Health Spending, Access, And Outcomes: Trends In Industrialized Countries

Even with managed care and government efforts to control growth, U.S. health spending per capita grew more rapidly in the 1990s than did spending in the average industrialized country.

by Gerard F. Anderson and Jean-Pierre Poullier

ABSTRACT: In 1997 the United States spent $3,925 per capita on health or 13.5 percent of gross domestic product (GDP), while the median Organization for Economic Cooperation and Development (OECD) country spent $1,728 or 7.5 percent. From 1990 to 1997 U.S. health spending per capita increased 4.3 percent per year, compared with the OECD median of 3.8 percent. The United States has the lowest percentage of the population with government-assured health insurance. It also has the fewest hospital days per capita, the highest hospital expenditures per day, and substantially higher physician incomes than the other OECD countries. On the available outcome measures, the United States is generally in the bottom half, and its relative ranking has been declining since 1960.

THE ORGANIZATION FOR ECONOMIC Cooperation and Development (OECD) has released data for 1997 that permit comparisons of the health care financing and delivery systems in twenty-nine industrialized countries.[1] In this DataWatch we present trends in health spending, access, financing and delivery systems, and outcomes across all twenty-nine countries. Expenditures were adjusted using purchasing power parities (PPPs), a commonly used method to adjust for cost-of-living differences across countries.[2] We give special attention to indicators for which the United States is an outlier in terms of either levels or rates of change.

Health Spending

Per capita health spending in 1997 ranged from a high of $3,925 in the United States to a low of $260 in Turkey (Exhibit 1).[3] Switzerland was second-highest ($2,547 per person). Other countries with

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per capita health spending above $2,000 were Canada, France, Germany, Iceland, and Luxembourg. Seven countries spent less than $1,000 per capita: the Czech Republic, Greece, Hungary, Korea, Mexico, Poland, and Turkey.

Between 1960 and 1997 spending in the United States increased at the same rate as the OECD median—9.0 percent.[4] For comparison purposes, spending per capita in Japan increased 11.7 percent per year in Japan, and only 8.3 percent in Canada.

Policymakers generally are more interested in recent trends. In 1990–1997 the annual rate of increase in per capita health care spending slowed in nearly all countries. It increased an average of 4.3

EXHIBIT 1
Health Care Spending In Twenty-Nine Countries, 1960, 1990, And 1997

	Per capita health spending[a]			Percent of GDP spent on health		
	1960	1990	1997	1960	1990	1997
Australia	$94	$1,320	$1,805	4.9%	8.3%	8.4%
Austria	64	1,204	1,793	4.4	7.2	7.9
Belgium	53	1,248	1,747	3.4	7.5	7.6
Canada	103	1,696	2,095	5.5	9.2	9.0
Czech Republic	–[b]	–[b]	904[c]	3.0	5.4	7.0
Denmark	66	1,364	1,848	3.6	8.2	7.4
Finland	55	1,292	1,447	3.9	8.0	7.2
France	72	1,539	2,051	4.2	8.9	9.6
Germany	68	1,279	2,339	4.8	8.7	10.4
Greece	16	386	974	2.4	4.2	7.1
Hungary	–[b]	–[b]	602[c]	–[b]	6.1	16.5
Iceland	50	1,374	2,005	3.3	7.9	8.0
Ireland	35	759	1,324	3.8	6.7	7.0
Italy	49	1,321	1,589	3.6	8.1	7.6
Japan	26	1,082	1,741	3.0	6.0	7.3
Korea	–[b]	310	587	–[b]	3.9	4.0
Luxembourg	–[b]	1,495	2,340	–[b]	6.6	7.1
Mexico	–[b]	193	391	–[b]	3.6	4.7
Netherlands	68	1,326	1,838	3.8	8.3	8.6
New Zealand	92	937	1,352	4.3	7.0	7.7
Norway	46	1,365	1,814	3.0	7.8	7.5
Poland	–[b]	–[b]	371[c]	–[b]	4.4	5.2
Portugal	–[b]	614	1,125	–[b]	6.5	7.8
Spain	14	815	1,168	1.5	6.9	7.4
Sweden	89	1,492	1,728	4.7	8.8	8.6
Switzerland	87	1,760	2,547	3.3	8.3	10.1
Turkey	–[b]	171	260	–[b]	3.6	4.0
United Kingdom	74	955	1,347	3.9	6.0	6.7
United States	149	2,799	3,925	5.2	12.6	13.5
OECD median	66	1,286	1,728	3.8	7.2	7.5

SOURCE: *OECD Health Data 98: A Comparative Analysis of Twenty-nine Countries* (Paris: Organization for Economic Cooperation and Development, 1998).
NOTE: GDP is gross domestic product.
[a] Expenditures were adjusted using purchasing power parities (see Note 2 in text).
[b] Not available.

percent per year in the United States, 2.7 percent in Canada, and 6.1 percent in Japan, with an OECD median of 3.8 percent per year.

