Health care alternatives: employment and occupations in 2005

BLS examines various industry and occupational employment alternatives for a particularly uncertain segment of the U.S. economy: health care

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The problems of climbing health care costs and a lack of health insurance for an estimated 37 million individuals in the United States have focused attention on health care issues. Health care expenditures have grown faster than the overall economy for the past three decades, rising from 7.4 percent of nominal gross domestic product (GDP) in 1970 to over 14 percent by 1992. If current trends prevail, health care expenditures could reach an unprecedented 19 percent of nominal GDP in the year 2000.[1]

In light of the uncertainty concerning the future of health care, BLS has conducted an analysis of two possible paths for the health care industry and for employment in the economy and in the health-related industries and occupations. The health care alternatives presented in this article examine a high and a low range of health care spending built around the Bureau's 1992–2005 moderate-growth projections described in the November 1993 issue of the *Monthly Labor Review*.[2] These alternatives do not attempt to quantify any specific proposals for health care reform. Rather, they present a range of employment impacts that might result should health care spending in 2005 fall between these two projected levels.[3]

Regardless of the actual health-related employment levels that are attained in 2005, the 10 health-related industries discussed here will likely provide a significant number of jobs in the economy. Direct employment in these industries accounted for 8.2 percent of total employment in 1990, and is projected to account for 10.1 percent of total employment in 2005 under the moderate-growth scenario. When direct and indirect employment is considered, health care spending accounted for 11.4 percent of total employment in 1990, and is projected to account for 14.5 percent in 2005 under the moderate-growth scenario. In short, health care is such a significant part of our economy that the impact of the 10 health care industries on overall employment will be substantial no matter how the health care system changes.[4]

Methodology

This study was conducted using two analytical procedures. The first case holds GDP constant in 2005 as the distribution of spending among all industries changes. That is, assumed changes in projected spending in health care industries are offset with spending changes in nonhealth industries. The second case shows GDP changing in 2005, reflecting changes in both total health care expenditures and the industry distribution of health care expenditures. Here, no changes in spending in other industries are made to offset the changes assumed for the health-related industries—they remain as projected in the 2005 moderate case.

This analysis has certain limitations. It does not take into account the job losses that might result from cost increases to businesses as a result of reform, because the model used by BLS does not specifically incorporate the detailed cost structure of industries. That is, this study would not account for a business that reduces employment as a result

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of higher costs arising from increases in the cost of health care for their employees. It also does not incorporate redirected spending that could take place if health care spending savings are realized. Because the detailed industry data used to calculate the health alternatives are not yet available for 1992, this analysis covers the period 1990–2005, rather than 1992–2005 as in the projections articles presented in the November 1993 issue of the *Review*.

"GDP constant" analysis. Under this approach, total GDP in 2005 in the low-expenditure and high-expenditure health alternatives is the same as in the moderate-growth scenario. Changes in demand caused by changes in spending in the health-related industries are offset by demand changes in industries outside of health care, such that the overall level of GDP in 2005 is unchanged. These changes are made in proportion to the size of each demand component in GDP. As a result, total employment in the low, moderate, and high cases is very similar, with variations arising only from productivity differences among industries.

"GDP not constant" analysis. Under this alternative approach, demand changes are assumed for the health-related industries for the low- and high-health alternatives, without offsetting changes in nonhealth-related industries. Because demand and GDP differ greatly among the low, moderate, and high cases, employment also varies substantially. While such an analysis is inconsistent with the fact that longrun employment changes are primarily generated by supply side forces, the case of changing GDP is valuable as a partial analysis of the relative impact of alternative health-related spending levels on employment and on the distribution of employment by industry and occupation.

