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National Health Care Spending In 2020: Growth Driven By Federal Spending In Response To The COVID-19 Pandemic

ABSTRACT US health care spending increased 9.7 percent to reach $4.1 trillion in 2020, a much faster rate than the 4.3 percent increase seen in 2019. The acceleration in 2020 was due to a 36.0 percent increase in federal expenditures for health care that occurred largely in response to the COVID-19 pandemic. At the same time, gross domestic product declined 2.2 percent, and the share of the economy devoted to health care spending spiked, reaching 19.7 percent. In 2020 the number of uninsured people fell, while at the same time there were significant shifts in types of coverage.

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The year 2020 was unlike any other in recent memory, as the COVID-19 pandemic swept across the world and disrupted nearly every aspect of normal life. The US health sector was affected by a number of factors, such as the direct treatment of the millions of Americans contracting COVID-19; the influence of social distancing restrictions and requirements regarding access to and use of health services; the short but dramatic two-month recession and its impact on health insurance coverage; and federal government spending on COVID-19 testing, vaccine development, insurance safety nets, and supplemental revenue support to providers. The many unique and, at times, opposing forces at play combined to result in national health expenditures increasing by 9.7 percent (the fastest rate since 2002) to $4.1 trillion in 2020, while gross domestic product (GDP) declined by 2.2 percent (the largest drop since 1938), which led to the health spending share of GDP reaching 19.7 percent, up from 17.6 percent in 2019 (exhibit 1).

Health care spending by the federal government increased 36.0 percent in 2020 (compared with 5.9 percent growth in 2019) (exhibit 2), with much of the growth not directly linked to patient care events. Rather, spending growth was driven by the following: assisting health care providers—in particular, hospitals, physicians, and nursing homes—with revenue lost because of lower utilization and increased costs (through the Provider Relief Fund, which provided direct financial support to providers, and through loans made under the Paycheck Protection Program to provide assistance to firms with qualifying expenses), assisting states with Medicaid funding, and providing increased public health activity related to COVID-19. Increased federal government spending related to COVID-19 led to an increase in the federal government's share of all national health expenditures (36 percent in 2020 compared with 29 percent in 2019), as the other sponsors of health care (state and local governments, households, and businesses) all paid for a smaller share in 2020 than in 2019.

Total national health expenditures that exclude spending associated with federal public health and other federal programs (the latter category includes Paycheck Protection Program loans and the Provider Relief Fund) increased just 1.9 percent in 2020 after an increase of 4.3 percent in 2019 (exhibit 3). This was a function of less use of medical services and goods in 2020 both by those covered through health insurance as well as by those paying directly out of

EXHIBIT 1

National health expenditures (NHE), aggregate and per capita amounts, share of gross domestic product (GDP), and annual growth, calendar years 2014–20

	2014[a]	2015	2016	2017	2018	2019	2020
EXPENDITURE AMOUNT							
NHE, billions	$3,001.4	$3,163.6	$3,305.6	$3,446.5	$3,604.5	$3,759.1	$4,124.0
GDP, billions	$17,550.7	$18,206.0	$18,695.1	$19,479.6	$20,527.2	$21,372.6	$20,893.7
NHE as percent of GDP	17.1	17.4	17.7	17.7	17.6	17.6	19.7
Population (millions)[b]	318.1	320.4	322.8	324.8	326.5	328.0	329.1
NHE per capita	$9,436	$9,873	$10,242	$10,611	$11,040	$11,462	$12,530
GDP per capita	$55,179	$56,818	$57,923	$59,975	$62,871	$65,166	$63,482
Prices (2012 = 100.0)							
Chain-weighted NHE deflator	103.0	103.8	105.2	106.3	108.7	109.9	113.3
GDP price index	103.7	104.7	105.7	107.7	110.3	112.3	113.7
Real spending							
NHE, billions of chained dollars	$2,914	$3,047	$3,143	$3,241	$3,316	$3,422	$3,640
GDP, billions of chained dollars	$16,932	$17,390	$17,680	$18,079	$18,607	$19,033	$18,385
ANNUAL GROWTH							
NHE	5.1%	5.4%	4.5%	4.3%	4.6%	4.3%	9.7%
GDP	4.2	3.7	2.7	4.2	5.4	4.1	–2.2
Population[b]	0.7	0.7	0.7	0.6	0.5	0.5	0.4
NHE per capita	4.3	4.6	3.7	3.6	4.0	3.8	9.3
GDP per capita	3.4	3.0	1.9	3.5	4.8	3.6	–2.6
Prices (2012 = 100.0)							
Chain-weighted NHE deflator	1.7	0.8	1.3	1.1	2.2	1.1	3.1
GDP price index	1.9	1.0	1.0	1.9	2.4	1.8	1.3
Real spending							
NHE, billions of chained dollars	3.3	4.6	3.2	3.1	2.3	3.2	6.4
GDP, billions of chained dollars	2.3	2.7	1.7	2.3	2.9	2.3	–3.4

SOURCE Centers for Medicare and Medicaid Services, Office of the Actuary, National Health Statistics Group; and Department of Commerce, Bureau of Economic Analysis and Census Bureau. **NOTES** Definitions, sources, and methods for NHE categories can be found in Centers for Medicare and Medicaid Services. National Health Expenditure Accounts: methodology paper, 2020 definitions, sources, and methods [Internet]. Baltimore (MD): CMS; 2021 Dec 15 [cited 2021 Dec 15]. Available from: https://www.cms.gov/files/document/definitions-sources-and-methods.pdf. Numbers might not add to totals because of rounding. Percent changes are calculated from unrounded data. [a]Annual growth, 2013–14. [b]Estimates reflect the Census Bureau's definition of resident-based population, which includes all people who usually reside in the fifty states or the District of Columbia but excludes residents living in Puerto Rico and areas under US sovereignty, members of the US Armed Forces overseas, and US citizens whose usual place of residence is outside of the US. Estimates also include a small (typically less than 0.2 percent of the population) adjustment to reflect census undercounts.

pocket. Similarly, spending for those with health insurance (through private health insurance, Medicare, Medicaid, the Children's Health Insurance Program, the Department of Defense, and the Department of Veterans Affairs) grew at a low rate of 3.0 percent in 2020, slowing from 4.3 percent in 2019 (exhibit 3). Out-of-pocket spending on health care (defined as direct consumer payments such as copayments, deductibles, coinsurance, and spending for noncovered services) declined by 3.7 percent in 2020, as the reduction in the use of services and in the number of uninsured people, along with the changing mix of services, led to reduced spending for nearly all health care services and goods.

