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It's The Prices, Stupid: Why The United States Is So Different From Other Countries

Higher health spending but lower use of health services adds up to much higher prices in the United States than in any other OECD country.

by **Gerard F. Anderson, Uwe E. Reinhardt, Peter S. Hussey, and Varduhi Petrosyan**

PROLOGUE: In Fall 1986 *Health Affairs* published the first of nearly two decades' worth of reports summarizing the state of health care spending in industrialized countries that are members of the Organization for Economic Cooperation and Development (OECD). In that first report, featuring 1984 data, the United States led the way in per capita health care spending at \$1,637, nearly double the OECD mean of \$871 (in purchasing power parities based on the U.S. dollar). In the latest offering, featuring data from 2000, the situation is much the same, although the absolute numbers are much higher (U.S. per capita spending of \$4,631, compared with an OECD median of \$1,983).

Over the years the OECD has refined its methodology to improve the comparability of data from vastly different health care systems. The analysis published in *Health Affairs* has greatly expanded from those early reports to examine underlying trends in spending differentials and to examine what the different countries get for their health care dollar in terms of population health indicators. In the current report, the authors look in depth at factors contributing to higher health care prices in the United States, which they contend are responsible for much of the difference between the U.S. spending levels and those of the other countries.

Lead author Gerard Anderson has been on the faculty of the Johns Hopkins University since 1983. He is a professor in the Department of Health Policy and Management, Johns Hopkins Bloomberg School of Public Health, and serves as that department's associate chair. He holds a doctorate in public policy analysis from the University of Pennsylvania. Uwe Reinhardt is the James Madison Professor of Political Economy at the Woodrow Wilson School, Princeton University. He holds a doctorate in economics from Yale. Peter Hussey is a doctoral candidate in the Department of Health Policy and Management. He serves as a consultant to the OECD Social Policy Division/Health Policy Unit. Research assistant Varduhi Petrosyan is also a doctoral candidate at Hopkins. She will become an assistant professor at American University of Armenia in May 2003.

ABSTRACT: This paper uses the latest data from the Organization for Economic Cooperation and Development (OECD) to compare the health systems of the thirty member countries in 2000. Total health spending—the distribution of public and private health spending in the OECD countries—is presented and discussed. U.S. public spending as a percentage of GDP (5.8 percent) is virtually identical to public spending in the United Kingdom, Italy, and Japan (5.9 percent each) and not much smaller than in Canada (6.5 percent). The paper also compares pharmaceutical spending, health system capacity, and use of medical services. The data show that the United States spends more on health care than any other country. However, on most measures of health services use, the United States is below the OECD median. These facts suggest that the difference in spending is caused mostly by higher prices for health care goods and services in the United States.

EVERY YEAR the Organization for Economic Cooperation and Development (OECD) publishes data that allow for comparisons of health systems across thirty industrialized countries. Over the years *Health Affairs* has published papers on a wide range of topics using these data.¹ This paper, the latest installment in an annual series, uses the most recent OECD data to present a series of snapshots of the health systems in the thirty OECD countries in 2000. Together these snapshots show that the United States spends more on health care than any of the other OECD countries spend, without providing more services than the other countries do. This suggests that the difference in spending is mostly attributable to higher prices of goods and services. This same story is told in earlier, more in-depth studies by other researchers, including Mark Pauly, Victor Fuchs and James Hahn, and Pete Welch and colleagues.² Our paper updates these earlier studies with more recent data and more countries.³ The story is particularly relevant given the recent increases in U.S. health care prices.

The Overall Spending Picture

Exhibit 1 presents selected data on total national health spending per capita in 2000, its average annual growth rate during 1990–2000, private health spending as a percentage of total health spending in 2000, and the change in the percentage of private health spending during 1990–2000. It also includes data on gross domestic product (GDP) per capita, a rough indicator of a country's ability to pay for health care, and on the fraction of the population over age sixty-five, an important factor influencing the demand for health care services. All of the data on per capita spending and GDP have been translated into U.S. dollar equivalents, with exchange rates based on purchasing power parities (PPPs) of the national currencies. The annual growth rates, on the other hand, are calculated from data expressed in the 1995 constant-value units of each country's own currency, adjusted for general inflation using each nation's GDP price deflators.

■ **Total health spending per capita.** U.S. per capita health spending was \$4,631 in 2000, an increase of 6.3 percent over 1999 (Exhibit 1).⁴ The U.S. level was 44 percent higher than Switzerland's, the country with the next-highest expenditure per

