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In Search Of Value: An International Comparison Of Cost, Access, And Outcomes

The United States still spends more and fares worse on health indicators than most industrialized nations do.

BY GERARD F. ANDERSON

THE ORGANIZATION FOR Economic Cooperation and Development (OECD) has released information on per capita health care spending, utilization rates, health status, demographic factors, and other data on twenty-nine industrialized countries for 1960–1996.¹ While complete data are not available for each country for each year and there are numerous methodologic and data issues involved in any international comparison, the data are useful in answering a variety of policy-related questions.² In particular, the data allow policymakers to evaluate their country's progress relative to that of other countries.

In this paper I use the OECD data to compare the recent performance of the U.S. health care system with systems in other industrialized countries. The comparisons focus on three dimensions that have dominated health care debates for years: cost, access, and outcomes. The paper examines whether the United States has shown improvement relative to other industrialized countries on any of these dimensions in the 1990s. Some of the comparisons involve all twenty-nine countries in the database, while other comparisons involve only the Group of Seven (G7) countries (Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States).³

COST

The United States spent considerably more on health care services in 1996 than any other industrialized country and experienced more rapid increases in the level of health care spending than most of the industrialized countries in the period 1990–1996 (Exhibit 1). In 1996 the United States spent the highest percentage of its gross domestic product (GDP) on health care of all twenty-nine industrialized countries by a wide margin. In that year the United States spent 14.2 percent of its GDP on health care, followed by Germany (10.5 percent), Switzerland (9.8 percent), France (9.6 percent), and Canada (9.2 percent).⁴ The United States also spent considerably more per capita on health care services (adjusted for purchasing power parities) in 1996 than any other country: \$3,708 per capita, followed by Switzerland (\$2,412), Germany (\$2,222), Luxembourg (\$2,206), and Canada (\$2,002).⁵

The story is generally similar for comparisons of the rate of growth in health spending during the 1990s. Between 1990 and 1996 the percentage of GDP spent on health care increased 1.5 percentage points in the United States (from 12.7 percent to 14.2 percent). The countries that had more rapid increases dur-

163

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EXHIBIT 1
Spending On Health Care, 1990 And 1996

Country	Percent of GDP spent on health		Per capita spending ^a (in U.S. dollars)	
	1990	1996	1990	1996
Australia	8.2%	8.4%	\$1,316	\$1,776
Austria	7.1	7.9	1,180	1,681
Belgium	7.6	7.9	1,247	1,693
Canada	9.2	9.2	1,691	2,002
Czech Republic	5.5	7.9 ^b	538	749 ^b
Denmark	6.5	6.4	1,069	1,430
Finland	8.0	7.5	1,292	1,389
France	8.9	9.6	1,539	1,978
Germany	8.2	10.5	1,642	2,222
Greece	4.2	5.9	389	748
Hungary	6.6	6.7	— ^c	— ^c
Iceland	8.0	7.9	1,375	1,839
Ireland	6.6	4.9	748	923
Italy	8.1	7.6	1,322	1,520
Japan	6.0	7.2 ^b	1,082	1,581 ^b
Korea	3.9	5.3 ^b	310	666 ^b
Luxembourg	6.6	7.0 ^b	1,499	2,206 ^b
Mexico	— ^c	4.5	— ^c	384
Netherlands	8.3	8.6	1,325	1,756
New Zealand	7.0	7.2	937	1,251
Norway	7.8	7.9	1,365	1,937
Poland	4.4	4.4	— ^c	— ^c
Portugal	6.5	8.2	616	1,077
Spain	6.9	7.6 ^b	813	1,131
Sweden	8.8	7.2 ^b	1,492	1,405
Switzerland	8.4	9.8 ^b	1,782	2,412 ^b
Turkey	2.5	— ^c	119	— ^c
United Kingdom	6.0	6.9	957	1,304
United States	12.7	14.2	2,689	3,708

SOURCE: Organization for Economic Cooperation and Development Health Data, 1997.

NOTE: GDP is gross domestic product.