Hospital care, physician and clinical services, and retail prescription drugs accounted for 59 percent of total health care expenditures (data not shown) and experienced mixed trends in 2020 (exhibit 4). Hospital spending grew at about the same rate in 2020 (6.4 percent) as in 2019 (6.3 percent), whereas physician and clinical services spending increased at a faster rate (5.4 percent compared with 4.2 percent in 2019). For these services, as was the case with almost all health care services, strong growth in federal program spending—primarily for the Provider Relief Fund and Paycheck Protection Program loans—far outweighed the negative or slow growth in private health insurance and out-of-pocket spending that was associated with less use of care in 2020 (exhibit 5). Spending growth on retail prescription drugs slowed (3.0 percent in 2020 compared with 4.3 percent in 2019), mainly because of slower growth in utilization and a decline in retail prescription drug prices.

Classification Of Federal COVID-19 Funding

The global pandemic caused major disruptions to the overall economy and to the delivery of health care goods and services. Economic shutdowns, increased pandemic-related hospitaliza-

EXHIBIT 2

National health expenditures (NHE) amounts, annual growth, and percent distribution, by type of sponsor, calendar years 2014–20

Type of sponsor	2014[a]	2015	2016	2017	2018	2019	2020
EXPENDITURE AMOUNT							
NHE, billions	$3,001.4	$3,163.6	$3,305.6	$3,446.5	$3,604.5	$3,759.1	$4,124.0
Businesses, household, and other private revenues	1,639.5	1,709.7	1,789.1	1,881.5	1,966.9	2,050.2	2,037.3
Private businesses	577.5	595.1	624.1	654.2	686.6	712.5	690.5
Household	856.3	900.8	937.7	977.5	1,021.7	1,067.0	1,078.3
Other private revenues	205.7	213.8	227.2	249.7	258.7	270.7	268.6
Governments	1,361.9	1,454.0	1,516.5	1,565.0	1,637.6	1,708.9	2,086.7
Federal government	843.5	916.2	959.3	988.8	1,041.2	1,102.3	1,498.7
Federal government contribution to employer-sponsored private health insurance premiums	33.2	33.9	36.2	37.5	38.3	38.6	39.8
Federal general revenue and Medicare net trust fund expenditures[b]	279.6	293.7	303.5	307.6	326.8	359.3	370.0
Federal portion of Medicaid payments	305.9	342.8	357.8	361.4	372.2	387.3	460.0
Other federal health insurance and programs[c]	193.2	203.6	213.2	225.7	236.5	250.2	559.3
All other federal health expenditures[d]	31.5	42.2	48.6	56.6	67.3	66.8	69.6
State and local governments	518.4	537.8	557.1	576.3	596.4	606.6	588.0
ANNUAL GROWTH							
NHE	5.1%	5.4%	4.5%	4.3%	4.6%	4.3%	9.7%
Businesses, household, and other private revenues	3.0	4.3	4.6	5.2	4.5	4.2	–0.6
Private businesses	3.4	3.0	4.9	4.8	4.9	3.8	–3.1
Household	3.5	5.2	4.1	4.2	4.5	4.4	1.1
Other private revenues	0.0	3.9	6.3	9.9	3.6	4.7	–0.8
Governments	7.7	6.8	4.3	3.2	4.6	4.4	22.1
Federal government	11.0	8.6	4.7	3.1	5.3	5.9	36.0
Federal government contribution to employer-sponsored private health insurance premiums	2.6	2.1	6.6	3.6	2.3	0.6	3.2
Federal general revenue and Medicare net trust fund expenditures[b]	3.5	5.0	3.3	1.4	6.2	10.0	3.0
Federal portion of Medicaid payments	19.2	12.0	4.4	1.0	3.0	4.1	18.8
Other federal health insurance and programs[c]	3.6	5.4	4.7	5.8	4.8	5.8	123.5
All other federal health expenditures[d]	123.6	34.0	15.1	16.4	19.0	–0.7	4.1
State and local governments	2.7	3.7	3.6	3.4	3.5	1.7	–3.1
PERCENT DISTRIBUTION							
NHE	100%	100%	100%	100%	100%	100%	100%
Businesses, household, and other private revenues	55	54	54	55	55	55	49
Private businesses	19	19	19	19	19	19	17
Household	29	28	28	28	28	28	26
Other private revenues	7	7	7	7	7	7	7
Governments	45	46	46	45	45	45	51
Federal government	28	29	29	29	29	29	36
Federal government contribution to employer-sponsored private health insurance premiums	1	1	1	1	1	1	1
Federal general revenue and Medicare net trust fund expenditures[b]	9	9	9	9	9	10	9
Federal portion of Medicaid payments	10	11	11	10	10	10	11
Other federal health insurance and programs[c]	6	6	6	7	7	7	14
All other federal health expenditures[d]	1	1	1	2	2	2	2
State and local governments	17	17	17	17	17	16	14

SOURCE Centers for Medicare and Medicaid Services, Office of the Actuary, National Health Statistics Group. **NOTES** Definitions, sources, and methods for NHE categories can be found in CMS. National Health Expenditure Accounts: methodology paper (see the exhibit 1 notes). Numbers might not add to totals because of rounding. Percent changes are calculated from unrounded data. [a]Annual growth, 2013–14. [b]Excludes Medicare Hospital Trust (HI) Fund payroll taxes and premiums, Medicare Supplementary Medical Insurance premiums, Part D state phase-down payments to Medicare beginning in 2006, Medicare premium buy-in programs by Medicaid for people eligible for both Medicaid and Medicare, and Trust Fund revenues from the income taxation of Social Security benefits. [c]Includes maternal and child health, vocational rehabilitation, SAMHSA, IHS, federal workers' compensation, other federal programs, public health activities, Department of Defense, Department of Veterans Affairs, CHIP Titles XIX and XXI, and investment (research, structures, and equipment). Also includes government subsidy payments for COBRA coverage for 2009–11, small business tax credits beginning in 2010, Early Retirement Reinsurance Program payments for 2010–11, and payments for the Basic Health Program beginning in 2015. Excludes premiums paid for the Pre-Existing Condition Insurance Plan for 2010–14. [d]Includes employer Medicare HI Trust Fund payroll taxes, federal portion of Medicare buy-in premiums, retiree drug subsidy payments to employee plans, and Marketplace tax credits and cost-sharing subsidies (beginning in 2014).