EXHIBIT 1
Health Spending in OECD Countries, 1990–2000

	Total health spending, 2000			Average annual growth rate, 1990–2000		Private health spending, 2000		
	GDP per capita, 2000 (US\$ PPP)	Per capita (US\$ PPP)	As percent of GDP	GDP per capita	Health spending per capita	As percent of total health spending	Change in percentage points, 1990–2000	Percent of population over age 65, 2000
Australia	\$26,497	\$2,211	8.3%	2.4%	3.1%	27.6%	-5.3	12.3%
Austria	26,864	2,162	8.0	1.8	3.1	30.3	3.8	15.5
Belgium	26,049	2,269	8.7	1.8	3.5	28.8	- ^a	17.0
Canada	27,963	2,535	9.1	1.7	1.8	28.0	2.6	12.6
Czech Republic	14,236	1,031	7.2	0.1	3.9	8.6	4.8	13.8
Denmark	29,050	2,420	8.3	1.9	1.7	17.9	0.6	15.0
Finland	25,078	1,664	6.6	1.8	0.1	24.9	5.8	14.9
France	24,847	2,349	9.5	1.4	2.3	24.0	0.6	16.0
Germany	25,936	2,748	10.6	1.2 ^b	2.1 ^b	24.9	2.2 ^b	16.4
Greece	16,950	1,399	8.3	1.9	2.8	44.5	7.2	17.6
Hungary	12,423	841	6.8	2.7 ^c	2.0 ^c	24.3	13.4 ^c	14.6
Iceland	29,323	2,608	8.9	1.6	2.9	15.6	2.2	11.7
Ireland	29,066	1,953	6.7	6.4	6.6	24.2	-4.7	11.3
Italy	25,206	2,032	8.1	1.4	1.4	26.3	5.6	18.1
Japan	25,937	2,012	7.8	1.1	3.9	23.3	0.9	17.2
Korea	15,045	893	5.9	5.1	7.4	55.6	-7.8	7.1
Luxembourg	46,960	2,701 ^d	6.0 ^d	4.5	4.1 ^e	7.1 ^d	0.2 ^e	14.4
Mexico	9,136	490	5.4	1.6	3.7	53.6	-5.6	4.7
Netherlands	27,675	2,246	8.1	2.3	2.4	32.5	-0.4	13.7
New Zealand	20,262	1,623	8.0	1.5	2.9	22.0	4.4	11.7
Norway	30,195	2,362	7.8	2.8	2.8	14.8	-2.4	15.4
Poland	9,580	576 ^d	6.2 ^d	3.5	5.3 ^e	28.9 ^d	20.6 ^e	12.1
Portugal	17,638	1,441	8.2	2.4	5.3	28.7	-5.8	15.6
Slovakia	11,650	690	5.9	4.0 ^f	- ^a	10.4	10.4	11.4
Spain	20,297	1,556	7.7	2.4	3.9	30.1	8.8	17.0
Sweden	24,845	1,847 ^f	7.9 ^f	1.4	-0.04 ^g	16.2 ^f	6.1 ^g	17.4
Switzerland	30,098	3,222	10.7	0.2	2.5	44.4	13.8	16.0
Turkey	6,439	320 ^f	4.8 ^f	1.8	6.1 ^g	28.1 ^f	-10.9 ^g	5.8
United Kingdom	24,323	1,763	7.3	1.9	3.8	19.0	2.6	15.8
United States	35,657	4,631	13.0	2.3	3.2	55.7	-4.7	12.3
OECD median	25,142	1,983	8.0	1.9	3.1	25.6	2.2	14.8

SOURCE: Organization for Economic Cooperation and Development, *OECD Health Data 2002* (Paris: OECD, 2002).

NOTES: For median calculation, see Note 5 in text. PPP is purchasing power parity (U.S. dollars).

^a Data not available.

^b 1992–2000.

^c 1991–2000.

^d 1999.

^e 1990–1999.

^f 1998.

^g 1990–1998.

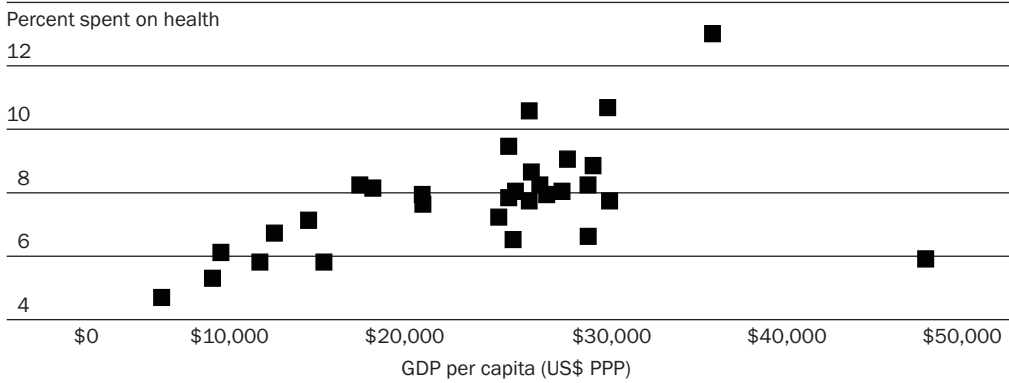
capita; 83 percent higher than neighboring Canada; and 134 percent higher than the OECD median of \$1,983.⁵ Although the United States can claim some success during the mid-1990s in its attempt to control health spending with managed care, over the entire 1990–2000 period the spending gap between the United States and the OECD median actually widened slightly.

Analysis suggests some convergence of health spending levels among the thirty OECD countries during the 1990s. Countries with higher spending levels in 1990 tended to have lower growth rates of real health spending per capita between 1990 and 2000 than did countries with lower initial levels of health spending.⁶ The United States was an exception to this pattern. It reported the highest health spending level in 1990, but its growth rate in per capita health spending was slightly above the OECD median.

■ **Health systems' share of GDP.** Measured in terms of share of GDP, the United States spent 13.0 percent on health care in 2000, Switzerland 10.7 percent, and Canada 9.1 percent. The OECD median was 8.0 percent. Ability to pay—measured here by per capita GDP—has repeatedly been shown to be a powerful predictor of the percentage of GDP allocated to health care.⁷ This is evident in Exhibit 2. In 2000 about 27 percent of the observed cross-national variation in the percentage can be explained by GDP per capita with a simple bivariate regression of the former on the latter variable. If Luxembourg is eliminated from the regression equation as an outlier, the explained variation increases to 56 percent.⁸ In spite of this high level of association, Exhibit 2 shows considerable cross-national variation in the health sector's share on GDP at given levels of per capita GDP, especially in the range between \$25,000 and \$30,000.

■ **Public versus private health spending.** Private spending in the OECD data falls into the broad categories of (1) out-of-pocket spending for deductibles, coinsurance, and services not covered by health insurance; and (2) premiums paid by families and individuals for private health insurance. As shown in Exhibit 1, the share of total health spending that is privately financed varies considerably across

EXHIBIT 2
Percentage Of Gross Domestic Product (GDP) Spent On Health Care, In Relation To GDP Per Capita, In Thirty OECD Countries, 2000



SOURCE: Organization for Economic Cooperation and Development, *OECD Health Data 2002* (Paris: OECD, 2002).
NOTES: PPP is purchasing power parity (U.S. dollars). GDP is gross domestic product. Data for Luxembourg and Poland are for 1999; data for Sweden and Turkey are for 1998. Individual countries are not shown because of space constraints. Graph points were plotted from columns 1 and 3 of Exhibit 1; individual countries' values can be identified by looking at that exhibit.

the OECD countries. The median country finances 26 percent of its health care from private sources. The range is as high as 56 percent in the United States and Korea to as low as 7 percent in Luxembourg and 9 percent in the Czech Republic. As a percentage of GDP, the OECD countries spent 0.4–7.2 percent of GDP on privately financed health care in 2000, with an OECD median of 2.0 percent. The United States was the highest at 7.2 percent. U.S. private spending per capita on health care was \$2,580, more than five times the OECD median of \$451.