Spending as a proportion of GDP. The percentage of gross domestic product (GDP) spent on health care in 1997 varied from a high of 13.5 percent in the United States to a low of 4.0 percent in Korea and Turkey (Exhibit 1). The median OECD country spent 7.5 percent. Only three countries—Germany, Switzerland, and the United States—spent more than 10 percent of their GDP on health care. Three OECD countries—Korea, Mexico, and Turkey—spent less than 5 percent.

One reason for focusing on the percentage of GDP spent on health care is what economists call opportunity costs: The larger the proportion of GDP spent on health care services, the smaller the proportion that is available for other goods and services. For this reason, many countries have tried to maintain the percentage of GDP spent on health care at a constant level.[5] Between 1960 and 1997 no country limited its growth of health spending to the level of growth in GDP, although some were more successful than others. Finland, Ireland, New Zealand, and the United Kingdom had the greatest success, and the United States was the least successful.[6]

Recently, however, some countries have been able to limit the rate of increase in health care spending to at or below the rate of increase in GDP. In Canada, Denmark, Finland, Italy, Norway, and Sweden the percentage of GDP spent on health care actually declined from 1990 to 1997. Other countries were less successful. The U.S. percentage of GDP spent on health increased from 12.6 in 1990 to 13.5 percent in 1997. In the Czech Republic, Germany, Greece, Japan, Mexico, Portugal, and Switzerland it increased even faster.

U.S. health spending. Two aspects of U.S. health spending warrant special attention. First, higher health spending in the United States is not a recent phenomenon. As early as 1960 the United States was spending almost 50 percent more per capita than any other OECD country. From 1960 to 1997 the rate of growth of U.S. health spending per capita equaled the rate of growth in the median OECD country. During the 1990s, however, U.S. health spending per capita grew more rapidly than in the median OECD country, in spite of managed care and federal and state governments' attempts to slow the rates of cost increase in Medicare and Medicaid.

Second, and possibly more significant from a public policy perspective, is the more rapid growth in the percentage of GDP spent on health care. From 1960 to 1997 the percentage of GDP spent on health care in the United States increased 8.3 percentage points, compared with 3.7 percentage points in the median OECD country. Much of this growth is attributable to slow growth in GDP and not

rapid growth in health spending. During this period the percentage of GDP spent on health care increased at approximately the same rate as the OECD median. However, the United States ranked twentieth of twenty-four countries for which growth in GDP could be calculated.[7]

Insurance Coverage

In 1997 twenty-four of the twenty-nine OECD countries ensured that at least 99 percent of their citizens had health insurance coverage (Exhibit 2). Most countries achieved universal health insurance coverage (coverage of at least 99 percent of the population) between 1960 and 1997. Seven countries already had passed legislation in 1960 ensuring universal coverage. An additional seventeen countries

EXHIBIT 2
Health Insurance Coverage In Twenty-Nine Countries, 1960 And 1997

	Percent of population with government-assured health insurance	
	1960	**1997**
Australia	100.0%	100.0%
Austria	78.0	99.0
Belgium	58.0	99.0
Canada	71.0	100.0
Czech Republic	100.0	100.0
Denmark	95.0	100.0
Finland	55.0	100.0
France	76.3	99.5
Germany	85.0	92.2
Greece	30.0	100.0
Hungary	100.0	99.0
Iceland	100.0	100.0
Ireland	85.0	100.0
Italy	87.0	100.0
Japan	88.0	100.0
Korea	–[a]	100.0
Luxembourg	90.0	100.0
Mexico	–[a]	72.0
Netherlands	71.0	72.0
New Zealand	100.0	100.0
Norway	100.0	100.0
Poland	100.0	100.0
Portugal	18.0	100.0
Spain	54.0	99.8
Sweden	100.0	100.0
Switzerland	74.0	100.0
Turkey	5.8	66.0
United Kingdom	100.0	100.0
United States	6.9	33.3
OECD median	85.0	100.0

SOURCE: *OECD Health Data 98: A Comparative Analysis of Twenty-nine Countries* (Paris: Organization for Economic Cooperation and Development, 1998).
[a] Not available.

passed similar legislation between 1961 and 1997. Of the five remaining countries, Germany and the Netherlands do not require their most affluent citizens to purchase health insurance. However, nearly all such citizens purchase private health insurance; therefore, these countries effectively have universal coverage. Of the twenty-nine OECD countries, only Mexico, Turkey, and the United States had no universal coverage in 1997.

Of all of the OECD nations in 1997, the United States had the largest percentage of citizens without government-assured health insurance coverage. Only 33 percent of the U.S. population had health insurance coverage assured by the government—those with Medicare, Medicaid, Indian Health Service, civil service, or military coverage. In 1997 an estimated forty-three million Americans were uninsured.[8]

Hospitals

Spending. The United States spent 42.2 percent of its health care dollar on hospital services in 1996—a percentage close to the OECD median of 43.2 percent (Exhibit 3). Denmark spent the highest percentage (62.7 percent), while Austria spent the lowest (20.9 percent).[9] Per capita spending on U.S. hospitals was $1,646, or more than double the OECD median of $692. Switzerland had the second-highest level of spending on hospital services ($1,231 per capita). Turkey spent the least ($67 per capita). Per capita spending is the result of three factors: admission rates, average length-of-stay, and expenditures per day.