^a Per capita spending is adjusted for purchasing power parities. Purchasing power parities express the rate at which one currency should be converted to another for a given expenditure to purchase the same set of goods and services in both countries.

^b 1995 data.

^c Not available.

ing this same time period were the Czech Republic, Germany, Greece, Japan, Korea, and Portugal.⁶ With the exception of Germany, these countries began the decade spending a comparatively small percentage of their GDP on health care. Germany was in the process of unification. Most of the other countries had rather small increases, and six countries (Denmark, Finland, Iceland, Ireland, Italy, and Sweden) actually spent less of their GDP on health care in 1996 than in 1990.

The average annual rate of increase in per capita spending on health care services (ad-

justed for purchasing power parities) between 1990 and 1996 in the United States was 5.5 percent.⁷ Two countries with relatively low spending in 1990 had substantially higher rates of increase during this time period (Portugal at 9.8 percent and Greece at 11.5 percent), and three other countries had slightly higher rates of increase (Spain at 5.7 percent, Norway at 6.0 percent, and Austria at 6.1 percent). In almost all of the remaining countries, the rate of growth in per capita spending was slower than it was in the United States.⁸

In a 1993 volume of *Health Affairs*, Joseph

Newhouse presented a list of factors that might explain the higher level and higher rate of growth in health care spending.⁹ The list included the following: an aging population, administrative costs, the spread of health insurance, increased income, a surplus of physicians, more defensive medicine, expensive care for the terminally ill, productivity in the service sector, and new technology. The OECD database makes it possible to compare the United States with other industrialized countries for several of these factors (Exhibit 2). Because data on some variables are not available for all countries, this analysis focuses on the G7 countries only.

■ **MEDIAN AGE.** In 1996 the median age in the United States was lower than it was in all of the other G7 countries, and the United States had the lowest percentage of its population over age sixty-five of all countries except Canada. Comparing the median ages in 1990 and 1996 suggests that the G7 countries' populations are aging at a similar rate. The percentage of the U.S. population over age sixty-five did not change between 1990 and 1996, whereas it increased in all of the other G7 countries.

■ **HEALTH INSURANCE.** With the excep-

tion of the United States, the G7 countries have achieved nearly universal publicly mandated health insurance coverage.¹⁰ Germany allows the most affluent to purchase private health insurance, so it requires only 92 percent of its population to purchase publicly mandated insurance.¹¹ During 1990–1995 the percentage of the U.S. population with publicly mandated health insurance coverage increased from 44 percent to 45 percent, according to the OECD's definition. The percentage of Americans under age sixty-five with any health insurance coverage actually decreased from 86.1 percent to 84.6 percent during this time period.¹² In most of the G7 countries the scope of coverage is similar to or better than that offered by most private health insurers, managed care plans, and Medicare.¹³

■ **GDP.** GDP per capita has been associated with higher spending on health care.¹⁴ Among the G7 members, the United States had the highest GDP per capita in 1995 (adjusted for purchasing power parities) and the largest increase in GDP per capita between 1990 and 1995.

■ **TECHNOLOGY.** The one factor that Newhouse believes explains most of the increase in the level of health care spending is

EXHIBIT 2

Factors Related To Health Care Spending: A Comparison Of G7 Member Nations

Country	Median age		Percent of population over age 65		GDP per capita ^a (In U.S. dollars)		Scanners per million persons	Magnetic resonance imagers per million persons
	1990	1996	1990	1996	1990	1995	1995	1995
Canada	32.0	35.0 ^b	11.0%	12.1%	\$18,346	\$21,252	8.0	1.3
France	34.7	37.0 ^c	14.0	15.4	17,358	19,953	9.2	2.1
Germany	37.0	38.0	14.9 ^d	15.3	20,045	20,470	15.7	4.8
Italy	36.0	39.0	14.5 ^e	16.4	16,268	19,487	16.9 ^c	3.1 ^c
Japan	37.0	40.0	11.9	14.7	18,190	21,912	63.8 ^b	20.1
United Kingdom	35.0	37.0	15.6	15.8	15,935	17,923	6.3 ^b	3.4
United States	32.0	35.0	12.2	12.2	21,163	25,635	26.0 ^b	15.5

SOURCE: Organization for Economic Cooperation and Development Health Data, 1997.