In most OECD countries the privately financed share of total health spending increased during the 1990s (Exhibit 1). The private share tended to increase more rapidly in countries with lower shares of private health spending in 1990. The explanation for the increase varied from country to country. For example, the level of cost sharing increased in Sweden, while private insurance coverage increased in Switzerland.⁹ Countries with the largest share of private financing in 1990—the United States, Mexico, and Korea—had a decreasing private share of financing during the 1990s (Exhibit 1).

Although the percentage of the health care dollar financed from public sources in the United States is low compared with other OECD countries, the absolute amount is relatively similar to other OECD countries. Public sources in the United States accounted for spending of 5.8 percent of GDP in 2000, very close to the OECD median of 5.9 percent. In fact, on this measure of public spending, the United States is virtually identical to the United Kingdom, Italy, and Japan (5.9 percent each) and not much smaller than neighboring Canada (6.5 percent). Finally, U.S. public sources spent \$2,051 per person in 2000; this places the United States among the top four countries listed in Exhibit 1, just behind Luxembourg (\$2,510), Iceland (2,202), and Germany (\$2,063). On that measure, the United States ranks far above the OECD median of \$1,502, Japan's \$1,542, and the United Kingdom's \$1,429.

Furthermore, as Steffie Woolhandler and David Himmelstein pointed out recently in *Health Affairs*, the OECD data (and the U.S. national health accounts on which the OECD database draws) actually understate the role of the public sector in health care. These researchers measured the public sector's share of total health spending not by who ultimately paid the providers of health care, but by the fraction of health spending that originated in households in the form of taxes. On that measure, close to 60 percent of total U.S. health spending in 1999—7.7 percent of GDP—was financed through taxes.¹⁰

■ **Spending on pharmaceuticals.** Spending per capita on pharmaceuticals—a subject of interest to policymakers throughout the OECD countries—varied from \$93 in Mexico to \$556 in the United States in 2000 (Exhibit 3). In spite of having the highest per capita spending, the United States is closer to other countries on pharmaceutical spending than spending for other health services and goods.

Average annual growth in real per capita spending on pharmaceuticals during 1990–2000 increased at an annual compound rate of 4.5 percent in the median

EXHIBIT 3
Spending On Pharmaceuticals In Selected OECD Countries, 1990–2000

	As percent of GDP, 2000	Spending per capita, 2000 (US\$ PPP)	Average annual growth in per capita spending, 1990–2000
Australia	1.0% ^a	\$252 ^a	6.9% ^b
Belgium	1.4 ^c	352 ^c	4.1 ^d
Canada	1.4	385	4.8
Czech Republic	1.0	260	5.8
Denmark	0.8	223	3.9
Finland	1.0	259	5.2
France	1.9	473	4.2
Germany	1.4	375	1.2 ^e
Greece	1.5	258	5.2
Hungary	1.8 ^c	193 ^c	-0.1 ^f
Iceland	1.3 ^g	382 ^g	2.3 ^h
Ireland	0.6	187	4.9
Italy	1.8	459	2.1
Japan	1.2 ^g	313 ^g	0.6 ^h
Korea	0.8 ^g	110 ^g	-0.4 ^h
Luxembourg	0.7 ^g	317 ^g	1.3 ^h
Mexico	1.1 ^g	93 ^g	- ⁱ
Netherlands	1.0	264	4.5
New Zealand	1.1 ^c	210 ^c	2.9 ^d
Norway	0.7 ^c	217 ^c	7.4 ^d
Portugal	2.0 ^a	334 ^a	5.7 ^b
Spain	1.4 ^c	264 ^c	4.8 ^d
Sweden	1.0 ^c	244 ^c	6.8 ^d
Switzerland	1.1	346	3.0
United Kingdom	1.1 ^c	253 ^c	6.0 ^d
United States	1.6	556	6.0
OECD median	1.2	262	4.5

SOURCE: Organization for Economic Cooperation and Development, *OECD Health Data 2002* (Paris: OECD, 2002).

NOTES: For median calculation, see Note 5 in text. PPP is purchasing power parity (U.S. dollars). GDP is gross domestic product. Data for Austria, Poland, Slovakia, and Turkey were not available.

^a 1998.

^b 1990–1998.

^c 1997.

^d 1990–1997.

^e 1992–2000.

^f 1991–1997.

^g 1999.

^h 1990–1999.

ⁱ Data not available.

OECD country (Exhibit 3). Only Australia, Norway, and Sweden registered higher rates than the United States during the 1990s.

Capacity And Utilization

Exhibits 4 and 5 present selected data on the supply side of the health systems in the OECD. There is considerable variation in the composition of the supply side and in reported utilization rates. A limitation of these data, of course, is that they mask important differences in the specialty composition of the physician supply