EXHIBIT 3

National health expenditures (NHE) and annual growth, by source of funds, calendar years 2014–20

Source of funds	2014[a]	2015	2016	2017	2018	2019	2020
EXPENDITURE AMOUNT (BILLIONS)							
NHE	$3,001.4	$3,163.6	$3,305.6	$3,446.5	$3,604.5	$3,759.1	$4,124.0
Health consumption expenditures	2,841.9	3,000.6	3,139.5	3,266.3	3,415.9	3,564.2	3,931.3
Out of pocket	340.3	352.9	365.6	372.6	386.5	403.7	388.6
Health insurance	2,150.2	2,287.6	2,395.8	2,494.5	2,613.3	2,726.4	2,809.3
Private health insurance	921.9	975.6	1,029.8	1,079.1	1,131.0	1,165.6	1,151.4
Medicare	617.6	647.9	675.7	704.8	749.4	801.4	829.5
Medicaid	498.2	543.0	564.9	578.6	596.4	614.4	671.2
Federal	305.9	342.8	357.8	361.4	372.2	387.3	460.0
State and local	192.2	200.2	207.0	217.1	224.2	227.1	211.2
Other health insurance programs[b]	112.6	121.1	125.4	132.1	136.5	145.0	157.2
Other third-party payers and programs	267.0	274.6	288.1	303.1	316.3	329.2	509.7
Other federal programs[c]	12.2	12.6	12.4	12.2	12.8	14.0	193.9
Other third-party payers and programs less other federal programs	254.9	262.0	275.8	290.9	303.5	315.2	315.8
Public health activity	84.4	85.5	90.0	96.2	99.7	105.0	223.7
Federal[d]	10.8	11.3	11.8	12.6	12.1	13.3	128.2
State and local	73.5	74.2	78.2	83.6	87.7	91.7	95.5
Investment	159.6	163.1	166.1	180.2	188.6	194.9	192.7
ANNUAL GROWTH							
NHE	5.1%	5.4%	4.5%	4.3%	4.6%	4.3%	9.7%
Health consumption expenditures	5.5	5.6	4.6	4.0	4.6	4.3	10.3
Out of pocket	2.9	3.7	3.6	1.9	3.7	4.4	–3.7
Health insurance	6.5	6.4	4.7	4.1	4.8	4.3	3.0
Private health insurance	4.9	5.8	5.5	4.8	4.8	3.1	–1.2
Medicare	4.9	4.9	4.3	4.3	6.3	6.9	3.5
Medicaid	12.0	9.0	4.0	2.4	3.1	3.0	9.2
Federal	19.2	12.0	4.4	1.0	3.0	4.1	18.8
State and local	2.1	4.2	3.4	4.9	3.3	1.3	–7.0
Other health insurance programs[b]	6.3	7.5	3.6	5.3	3.4	6.2	8.4
Other third-party payers and programs	1.9	2.8	4.9	5.2	4.4	4.1	54.8
Other federal programs[c]	–6.0	3.0	–1.6	–1.1	5.2	9.3	1,282.0
Other third-party payers and programs less other federal programs	2.4	2.8	5.3	5.5	4.3	3.9	0.2
Public health activity	3.5	1.3	5.2	6.9	3.7	5.3	113.1
Federal[d]	4.8	4.6	4.0	7.0	–4.3	10.3	864.5
State and local	3.3	0.9	5.4	6.9	4.9	4.6	4.2
Investment	–2.2	2.2	1.8	8.5	4.7	3.4	–1.2
NHE IMPACTS BY DIRECT FEDERAL COVID-19 SUPPLEMENTAL FUNDING[e]							
NHE excluding federal public health activity expenditures	$2,990.6	$3,152.3	$3,293.8	$3,433.9	$3,592.5	$3,745.8	$3,995.8
NHE excluding federal public health activity expenditures and other federal programs	$2,978.4	$3,139.8	$3,281.4	$3,421.7	$3,579.6	$3,731.8	$3,801.9
NHE IMPACTS, ANNUAL GROWTH							
NHE excluding federal public health activity expenditures	5.1%	5.4%	4.5%	4.3%	4.6%	4.3%	6.7%
NHE excluding federal public health activity expenditures and other federal programs	5.2	5.4	4.5	4.3	4.6	4.3	1.9

SOURCE Centers for Medicare and Medicaid Services, Office of the Actuary, National Health Statistics Group. **NOTES** Definitions, sources, and methods for NHE categories can be found in CMS. National Health Expenditure Accounts: methodology paper (see the exhibit 1 notes). Numbers might not add to totals because of rounding. Percent changes are calculated from unrounded data. [a]Annual growth, 2013–14. [b]Includes health-related spending for CHIP Titles XIX and XXI, Defense, and VA. [c]Federal COVID-19 supplemental funding here includes Paycheck Protection Program (PPP) loans and Provider Relief Fund. [d]Includes COVID-19-related federal public health spending. [e]Billions of dollars. Includes PPP loans, Provider Relief Fund, and COVID-19-related federal public health spending.

tions, shortages of available medical professionals and personal protective equipment, and increased disease surveillance and testing, among other impacts, all contributed to major changes in the way in which health care was delivered, the sources of funds that paid for care, and the amount of services used. To alleviate many of the devastating impacts of the public health

EXHIBIT 4

National health expenditures (NHE) amounts and annual growth, by spending category, calendar years 2014–20