Projecting employment. For both analyses, the low- and high-health alternatives are estimated using an alternative demand distribution. Each alternative distribution is translated into industry-level employment by using an employment requirements table derived from the projected industry total requirements table and the industry employment output ratios from the basic projections estimates. A set of industry employments is converted into the set of occupational demands within each industry by the use of an occupational staffing pattern matrix, also estimated for 2005 in the basic projections.[5]

This process produces estimates of employment directly and indirectly related to health care spending. Expenditures for the output of the 10 health-related industries[6] identified below require direct employment in those industries. For example, spending on pharmaceuticals translates directly to employment in the pharmaceuticals industry. In addition, however, the 10 health-related industries use inputs from other nonhealth industries, thereby generating indirect employment in the latter industries. For example, workers employed by gardening services who maintain the grounds at a hospital are an indirect employment effect of health care spending. Table 1 presents the direct and indirect employment related to health care spending in 1990.

Assumptions

For purposes of this study, health-related industries include the following:[7]

- New hospitals and institutions (construction)
- Medical instruments and supplies (manufacturing)
- X-ray and other electromedical apparatus (manufacturing)
- Drugs (manufacturing)
- Insurance carriers (services)
- Offices of health practitioners (services)
- Nursing and personal care facilities (services)
- Private hospitals (services)
- Health services, not elsewhere classified (services)
- State and local government hospitals (services)

The term "health services industries" comprises the last five industries listed above—four private

Table 1. **Direct and indirect employment attributable to health care spending, 1990**

Industry	Employment (thousands of jobs)		
	Total	Direct	Indirect
Total[1]	13,918.5	9,859.2	4,059.3
Agriculture, forestry, and fisheries	320.6	.0	320.6
Mining	35.8	.0	35.8
Construction	255.4	159.1	96.3
Manufacturing	1,134.6	312.8	821.7
Transportation	157.2	.0	157.2
Communications	65.8	.0	65.8
Public utilities	50.2	.0	50.2
Trade, wholesale and retail	656.0	.0	656.0
Finance, insurance, and real estate	754.3	295.0	459.3
Services	9,314.2	8,020.0	1,294.2
Government	1,174.3	1,072.3	102.0

[1] Includes wage and salary, self employed, and unpaid family workers.

health services industries plus one public health service industry (State and local government hospitals).

This study assumes projected 1990–2005 average annual growth rates of 2.0 percent and 4.6 percent, in real terms, for demand expenditures for the 10 health-related industries under the low- and high-health alternatives, respectively, compared with a 3.2-percent rate for the moderate-growth scenario. The moderate-growth scenario incorporates assumptions that yield a slowing rate of increase in expenditures and employment in health-related industries relative to the 3.6-percent yearly growth rate of the 1979–90 period. Total expenditures for the low- and high-health scenarios were distributed among the 10 health-related industries by adjusting the historical distributions upon which the moderate-growth scenario is based. The assumptions outlined below determine the alternative distributions. To derive the alternative spending levels by industry, the assumed projected industry distributions (shown in table 2) were applied to the aggregate spending levels for each alternative. Note that the terms "low," "moderate," and "high" refer to *aggregate* spending levels, not spending at the industry level.

Low-health. The low-health alternative could arise from a variety of circumstances, such as increased use of health maintenance organizations (HMO's) or greater efficiency in the health care system through improved coordination among health care providers. Equally, it could come about because of resistance by payer individuals, businesses, and governments to increases in health care costs. The growth rate assumed for this alternative accounts for an initial increase in spending between 1993 and 1995 consistent with expanding health coverage. The increase in expenditures is moderated over the next 2 years. From 1997 to 2000, expenditures are assumed to be constant. After the year 2000, expenditures for the 10 health-related industries are assumed to grow at approximately twice the annual growth rate of the population.