EXHIBIT 4
Health Care Workforce In OECD Countries, 1990 And 2000

	Nurses per 1,000 population, 2000	Nurses per acute care bed, 2000	Physicians per 1,000 population		Physician visits per capita, 2000
			1990	2000	
Australia	8.1 ^a	1.4 ^b	2.3 ^c	2.5 ^d	6.4
Austria	9.2	0.8	2.2	3.1	6.7
Belgium	— ^e	— ^e	3.3	3.9	7.9
Canada	7.6	— ^e	2.1	2.1	6.4 ^b
Czech Republic	8.4	0.5	2.8	3.1	12.6
Denmark	7.3 ^b	1.2 ^a	3.1	3.4	6.1
Finland	14.7	— ^e	2.4	3.1	4.3
France	6.5	0.5 ^b	3.1	3.3	— ^e
Germany	9.3	0.6	3.1 ^f	3.6	— ^e
Greece	3.9 ^b	0.9 ^b	3.4	4.4 ^b	2.5 ^d
Hungary	4.9	0.3 ^b	2.9	3.2 ^b	21.9
Iceland	14.2 ^b	— ^e	2.8	3.4 ^b	5.2 ^a
Ireland	9.2	1.3	1.6	2.3 ^b	— ^e
Italy	4.5 ^b	0.8 ^d	4.7	6.0	6.1
Japan	7.8 ^d	— ^e	1.7	1.9	— ^e
Korea	1.4	— ^e	0.8	1.3	8.8 ^b
Luxembourg	7.1	0.6 ^d	2.0	3.1	2.8 ^d
Mexico	1.1	— ^e	1.1	1.8	2.5
Netherlands	13.0	— ^e	2.5	3.2	5.9
New Zealand	9.7	— ^e	1.9	2.2	— ^e
Norway	10.3	1.5	2.6 ^c	2.9	— ^e
Poland	4.9	— ^e	2.1	2.2	5.4
Portugal	3.7	1.0 ^d	2.8	3.2	3.4 ^d
Slovakia	7.3	0.6	— ^e	— ^e	— ^e
Spain	3.7	0.8 ^a	2.3	3.3	7.8 ^d
Sweden	8.4 ^b	— ^e	2.9	2.9 ^b	2.8
Switzerland	— ^e	— ^e	3.0	3.5	— ^e
Turkey	1.1	0.3 ^b	0.9	1.3	2.5
United Kingdom ^g	8.1	1.2 ^b	1.4	1.8	5.4 ^d
United States	8.3 ^b	1.3	2.4	2.8 ^b	5.8 ^h
OECD median	7.6	0.8	2.4	3.1	5.9

SOURCE: Organization for Economic Cooperation and Development, *OECD Health Data 2002* (Paris: OECD, 2002).

NOTE: For median calculation, see Note 5 in text.

^a 1997.

^b 1999.

^c 1991.

^d 1998.

^e Data not available.

^f 1992 (from 1992 onward, data refer to Germany after reunification).

^g Some of the data were provided by the United Kingdom Department of Health.

^h 1996.

“Countries with higher GDP per capita are not more likely to have more physicians per capita than are countries with low GDP.”

.....

and in the content of crude utilization rates, such as “physician visits,” “hospital admissions,” and “acute care hospital days.”

■ **Supply of physicians.** The general picture that emerges from Exhibit 4 is that the number of physicians per 1,000 population (physician density) increased in most of the OECD countries during the 1990s. As the exhibit also shows, however, there are some exceptions to these general trends. In both Canada and Sweden physician growth was limited to population growth during the 1990s. In the United States medical school enrollment has been essentially constant since 1980. The observed increase in the number of physicians has mostly come from physicians who immigrated to the United States following medical education in other countries.¹¹

Richard Cooper and colleagues have argued that a common driver of physician density in all industrialized countries has been economic growth, represented by GDP per capita. The authors observe that within OECD countries, GDP and the number of physicians per capita are highly correlated.¹² However, countries with higher GDP per capita are not more likely to have more physicians per capita than are countries with low GDP per capita.¹³ This suggests the importance of factors unrelated to GDP in determining physician supply differences. Several commentators have observed that a causal link between GDP and physician supply may be overly simplistic.¹⁴

■ **Supply of nurses.** While many OECD countries perceive a nurse shortage, the actual number of nurses varies considerably across the OECD countries (Exhibit 4).¹⁵ The number of nurses per 1,000 population (nurse density) ranged from 1.1 in Turkey and Mexico to 14.7 in Finland, and the number of nurses per acute care hospital bed ranged from 0.3 in Turkey to 1.5 in Norway. The United States ranks higher than the OECD median on both measures, although several of the European countries report a higher nurse density than does the United States.

Some researchers have contended that as a population ages, the demand for nurses will grow rapidly.¹⁶ The OECD data show that there is no significant correlation between the percentage of population age sixty-five and older and the number of practicing nurses per 1,000 population.¹⁷ However, there is a significant positive correlation between the growth rate of the percentage of population age sixty-five and older and the growth rate of the number of practicing nurses per capita between 1990 and 2000.¹⁸

■ **Hospitals.** Most of the OECD nations greatly reduced the number of acute care hospital beds, the average length of acute care hospital stay, and the number of acute care hospital days per capita during the 1990s (Exhibit 5). Turkey and Korea, however, increased their systems' bed capacity, and the United Kingdom increased its average length of hospital stay slightly.

EXHIBIT 5
Health Services Capacity And Use In Selected OECD Countries, 1990 And 2000

	Acute care beds per 1,000 population		Admissions per 1,000 population		Average length of hospital stay (days)		Acute care hospital days per capita	
	1990	2000	1990	2000	1990	2000	1990	2000
Australia	4.4 ^a	3.8 ^b	168 ^a	155	6.5 ^a	6.2 ^b	1.2	1.0
Austria	7.1	6.2	215	283	9.3	6.3	2.0	1.8
Belgium	4.9	4.6 ^c	169	180 ^d	8.7	8.8 ^c	1.5	1.3 ^c
Canada	4.0	3.3 ^b	120	99 ^b	8.6	7.1 ^b	1.4	1.0 ^b
Czech Republic	8.5	6.6	180	196	12.0	8.7	2.2	1.7
Denmark	4.1	3.3 ^b	190	194 ^b	6.4	5.2 ^b	1.2	1.0 ^b
Finland	4.3	2.4	163	203	7.0	4.4	1.1	0.9
France	5.2	4.2	209	204 ^b	7.0	5.5 ^b	1.5	1.1 ^b
Germany	7.3 ^e	6.4	183 ^e	205	12.9 ^e	9.6	2.3 ^e	1.9
Greece	4.0	4.0 ^b	123	133 ^c	7.5	6.3 ^f	0.9 ^g	1.0 ^f
Hungary	7.1	6.4	191	225	9.9	7.9	1.9	1.8
Iceland	4.3	- ^h	176	- ^h	7.0	- ^h	1.2	- ^h
Ireland	3.2	2.9	147	144	6.7	6.4	1.0	0.9
Italy	6.2	4.5 ^b	150	176 ^f	9.5 ^a	7.2 ^f	1.6	1.3 ^f
Korea	2.7	5.2	- ^h	- ^h	12.0	11.0	- ^h	- ^h
Luxembourg	6.9	5.7	184	213 ^f	11.0	- ^h	2.0	- ^h
Netherlands	4.3	3.5	103	93	11.2	9.0	1.2	0.8
New Zealand	8.0	- ^h	- ^h	- ^h	- ^h	4.9 ^f	- ^h	0.3 ^f
Norway	3.8	3.1	148	154	7.8	6.0	1.1	0.9
Portugal	3.6	3.3 ^f	106	119 ^f	8.4	7.3 ^f	0.9	0.9 ^f
Slovakia	- ^h	5.9	- ^h	177	- ^h	8.6	- ^h	1.5
Spain	3.3	3.0 ^c	96	113 ^c	9.6	7.6 ^c	0.9	0.9 ^c
Sweden	4.1	2.4	166	159 ^d	6.5	5.0	1.1	- ^h
Switzerland	6.5	4.1	139	136	13.4	9.3	1.9	1.3
Turkey	2.0	2.2	54	73	6.0	5.4	0.3	0.4
United Kingdom ⁱ	- ^h	3.3	- ^h	151	5.7	6.2	0.9	0.9
United States	3.7	3.0	125	118	7.3	5.9 ^b	0.9	0.7
OECD median	4.3	3.8	163	154	8.4	6.4	1.2	1.0