Admission rates. Across the twenty-nine OECD countries, there was wide variation in the proportion of the population admitted to the hospital for inpatient care during the year. Approximately one of four citizens of Austria, Finland, and Iceland were admitted to the hospital during 1996. The OECD median was approximately one of six. In the United States, one of eight were admitted. Fewer than one of ten Japanese and one of seventeen Mexicans were admitted to the hospital as inpatients in 1996. The percentage of the population admitted to the hospital has changed in some countries and remained relatively stable in others since 1960 (data not presented). Canada and the United States were the only two countries with data available for which the percentage of the population admitted to the hospital actually declined from 1960 to 1996.[10] The inpatient admission rate nearly doubled in the United Kingdom, Austria, Finland, Hungary, Italy, and Turkey.

Lengths-of-stay. In the median OECD country the average inpatient stay was 10.6 days in 1996 (Exhibit 3).[11] The range was from 43.7 days in Japan and 32.5 days in the Netherlands to fewer than 7.0

EXHIBIT 3
Hospital Spending And Selected Characteristics In Twenty-Nine Countries, 1996

	Per capita spending on hospitals[a]	Percent of total health spending on hospitals	Percent of population with inpatient admissions	Average length-of-stay (days)	Hospital days per capita	MRI units per million population	CT scanners per million population	FTE employees per bed[b]
Australia	$ 767	43.2%	16.5%	15.5	2.6	2.9[b]	18.4[c]	2.3
Austria	365	20.9	25.1	10.5	2.6	7.4	23.9	1.9
Belgium	692	40.5	20.0	11.3	2.2	3.3[b]	16.7[c]	1.5[d]
Canada	918	44.5	11.0	10.5	1.9	1.3[b]	7.9[b]	2.7[c]
Czech Republic	252	27.9	22.3	12.3	2.6	1.1	7.1	1.6
Denmark	1,131	62.7	19.5	7.3	1.7	2.5[e]	5.8[e]	3.2[c]
Finland	564	40.8	25.7	11.6	3.2	2.4[e]	9.0[e]	2.1[c]
France	902	45.6	22.5	11.2	2.6	2.3	9.4	1.1
Germany	796	35.0	20.9	14.3	2.8	5.7	16.4	1.5
Greece	261[c]	41.1[c]	15.0[b]	8.2	1.2	1.2	6.1	1.4[c]
Hungary	306	57.5	23.4[b]	10.8	2.5	1.4	5.1	0.5[c]
Iceland	1,039	54.9	27.0	18.0	4.5	7.4	14.9	NA
Ireland	692[f]	54.2[f]	15.2	7.0	1.1	0.3[e]	14.3	1.8
Italy	743	46.9	16.2[b]	9.8	1.6	3.5[b]	17.5[b]	2.2
Japan	463[b]	28.5	9.3	43.7	4.1[b]	18.8	69.7	0.9
Korea	185	34.4	6.3[b]	13.0	0.8	4.7	16.3	0.8
Luxembourg	703	32.9	19.0	15.3	2.8	2.6[e]	15.7[e]	NA
Mexico	118[g,h]	36.2[g,h]	5.8	4.1	0.2	0.2[e]	2.1[e]	NA
Netherlands	954	53.4	11.1	32.5	3.6	3.9[b]	9.0[g]	2.2
New Zealand	573	45.1	13.8	6.5	1.5	2.7	7.7	NA
Norway	679[c]	37.5[b]	15.3	9.9	4.5	0.7[e]	11.6[e]	3.5
Poland	170	45.9[f]	11.6[b]	10.6	2.6	0.2	0.4	1.0
Portugal	396	37.0	11.4	9.8	1.1	2.8	12.0[f]	2.6
Spain	501	45.0	10.0	11.0	1.1	3.2	9.0	2.6[c]
Sweden	665[b,h]	41.9[b,h]	18.1	7.5	1.3	6.8[b]	13.7[g]	NA
Switzerland	1,231	49.3	15.0	15.0	2.7	7.4[g]	17.7[g]	2.0[i]
Turkey	67	28.8	6.3[b]	6.3	0.4	0.3[e]	1.6[e]	1.6[c]
United Kingdom	521[b]	42.0	16.0	9.8	1.7	3.4[b]	6.3[g]	3.5
United States	1,646	42.2	12.2	7.8	1.1	16.0[b]	26.9[g]	3.9
OECD median	692	43.2	16.0	10.6	2.2	2.8	11.6	2.0

SOURCE: *OECD Health Data 98: A Comparative Analysis of Twenty-nine Countries* (Paris: Organization for Economic Cooperation and Development, 1998).

NOTES: MRI is magnetic resonance imaging. CT is computed tomography. FTE is full-time-equivalent. NA is not available.

[a] Expenditures were adjusted using purchasing power parities (see Note 2 in text).

[b] 1995 data.

[c] 1994 data.

[d] 1991 data.

[e] 1990 data.

[f] 1997 data.

[g] 1993 data.

[h] Public expenditures only.