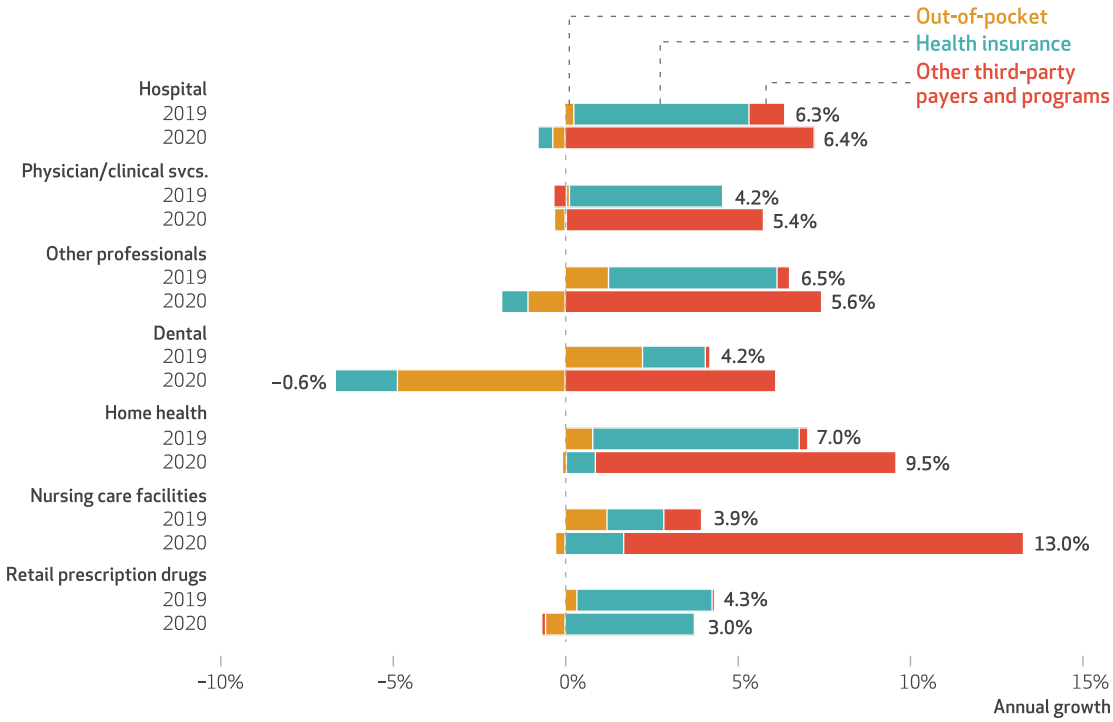
Spending category	2014[a]	2015	2016	2017	2018	2019	2020
EXPENDITURE AMOUNT (BILLIONS)							
NHE	$3,001.4	$3,163.6	$3,305.6	$3,446.5	$3,604.5	$3,759.1	$4,124.0
Health consumption expenditures	2,841.9	3,000.6	3,139.5	3,266.3	3,415.9	3,564.2	3,931.3
Personal health care	2,527.3	2,674.1	2,795.3	2,905.2	3,021.8	3,175.2	3,357.8
Hospital care	940.5	989.0	1,035.4	1,077.6	1,122.6	1,193.7	1,270.1
Professional services	794.8	843.8	893.8	937.5	978.9	1,022.4	1,069.3
Physician and clinical services	597.7	636.4	675.3	709.4	736.9	767.9	809.5
Other professional services	82.4	87.4	92.2	96.9	104.5	111.3	117.4
Dental services	114.7	120.0	126.2	131.1	137.5	143.2	142.4
Other health, residential, and personal care	152.3	165.2	175.0	185.1	191.0	195.7	208.8
Home health care	84.6	89.6	93.7	99.4	105.6	113.0	123.7
Nursing care facilities and continuing care retirement communities	152.3	156.4	161.6	163.4	167.6	174.2	196.8
Retail outlet sales of medical products	402.7	430.2	435.8	442.2	456.0	476.3	489.1
Prescription drugs	290.6	312.2	313.3	315.9	324.2	338.1	348.4
Durable medical equipment	46.6	48.7	50.6	51.9	54.4	57.0	54.9
Other nondurable medical products	65.5	69.3	71.9	74.5	77.5	81.1	85.7
Government administration	41.7	41.7	44.0	43.9	46.3	47.4	48.4
Net cost of health insurance	188.5	199.3	210.2	221.1	248.1	236.6	301.4
Government public health activities	84.4	85.5	90.0	96.2	99.7	105.0	223.7
Investment	159.6	163.1	166.1	180.2	188.6	194.9	192.7
Noncommercial research	46.0	46.4	47.5	50.7	53.6	56.2	60.2
Structures and equipment	113.5	116.7	118.6	129.4	135.0	138.7	132.5
ANNUAL GROWTH							
NHE	5.1%	5.4%	4.5%	4.3%	4.6%	4.3%	9.7%
Health consumption expenditures	5.5	5.6	4.6	4.0	4.6	4.3	10.3
Personal health care	5.1	5.8	4.5	3.9	4.0	5.1	5.8
Hospital care	3.7	5.2	4.7	4.1	4.2	6.3	6.4
Professional services	4.9	6.2	5.9	4.9	4.4	4.4	4.6
Physician and clinical services	5.2	6.5	6.1	5.0	3.9	4.2	5.4
Other professional services	5.6	6.1	5.4	5.1	7.8	6.5	5.6
Dental services	3.0	4.6	5.2	3.9	4.9	4.2	–0.6
Other health, residential, and personal care	5.5	8.4	6.0	5.7	3.2	2.4	6.7
Home health care	4.6	5.8	4.6	6.1	6.2	7.0	9.5
Nursing care facilities and continuing care retirement communities	2.5	2.7	3.4	1.1	2.6	3.9	13.0
Retail outlet sales of medical products	9.6	6.8	1.3	1.5	3.1	4.4	2.7
Prescription drugs	12.1	7.4	0.4	0.8	2.6	4.3	3.0
Durable medical equipment	3.6	4.5	3.9	2.6	4.8	4.9	–3.7
Other nondurable medical products	3.7	5.7	3.8	3.7	4.0	4.7	5.7
Government administration	11.5	–0.0	5.6	–0.3	5.5	2.3	2.1
Net cost of health insurance	12.1	5.7	5.5	5.2	12.2	–4.6	27.4
Government public health activities	3.5	1.3	5.2	6.9	3.7	5.3	113.1
Investment	–2.2	2.2	1.8	8.5	4.7	3.4	–1.2
Noncommercial research	–1.4	0.7	2.4	6.8	5.6	4.9	7.0
Structures and equipment	–2.5	2.8	1.6	9.1	4.3	2.7	–4.5

SOURCE Centers for Medicare and Medicaid Services, Office of the Actuary, National Health Statistics Group. **NOTES** Definitions, sources, and methods for NHE categories can be found in CMS. National Health Expenditure Accounts: methodology paper (see the exhibit 1 notes). Numbers might not add to totals because of rounding. Percent changes are calculated from unrounded data. [a]Annual growth, 2013–14.

emergency, the federal government implemented five pieces of legislation that included major new funding sources for health care providers and for state and local governments: the Coronavirus Preparedness and Response Supplemental Appropriations Act of 2020; the Families First Coronavirus Response Act of 2020; the Coronavirus Aid, Relief, and Economic Security (CARES) Act of 2020; the Paycheck Protection Program and Health Care Enhancement Act of 2020; and the Coronavirus Response and Relief Supplemental Appropriations Act of 2021. These new flows of federal funds were classified in the National Health Expenditure Accounts in part on the basis of international recommendations that considered the nature of the transactions,

EXHIBIT 5

Contributions to growth in expenditures, by type of medical good or service, 2019 and 2020



SOURCE Centers for Medicare and Medicaid Services, Office of the Actuary, National Health Statistics Group. **NOTE** The colored segments within each bar represent the contribution of the designated payer (out-of-pocket, health insurance, and other third-party payers and programs) to overall growth for each medical good or service.

their policy intent, and their real effects on the health sector and the economy.[1–3]

The Provider Relief Fund ($122 billion in 2020) supplied direct federal subsidies to health care providers and is classified under "other federal programs" in the National Health Expenditure Accounts.[4] Similarly, loans under the Paycheck Protection Program ($53 billion in 2020) provided funding for payroll and other eligible expenses to many health care providers.[5] These loans are also recognized as federal subsidies because they are eligible to be forgiven if used for qualifying expenses; to date, they have a very high forgiveness rate (99 percent).[6] In addition, increased federal public health funding included payments for Operation Warp Speed for developing vaccines and therapeutics,[7] strategic stockpiles of drugs and vaccines, and health facility preparedness. Some federal health care providers (such as the Department of Defense, the Department of Veterans Affairs, and the Indian Health Service) were also given direct federal supplemental funding to support operations during the pandemic; these expenditure amounts are included with their respective source-of-funds categories.[8]

Sponsors Of Health Care

In 2020 the federal government and households accounted for the largest shares of national health spending (36 percent and 26 percent, respectively), followed by private businesses (17 percent), state and local governments (14 percent), and other private revenues (7 percent). Most of the growth in overall national health expenditures in 2020 was a result of increased spending by the federal government, as there were declines in spending by private businesses, state and local governments, and other private revenues and slow growth in spending by households (exhibit 2).