SOURCE: Organization for Economic Cooperation and Development, *OECD Health Data 2002* (Paris: OECD, 2002).

NOTES: For median calculation, see Note 5 in text. Data for Japan, Mexico, and Poland were not available.

^a 1991.

^b 1999.

^c 1997.

^d 1996.

^e 1992 (from 1992 onward, data refer to Germany after reunification).

^f 1998.

^g 1993.

^h Data not available.

ⁱ Some of the data were provided by the United Kingdom Department of Health.

The German and Swiss health systems appear particularly well endowed with physicians and acute care hospital beds compared with the United States. The two countries rank much higher than the United States does on hospital admissions per capita, average length-of-stay, and acute care beds per capita. The average cost per hospital admission and per patient day in these countries must be considerably lower than the comparable U.S. number, however, because both countries spend considerably less per capita and as a percentage of GDP on hospi-

tal care than the United States does. The average U.S. expenditure per hospital day was \$1,850 in 1999—three times the OECD median.¹⁹

Explanations for differences. There are several plausible explanations for this difference. First, the inputs used for providing hospital care in the United States—health care workers' salaries, medical equipment, and pharmaceutical and other supplies—are more expensive than in other countries. Available OECD data show that health care workers' salaries are higher in the United States than in other countries.²⁰ Second, the average U.S. hospital stay could be more service-intensive than it is elsewhere. While this may be true, it should be noted that the average length-of-stay and number of admissions per capita in the United States are only slightly below the OECD median. Third, the U.S. health system could be less efficient in some ways than are those of other countries. The highly fragmented and complex U.S. payment system, for example, requires more administrative personnel in hospitals than would be needed in countries with simpler payment systems.²¹ Several comparisons of hospital care in the United States with care in other countries, most commonly Canada, have shown that all of these possibilities may be true: U.S. hospital services are more expensive, patients are treated more intensively, and hospitals may be less efficient.²²

U.S.-Canada comparisons. Some in the United States believe that Canada is rationing health care by placing tight constraints on capacity and waiting lists. That impression is reinforced annually by the annual waiting list survey of Canada's Fraser Institute.²³ Exhibit 5 shows that hospital admissions per capita, indeed, were lower in Canada than in the United States in 2000. Remarkably, however, Canada actually had a higher acute care bed density than did the United States and also reported a greater number of acute care hospital days per capita. The explanation for this seeming paradox could be the much longer average length of hospital stay in Canada. In both 1990 and 1999 the Canadian length-of-stay exceeded the comparable U.S. numbers by about 20 percent. To the extent that bed capacity is a binding constraint in Canada, further reductions in average lengths-of-stay could help to relax that constraint.

Medical technology. Hospital beds and health professionals are, of course, not the only binding constraints on a health system's capacity. Just as constraining, and possibly more so, can be the availability of advanced medical technology. As shown in Exhibit 6, Canada has far fewer computed tomography (CT) and magnetic resonance imaging (MRI) scanners per capita than the United States does. Indeed, Canada's endowment with this type of equipment lies considerably below the OECD median, although Canada's is the fifth most expensive health system in the OECD.²⁴ As is further shown in Exhibit 6, Canada's health system also delivers far fewer highly sophisticated procedures than does the U.S. system. For example, the U.S. system delivers four times as many coronary angioplasties per capita and about twice the number of kidney dialyses. These data, of course, do not provide insight on the medical necessity of these procedures.

EXHIBIT 6 Use Of Sophisticated Medical Technologies In Selected OECD Countries, 1999 And 2000

	MRI units per million population, 2000	CT scanners per million population, 2000	Coronary angioplasties per 100,000 population, 1999	Patients undergoing dialysis per 100,000 population, 2000
Australia	4.7	– ^a	102.7	33.2
Austria	10.8	25.8	– ^a	37.1
Belgium	3.2 ^b	– ^a	201.4 ^c	– ^a
Canada	2.5	8.2 ^b	80.8	45.7 ^d
Czech Republic	1.7	9.6	– ^a	– ^a
Denmark	6.6	11.4	82.0	36.3 ^d
Finland	11.0	13.5	– ^a	22.9
France	2.8 ^d	9.6 ^d	– ^a	– ^a
Germany	6.2 ^b	17.1 ^b	165.7 ^b	64.0
Greece	1.5 ^d	7.8 ^d	– ^a	66.6
Hungary	1.5	5.4	27.4	– ^a
Iceland	10.7	21.3	167.0	13.9
Ireland	– ^a	– ^a	80.4	– ^a
Italy	6.7 ^d	19.6 ^d	67.2	– ^a
Japan	23.2 ^d	84.4 ^d	– ^a	162.4
Korea	5.4	28.2	– ^a	– ^a
Luxembourg	4.6	25.1	– ^a	60.1 ^d
Mexico	0.3	2.0	1.8	32.5
New Zealand	2.6 ^c	8.9	65.5	– ^a
Poland	0.4 ^b	0.4 ^b	– ^a	128.9
Portugal	2.8 ^b	12.3 ^b	41.7	– ^a
Slovakia	1.1	8.3	– ^a	39.8
Spain	4.9	12.2	– ^a	43.7 ^b
Sweden	7.9 ^d	14.2 ^d	– ^a	– ^a
Switzerland	13.0 ^d	18.5 ^d	– ^a	– ^a
Turkey	– ^a	7.2 ^d	– ^a	23.4 ^d
United Kingdom	3.9	6.5 ^e	51.0 ^f	27.0 ^d
United States	8.1 ^d	13.6 ^d	388.1	86.5 ^c
OECD median	4.7	12.2	– ^g	39.8