[i] 1992 data.

days in Mexico, Turkey, and New Zealand.[12] The average length-of-stay in the United States was 7.8 days. In all countries the average length of inpatient stay declined between 1960 and 1996 (data not presented). Two countries with the largest reductions in average length-of-stay in this period were Sweden (31.8 days to 7.5 days) and

the United Kingdom (35.9 days to 9.8 days). During this period the U.S. average length-of-stay fell from 20.5 days to 7.8 days, and length-of-stay in the median OECD country declined at a similar rate, from 27.0 days to 10.6 days.

One topic under discussion in the United States is the appropriate length-of-stay following normal childbirth (data not presented). Mexico had the shortest length-of-stay in 1995 (1.4 days), and the United States had the second-shortest (1.5 days). Of the sixteen countries for which data are available, only Australia, New Zealand, and Turkey also had an average length-of-stay of fewer than three days following normal delivery.

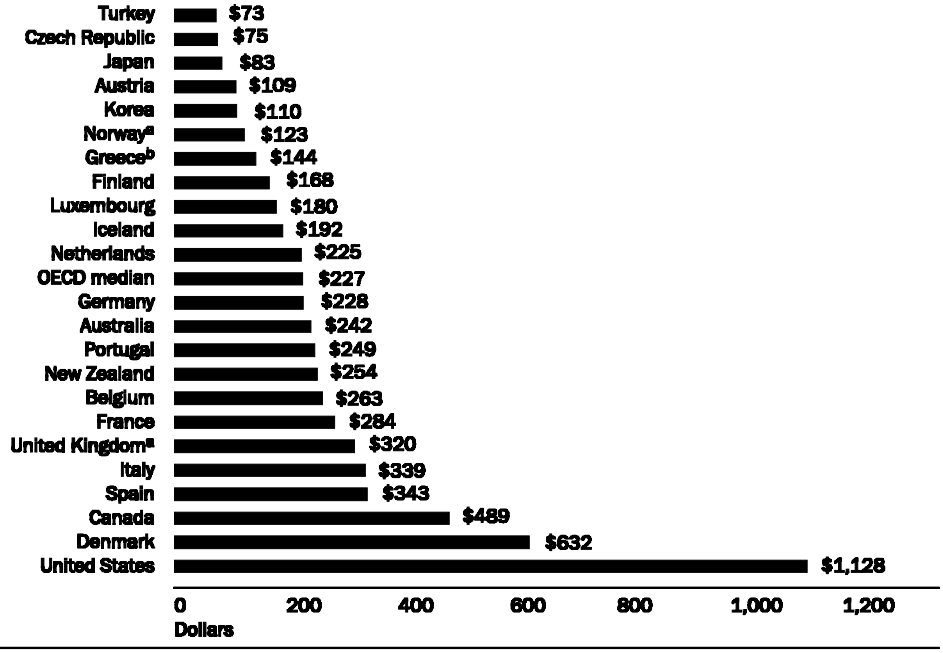
Inpatient hospital days. Inpatient days per capita are a function of both hospital admission rates and length-of-stay. In 1996 the United States had 1.1 inpatient hospital days per capita (Exhibit 3). Only Korea, Mexico, and Turkey had fewer inpatient hospital days per capita. The OECD median was 2.2. Iceland and Norway had the highest number of inpatient hospital days per capita (4.5).

High technology and intensity of service. Two commonly accepted rationales for high hospital costs are technology and intensity of service.[13] Japan had the most magnetic resonance imaging (MRI) units per capita, followed by the United States (Exhibit 3). Japan also had the most computed tomography (CT) scanners per million population, followed by the United States and Austria. A proxy for intensity of service is the number of full-time-equivalent (FTE) hospital employees per bed.[14] This number in 1995 was highest in the United States at 3.9 (Exhibit 3). The only other countries with more than three employees per bed were Denmark, Norway, and the United Kingdom.

Hospital expenditures per day. The United States had the highest hospital expenditures per day by a wide margin in 1996—$1,128 (Exhibit 4).[15] The countries with the second- and third-highest expenditures per day were Denmark at $632 and Canada at $489.[16] The OECD median was $227.

U.S. cost containment efforts. Two aspects of spending and use of hospital services in the United States warrant special attention. First, numbers of hospital days per capita, lengths-of-stay, and admission rates were well below the OECD median, suggesting that greater use of hospital services is not primarily responsible for the higher level of hospital spending. However, most of the recent cost containment efforts in the United States have focused on controlling the use of hospital services. On the other hand, U.S. hospital spending per inpatient day was much higher than in any other OECD country (five times the OECD median in 1996), which suggests that greater emphasis on this aspect of health care spending is war-

EXHIBIT 4
Hospital Expenditures Per Day in Twenty-Three Countries, 1996



SOURCE: *OECD Health Data 98: A Comparative Analysis of Twenty-nine Countries* (Paris: Organization for Economic Cooperation and Development, 1998).
NOTE: No data were available for Hungary, Ireland, Mexico, Poland, Sweden, and Switzerland.
[a] 1995 data.
[b] 1994 data.

ranted. Since 1960 U.S. hospital spending per day has risen an average of 15 percent per year, much faster than in most other OECD countries. At the same time, reductions in average length-of-stay have been comparable to or slower than those of most other OECD countries.