NOTES: GDP is gross domestic product. G7 refers to the Group of Seven industrialized nations.

^a Adjusted for purchasing power parities.

^b 1993 data.

^c 1994 data.

^d 1991 data.

^e 1989 data.

the spread of new technology.¹⁵ While the OECD data include no direct measures of the spread of new technology, they do contain some indirect measures such as how intensively hospitals are used, the diffusion of specific technologies, and how the health care dollar is allocated.¹⁶

The United States has more scanners and more magnetic resonance imagers (MRIs) than all of the G7 countries except Japan. Japan has more than twice as many scanners as the United States has and slightly more MRIs per capita. These data do not provide comparative information on use rates or the effect of these technologies on incremental costs. However, if access to scanners and MRIs is a good proxy for access to expensive new technologies, and if technology is a major factor explaining spending differences across the G7 countries, then the data would suggest that Japan should be spending more on health care than the United States is spending.

■ **HOSPITALS.** Comparative data on hospital services also reflect the spread of new technologies, since many high-technology services are provided in hospitals. There is wide variation in the number of inpatient hospital beds per capita among the G7 countries, and the United States had the fewest in both

1990 and 1995 (Exhibit 3). The number of beds per capita declined in all G7 countries except Japan between 1990 and 1995.

Average length-of-stay also varies considerably across the G7 countries (Exhibit 3). The United States had the shortest average length-of-stay among the G7 members in both 1990 and 1995. Japan, which in 1995 had an average length-of-stay of 45.5 days, is clearly an outlier.¹⁷ This is probably because Japan does not make a distinction between acute and long-term care beds.¹⁸ Average length-of-stay declined in all of the G7 countries between 1990 and 1995. In the United States a topic of recent public policy interest is the length-of-stay for normal deliveries. In 1993 the average U.S. length-of-stay for a normal delivery was 1.7 days. In Canada it was 2.8 days, and the range in Italy, France, Germany, and Japan was between 5.6 and 6.5 days.

In France, Germany, and the United Kingdom more than one of five persons are hospitalized during the year, compared with one of eight in the United States. While it is difficult to draw definitive conclusions from these data, the numbers presented in Exhibit 3 suggest that U.S. hospitals are probably occupied by more severely ill patients because of the shorter lengths-of-stay and lower admission

EXHIBIT 3

Inpatient Hospital Data: A Comparison Of G7 Member Nations, 1990 And 1995

Country	Inpatient hospital beds per 1,000 population		Average length-of-stay (days) ^a		Percent of population admitted		Hospital staffing ratios ^b	
	1990	1995	1990	1995	1990	1995	1990	1995
Canada	6.2	5.1	13.0	12.2	13.6%	12.5% ^c	2.8	— ^d
France	9.7	8.9	13.3	11.2	23.2	22.7	1.09	1.05
Germany	10.4	9.7	16.7	14.2	19.0	20.7	— ^d	1.95
Italy	7.2	6.4	11.7	10.5	15.5	16.0 ^e	1.5	1.67 ^e
Japan	16.0	16.2 ^e	50.5	45.5	8.2	8.9 ^e	0.88	0.88 ^e
United Kingdom	5.9	4.7	15.6	9.9	18.4	20.8	3.1	— ^d
United States	4.7	4.1	9.1	8.0	13.7	12.4	3.435	— ^d

SOURCE: Organization for Economic Cooperation and Development Health Data, 1997.

NOTE: G7 refers to the Group of Seven industrialized nations.

^a Includes community hospitals, federal hospitals, and psychiatric hospitals.

^b Acute care hospitals only.

^c 1993 data.

^d Not available.