The following assumptions were made in changing the moderate-growth scenario's 2005 distribution of spending among the 10 health-related industries to reflect the low-health alternative. The share of expenditures for the health services, not elsewhere classified (n.e.c.) industry (which includes home health care and outpatient alcohol and drug treatment centers) will increase because of efforts to reach the currently uninsured population and because of an emphasis on less expensive health care alternatives. Similarly, relative expenditures for health insurance are expected to increase due to expanded insurance coverage. It is assumed also that relative expenditures for goods and services provided by nursing and personal care facilities, private hospitals, new hospital construction, x-ray and other electromedical apparatus, and State and local hospitals will decrease with a shift toward greater reliance on home health care, more outpatient treatment, greater use of clinics, improved preventative care, more efficient use of existing hospital capacity, less overlap of equipment purchases, and some rationing of procedures. Finally, relative expenditures for goods and services provided by offices of health practitioners, medical instruments and supplies, and pharmaceuticals were assumed not to change because of the offsetting effects of such factors as expanded insurance coverage and cost containment measures.

High-health. The high-health alternative could also arise from a variety of circumstances, including expansion of insurance coverage to the currently uninsured without concurrent health care cost reductions, continued development of new technologies that lead to more expensive medical procedures, and continued increases in consumer demand for costly medical services. The growth rate for this alternative was derived from assumptions of continued increases in general spending with limited savings from attempts at cost containment.

The following assumptions were made in changing the moderate growth scenario's 2005 distribution of spending among the 10 health-related industries to reflect the high-health alternative. Relative expenditures in offices of health practitioners, nursing and personal care facilities, and both private and State and local hospitals are not expected to change because the increase in expenditures on these services caused by expansion of insurance coverage and consumer demand for state-of-the-art medicine will be offset by emphasis on less expensive care. Relative spending on health insurance is not expected to change, even though insurance coverage may expand. The share of expenditures for health services, n.e.c., medical instruments and supplies, x-ray and other electromedical apparatus, and pharmaceuticals is expected to increase because of the assumption of expanded insurance coverage and growing demand without success in controlling costs in this scenario. Relative expenditures for new hospital construction are expected to decrease as a result of better utilization of the current oversupply of hospital beds.

Results

Table 2 shows that, relative to the moderate scenario, the low-health alternative is $123 billion

Table 2. **Health care spending, 1990 and projected to 2005**

[Millions of 1987 dollars]

Industry	1990	2005		
		Low-health	Moderate-growth	High-health
Total, health-related industries	$491,206	$659,894	$783,282	$964,352
Total, private health services	379,771	521,356	619,052	763,884
Offices of health practitioners	153,187	196,233	232,939	286,789
Nursing and personal health care facilities	32,750	42,936	54,074	66,575
Hospitals, private	160,426	209,606	263,981	325,008
Health services, n.e.c.	33,408	72,581	68,058	85,512
New hospital construction	14,426	12,207	16,767	16,780
Medical instruments and supplies	13,093	26,921	31,944	40,136
X-ray and other electromedical apparatus	5,599	8,525	10,737	13,491
Drugs	24,689	35,235	41,796	52,515
Health insurance[1]	24,986	29,610	30,191	37,170
State and local hospitals	28,642	26,040	32,795	40,376
	Percent distribution			
Total, health-related industries	100.0	100.0	100.0	100.0
Total, private health services	77.3	79.0	79.0	79.2
Offices of health practitioners	31.2	29.7	29.7	29.7
Nursing and personal health care facilities	6.7	6.5	6.9	6.9
Hospitals, private	32.7	31.8	33.7	33.7
Health services, n.e.c.	6.8	11.0	8.7	8.9
New hospital construction	2.9	1.9	2.1	1.8
Medical instruments and supplies	2.7	4.1	4.1	4.2
X-ray and other electromedical apparatus	1.1	1.3	1.4	1.4
Drugs	5.0	5.3	5.3	5.5
Health insurance[1]	5.1	4.5	3.9	3.9
State and local hospitals	5.8	4.0	4.2	4.2

[1]Part of the Insurance carriers industry.
n.e.c. = not elsewhere classified.

lower and the high-health alternative is $181 billion higher in 2005 (in 1987 dollars). Because of the relative size of the private health services industries, most of the changes in spending and employment from the moderate-growth scenario occur in these four industries. The table also shows how total health-related spending is distributed among the 10 health-related industries. There are three particularly noteworthy points shown by the data. The percent distribution of health services, n.e.c., is higher in the low-health scenario than in the moderate because of the low alternative's assumption that the demand for these services will increase under reform. This distribution results in a higher level of spending and employment by health services, n.e.c., in the low alternative than in the moderate.