Physicians. Physicians represent 10–20 percent of health care spending in most of the OECD countries (Exhibit 5). The median OECD country spent 15.4 percent of health care expenditures on physician services in 1996; the United States spent 19.5 percent, or $761 per capita. Japan had the second-highest level of spending per capita on physician services at $542; the median OECD country spent $295 per capita.

Physician supply. Training the appropriate number of physicians is a major public policy issue in many countries. In the median OECD country there were 2.8 physicians for every thousand persons in 1996 (Exhibit 5). This is an average of one physician for every 357 persons. Italy, Spain, and Hungary had relatively high physician-to-population ratios. Korea, Turkey, Mexico, and the United Kingdom had relatively low ratios. The U.S. ratio was 2.6 physicians per thou-

EXHIBIT 5
Spending On Physicians And Drugs In Twenty-Nine Countries, 1996

	Per capita spending on physician services[a]	Percent of total health spending on physicians	Physicians per thousand population	Physician visits per capita[b]	Drug spending per capita[a]	Percent of total health spending on drugs
Australia	$307[c]	19.2%	2.5	6.6	$202	11.4%
Austria	265	15.2	2.8	6.3	247	14.1
Belgium	315[d]	NA	3.4[c]	8.0[e]	306	17.9
Canada	298	14.5	2.1	6.5[d]	258	12.5
Czech Republic	NA	NA	2.9	NA	234	25.9
Denmark	139	7.7	2.9	5.4	165	9.2
Finland	NA	NA	2.8	4.1	209	15.2
France	237	11.8	2.9	6.5[e]	337	16.8
Germany	375	16.4	3.4	6.4	289	12.7
Greece	114[c]	18.0[c]	3.9[b]	NA	236	26.6
Hungary	NA	NA	4.2[b]	14.8	172	28.5
Iceland	291	15.4	3.0[c]	4.8[c]	312	16.5
Ireland	120[c,d]	NA	2.1	NA	126	9.9
Italy	320	20.2	5.5	NA	284	17.9
Japan	542[b]	34.4	1.8	15.8	349	20.8
Korea	121[b]	25.1[b]	1.1[b]	9.5	NA	NA
Luxembourg	274	12.8	2.2[b]	NA	250	11.7
Mexico	NA	NA	1.5	2.1	NA	NA
Netherlands	154	8.7	2.6[f]	5.7	193	10.9
New Zealand	132[g]	11.1	2.1	NA	194	15.2
Norway	NA	NA	2.8	NA	174	9.0
Poland	NA	NA	2.4	5.4	NA	NA
Portugal	NA	NA	3.0	3.2	282	26.3
Spain	NA	NA	4.2	NA	223	20.0
Sweden	187[c]	12.2c	3.1	3.0	218	13.0
Switzerland	446	17.9	3.2	NA	190	7.6
Turkey	NA	NA	1.1[b]	NA	NA	31.6
United Kingdom	184[c]	15.5	1.7	5.9	218	16.5
United States	761	19.5	2.6	6.0	344	8.8
OECD median	295	15.4	2.8	5.9	234	15.9

SOURCE: *OECD Health Data 98: A Comparative Analysis of Twenty-nine Countries* (Paris: Organization for Economic Cooperation and Development, 1998).
NOTE: NA is not available.
[a] Expenditures were adjusted using purchasing power parities (see Note 2 in text).
[b] 1995 data.
[c] 1994 data.
[d] Public expenditures only.
[e] 1996 data.
[f] 1990 data.
[g] 1993 data.

sand population, or one physician for every 385 Americans (very close to the OECD median).

Physician visits. Most OECD countries have five to seven physician visits per person each year. In the United States the mean number of physician visits was 6.0 in 1995. Countries with a high number of physician visits per capita included Japan and Hungary. Countries with relatively few physician visits per capita were Mexico and Sweden.

Physician incomes. Nearly half of the OECD countries have data available on physician incomes.[17] Of those with data for 1996, physician incomes were much higher in the United States ($199,000 on average) than in any other country. U.S. physician incomes increased faster than inflation during 1960–1996. In most other OECD countries with available data, physician incomes have kept pace with or only slightly exceed the rate of inflation. In Australia and France physician incomes actually declined during this period.[18]

Two aspects of U.S. physician spending and utilization are worthy of further discussion. First, the numbers of physicians and physician visits per capita in the United States are close to the OECD median, suggesting that physician supply and access to physician services are not responsible for higher spending levels. These two areas, however, have received considerable public policy attention in recent years. One area in which the United States differs from the other countries is physician income ($199,000 in 1996). In Germany, the country with the second-highest level of physician incomes, the physicians' take-home income was approximately half that of U.S. physicians. In 1991 (the latest year with comparable data) U.S. physicians earned more than three times as much as physicians in Australia, France, and the United Kingdom earned and almost four times as much as physicians in Finland, Norway, and Sweden earned.