SOURCE: Organization for Economic Cooperation and Development, *OECD Health Data 2002* (Paris: OECD, 2002).

NOTES: For median calculation, see Note 5 in text. Data for the Netherlands and Norway were not available. MRI is magnetic resonance imaging. CT is computed tomography.

^a Data not available.

^b 1997.

^c 1998.

^d 1999.

^e 2001 data for England were provided by the United Kingdom Department of Health.

^f 2000 data for England were provided by the United Kingdom Department of Health.

^g Data were not available for enough countries to present the median.

Quite remarkable, and inviting further research, is the extraordinarily high endowment of Japan's health system with CT and MRI scanners and its relatively high use of dialysis. These numbers are all the more remarkable because Japan's health system is among the least expensive in the OECD.

Health Spending Versus Health Care Provision

To explore further how the observed differences in the percentage of GDP going to health care might affect volume, quality, and spending, it is important to distinguish between two distinct categories of resources that may go in opposite directions: (1) the allocation of real resources (human labor and other physical inputs); and (2) the allocation of financial claims on the country's GDP to the owners of these real resources.²⁵ The relationship between these two distinct resource flows manifests itself in the money prices paid for health services. Several important insights follow from this relationship.

First, the relationship between the financial resources that individuals pay to the providers of health care and the real resources these providers contribute to the process of health care may not be nearly as tight as some observers have proposed. Some health care providers have argued that every proposed cut in health care spending is a direct threat to the well-being of patients. As one of us (Reinhardt) has argued, spending on health care can also have a direct effect on the incomes of providers.²⁶ The question is whether increased spending results in more real resources devoted to patient care or higher incomes to providers.

Second, the distinction between financial and real resource flows in health care raises the fundamental question of what is meant by the "cost" of a country's health system.²⁷ Because labor and other productive inputs are allocated to health care rather than to the next most valuable productive enterprise, there is an "opportunity cost" associated with devoting more resources to health care. Alternatively, the "cost" of the health care system could be measured by health spending (that is, the percentage of GDP spent on health). If one ranked countries by the costliness of their health systems on each of these two cost measures, the two rankings might be very different. Consider, for example, that Country A might devote a larger fraction of its GDP to health care providers than does Country B but uses fewer real resources in its health system than does nation B. In other words, Country A spends more per capita on health care than Country B, and yet economists might rate Country A's health system less costly than Country B's because fewer actual resources are devoted to health care.

■ **Previous research.** To explore this possibility at the empirical level, Mark Pauly sought to estimate the opportunity costs of the human labor represented by physicians, nurses, and other medical workers in a set of OECD countries for the year 1988.²⁸ Although the United States spent a far greater share of its GDP on health care than did the other OECD countries in 1988, Pauly found that in terms of the opportunity cost of real resource use, the U.S. health system ranked somewhere in the middle of the OECD cohort.

Victor Fuchs and James Hahn came to a similar conclusion.²⁹ They noted that expenditures on physician services in 1985 in U.S. dollar equivalents were \$347 per capita in the United States but only \$202 in Canada. Yet another comparison, by Pete Welch and colleagues, provides additional evidence of higher prices with

“Simple comparisons suggest that Americans are receiving fewer real resources than are people in the median OECD country.”

lower utilization in the United States.³⁰ It must be emphasized, of course, that the data used by these researchers are many years in the past, which makes the case for replicating the analysis with more recent data. We also now have the advantage of having data on more countries.

■ **Recent data.** As shown in Exhibits 4 and 5, in 2000 the United States had fewer physicians per 1,000 population, physician visits per capita, acute care beds per capita, hospital admissions per 1,000 population, and acute care days per capita than the median OECD country. These simple comparisons suggest that Americans are receiving fewer real resources than are people in the median OECD country. There are, however, other explanations. A more comprehensive approach would be to compare the actual progression of treatment for a set of tracer conditions in various countries.

A study by the McKinsey Global Institute followed that more in-depth approach. The research team, which was advised by a number of prominent health economists, based its analysis on four tracer diseases: diabetes, cholelithiasis (gall stones), breast cancer, and lung cancer.³¹ Using PPP-adjusted U.S. dollars as the common yardstick, the McKinsey researchers found that in the study year of 1990 Americans spent about \$1,000 (66 percent) more per capita on health care than Germans did. The researchers estimated that Americans paid 40 percent more per capita than Germans did but received 15 percent fewer real health care resources. A similar comparison revealed that the U.S. system used about 30 percent more inputs per capita than was used in the British system and spent about 75 percent more per capita on higher prices.³²

■ **Prices and total health spending.** The preceding analysis suggests the crucial role of prices as drivers of cross-national differences in health spending. As noted earlier, the prices paid for health care represent the generalized claims on its GDP that a country cedes to the providers of real health care resources. The magnitudes of these money transfers depend upon a whole host of factors, among them the relative bargaining power of the providers and those who pay them.

Even if, within each country, the markets for health care and the related markets for the labor and other inputs used in health care were perfectly competitive in the textbook sense, the money prices of identical health care goods or services or inputs would likely still vary among countries. It is so because neither the goods and services nor all of the inputs that produce them are perfectly mobile across countries. Unlike markets for electronics or financial securities, which are truly global, the markets for the health workforce (especially physicians) are still largely national and even local within countries. Furthermore, of course, most of the markets related to health care within localities do not satisfy the rigorous con-

ditions of the textbook model of competition.³³ In health care, for example, one finds varying degrees of monopoly power on the sell side of the market and varying degrees of monopsony power on the buy side.