^e 1994 data.

rates. The other countries appear to be able to offer many more inpatient hospital days to their populations at a lower total cost.¹⁹ Compared with the United States, Canada had 48 percent, Italy had 62 percent, the United Kingdom had 100 percent, France had 153 percent, Germany had 171 percent, and Japan had 288 percent more inpatient days per capita in 1995. However, expenditures per capita on hospital services in 1995 (adjusted for purchasing power parities) were considerably lower.

■ **DISTRIBUTION OF SPENDING.** Japan and Germany spend a smaller proportion of their health care resources on hospitals than do the other G7 nations (Exhibit 4). Many countries have had recent initiatives to use more ambulatory and fewer hospital services; the results of these efforts may be reflected in the smaller percentage of resources allocated to hospitals in 1995 compared with 1990 in the United States, the United Kingdom, Japan, and Canada. Germany and Italy spent slightly more on hospitals over the period.

There is considerable variation among the G7 members in the proportion of the health care dollar spent on physicians. Japan consistently spends the most on physicians, followed by the United States and Italy, and then Germany, France, and Canada. The United Kingdom does not report data separately on physician services. The United States spends

the smallest percentage of its health care dollar on pharmaceuticals. On a per capita basis (adjusted for purchasing power parities), however, spending on pharmaceuticals was similar in all G7 countries except the United Kingdom.²⁰

ACCESS

■ **INSURANCE.** Since 1960 a number of public initiatives in the United States have been aimed at reducing the number of uninsured Americans. Federal legislation during this period has included the passage of Medicare and Medicaid and subsequent Medicaid expansions. Although these initiatives have increased the number of persons eligible to receive health insurance coverage under public programs, the gains have been minor compared with those made in other countries over the same period of time.

In 1960 a few countries had achieved 100 percent coverage, and the majority had more than 75 percent of their population eligible for coverage for inpatient hospital services under publicly mandated health insurance (Exhibit 5). Among the countries that reported data for 1960, only the United States, Turkey, Portugal, and Greece had less than half of their population eligible for coverage for inpatient hospital services under publicly mandated insurance.

By 1995 the United States was the only

EXHIBIT 4 Distribution of Health Care Spending, 1990 And 1995

Country	Hospitals		Physicians		Drugs	
	1990	1995	1990	1995	1990	1995
Canada	48%	46%	15%	14%	11%	13%
France	44	44	12	12	17	17
Germany	34	36	17	17	14	13
Italy	45	47	20	21	18	17
Japan	33	29 ^a	36	35 ^a	21	20 ^a
United Kingdom	44	40 ^a	— ^b	— ^b	14	16 ^a
United States	44	43	21	20	9	8

SOURCE: Organization for Economic Cooperation and Development Health Data, 1997.

^a 1994 data.

^b Not available.

EXHIBIT 5
Percentage Of Population Eligible For Publicly Mandated Coverage For Inpatient Hospital Care, OECD Countries, 1960 And 1995

Country	1960	1995
Australia	77.0%	100.0%
Austria	78.0	99.0
Belgium	58.0	99.0
Canada	68.0	100.0
Czech Republic	100.0	100.0
Denmark	95.0	100.0
Finland	100.0	100.0
France	80.0	99.5
Germany	84.0	92.2
Greece	30.0	100.0
Hungary	100.0 ^a	99.0
Iceland	90.0	100.0
Ireland	85.0	100.0
Italy	87.0	100.0
Japan	88.0	100.0
Korea	39.1 ^b	100.0
Luxembourg	100.0	100.0
Mexico	46.4 ^c	68.5
Netherlands	71.0	74.1
New Zealand	100.0	100.0
Norway	100.0	100.0
Poland	— ^d	— ^d
Portugal	18.0	100.0
Spain	50.0	99.3
Sweden	100.0	100.0
Switzerland	72.0	99.5
Turkey	5.8	55.1 ^e
United Kingdom	100.0	100.0
United States	20.0	46.0

SOURCE: Organization for Economic Cooperation and Development Health Data, 1997.

^a 1975 data.

^b 1981 data.

^c 1988 data.

^d Not available.