A number of factors could explain the much higher physician incomes in the United States. In most countries physician education is heavily subsidized by the government, and therefore physicians do not begin their medical practices with large debts. However, studies conducted in the United States have shown that even after considering the debt and opportunity costs associated with a very long training period, there is a positive rate of return for physicians.[19] Also, in most other countries there is less disparity between the incomes of executives and those of factory workers.[20]

The disparity in physician incomes is responsible for only a portion of the difference in health spending per capita between the United States and other OECD countries. Physician services accounted for only 19.5 percent of U.S. health spending, and physician incomes represent only about half of spending for physician services. The remainder is for practice expenses. Nevertheless, this aspect of physician spending warrants public policy attention.

Pharmaceuticals

There is general uniformity across the OECD nations in the level of per capita spending on pharmaceuticals, in spite of wide differences in total health spending (Exhibit 5). The median OECD country spent $234 per capita on pharmaceuticals in 1996. Five coun-

tries—Belgium, France, Iceland, Japan, and the United States—spent more than $300 per capita; and six nations—Denmark, Hungary, Ireland, New Zealand, Norway, and Switzerland—spent less than $200 per capita. It is also likely that Korea, Mexico, Poland, and Turkey spent less than $200, although no data were available.

There is much greater variation in the percentage of health care resources devoted to pharmaceuticals. Switzerland and the United States spent the smallest percentage of health care resources on pharmaceuticals, and Turkey and Hungary spent the largest. Generally, there is an inverse relationship between per capita income and the percentage of the health care dollar spent on pharmaceuticals. This may be because pharmaceuticals are one of the few health care services purchased on the international market, whereas most other goods and services are purchased on the domestic market.

Health Status And Outcomes Of Care

Comparisons of outcomes using international data are fraught with problems. It is widely recognized that most standard outcome measures such as longevity or infant mortality are only crude proxies for health status and are not very sensitive to changes in the health care financing and delivery systems.[21] Research is continuing on the development of better outcome indicators. Some researchers are trying to develop or refine a health status measure that summarizes the health status of a country using a single indicator, such as quality-adjusted life years, disability-adjusted life years, and health-adjusted life years.[22] In addition, a number of health status measures such as the SF-36 and SIP have been adapted for use in other languages and cultures.[23] At the same time, other researchers and countries have decided that a single aggregate indicator cannot possibly summarize the health status of a population and therefore have begun developing multiple indicators.[24]

Unlike longevity and infant mortality, most of these measures are still in development or are not collected routinely in many of countries; therefore, analysts must rely on available indicators as a proxy for health care outcomes. For better comparisons of outcomes at the population level, data-collection efforts should reflect the health status of the population and be sensitive to interventions in the health care financing and delivery systems.

Life expectancy. In 1996 the range of life expectancies at birth for women ranged from a high of 83.6 years in Japan to a low of 70.5 years in Turkey (Exhibit 6). The United States (79.4 years) was below the OECD median of 80.3 years. For women age sixty-five, life expectancy ranged from a high of 21.5 years in Japan to a low of 15.9 years in Hungary.[25] Life expectancy for women age sixty-five in the

EXHIBIT 6
Health Status And Outcomes In Twenty-Nine Countries, 1996

	Pecent of population age 65 and older	Life expectancy (years)				Infant mortality per thousand live births	Potential years of life lost per 100,000 life years, 1995	
		At birth		At age 65				
		Female	Male	Female	Male		Female	Male
Australia	12.0%	81.1	75.2	19.6	15.8	5.8	3,103	5,193
Austria	14.7	80.2	73.9	18.8	15.3	5.1	3,248	6,321
Belgium	15.9	81.0	74.3	19.7	15.3	6.0	3,526	6,259
Canada	12.0	81.5	75.4	20.2	16.3	6.0	3,284	5,451
Czech Republic	12.5	77.2	70.5	16.5	12.9	6.0	4,233	8,935
Denmark	15.5	78.0	72.8	17.7	14.2	5.2	4,058	6,217
Finland	14.4	80.5	73.0	18.7	14.6	4.0	2,856	6,217
France	15.4	82.0	74.1	20.6	16.1	4.9	3,092	6,861
Germany	15.6	79.9	73.6	18.6	14.9	5.0	3,337	6,505
Greece	16.0	80.4	75.1	18.6	16.1	7.3	3,165	6,317
Hungary	14.1	74.7	66.6	15.9	12.1	10.6	6,334	14,519
Iceland	11.5	80.6	76.2	19.1	16.2	3.7	2,520	3,928
Ireland	11.4	78.5	73.2	17.4[a]	13.7[a]	5.5	3,444	5,795
Italy	16.3	81.3	74.9	19.6	15.7	5.8	3,144	5,951
Japan	14.6	83.6	77.0	21.5	16.9	3.8	2,399	4,443
Korea	6.1	77.4[a]	69.5[a]	16.9[a]	13.2[a]	9.0	3,251	7,403
Luxembourg	13.7	80.0	73.0	19.2[a]	14.7[a]	4.9	3,015	6,303
Mexico	4.1	76.5	70.1	18.8	15.5	17.0	5,872	9,945
Netherlands	13.3	80.4	74.7	18.6	14.4	5.2	3,262	5,139
New Zealand	11.3	79.8	74.3	19.0	15.5	7.4	4,775	7,342
Norway	15.6	81.1	75.4	19.5	15.5	4.0	3,070	4,968
Poland	11.5	76.8	67.8	16.8	13.0	12.3	5,361	12,103
Portugal	14.8	78.5	71.2	17.7	14.3	6.9	4,117	9,234
Spain	15.5	81.6	74.4	19.8	15.8	5.0	3,056	6,940
Sweden	17.5	81.5	76.5	19.7	16.1	4.0	2,631	4,305
Switzerland	14.9	81.9	75.7	20.3	16.3	4.7	2,948	5,527
Turkey	5.2	70.5	65.9	–[b]	–[b]	42.2	–[b]	–[b]
United Kingdom	15.6	79.3	74.4	18.4	14.7	6.1	3,616	5,690
United States	12.7	79.4	72.7	18.9	15.7	7.8	4,591	8,401
OECD median	14.4	80.3	74.0	18.9	15.5	5.8	3,256	6,281