■ **How the buy and sell sides operate.** Monopoly power allows sellers to raise prices above those they would obtain in perfectly competitive markets. In the jargon of economics, they are thus able to earn “rents,” defined as the excess of the prices actually received by sellers above the minimum prices the sellers would have to be paid to sell into the market. Countries differ in the degree to which they try to whittle away at the rent earned on the supply side through the creation of market power on the buy (monopsony) side of the market. A single-payer system would be called a “pure monopsony.”

In the U.S. health system, for example, money flows from households to the providers of health care through a vast network of relatively uncoordinated pipes and capillaries of various sizes. Although the huge federal Medicare program and the federal-state Medicaid programs do possess some monopsonistic purchasing power, and large private insurers may enjoy some degree of monopsony power as well in some localities, the highly fragmented buy side of the U.S. health system is relatively weak by international standards. It is one factor, among others, that could explain the relatively high prices paid for health care and for health professionals in the United States.

In comparison, the government-controlled health systems of Canada, Europe, and Japan allocate considerably more market power to the buy side. In each of the Canadian provinces, for example, the health insurance plans operated by the provincial governments constitute pure monopsonies: They purchase (pay for) all of the health services that are covered by the provincial health plan and used by the province’s residents.

Even a pure monopsonist, of course, is ultimately constrained by market forces on the supply side—that is, by the reservation (minimally acceptable) prices of the providers of health care below which they will not supply their goods or services. But within that limit, monopsonistic buyers enjoy enough market clout to drive down the prices paid for health care and health care inputs fairly close to those reservation prices. It can explain, for example, why Fuchs and Hahn found that “U.S. fees for procedures are more than three times as high as Canadian fees [and] the difference in fees for evaluation and management services is about 80 percent.”³⁴

■ **Impact on quantity and quality.** Just what impact variations in the distribution of market power between the buy and the sell sides of health systems have on the quantity and quality of health care, and on overall economic welfare, is an exceedingly challenging question on which even economists are unlikely to agree. In the simple textbook model used to analyze monopsony, a firm is assumed to procure inputs in a market in which it has monopsony power and sell its output in a perfectly price-competitive market. It can then be shown that the firm will hire too few

inputs and produce too few units of output, relative to the welfare-maximizing levels that would obtain in the absence of monopsony.³⁵ If this theory is applied to health care, it must be amended to allow for the ease with which providers can alter not only the quantity of services offered, but also their quality. As Pauly writes in his previously cited study: “Monopsony actually reduces total welfare, since it reduces quantity or quality, so it actually is a negative-sum game—but the primary effect is to control medical spending by controlling providers’ incomes.”³⁶

Monopsony power, however, does not necessarily trigger this negative welfare effect. If its exercise were confined strictly to capturing economic rents that would otherwise be earned by providers, then economic theory would not predict an inevitable reduction in the quantity or quality of health care. The effect might be merely to redistribute income from the providers of health care to the rest of society. Even then, however, it is possible that a monopsonistic payer might push this process too far and eventually trigger reductions in either the quantity or quality of health care, or both. Using monopsonistic payer systems in health care to procure just the mix of quantity and quality that is actually desired by the insured citizenry is a daunting task and not always achieved successfully in practice.

To complicate matters further, there is the problem of defining precisely what is meant by the elusive term “quality” in the context of health policy. If the use of monopsony power enables a country to make health care more readily accessible to all members of society—or at least to more than would otherwise be possible—then the citizens of that country might well give their health system a higher overall quality rating, even if the exercise of monopsony power reduced somewhat the clinical quality and the amenities that accompany clinical treatment. That possibility could explain, for example, why in cross-national surveys on the satisfaction of citizens with their health system, Canada and the European nations have consistently earned higher marks than has the U.S. system.³⁷ Another reason could well be that the monopsony power allocated by these systems to the payer side reduces the prices paid to providers for health care, thereby transferring wealth from these providers to the rest of society.

IN 2000 THE UNITED STATES spent considerably more on health care than any other country, whether measured per capita or as a percentage of GDP. At the same time, most measures of aggregate utilization such as physician visits per capita and hospital days per capita were below the OECD median. Since spending is a product of both the goods and services used and their prices, this implies that much higher prices are paid in the United States than in other countries. But U.S. policymakers need to reflect on what Americans are getting for their greater health spending. They could conclude: It’s the prices, stupid.