Similarly, the health insurance industry shows a higher share in the low-health alternative than in the moderate, due to assumed expansion of insurance coverage to the uninsured. However, the difference in the distributions is not large enough to cause higher expenditures and employment in the low-health case for this industry. The same is true for new hospital construction in the high-health alternative. The percent distribution is lower than that in the moderate case because of expected improvements in the utilization of the current oversupply of hospital beds. However, the difference is not great enough to cause a lower level of spending and employment in the high-health alternative.

"GDP constant" scenarios. Industry employment in 1990 and for the moderate-growth and the two health alternatives in 2005 when GDP is constant is shown in table 3. The table shows the overall impact when employment in the health-related industries decreases or increases under the low- and high-health alternatives, as well as which industries are gainers or losers, relative to the moderate scenario, in terms of projected jobs.

Under the *low-health* alternative, total spending in the health-related industries is assumed to decline relative to the moderate scenario, which causes lower projected total employment in these industries. To keep GDP in 2005 constant, the decrease in health-related spending is assumed to be offset by spending increases in the nonhealth-re-

Table 3. **Employment, 1990 and alternative projections to 2005**

[Thousands of jobs]

Item	1990	2005			Differences from moderate	
		Low-health	Moderate-growth	High-health	Low	High
Industry						
Total employment	122,028	146,802	147,482	148,546	–680	1,063
Agriculture, forestry, fisheries	3,276	3,389	3,325	3,377	64	52
Agricultural services	975	1,387	1,351	1,445	36	95
Mining	734	579	575	569	4	–6
Construction	6,617	7,561	7,483	7,295	78	–187
New hospitals and institutions	159	129	177	177	–48	0
Manufacturing	19,525	18,104	17,999	17,836	105	–163
Medical instruments and supplies	209	253	296	366	–43	70
Pharmaceuticals	237	255	297	364	–42	67
Transportation services	3,816	4,722	4,667	4,584	56	–83
Communications	1,319	1,148	1,135	1,117	13	–18
Public utilities	965	1,094	1,084	1,068	10	–16
Trade	27,730	33,013	32,523	31,798	490	–726
Retail trade, except eating and drinking places	14,426	16,205	15,945	15,562	260	–383
Eating and drinking places	6,785	9,097	8,969	8,776	129	–192
Wholesale trade	6,519	7,711	7,610	7,459	101	–151
Finance, insurance, and real estate	7,361	8,831	8,781	8,820	50	39
Insurance carriers	1,462	1,652	1,660	1,737	–8	77
Insurance agents, brokers, and services	842	1,201	1,207	1,262	–6	55
Depository institutions	2,255	2,243	2,204	2,149	39	–55
Services	32,381	46,175	47,890	50,389	–1,714	2,500
Hospitals, private	3,555	4,008	5,047	6,214	–1,040	1,167
Offices of health practitioners	2,495	3,329	3,899	4,748	–570	849
Nursing and personal care facilities	1,421	1,836	2,312	2,847	–476	535
Health services, n.e.c.	763	1,688	1,604	2,010	83	406
Business services, n.e.c.	1,088	1,825	1,881	1,953	–56	73
Hotels and other lodging places	1,990	2,630	2,589	2,531	41	–59
Personnel supply services	1,575	2,606	2,644	2,682	–37	38
Government	18,304	22,185	22,021	21,692	164	–329
State and local government hospitals	1,072	993	1,250	1,539	–258	289
Local government education	6,042	8,184	8,012	7,760	182	–252
State and local general government, n.e.c.	5,461	6,645	6,506	6,301	140	–205
State government education	1,730	2,350	2,301	2,229	49	–72
Federal general government	2,065	1,941	1,901	1,841	41	–60
Occupation						
Total, all occupations	122,028	146,802	147,482	148,546	–680	1,063
Executive, administrative, and managerial	12,252	15,221	15,195	15,181	26	–14
All other managers and administrators	1,680	2,228	2,258	2,311	–31	53
General managers and top executives	2,920	3,266	3,251	3,237	15	–14
Professional specialty	16,284	22,403	22,801	23,331	–398	530
Registered nurses	1,730	2,216	2,601	3,101	–385	501
Physicians	528	666	751	874	–85	123
Teachers, elementary and secondary	2,640	3,565	3,491	3,383	74	–108
Technicians and related support	4,203	5,360	5,664	6,109	–305	445
Licensed practical nurses	613	804	920	1,091	–116	171
Clinical lab technologists and technicians	248	302	339	410	–37	72
Radiologic technologists and technicians	151	222	264	323	–42	59
Marketing and sales	13,257	15,847	15,664	15,419	183	–245
Salespersons, retail	3,755	4,516	4,446	4,344	70	–102
Cashiers	2,791	3,463	3,417	3,349	46	–68
Administrative support occupations, including clerical	22,454	25,269	25,406	25,647	–137	241
Receptionists and information clerks	875	1,160	1,210	1,289	–50	79
Medical secretaries	214	290	341	416	–51	76
General office clerks	2,691	3,306	3,343	3,393	–37	51
Teacher aides and educational assistants	851	1,293	1,267	1,227	27	–39

