zero percent adjuster.

Table 9

Estimates of FTE Reasonable 1982 Annual Compensation Levels

Inflator:	-----6.8%-Compound			----CPI Forecast		
Adjuster:	0%	12%	60%	0%	12%	60%
NONMETROPOLITAN AREAS						
Seecialty						
Total	$ 79,300	$ 88,800	$ 126,800	$ 81,800	$ 91,600	$ 130,900
GP/FP	70, 700	79,200	113,100	72,900	81,600	116,600
Int Med	74,500	85,500	119,200	76,000	86,000	122,900
Surgery	90,700	101,700	145,200	93,600	104,800	149,800
Pediatrics	64,900	72, 800	103,900	67,000	75,000	107,200
Ob/Gyn	99,300	111,300	158,900	102,400	114,700	163,800
Radio1ogy	107,900	120,900	172,700	111,300	124,700	178,100
Psychiatry	68,800	77,000	110,000	70,900	79,400	113,400
Anes.	83,100	93,100	132,900	85,700	96,000	137,100
Pathology	102,900	115,200	164,600	106,400	119,200	170,200
METROPOLITAN AREAS LESS THAN 1 MILLION						
Seecialt						
Total	$ 85,000	$ 95,200	$ 136,000	$ 87,700	$ 98,200	$ 140,300
GP/FP	67, 800	76,000	108,500	69,900	78,300	111,800
Int Med	76,400	85,600	122,200	78,000	88,300	126,100
Surgery	101,200	113,400	162,000	104,400	116,900	167,000
Pediatrics	75,400	84,500	120,700	77,800	87,100	124,500
Ob/Gyn	96,500	108,100	154,300	99,500	111,400	159,200
Radiology	114,600	128,400	183,400	118,200	132,400	189,100
Psychiatry	70,700	79,200	113,100	72,900	81,600	116,600
Anes.	99,300	111,300	158,900	102,400	114,700	163,000
Pathology	109,300	122,400	174,900	112,300	125,800	179,700
METROPOLITAN AREAS GREATER THAN 1 MILLION						
Specialty						
Total	$ 87,900	$ 98,400	$ 140,600	$ 90,600	$ 101,500	$ 145,000
GP/FP	68,800	77,000	110'000	70,900	79,400	113,400
Int Med	82,100	92,000	131,400	84,700	94,900	135,500
Surgery	103,100	115,600	165,000	106,400	119,200	170,200
Pediatrics	69,700	78,100	111,500	71,900	80,500	115,000
Ob/Gyn	97,400	109,100	155,900	100,500	112,600	160,800
Radiology	111,700	125,200	178,000	115,200	129,000	184,300
Psychiatry	76,400	85,600	122,200	78,800	88,300	126,100
Anes.	99,300	111,300	158,900	102,400	114,600	163,800
Pathology	106,600	119,400	170,600	110,300	123,500	176,500

Source: Calculation from Table 6 (Specialty-Locality adjustors) and Table 8 (1982 U.S. Averages, all M.D.s).

Table 10

Estimates of FTE Annual Average Net Compensation Level for 1982 and 1983 /1

Specialty	1982 Non Met	1982 Met < 1,000,000	1982 Met > 1,000,000	1983 Non Met	1983 Met< 1,000,000	1983 Met > 1,000,000
Total	81,000	87,700	90,600	87,600	93,900	97,100
GP/FP	72,900	69,900	70,900	78,100	74,900	76,000
Int Med	76,800	78,800	84,700	82,300	84,400	90,700
Surgery	93,600	104,400	106,400	100,200	111,800	113,900
Pediatrics	67,000	77,800	71,900	71,700	83,300	77,000
Ob/Gyn	102,400	99,500	100,500	109,700	106,600	107,600
Radiology	111,300	118,200	115,200	119,200	126,600	123,400
Psychiatry	70,900	72,900	78,800	76,000	78,100	84,400
Anes.	85,700	102,400	102,400	91,800	109.700	109,700
Pathology	106,400	112,300	110,300	113,900	120,300	118,200

/1 Assumes CPI-Based inflator.

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Appendix A

HCFA/NORC Survey of Physicians Practice Costs and Incomes

Fact Sheet On The Survey OF PHYSICIANS' Costs AND Income

A. Composition of the Sample

1. National sample of approximately 5,000 physicians
2. Fifteen office-based specialties and three hospital-based specialties
3. Geographic stratification is possible by region and city size

B. Specialties Surveyed

1. Allergy
2. Cardiovascular Disease
3. Dermatology
4. Gastroenterology
5. General/Family Practice
6. General Surgery
7. Internal Medicine
8. Neurological Surgery
9. Obstetrics/Gynecology
10. Ophthalmology
11. Orthopedic Surgery
12. Otolaryngology
13. Pediatrics
14. Psychiatry/Child Psychiatry

15. Urology

16. Anesthesiology

17. Pathology

18. Radiology

C. Contents of Questionnaire

1. Practice characteristics (e.g., practice size, incorporation status)

2. Hours worked by patient location (e.g., office, hospital)

3. Number of visits by patient location

4. Practice expenses by item

5. Net income of the physician

6. Gross income of the practice

7. Fees for selected procedures by type of insurer

8. Patient characteristics (e.g., insurance, race)

D. Disposition of the Sample

1975 Survey - completed (a more limited sample than other years)

1976 Survey - completed

1977 Survey - "

1978 Survey - "