SOURCE: *OECD Health Data 98: A Comparative Analysis of Twenty-nine Countries* (Paris: Organization for Economic Cooperation and Development, 1998).
[a] 1995 data.
[b] Not available.

United States (18.9 years) is equal to the OECD median.

Life expectancy at birth was 6.3 years shorter for males than for females in the median OECD country in 1996. Japan had the longest life expectancy at birth for males, and Turkey had the shortest. For men age sixty-five, life expectancy ranged from a high of 16.9 years in Japan to a low of 12.1 years in Hungary. Life expectancy for U.S. males age sixty-five was 15.7 years, slightly above the OECD median of 15.5 years.

Between 1960 and 1996 life expectancy for females at birth in the median OECD country increased 7.6 years, while for males it increased 6.5 years (data not presented). In the United States the increase was below the OECD median—6.3 years for females and 6.1 years for males. Turkey had the largest increase for both males (19.4

years) and females (20.8 years). Hungary had the smallest increase for males (0.7 years), and the Czech Republic had the smallest increase for females (3.8 years). The median OECD life expectancy at age sixty-five increased 4.0 years for females and 3.0 years for males. Increases in the United States were below the OECD median—3.1 years for females and 2.9 years for males. Japan had the largest increase for both men (7.4 years) and women (5.3 years). Poland had the smallest increase for females (1.9 years) and Hungary the smallest for males (−0.2 years).

Infant mortality. Another crude outcome indicator is the infant mortality rate. The OECD median infant mortality rate was 5.8 deaths per thousand live births in 1996 (Exhibit 6). The U.S. rate was 7.8. Only Hungary, Korea, Mexico, Poland, and Turkey had higher infant mortality rates in 1996. From 1960 to 1996 the infant mortality rate declined in all countries (data not presented). In the OECD median country the decline was 21.6 per thousand live births. In the United States the decline was 18.2 per thousand live births.

Years of life lost. A more sophisticated measure of longevity is potential years of life lost.[26] This indicator measures the number of years before age seventy a person died from causes that could have been prevented. In 1995 the range for women was from 6,334 years per 100,000 life years in Hungary to 2,399 years in Japan. The U.S. rate was 4,591 years. For men, the range was from 14,519 years in Hungary to 3,928 years in Iceland. The U.S. rate was 8,401 years.

For nearly all available outcome measures, the United States ranked near the bottom of the OECD countries in 1996, and the rate of improvement for most of the indicators has been slower than the median OECD country. The available indicators, however, are generally recognized not to be sensitive to changes in the health care financing and delivery systems. On other indicators, the United States' ranking could improve.

LOOKING AT DATA FROM many countries allows policymakers to compare where individual countries are doing well, doing poorly, or simply making different choices. As the research and policy-making communities develop better outcome measures, the utility of international comparisons will improve.

Peter Hussey did all of the analytic work to prepare the exhibits; the paper could not have been done without his diligence. The Commonwealth Fund supported this analysis and provided numerous helpful suggestions.

NOTES

1. *OECD Health Data 98: A Comparative Analysis of Twenty-nine Countries* can be obtained by contacting the OECD Information Center, Suite 605, 2001 L Street, NW, Washington, DC 20036-4922 (tel.: 202-785-6323, fax: 202-785-0350, e-mail: washington.contact@oecd.org). Some of the data presented here are updated from the initial release, which is available on CD-ROM.
2. PPPs are used to adjust for differences in cost of living across countries by comparing prices for a fixed basket of goods and services. The basket of goods and services used here is broad-based, not health-based.
3. Total health spending includes spending for hospitals, physicians, nursing homes, pharmaceuticals, therapeutic appliances, biomedical research and development, public health, administration, construction, and other services. International comparisons of health spending must recognize that countries include slightly different services in the health care sector and that numbers are continually being revised as new information becomes available. Some of the numbers for 1996 are estimates. All figures for 1997 are projections.