See footnote at end of table.

Table 3. **Continued—Employment, 1990 and alternative projections to 2005**

[Thousands of jobs]

Item	1990	2005			Differences from moderate	
		Low-health	Moderate-growth	High-health	Low	High
Service occupations	18,859	25,469	25,820	26,335	-350	516
Nursing aides, orderlies, and attendants	1,215	1,632	1,903	2,218	-170	316
Home health aides	303	839	827	933	12	106
Medical assistants	164	266	308	375	-43	67
Waiters and waitresses	1,736	2,427	2,394	2,344	33	-50
Janitors and cleaners, including maids/housekeeping	2,846	3,367	3,410	3,450	-42	41
Agricultural, forestry, fishing, and related occupations	3,531	3,696	3,650	3,655	46	5
Precision production,craft, and repair	14,273	15,503	15,380	15,179	122	-202
Operators, fabricators, and laborers	16,914	18,033	17,902	17,689	131	-213

n.e.c. = not elsewhere classified.

lated industries. This causes total employment in these industries to increase. The net effect of these offsetting spending changes is lower projected employment in 2005 relative to the moderate-growth scenario. This employment change arises from the redistribution of output among high- and low-productivity industries and the secondary effects among the supporting industries that supply the inputs necessary to produce the output of goods or services.

While the net employment change under the low-health alternative is relatively modest, the distribution of expenditures and employment among industries does change significantly. It is important to note that while total health-related industry employment is lower and nonhealth-related industry employment is higher than in the moderate scenario, employment at the individual industry level does not necessarily behave similarly. For example, the estimates show that because of the spending assumptions outlined in the previous section, employment is not lower in all of the health-related industries. The exception is health services, n.e.c. As explained earlier, this industry's services are expected to be in greater demand under these assumptions. Similarly, employment in the nonhealth-related industries is not always greater. Specifically, employment in personnel supply services and business services, n.e.c., is lower, because these industries provide services—either directly or indirectly—to health care facilities. When employment in health care facilities is lower, so is employment in these two industries.

In the *high-health* scenario, total spending in the health-related industries is assumed to increase relative to the moderate scenario, which causes greater projected total employment in these industries. To keep GDP constant, this increase in health related spending is offset with spending decreases in the nonhealth-related industries, which causes total employment in these industries to decrease. The net effect of these offsetting spending changes is higher projected employment in 2005, relative to the moderate scenario. As with the low-health alternative, this employment change arises from the redistribution of output among high and low productivity industries and the secondary effects among the supporting industries that supply the inputs necessary to produce goods and services. This fact suggests that, on average, the level of productivity in the health-related industries is lower than the average for all other sectors.