^e 1990 data.

country that still had less than half of its population eligible for publicly mandated coverage. The U.S. rate increased from 20 percent in 1960 to 46 percent in 1995, primarily because of the passage of Medicare and Medicaid in 1965.²¹ There was little change (an increase from 44 percent to 46 percent) in the early 1990s despite Medicaid expansions.

Many Americans purchase private health

insurance that is not publicly mandated. This is also true in some of the other countries. The most affluent Germans have private health insurance.²² In the Netherlands higher-income employee groups, the self-employed, and state government officials have private health insurance that is not publicly mandated. The Netherlands has achieved universal coverage through a combination of public and private

insurance.²³ In 1995 the United States, Turkey, and Mexico were the only countries among the twenty-nine industrialized nations that had not achieved the objective of nearly universal health insurance coverage for all of their citizens.

■ **SERVICES.** Access to services is difficult to measure using the OECD data since not all countries responded to the OECD questionnaire. In 1995 Japan had the lowest percentage of the population admitted to a hospital (Exhibit 3). Canada and the United States had similar rates of admission, and the percentage of the population admitted for inpatient services was considerably higher in France, Germany, and the United Kingdom. Physician consultations per capita per year are not well reported in the new OECD data. However, in 1993 the number of annual physician consultations per capita for each of the G7 countries was as follows: Japan, 16.3; Canada, 6.8; France, 6.3; the United States, 6.0; Germany, 5.9; and the United Kingdom, 5.8 (not shown).²⁴ With the exception of Japan, which has a system for dispensing pharmaceuticals that encourages visits to physician offices, the G7 countries provide similar levels of access to physicians.²⁵ The data do not provide information on the duration of the visit, the scope of services provided, or other aspects of physician visits.

OUTCOMES

Exhibit 6 presents a few select indicators of health outcomes for the twenty-nine countries. Although these indicators are commonly used to compare health status in various countries, they should not be considered comprehensive measures of health outcomes or the effectiveness of the health care system, because many factors in addition to the health care system can influence these measures.

■ **INFANT MORTALITY.** In 1960 the U.S. infant mortality rate was 26.0 per thousand

live births. This placed the United States twelfth among the twenty-seven countries reporting data that year. By 1990 the U.S. infant mortality rate had improved to 9.2 per thousand live births, but the relative ranking of the United States had fallen to twenty-first of twenty-nine countries. Between 1990 and 1995 the infant mortality rate continued to decline to 8.0 per thousand live births, but the United States fell to twenty-third of twenty-nine countries because other countries showed more rapid improvements.

■ **LIFE EXPECTANCY.** In 1960 life expectancy at birth for women in the United States was 73.1 years, and the United States ranked thirteenth of twenty-nine countries on this measure. By 1990 the relative ranking of the United States had slipped to seventeenth, and by 1995 the United States was tied with New Zealand for twentieth.

For men, life expectancy at birth in 1960 was 66.6 years, and the United States placed seventeenth of twenty-nine countries. In both 1990 and 1995 the United States ranked twenty-first of twenty-nine countries in terms of life expectancy for men, despite overall increases in life expectancy.

SUMMARY

The United States spent the most resources on health care of all the twenty-nine industrialized countries in 1996 by a wide margin. Managed care and other recent initiatives have been credited with slowing the rate of increase in U.S. health care spending in recent years. Although the rate of increase slowed, it was still more rapid than the rate in most other industrialized countries between 1990 and 1996.

Among the twenty-nine industrialized countries, the United States had the lowest percentage of its population eligible for publicly mandated insurance in 1995. Since 1960 Greece, Korea, and Mexico have surpassed

"Only the United States had less than half of its population eligible for publicly mandated health insurance in 1995."