Health care expenditures that were financed by the federal government increased rapidly, at 36.0 percent in 2020 (exhibit 2). Growth was driven mainly by spending for the Provider Relief Fund and Paycheck Protection Program loans, increased spending for federal public health activity, and growth in the federal portion of Medicaid payments (a 31 percent share of federal government expenditures) (data not shown). Growth in federal Medicaid payments resulted from the Families First Coronavirus Response Act of 2020 and led to a 6.2-percentage-point increase in the federal medical assistance per-

The pandemic contributed to major changes in the way in which health care was delivered.

centage.[9]

Households experienced slower health care expenditure growth in 2020, increasing 1.1 percent after growth of 4.4 percent in 2019 (exhibit 2). Out-of-pocket spending (a 36 percent share of household expenditures) and households' contributions to employer-sponsored private health insurance premiums (a 27 percent share) were the largest contributors to the deceleration (data not shown). Out-of-pocket spending declined 3.7 percent in 2020 after growing 4.4 percent in 2019, largely attributable to reductions in the use of dental services, hospital care, physician and clinical services, and retail prescription drugs (exhibit 3). In addition, households' contributions to employer-sponsored insurance premiums increased 3.8 percent after growth of 5.5 percent in 2019 (data not shown). The slowdown was driven largely by a decline in enrollment in employer-sponsored insurance.

Health care expenditures by private businesses declined 3.1 percent in 2020 after increasing 3.8 percent in 2019 (exhibit 2). The largest share of private businesses' health spending was contributions to employer-sponsored private health insurance premiums (a 76 percent share of private business spending), which declined 3.6 percent in 2020 after a 4.1 percent increase in 2019 (data not shown). This reflects a decline in enrollment as well as a reduction in spending by self-insured employers resulting from declines in the use of health care goods and services by their employees.

Health care expenditures financed by state and local governments decreased 3.1 percent in 2020 after growth of 1.7 percent in 2019 (exhibit 2). The decrease was driven by a 7.0 percent decline (exhibit 3) in state and local Medicaid expenditures (representing a 36 percent share of state and local spending; data not shown). This expenditure decline occurred as the federal government's share of expenditures for Medicaid increased to help ease the financial burden experienced by state and local governments as a result of the pandemic.

Enrollment

Despite the significant economic and employment disruptions caused by the pandemic in 2020, the number of uninsured people fell slightly. However, there were significant shifts in types of coverage as fewer people were covered through employer-sponsored insurance and more people had insurance through the individual market and public programs, in particular through Medicaid (exhibit 6).

Total private health insurance enrollment declined by 1.7 million (0.8 percent) in 2020, as a 2.3 million decrease in enrollment for employer-sponsored private health insurance was somewhat offset by a 0.6 million increase in enrollment for Marketplace plans (data not shown). The decline in employer-sponsored insurance was largely due to job losses; for Marketplace plans, the pandemic may have caused more people to qualify for subsidies and may have caused existing enrollees to maintain their coverage longer during the year, leading to less attrition and higher enrollment.

Medicare enrollment growth slowed in 2020, with the number of enrollees increasing 2.1 percent compared with growth of 2.6 percent in 2019 (exhibit 6). The deceleration was driven in part by increased mortality in the population age sixty-five and older on account of the pandemic. COVID-19 had a disproportionate impact on Medicare beneficiaries, as people ages sixty-five and older constituted 14 percent of all COVID-19 cases but 80 percent of all COVID-19-related deaths (through the first half of 2021).[10,11]

Medicaid enrollment increased by an estimated 3.7 million (or 5.1 percent) in 2020 after declining slightly in both 2018 and 2019 (exhibit 6). The 2020 increase was the largest since 2015 and can be attributed to pandemic-related job losses as well as enactment of Section 6008 of the Families First Coronavirus Response Act, which provided states that adhered to the "maintenance of eligibility" provisions with a 6.2-percentage-point increase in the federal medical assistance percentage as an incentive for states to not disenroll Medicaid beneficiaries.[9]

The number of uninsured people decreased by 0.6 million (1.9 percent) in 2020 to 31.2 million, and accordingly, the uninsured share of the US population was 9.5 percent in 2020 compared with 9.7 percent in 2019 (exhibit 6).

Other Federal Programs And Government Public Health Activity

In the National Health Expenditure Accounts, the category titled "other federal programs" includes federal subsidies and all other federal medical expenditures not elsewhere classified.

EXHIBIT 6

National health expenditures (NHE) and health insurance enrollment, aggregate and per enrollee amounts, and annual growth, by source of funds, calendar years 2014–20

	2014[a]	2015	2016	2017	2018	2019	2020
PRIVATE HEALTH INSURANCE							
Expenditure (billions)	$921.9	$975.6	$1,029.8	$1,079.1	$1,131.0	$1,165.6	$1,151.4
Expenditure growth	4.9%	5.8%	5.5%	4.8%	4.8%	3.1%	–1.2%
Per enrollee expenditure	$4,735	$4,871	$5,105	$5,340	$5,639	$5,770	$5,749
Per enrollee expenditure growth	2.9%	2.9%	4.8%	4.6%	5.6%	2.3%	–0.4%
Enrollment (millions)	194.7	200.3	201.7	202.1	200.6	202.0	200.3
Enrollment growth	2.0%	2.9%	0.7%	0.2%	–0.8%	0.7%	–0.8%
MEDICARE							
Expenditure (billions)	$617.6	$647.9	$675.7	$704.8	$749.4	$801.4	$829.5
Expenditure growth	4.9%	4.9%	4.3%	4.3%	6.3%	6.9%	3.5%
Per enrollee expenditure	$11,685	$11,934	$12,118	$12,328	$12,771	$13,309	$13,490
Per enrollee expenditure growth	1.8%	2.1%	1.5%	1.7%	3.6%	4.2%	1.4%
Enrollment (millions)	52.8	54.3	55.8	57.2	58.7	60.2	61.5
Enrollment growth	3.1%	2.7%	2.7%	2.5%	2.6%	2.6%	2.1%
MEDICAID							
Expenditure (billions)	$498.2	$543.0	$564.9	$578.6	$596.4	$614.4	$671.2
Expenditure growth	12.0%	9.0%	4.0%	2.4%	3.1%	3.0%	9.2%
Per enrollee expenditure	$7,462	$7,596	$7,690	$7,822	$8,126	$8,499	$8,836
Per enrollee expenditure growth	–0.9%	1.8%	1.2%	1.7%	3.9%	4.6%	4.0%
Enrollment (millions)	66.8	71.5	73.5	74.0	73.4	72.3	76.0
Enrollment growth	13.0%	7.1%	2.7%	0.7%	–0.8%	–1.5%	5.1%
UNINSURED AND POPULATION							
Uninsured (millions)	35.5	29.5	28.7	29.7	30.6	31.8	31.2
Uninsured growth	–19.5%	–17.0%	–2.8%	3.7%	2.9%	3.8%	–1.9%
Population (millions)[b]	318.1	320.4	322.8	324.8	326.5	328.0	329.1
Population growth	0.7%	0.7%	0.7%	0.6%	0.5%	0.5%	0.4%
Insured share of total population	88.8%	90.8%	91.1%	90.8%	90.6%	90.3%	90.5%