As in the low-health alternative, the distribution of expenditures and employment among industries changes significantly under the high-health alternative, both in total and among industries. While employment in all of the health-related industries increases because of the assumptions used, employment in the nonhealth-related industries is not necessarily less, despite the lower assumed spending levels for 2005. Specifically, employment in agricultural services, personnel supply services, and business services is higher relative to the moderate-growth scenario. As in the low-health alternative, this occurs because these industries provide direct and indirect services to health care facilities. Thus, when demand for employment in health care facilities increases, employment in these three industries also grows.

Occupational employment in 1990 and for the moderate-growth and two health alternatives in 2005 when GDP is constant also is shown in table 3. This information addresses the question of whether employment varies in nonhealth-related occupations when employment in the health-related industries changes under the low- and high-health alternatives. Under the low-health alternative, traditional health-related occupations tend to grow more slowly between 1990 and 2005, rela-

tive to the moderate-growth scenario, while nonhealth-related occupations tend to grow faster. The notable exceptions include home health aides, which increases relative to the moderate scenario due to the assumption that demand for these workers will increase as expenditure patterns emphasize home care, and general office clerks, receptionists, and information clerks, and all other managers and administrators, all of which decrease because of their presence in health care settings despite the fact that they are not traditional "health care workers." Under the high-health alternative, employment changes as expected, with the traditional health-related occupations growing more rapidly and the nonhealth-related occupations growing more slowly than under the moderate-growth scenario.

"GDP not constant" scenarios. Industry employment in 1990 and for the moderate-growth and the two health alternatives in 2005 when GDP changes is shown in table 4. Relative to the moderate-growth scenario, projected 2005 employment associated with proposed health care expenditures is about 3.3 million lower in the low-health alternative and almost 5 million higher in the high-health alternative. The services sector shows the greatest difference in projected employment under both scenarios because of its relative size and the spending changes made under the assumptions used in this analysis.

The occupations with the largest changes in employment from the moderate-growth scenario under the low- and high-health alternatives also are found in table 4. The services and professional specialty occupations show the greatest differences in projected employment. These occupational categories include health-related occupations such as home health aides, registered nurses, physicians, and nursing aides, orderlies, and attendants. Significant employment changes also occur in occupations that do not immediately appear to be health related. However, these employees, such as general office clerks, secretaries, and janitors, perform work in health care settings, such as HMO's and clinics, that is not specific to health care.

In the *low-health* scenario, employment in all occupations is projected to be lower in 2005 than in the moderate alternative, with the exception of that of home health aides, which increases due to the assumption that greater emphasis will be placed on home health care. Under the *high-health* scenario, employment in all occupations is higher in 2005, relative to the moderate-growth scenario, as greater expenditures on health services require more doctors, nurses, lab technicians, and aides.

The following tabulation shows the percent of total employment and of employment in selected industrial sectors generated by health care spending in 1990 and in the 2005 moderate case. As the data show, a significant portion of jobs in the services, manufacturing, and government sectors are generated by health care spending.

	Percent attributable to health care spending	
	1990	*2005*
Total employment*	11.4	14.5
Services	28.8	31.5
Manufacturing	5.8	8.3
Government	6.4	6.3

* Includes wage and salary, self employed, and unpaid family workers.

When tables 3 and 4 are compared, the industries and occupations most affected by the offsets used in the constant GDP analysis become apparent. Because table 4 shows employment generated by health-related spending only, industries and occupations in table 3 that do not appear on table 4 are those related to the spending offsets. Those industries and occupations in table 3 that show positive differences in the low case and negative differences in the high case are generally those that offset health care spending reductions and increases, respectively. The industry exceptions—agricultural, personnel supply, and business services—were described above, as was the occupational exception—home health aides.