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NOTES

1. See S. Woolhandler and D.U. Himmelstein, "Paying for National Health Insurance—And Not Getting It," *Health Affairs* (July/Aug 2002): 88–98; and U.E. Reinhardt, P.S. Hussey, and G.F. Anderson, "Cross-National Comparisons of Health Systems Using OECD Data, 1999," *Health Affairs* (May/June 2002): 169–181.
2. See M.V. Pauly, "U.S. Health Care Costs: The Untold True Story," *Health Affairs* (Fall 1993): 152–159; V.R. Fuchs and J.S. Hahn, "How Does Canada Do It?" *New England Journal of Medicine* (27 September 1990): 884–890; and W.P. Welch et al., "A Detailed Comparison of Physician Services for the Elderly in the United States and Canada," *Journal of the American Medical Association* 275, no. 18 (1996): 1410–1416.
3. On the quality of the OECD data, see Reinhardt et al., "Cross-National Comparisons," 177–179.
4. *Ibid.*, Exhibit 1.
5. The OECD median was calculated only if figures were available for fifteen of the thirty countries. In some cases, missing data points were replaced by values within three years; the calculation of the median included these substituted values. PPPs are used to adjust for differences in cost of living across countries by comparing prices for a fixed market basket of goods. The basket of goods used here is broad-based, not health-based. Inflation is adjusted for by using the U.S. Consumer Price Index (CPI). All values were converted into 2000 U.S. dollars.
6. The coefficient of correlation between health care spending per capita in 1990 (PPP) and mean annual growth in health spending per capita (national currency unit at 1995 GDP price) between 1990 and 2000 is -0.56 ($p < .002$). The correlation coefficient is -0.67 ($p < .0001$) when the United States is excluded.
7. U.G. Gerdtham and B. Jönsson, "International Comparisons of Health Expenditure," in *Handbook of Health Economics*, ed. A.J. Culyer and J.P. Newhouse (New York: Elsevier Science B.V., 2000), 11–53.
8. The coefficient of correlation between the per capita GDP and percentage of GDP allocated to health care in 2000 is 0.52 ($p < .003$). The correlation coefficient is 0.75 ($p < .0001$) when Luxembourg is excluded. Because of its role as an international center of finance and commerce, Luxembourg has an extraordinarily high GDP per capita. On the other hand, its health spending is controlled by a social insurance system. The relationship shown was between the per capita GDP and percentage of GDP allocated to health care in 2000, not health spending per capita as reported in other articles. (See, for example, Reinhardt et al., "Cross-National Comparisons." The correlation coefficient between the per capita GDP and per capita health spending was as high as 0.86 ($p < .0001$) in 2000.
9. P. Zweifel, "Switzerland," *Journal of Health Politics, Policy and Law* 25, no. 5 (2000): 937–944; F. Diderichsen, "Sweden," *Journal of Health Politics, Policy and Law* 25, no. 5 (2000): 931–935; and R.G. Evans, "Canada," *Journal of Health Politics, Policy and Law* 25, no. 5 (2000): 889–897.
10. Woolhandler and Himmelstein, "Paying for National Health Insurance."
11. Health Resources and Services Administration, *Graduate Medical Education and Public Policy: A Primer* (Washington: U.S. Department of Health and Human Services, 2000).
12. R.A. Cooper et al., "Economic and Demographic Trends Signal an Impending Physician Shortage," *Health Affairs* (Jan/Feb 2002): 140–154.
13. The correlation coefficient between GDP per capita and the number of active physicians per 1,000 population in OECD countries in 2000 was 0.28 ($p = .14$). Richard Cooper and colleagues hypothesize a ten-year lag between GDP and physician supply; the correlation coefficient between GDP per capita in 1990 and the number of active physicians per 1,000 population in 2000 was 0.31 ($p = .10$).
14. K. Grumbach, "The Ramifications of Specialty-Dominated Medicine," *Health Affairs* (Jan/Feb 2002): 155–157; and F. Mullan, "Some Thoughts on the White-Follows-Green Law," *Health Affairs* (Jan/Feb 2002): 158–159.
15. See R. Steinbrook, "Nursing in the Crossfire," *New England Journal of Medicine* (30 May 2002): 1757–1766; P.I. Buerhaus, D.O. Staiger, and D.I. Auerbach, "Implications of an Aging Registered Nurse Workforce," *Journal of the American Medical Association* 283, no. 22 (2000): 2948–2954; and L.H. Aiken et al., "Nurses' Reports on Hospital Care in Five Countries," *Health Affairs* (May/June 2001): 43–53.
16. See R. Steinbrook, "Nursing in the Crossfire," *New England Journal of Medicine* (30 May 2002): 1757–1766.
17. The correlation is not significant even when countries with less than 7 percent elderly population are excluded (Korea, Mexico, and Turkey). These three countries have very low percentages of population over age sixty-five (5–7 percent) compared with other OECD countries (the median is 14.8 percent).
18. The coefficient of correlation between the two growth rates is 0.58 ($p < .002$).
19. Reinhardt et al., "Cross-National Comparisons."

20. Ibid.
21. See McKinsey Global Institute, *Health Care Productivity* (Los Angeles: McKinsey and Company, 1996); and U.E. Reinhardt, "The Interaction of the Private and Public Sectors in the United States Health System" (Unpublished paper, Princeton, N.J., August 2002).
22. Canada-U.S. comparisons include J.P. Newhouse, G.M. Anderson, and L.L. Roos, "Hospital Spending in the United States and Canada: A Comparison," *Health Affairs* (Winter 1988): 6-16; J.V. Tu et al., "Use of Cardiac Procedures and Outcomes in Elderly Patients with Myocardial Infarction in the United States and Canada," *New England Journal of Medicine* (22 May 1997): 1500-1505; and C.M. Bell et al., "Shopping Around for Hospital Services: A Comparison of the United States and Canada," *Journal of the American Medical Association* 279, no. 13 (1998): 1015-1017.
23. M. Walker and G. Wilson, *Waiting Your Turn: Hospital Waiting Lists in Canada*, 11th ed., September 2001, www.fraserinstitute.ca/shared/readmore.asp?sNav=pb&tid=206 (15 September 2002).
24. Part of Canada's expense is, of course, driven by its proximity to the even more expensive U.S. market, which functions as an implicit benchmark for Canada's markets of health professionals.
25. A country's GDP represents the market value of all goods and services produced within the country's boundaries and traded in the marketplace. What if the providers of health care spend the money they receive on goods and services produced in other countries? These other countries would thereby earn a claim on the GDP of the providers' country.
26. U.E. Reinhardt, "Resource Allocation in Health Care: The Allocation of Lifestyles to Providers," *Milbank Quarterly* 65, no. 2 (1987): 153-176.
27. Pauly, "U.S. Health Care Costs."
28. Ibid.
29. Fuchs and Hahn, "How Does Canada Do It?"
30. Welch et al., "A Detailed Comparison."
31. McKinsey Global Institute, *Health Care Productivity*, Exhibit 5.
32. Ibid.
33. T.H. Rice, *The Economics of Health Reconsidered* (Chicago: Health Administration Press, 1998).
34. Fuchs and Hahn, "How Does Canada Do It?"
35. M.L. Katz and H.S. Rosen, *Microeconomics* (Homewood, Ill.: Irwin, 1991), 524-527.
36. Pauly, "U.S. Health Care Costs," 155.
37. R.J. Blendon et al., "Who Has the Best Health System? A Second Look," *Health Affairs* (Winter 1995): 220-230; and R.J. Blendon, M. Kim, and J.M. Benson, "The Public versus the World Health Organization on Health System Performance," *Health Affairs* (May/June 2001): 10-24.