SOURCE Centers for Medicare and Medicaid Services, Office of the Actuary, National Health Statistics Group; and Department of Commerce, Census Bureau. **NOTES** Definitions, sources, and methods for NHE categories can be found in CMS. National Health Expenditure Accounts: methodology paper (see the exhibit 1 notes). Numbers might not add to totals because of rounding. Percent changes are calculated from unrounded data. [a]Annual growth, 2013–14. [b]Estimates reflect the Census Bureau's definition of resident-based population, which includes all people who usually reside in the fifty states or the District of Columbia but excludes residents living in Puerto Rico and areas under US sovereignty, members of the US Armed Forces overseas, and US citizens whose usual place of residence is outside of the US. Estimates also include a small (typically less than 0.2 percent of the population) adjustment to reflect census undercounts.

In 2020 this category includes federal supplemental COVID-19 funding from the Provider Relief Fund and Paycheck Protection Program loans. Expenditures in this category increased dramatically because of this supplemental funding to health care providers—from $14.0 billion in 2019 to $193.9 billion in 2020 (exhibit 3).

Moreover, spending for public health activity increased 113.1 percent to reach $223.7 billion in 2020 as the federal portion of such spending grew rapidly because of pandemic-related public health activities (exhibit 3). Public health expenditures include federal, state, and local governments' provision of population-based health care services, including epidemiological surveillance, immunization and vaccination services, and disease prevention programs. In 2020 federal public health expenditures accounted for 57 percent of all public health spending, whereas typically the federal portion accounts for less than 15 percent of such spending overall (data not shown). Public health expenditures through the Department of Health and Human Services, including the Centers for Disease Control and Prevention, experienced rapid growth in 2020 as COVID-19 supplemental funding increased. In addition to Biomedical Advanced Research and Development Authority funding for Operation Warp Speed; strategic stockpiles of drugs, vaccines, and equipment; and health facility preparedness, the federal health response to the pandemic also included an increase in grants to states for pandemic-related public health activities. However, state and local public health spending increased at about the same rate in 2019 and 2020, at 4.6 percent and 4.2 percent, respectively (exhibit 3).

Private Health Insurance

Private health insurance spending accounted for 28 percent of total health care expenditures, or

Health care expenditures that were financed by the federal government increased rapidly, at 36.0 percent in 2020.

$1.15 trillion, in 2020, decreasing by 1.2 percent because of a decline in enrollment and lower utilization as a result of the COVID-19 pandemic (exhibits 3 and 6).

Total private health insurance spending for medical goods and services declined 3.5 percent in 2020 to $1.0 trillion (data not shown). Pandemic-related reductions in health care use, particularly for some elective procedures,[12,13] along with economic shutdowns and moratoria on certain procedures, led to declines in private health insurance spending for hospital care (−5.9 percent), physician and clinical services (−2.6 percent), and dental services (−3.8 percent) (data not shown).

The combination of the health insurance tax (which was reinstated in 2020 after a moratorium in 2019) and a decline in private health insurance spending for most medical goods and services resulted in an increase in the net cost of insurance (the difference between revenues received by private health insurers and the amounts paid by private health insurers for medical care incurred).[14] Spending attributable to the net cost of insurance, which includes administrative costs, taxes, fees, changes in reserves, and profits, increased by $21.6 billion in 2020 to reach $151.1 billion, or a 13.1 percent share of total private health insurance expenditures compared with a share of 11.1 percent in 2019 (data not shown).

Private health insurance enrollment fell by 1.7 million in 2020 as pandemic-related job losses led to some people losing employer-sponsored health insurance coverage. This decrease in the number of enrollees was partially offset by an increase in enrollment in Marketplace plans. Per enrollee private health insurance spending decreased 0.4 percent in 2020 to $5,749, after increasing 2.3 percent to $5,770 in 2019 (exhibit 6).

Medicare

Medicare spending accounted for 20 percent of total national health care expenditures and reached $829.5 billion in 2020. The growth rate for total Medicare spending (for the fee-for-service program and Medicare private plans combined) was 3.5 percent in 2020, decelerating from 6.9 percent in 2019 (exhibit 3).[8] Medicare per enrollee spending increased at a slower rate in 2020 (1.4 percent) than in 2019 (4.2 percent) (exhibit 6), driven by slower growth in expenditures for such services as hospital care and physician and clinical services.

Medicare private plan spending (which accounted for 45 percent of total Medicare expenditures in 2020) increased 17.1 percent in 2020, an acceleration from growth of 15.3 percent in 2019 (data not shown). Consisting mainly of Medicare Advantage plans, Medicare private plans experienced an enrollment increase of 9.5 percent in 2020—accelerating from a growth rate of 7.7 percent in 2019—and represented 40 percent of total Medicare enrollment. Per enrollee Medicare private plan spending increased 6.9 percent in 2020—a relatively steady growth rate compared with that of 7.0 percent in 2019. In 2020, primarily on account of lower utilization resulting from the COVID-19 pandemic, medical benefits paid for by Medicare private plans were lower than had been estimated when plans submitted their premium bids in mid-2019. Although some plans adjusted their benefit packages—modifications that may have included lower cost-sharing requirements[15]—the amount of premiums used to pay for incurred medical care was less than had been anticipated. As a result, the plan's net cost of insurance, which includes administrative costs, taxes, fees, changes in reserves, and profits, increased in 2020 (data not shown).[16]

As a share of total Medicare spending, fee-for-service expenditures accounted for 55 percent in 2020, down from a share of 61 percent in 2019. The decrease was fueled by a 5.5 percent decline in expenditures for health care goods and services—the first decline in such spending since 1999 (data not shown). Although spending for most goods and services (with the notable exception of nursing home care and other nondurable medical products) decreased in 2020, the main drivers in the traditional fee-for-service Medicare program were pronounced decreases in expenditures for hospital care and physician and clinical services, as the COVID-19 pandemic led to reductions in utilization that can be attributed to beneficiaries delaying or forgoing non-COVID-19-related care. In addition, the number of fee-for-service beneficiaries declined 2.2 percent in 2020 (after a smaller decrease of 0.2 per-

cent in 2019); per beneficiary fee-for-service spending declined 3.2 percent in 2020 (data not shown).