The largest changes in employment that arise from offsetting health-related spending changes occur in industries within the wholesale and retail trade, services, and government sectors. This reflects the relative size of these industries and the concentration of spending in selected components of final demand, such as education in State and local governments. For occupations, the largest employment differences arising from changes in health-related employment occur among general managers and top executives, teachers, retail salespersons, cashiers, waiters and waitresses, and teacher aides. Again, relative size of the occupations and concentration of a specific final demand category dictate where most of the changes occur.

A comparison of tables 3 and 4 also shows how the results differ under the constant versus changing GDP analyses. For example, manufacturing requires 105,000 additional jobs when offsetting reduced health care spending keeps GDP constant. When manufacturing is affected only by reduced health care expenditures—that is, when GDP is decreasing—248,000 fewer jobs are projected. The same is true for many occupations as well. When offsetting expenditures changes are made, general office clerks are projected to show 37,000 fewer jobs in 2005 than in the moderate case. On the

Table 4. **Direct and indirect employment related to health care spending, 1990 and projected to 2005**

[Thousands of jobs]

Item	1990	2005			Differences from moderate	
		Low-health	Moderate-growth	High-health	Low	High
Industry						
Total employment	13,918	18,026	21,362	26,321	–3,335	4,959
Agriculture, forestry, fisheries	321	560	555	695	5	140
Mining	36	38	46	56	–8	10
Construction	255	262	337	374	–75	37
Manufacturing	1,135	1,246	1,494	1,849	–248	355
Medical instruments and supplies	193	237	280	350	–44	70
Pharmaceuticals	211	230	272	340	–43	68
Transportation services	157	201	240	295	–39	55
Communications	66	55	64	80	–9	16
Public utilities	50	58	70	86	–12	16
Trade	656	937	1,118	1,377	–181	259
Finance, insurance, and real estate	754	908	988	1,217	–80	229
Insurance carriers	329	359	374	460	–15	86
Insurance agents, brokers, and services	189	260	270	333	–11	62
Services	9,314	12,656	15,067	18,590	–2,411	3,522
Hospitals, private	3,555	4,008	5,047	6,214	–1,040	1,167
Offices of health practitioners	2,378	3,115	3,687	4,540	–572	853
Nursing and personal care facilities	1,421	1,836	2,312	2,847	–476	534
Health services, n.e.c.	754	1,676	1,593	1,998	83	406
Government	1,174	1,105	1,383	1,703	–278	320
State and local government hospitals	1,072	993	1,250	1,539	–258	289
Occupation						
Total, all occupations	13,918	18,026	21,362	26,321	–3,335	4,959
Executive, administrative, and managerial	1,096	1,464	1,717	2,114	–254	397
All other managers and administrators	302	394	463	570	–68	108
General managers and top executives	214	281	327	402	–46	76
Professional specialty	2,945	3,909	4,690	5,784	–782	1,093
Registered nurses	1,450	1,806	2,199	2,712	–393	513
Physicians	348	464	553	682	–89	128
Technicians and related support	1,521	1,965	2,339	2,886	–374	547
Licensed practical nurses	499	631	751	927	–120	176
Clinical lab technologists and technicians	218	267	304	377	–38	73
Radiologic technologists and technicians	144	212	254	313	–42	59
Marketing and sales	592	777	904	1,112	–127	209
Administrative support occupations, including clerical	2,717	3,250	3,828	4,718	–579	890
General office clerks	370	486	580	714	–94	134
Receptionists and information clerks	281	375	440	542	–65	102
Secretaries, except legal and medical	287	292	345	425	–53	80
Medical secretaries	207	276	327	403	–51	76
Service occupations	3,007	4,188	4,983	6,150	–794	1,167
Nursing aides, orderlies, and attendants	913	1,146	1,426	1,757	–281	331
Janitors and cleaners, including maids/housekeeping	408	456	558	688	–103	129
Home health aides	159	473	469	586	4	118
Medical assistants	152	245	288	354	–43	67
Agricultural, forestry, fishing, and related occupations	302	415	437	543	–22	106
Precision production, craft, and repair	818	942	1,124	1,368	–182	245
Operators, fabricators, and laborers	921	1,117	1,340	1,646	–223	306

n.e.c. = not elsewhere classified.

other hand, when the numbers of general office clerks are affected only by reduced health care spending, 94,000 fewer jobs are projected.