EXHIBIT 6**Infant Mortality And Life Expectancy, OECD Countries, 1990 And 1995**

Country	Infant mortality per 1,000 live births		Life expectancy at birth, males (years)		Life expectancy at birth, females (years)	
	1990	1995	1990	1995	1990	1995
Australia	8.2	5.7	73.9	75.0	80.1	80.9
Austria	7.8	5.4	72.3	73.5	78.9	80.1
Belgium	8.0	7.0	72.4	73.3	79.1	80.0
Canada	6.8	6.0	73.8	75.3	80.4	81.3
Czech Republic	10.8	7.7	67.5	70.0	76.0	76.9
Denmark	7.5	5.5	72.0	72.5	77.7	77.8
Finland	5.6	4.0	70.9	72.8	78.9	80.2
France	7.3	5.0	72.7	73.9	80.9	81.9
Germany	7.1	5.3	72.7	73.0	79.1	79.5
Greece	9.7	8.1	74.6	75.1	79.4	80.3
Hungary	15.0	11.0	65.1	65.3	73.7	74.5
Iceland	5.9	6.1	75.7	76.5	80.3	80.6
Ireland	8.2	6.3	72.0	72.9	77.5	78.5
Italy	8.2	6.2	73.5	74.4	80.0	80.8
Japan	4.6	4.3	75.9	76.4	81.9	82.8
Korea	13.0	9.0	67.4	70.0	75.4	76.0
Luxembourg	7.4	5.0	72.3	72.5	78.5	79.5
Mexico	24.0	16.5	67.7	69.5	74.0	76.0
Netherlands	7.1	5.5	73.8	74.6	80.1	80.4
New Zealand	8.4	7.0	72.4	73.8	78.3	79.2
Norway	7.0	4.0	73.4	74.8	79.8	80.8
Poland	19.3	13.6	66.5	67.6	75.5	76.4
Portugal	11.0	7.4	70.9	71.5	77.9	78.6
Spain	7.6	5.5	73.4	73.2	80.5	81.2
Sweden	6.0	4.1	74.8	76.2	80.4	81.5
Switzerland	6.8	5.0	74.0	75.3	80.9	81.7
Turkey	59.3	45.0	64.1	65.4 ^a	68.4	70.0 ^a
United Kingdom	7.9	6.0	72.9	74.3	78.6	79.7
United States	9.2	8.0	71.8	72.5	78.8	79.2

SOURCE: Organization for Economic Cooperation and Development Health Data, 1997.

^a 1994 data.

the United States on this measure. Among the twenty-nine industrialized countries, only the United States had less than half of its population eligible for publicly mandated health insurance in 1995. The United States appears to be comparable to the other G7 countries in terms of access to physicians, inpatient hospital services, and pharmaceuticals. However, on outcomes indicators such as life expectancy and infant mortality, the United States is frequently in the bottom quartile among the twenty-nine industrialized countries, and its relative ranking has been declining since 1960.

This analysis was funded by The Commonwealth Fund.

NOTES

1. Organization for Economic Cooperation and Development, *OECD Health Data, 1997* (Washington: OECD, 1997).
2. G.J. Scheiber, J.P. Poullier, and L.M. Greenwald, "Health System Performance in OECD Countries, 1980-1992," *Health Affairs* (Fall 1994): 100-112; G.J. Scheiber, J.P. Poullier, and L.M. Greenwald, "Health Spending, Delivery, and Outcomes in OECD Countries," *Health Affairs* (Summer 1993): 120-129; D.A. Rublee and M. Schneider, "International Health Spending: Comparisons with the OECD," *Health Affairs* (Fall 1991): 187-198; and OECD, *New Directions in Health Care Policy*, Health Policy Studies No. 7 (Paris: OECD, 1995). This latter publication provides a good overview of the methodological issues involved in constructing the data set.