Medicaid

In 2020 Medicaid spending accounted for 16 percent of national health care expenditures and reached $671.2 billion. Medicaid spending increased 9.2 percent in 2020—its fastest rate of growth since 2014 (the first year of expanded coverage under the Affordable Care Act) and a rate approximately three times faster than the growth of 3.0 percent in 2019 (exhibit 3). The faster growth in 2020 was influenced primarily by increased enrollment (exhibit 6).

Medicaid hospital spending, which accounted for a third of total Medicaid expenditures, increased 6.7 percent in 2020 compared with 4.6 percent in 2019, driven in part by faster growth in enrollment and increased Medicaid supplemental payments to hospitals, inpatient payments, and payments to mental health facilities. Spending for the second largest category—"other health, residential, and personal care services"—also grew rapidly, accelerating from 1.5 percent growth in 2019 to 9.0 percent in 2020 as a result of faster growth in expenditures for home and community-based waiver services (data not shown).

Medicaid enrollment is estimated to have increased 5.1 percent in 2020. Total Medicaid per enrollee spending growth decelerated slightly to 4.0 percent in 2020, down from 4.6 percent in 2019 (exhibit 6), whereas Medicaid per enrollee growth for personal health care expenditures slowed from 5.6 percent to 1.0 percent (data not shown).

Federal Medicaid spending increased 18.8 percent in 2020 after growth of 4.1 percent in 2019 (exhibit 2). The faster growth was largely attributable to a 6.2-percentage-point increase in the federal medical assistance percentage that resulted from the Families First Coronavirus Response Act.[9] Because of the increase in the federal medical assistance percentage, along with, to a lesser degree, the recent increases from Medicaid expansion (as Idaho, Nebraska, and Utah expanded coverage), the federal share of Medicaid spending was about 69 percent in 2020, the highest percentage in the history of the Medicaid program (data not shown). After a growth rate of 1.3 percent in 2019, Medicaid state and local expenditures fell by 7.0 percent in 2020 (exhibit 3)—a decline that was also attributable in part to the increase in the federal medical assistance percentage.

Out-Of-Pocket Spending

Total out-of-pocket spending declined by 3.7 percent in 2020 after an increase of 4.4 percent in 2019 (exhibit 3). This decline was only the fourth in the history of the National Health Expenditure Accounts, and it was the first since the Great Recession in 2009.

The decrease in out-of-pocket spending was driven primarily by people's responses to the pandemic, as utilization for most goods and services declined and there were little or no cost-sharing requirements for COVID-19 testing and treatment in 2020. In 2020 the largest decreases in out-of-pocket spending were for hospital care and dental services, with spending in each category falling about 12 percent. In addition, retail prescription drugs and physician and clinical services also experienced declines (of 4.2 percent and 3.8 percent, respectively). Partially offsetting these decreases was a 5.8 percent increase in expenditures for other nondurable medical products such as over-the-counter medicines, which represent the largest share of out-of-pocket spending, at 21 percent (data not shown).

Hospital Care

Hospital spending reached $1.3 trillion (a 31 percent share of national health spending) and increased 6.4 percent in 2020, a similar growth rate to that of 6.3 percent in 2019 (exhibit 4). Growth in 2020 reflected a substantial amount of funding from other federal programs (COVID-19 relief is included in this category) and faster increases in Medicaid spending for hospital care (with growth rates of 4.6 percent in 2019 and 6.7 percent in 2020) (data not shown). This faster Medicaid spending growth was offset by a decline in private health insurance expenditures for hospital care (from an increase of 6.6 percent in 2019 to a decrease of 5.9 percent in 2020), a decline in out-of-pocket spending for hospital care (from an increase of 8.3 percent in 2019 to a decrease of 12.6 percent in 2020), and slower growth in Medicare expenditures (from 5.8 percent in 2019 to 0.4 percent in 2020) (data not shown).

Payments from other federal programs to hospitals increased by $84.8 billion in 2020 (data not shown); this category reflects COVID-19 relief spending, with the largest contributor being the Provider Relief Fund.

During 2020 many states decided to place a moratorium on elective procedures to prevent the spread of COVID-19, and many people may have lowered their use of health care and interacted less with the health care system.[17] At the same time, there was a limited supply of critical care hospital equipment and capacity in different

The story that unfolded in 2020 and continues today is unlike anything that has happened in the past 100 years.

areas around the US on account of the pandemic, and this shortage may have contributed to lowered admissions for nonemergency care.[18,19] The number of hospital inpatient days and discharges decreased by 4.7 percent and 9.8 percent, respectively,[20,21] and this lower utilization contributed to the decline in private health insurance and out-of-pocket spending for hospital care in 2020.[22]

Hospital prices, as measured by the Producer Price Index, increased by 3.2 percent in 2020 compared with 2.0 percent in 2019.[23]

Physician And Clinical Services

Spending for physician and clinical services increased 5.4 percent in 2020; it reached $809.5 billion, representing 20 percent of total health care expenditures. This increase followed growth of 4.2 percent in 2019 (exhibit 4). The substantial growth in funding from federal programs that provided COVID-19 relief (Paycheck Protection Program loans and the Provider Relief Fund) was the main reason for faster growth in 2020. In addition, spending was bolstered by strong growth in expenditures for independently billing laboratories resulting from COVID-19-related testing; in the National Health Expenditure Accounts, these expenditures are classified within the physician services category.[24]

Although total physician and clinical services spending growth accelerated, both Medicare and Medicaid expenditure growth for physician and clinical services slowed in 2020. Medicare spending increased 0.5 percent, down from 8.9 percent in 2019, with the deceleration driven by a decline in fee-for-service expenditures. Medicaid spending grew 4.0 percent in 2020 after increasing 6.5 percent in 2019. The slower expenditure growth for Medicaid physician and clinical services was also driven by decreased fee-for-service spending, including expenditures for federally qualified health centers that declined in 2020 after rapid growth in 2019. For private health insurance, spending for physician and clinical services declined for the first time since 2013, decreasing 2.6 percent in 2020 after an increase of 2.6 percent in 2019 (data not shown).