THIS STUDY SHOWS that when GDP is assumed constant, increases in health care spending—which generate increases in health-related employment—come at the expense of spending and employment outside health-related industries. Similarly, decreases in health care spending—the goal of health care reform—translate to decreases in health related employment with concurrent increases in spending and employment outside of health care. When GDP is assumed to change, the analysis reveals the aggregate impact of the three health-related spending levels, as well as the secondary effects of health care spending in industries outside of health care. □

Footnotes

[1] Verdon Stain, "Managed Competition and Its Potential to Reduce Health Spending" (U.S. Congressional Budget Office, May 1993).

[2] For a fully detailed discussion of the Bureau's moderate-growth projections, see Norman C. Saunders, "The U.S. economy: framework for BLS projections," *Monthly Labor Review*, November 1993, pp. 11–30.

[3] Sources that provided supporting research for this paper include: Jeffrey Lemieux and Christopher Williams, "Projections of National Health Expenditures" (U.S. Congressional Budget Office, October 1992); Stain, "Managed Competition"; Dr. Anthony R. Kovner, *Health Care Delivery in the United States* (Springer Publishing Company, Inc., 1990); Pauly, Danzon, Feldstein, and Hoff, "A Plan For Responsible National Health Insurance," *Health Affairs*, Spring 1991; Zedlewski, Acs, and Winterbottom, "Play-or-Pay Employer Mandates: Potential Effects," *Health Affairs*, Spring 1992; Cassel, Rudberg, and Olshansky, "The Price of Success: Health Care in an Aging Society," *Health Affairs*, Summer 1992; Victor Cohn, "New Deal on Health Care," *The Washington Post*, Nov. 3, 1992; Dana Priest, "Mixed Signals on Health Care," *The Washington Post*, Nov. 23, 1992; Dana Priest, "Clinton's Health Care Options," *The Washington Post*, Dec. 16, 1992; Dana Priest, "The Road to Health Care Reform," *The Washington Post*, Jan. 26, 1993; Dana Priest, "Clinton Plan Envisions Health Security Card," *The Washington Post*, Apr. 10, 1993; Dana Priest "Health Plan's Likely Features," *The Washington Post*, Apr. 16, 1993; *Fortune Magazine*, May 3 and 31, 1993; *Business Week*, April 26 and May 3, 1993; Melinda Beck, "The Next Bite: Paying for Health Care," *Newsweek*, Mar. 1, 1993; Jolie Solomon, "Drugs: Is the Price Right?" *Newsweek*, Mar. 8, 1993; Eleanor Clift, "Health Care: Covert Operation," *Newsweek*, Mar. 15, 1993; Eleanor Clift, "Hillary's Hard Sell," *Newsweek*, Mar. 29, 1993; and Mike McNamee and Susan Garland, "From Brainstorms to Headaches," *Business Week*, May 3, 1993.

[4] For more background information on health care, see David R. H. Hiles, "Health services: the real jobs machine," *Monthy Labor Review*, November 1992.

[5] The data underlying the employment requirements table represent annual averages and should be used for marginal analyses—that is, the effect of an additional increase or decrease in the expenditure category—with caution.

[6] The industries used in the Bureau's projection program are related to the U.S. Office of Management and Budget's Standard Industrial Classification (SIC) for 1987. The actual SIC content of all of the industries discussed in this article is presented in *The American Work Force: 1992–2005*, Bulletin 2452 (Bureau of Labor Statistics, forthcoming).

[7] About 17 percent of health-related employment is found in Federal, State, and local government health departments, retail pharmacies, educational services, and other industries. This includes those working in Federal government hospitals such as Veterans Administration hospitals and U.S. Department of Defense institutions. However, because the health component of these industries cannot be separated from the rest of the industry in the BLS model, no separate projection is available for them and they are not included in this study.