   For ranking purposes, data from recent years are sometimes substituted if data for the desired year are missing for a particular country, rather than omitting the country completely from the analysis. For example, PPPs have not been calculated for the Czech Republic, Hungary, and Poland for 1997, so the figures for per capita health spending for 1996 were used.
4. The median was chosen because it is less influenced by outliers than the mean is. The median is calculated based on the countries for which data are reported in that year. In some years that will not include all twenty-nine countries.
5. For example, the Maastricht Treaty requires countries to limit their public finance deficit to less than 3 percent of GDP for the country to be eligible for the Euro. This places considerable pressure on countries to control health spending to keep the public finance deficit low.
6. Change in the percentage of GDP spent on health care reflects the change in GDP as well as the change in health care spending. GDP grew in all OECD countries from 1960 to 1997, although at different rates. The countries with the most rapid growth in GDP in 1960–1997 were Greece, Ireland, and Turkey. Countries with relatively slow growth were Sweden, Switzerland, and the United Kingdom. The OECD median growth in GDP was seventeenfold. The rate of growth of GDP in the United States was fourteenfold, or twentieth of twenty-four countries during the time period.
7. Growth in GDP could not be calculated for the Czech Republic, Hungary, Korea, Mexico, and Poland.
8. *Current Population Reports*, Series P60-202 (Washington: U.S. Bureau of the Census, September 1998).
9. This may be an accounting issue for Austria. An upward revision is likely, expected to bring Austria into the 40 percent range.
10. In Canada the inpatient admission rate declined from 15 percent of the population in 1960 to 11 percent in 1996. In the United States the decline was from 13.9 percent to 12.2 percent. Inpatient admissions data were available for fourteen countries for 1960 and 1995 or 1996.
11. A portion of the variation in length-of-stay could be attributable to differences in how hospitals are defined.
12. Part of the explanation for the much longer average length-of-stay in Japan is the lack of a fully developed nursing home industry. Among the countries reporting data on nursing home beds, Japan has one of the lowest numbers of nursing home beds per capita. As a result, patients requiring long-term care may be treated in acute care hospitals. In Japan 45 percent of inpatients over age sixty-five remain in the hospital for more than six months. See N. Ikegami,

"Overview: Health Care in Japan," in *Containing Health Care Costs in Japan*, ed. N. Ikegami and J.C. Campbell (Ann Arbor, Mich.: University of Michigan Press, 1996), 9.
13. J.P. Newhouse, "An Iconoclastic View of Health Cost Containment," *Health Affairs* (Supplement 1993): 152–171.
14. Sometimes the figures reflect total employees and not FTE employees per bed.
15. In most countries hospital-based physicians are salaried employees of the hospital, and their costs cannot be separated from the other expenditures. Only the United States separates physician fees from other hospital spending when a patient is treated in the hospital. If physician fees were included in hospital expenditures, hospital spending per capita and per day would be even higher.
16. Denmark's hospital expenditures per day may be high because nursing homes were not included in some calculations. The OECD definition of *inpatient* includes nursing homes.
17. Physician income after practice expenses and malpractice insurance but before income tax.
18. For more detailed information, contact Gerard Anderson, Johns Hopkins University, Center for Hospital Finance and Management, 624 North Broadway, Baltimore, Maryland 21205.
19. W.B. Weeks et al., "A Comparison of the Educational Costs and Incomes of Physicians and Other Professionals," *New England Journal of Medicine* 330, no. 18 (1994): 1280–1286.
20. The United States had the highest level of income inequality of fifteen OECD countries as measured by the Gini index. A.B. Atkinson, L. Rainwater, and T.M. Smeeding, *Income Distribution in OECD Countries: Evidence from the Luxembourg Income Study* (Paris: OECD, 1995), 46.
21. D.A. Kindig, *Purchasing Population Health: Paying for Results* (Ann Arbor, Mich.: University of Michigan Press, 1997).
22. See, for example, M. Weinstein and W. Stason, "Foundations of Cost-Effectiveness Analysis for Health and Medical Practices," *New England Journal of Medicine* 296, no. 13 (1977): 716–721; and C.J.L. Murray, "Quantifying the Burden of Disease: The Technical Basis for Disability-Adjusted Life Year," *Bulletin of the World Health Organization* 72, no. 3 (1994): 429–445.
23. J. Ware, "The Status of Health Assessment in 1994," *Annual Review of Public Health* 16 (1995): 327–354; and D. Patrick and M. Bergner, "The Measurement of Health Status in the 1990s," *Annual Review of Public Health* 11 (1990): 165–183.
24. N. Roos et al., "Population Health and Health Care Use: An Information System for Health Policy Makers," *Milbank Memorial Fund Quarterly* 74, no. 1 (1996): 3–29. The United Kingdom is piloting an information system that will allow comparison of health status along a number of dimensions. Other attempts are under way in Australia, Canada, the Netherlands, New Zealand, and other countries.
25. Life expectancy at age sixty-five is probably lower in Turkey, where it is not calculated.
26. The OECD defines potential years of life lost (PYLL) as a summary measure of premature mortality that provides an explicit way of weighting deaths occurring at younger ages that are considered preventable. The calculation for PYLL involves adding up deaths occurring at each age and multiplying this by the number of remaining years to live until a selected age limit. A limit of seventy years was chosen for the calculations in *OECD Health Data 98*.