3. For certain variables, not all twenty-nine countries responded to the OECD questionnaire. For these variables, the data set was restricted to members of the G7 for some analyses.
4. For Switzerland, the most recent figure available is from 1995.
5. Purchasing power parities express the rate at which one currency should be converted into another for a given expenditure to purchase the same set of goods and services in both countries. Purchasing power parities are generally considered to be a better way to convert money into a common exchange than other adjustments such as exchange rates, but they are not specific to health care.
6. As measured by the average annual growth rate in percentage of GDP spent on health care.
7. A lack of data prevents a comparison adjusting for GDP price deflators. However, the data are adjusted for purchasing power parities. Ulf G. Gerdtham and Bengt Jönsson found similar results using purchasing power parities and GDP price deflators. U.G. Gerdtham and B. Jönsson, "Conversion Factor Instability in International Comparisons of Health Care Expenditures," *Journal of Health Economics* 10, no. 2 (1991): 227-234.
8. Luxembourg, Korea, Japan, and the Czech Republic had higher rates of increase than the United States during 1990-1995. They did not report data for 1996.
9. J.P. Newhouse, "An Iconoclastic View of Health Cost Containment," *Health Affairs* (Supplement 1993): 152-171. See also E.A. Peden and M.S. Freeland, "A Historical Analysis of Medical Spending Growth, 1960-1993," *Health Affairs* (Summer 1995): 235-247. The authors show that half of the growth in U.S. health care spending between 1960 and 1993 can be attributed to the expansion of health insurance coverage.
10. This is not the measure that U.S. policymakers and researchers are accustomed to using to evaluate insurance coverage. However, the percentage of the population covered by all forms of health insurance is not available in the OECD data.
11. J.K. Iglehart, "Health Policy Report: Germany's Health Care System (Part 1)," *The New England Journal of Medicine* 324, no. 7 (1991): 503-508; and J.K. Iglehart, "Health Policy Report: Germany's Health Care System (Part 2)," *The New England Journal of Medicine* 324, no. 24 (1991): 1750-1756.
12. Based on the March Current Population Survey point-in-time estimate. Data obtained directly from Housing and Household Economic Statistics Division, U.S. Bureau of the Census, 1997.
13. W. Glaser, *Health Insurance in Practice: International Variations in Financing, Benefits, and Problems* (San Francisco: Jossey-Bass, 1991).
14. D. Parkin, A. McGuire, and B. Yule, "Aggregate Health Care Expenditures and National Income: Is Health Care a Luxury Good?" *Journal of Health Economics* 6, no. 2 (1987): 109-127; M. Pfaff, "Differences in Health Care Spending across Countries: Statistical Evidence," *Journal of Health Politics, Policy and Law* (Spring 1990): 1-25; U.G. Gerdtham, "Pooling International Health Expenditure Data," *Health Economics* 1, no. 4 (1992): 217-231; and J.M. O'Connell, "The Relationship between Health Expenditures and the Age Structure of the Population in OECD Countries," *Health Economics* 5, no. 6 (1996): 573-578.
15. Peden and Freeland, "A Historical Analysis of Medical Spending Growth, 1960-1993."
16. P. Lazaro and K. Fitch, "The Distribution of 'Big Ticket' Technologies in OECD Countries," *Medical International Journal of Technology Assessment in Health Care* 11, no. 3 (1995): 552-570.
17. For a description of the Japanese health care system, see N. Ikegami and J.C. Campbell, "Medical Care in Japan," *The New England Journal of Medicine* 333, no. 19 (1995): 1295-1299.
18. The OECD recognizes this issue and is attempting to modify the data.
19. The other G7 countries spend less on hospital care and an equivalent or lower percentage of their total health care expenditures on hospital care.
20. Per capita spending on pharmaceuticals (adjusted for purchasing power parities) in 1995 was \$307 in the United States, \$198 in the United Kingdom, \$260 in Italy, \$267 in Germany, \$276 in Canada, \$328 in France, and \$308 in Japan in 1994.
21. How the OECD calculates the value for the United States is unclear since a smaller percentage of the population is insured by Medicare, Medicaid, and other public programs.
22. Iglehart, "Health Policy Report: Germany's Health Care System (Parts 1 and 2)."
23. F.T. Schut, "Health Care Reform in the Netherlands: Balancing Corporatism, Etatism, and Market Mechanisms," *Journal of Health Politics, Policy and Law* (Fall 1995): 615-652.
24. Italy does not report these data to the OECD.
25. Ikegami and Campbell, "Medical Care in Japan."