Retail Prescription Drugs

Retail prescription drug spending reached $348.4 billion in 2020 (constituting 8 percent of total health care expenditures) and increased 3.0 percent, which was slower growth than the rate of 4.3 percent seen in 2019 (exhibit 4). COVID-19 had less of an impact on prescription drug spending and use than on medical services, with spending for new prescriptions partially affected by fewer doctor visits during the pandemic and with spending for refills less so.[25] The slowdown in spending growth for retail prescription drugs in 2020 was primarily a result of a 4.2 percent decline in out-of-pocket spending on these drugs (data not shown), which resulted from slower growth in overall utilization and an increased use of coupons, which lower point-of-sale expenditures for consumers.[25] Furthermore, even as new drugs were launched in 2020, expenditure growth on new brand-name drugs decelerated in part because of the pandemic's impact on visits to physicians' offices and a decreased opportunity to prescribe new products.[25]

Growth in utilization, as measured by the number of prescriptions dispensed (based on a thirty-day supply), slowed in 2020 to 1.7 percent from a rate of 2.3 percent in 2019.[25] Also contributing to the slowdown in overall prescription drug spending growth was a decline in prices for the third consecutive year; in 2020 prices for prescription drugs declined 0.1 percent after decreases of 0.4 percent in 2019 and 1.0 percent in 2018.[26] This occurred as retail prescription drug prices declined for generic drugs and as price growth slowed for brand-name drugs.[27] The generic dispensing rate continued to increase in 2020, reaching 86.6 percent compared with 86.4 percent in 2019.[28]

The largest payers of retail prescription drug spending—private health insurance, Medicare, and out-of-pocket spending—experienced slower growth or declining expenditures in 2020. Private health insurance spending, which represented the largest share of prescription drug expenditures (40 percent), increased 2.3 percent in 2020—a slightly lower rate than the growth of 2.9 percent in 2019. Medicare, the second-largest payer at 32 percent, also experienced slower spending growth, with expenditures for retail prescription drugs increasing by 5.1 percent in 2020 after growth of 7.5 percent in 2019. Out-of-

pocket spending accounted for a 13 percent share of total retail prescription drug expenditures in 2020, declined 4.2 percent, and had a significant influence on the overall trend (data not shown).

Conclusion

The year 2020 will always be remembered for the dramatic impact that COVID-19 had on nearly every aspect of life, including the heath care sector and the overall economy. The substantial increase in national health expenditures, with a growth rate of 9.7 percent in 2020, was the result of an unprecedented government response to the global pandemic through increased funding for programs such as the Paycheck Protection Program and the Provider Relief Fund, increased public health spending, and strong growth in federal Medicaid payments. The pandemic's impact on the overall economy was dramatic, causing the GDP to decline by 2.2 percent and contributing to the largest jump in the health spending share of GDP in the sixty-one-year history of the National Health Expenditure Accounts.

Although the specific impact of the pandemic on health expenditures in 2021 is still unknown because of incomplete data, there will likely be notable effects from the widespread vaccination efforts that began in the spring of 2021 and from the emergence of the Delta variant in the summer of 2021, including the variant's influence on cases and hospitalizations. Uncertainty remains regarding how the pandemic may evolve during the winter months (given the emergence of the Omicron variant in late fall 2021), whether the pandemic plays a significant role in 2022 and beyond, and whether there are other factors that might affect future health care consumption decisions. We do know, however, that the story that unfolded in 2020 and continues today is unlike anything that has happened in the past 100 years. ■

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NOTES

1 New pandemic-related federal funds required a detailed consideration of how these expenditures should be classified in a national accounting framework.

2 Mandel BA, Ludwick MS. COVID-19 pandemic: federal recovery legislation and the NIPAs [Internet]. Washington (DC): Bureau of Economic Analysis; 2021 Apr [cited 2021 Nov 19]. Available from: https://www.bea.gov/system/files/2020-06/COVID-19%20Pandemic-Federal%20Recovery%20Legislation%20and%20the%20NIPAs.pdf

3 In response to the pandemic, the United Nations Statistical Commission (working group on National Accounts), along with an expert advisory group, developed guidance on how to classify new government funding for COVID-19 response. Several important principles underlie these recommendations, including the recognition that national accounts should reflect the nature of the transactions and their policy intent and that accounts should reflect the real economic effects of the new programs. We used these broad guidelines to help inform the classification of federal COVID-19 supplemental funding in the National Health Expenditure Accounts (see note 2).

4 A summary of the classification of COVID-19 funding in the National Health Expenditure Accounts is available from CMS.gov. Centers for Medicare and Medicaid Services. Historical [Internet]. Baltimore (MD): CMS; [last updated 2021 Dec 15; cited 2021 Dec 15]. Available for download from: https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/NationalHealthAccountsHistorical

5 We estimated the amount of Paycheck Protection Program funding given to health care providers, using data from the Small Business Administration. We tabulated the data by the North American Industry Classification System categories included in the National Health Expenditure Accounts and assumed a loan forgiveness rate of 99 percent.

6 Small Business Administration. PPP data: forgiveness data [Internet]. Washington (DC): SBA; 2021 Nov 17 [cited 2021 Nov 19]. Available from: https://www.sba.gov/funding-programs/loans/covid-19-relief-options/paycheck-protection-program/ppp-data

7 Operation Warp Speed reflected Biomedical Advanced Research Development Authority funding (federal) that was used to support the development of multiple COVID-19 vaccine candidates.

8 Medicare Accelerated and Advance Payments, which are funds that Medicare providers and suppliers could request and receive expedited approval for in response to the COVID-19 pandemic, are excluded from the National Health Expenditure Accounts' Medicare estimates because they are treated like a loan and must be repaid to the federal government.

9 Stolyar L, Hinton E, Singer N, Rudowitz R. Growth in Medicaid MCO enrollment during the COVID-19 pandemic [Internet]. San Francisco (CA): Henry J. Kaiser Family Foundation; 2021 Jun 24 [cited 2021 Nov 19]. Available from: https://www.kff.org/coronavirus-covid-19/issue-brief/growth-in-medicaid-mco-enrollment-during-the-covid-19-pandemic/

10 Burton R. Context for Medicare payment policy [Internet]. Washington (DC): Medicare Payment Advisory Commission; 2021 Sep 2 [cited 2021 Nov 19]. Available from: https://www.medpac.gov/wp-content/uploads/2021/10/context-medpac-sept-2021.pdf

11 Centers for Disease Control and

Prevention. COVID data tracker: demographic trends of COVID-19 cases and deaths in the US reported to CDC [Internet]. Atlanta (GA): CDC; 2021 Nov 18 [cited 2021 Nov 19]. Available from: https://covid.cdc.gov/covid-data-tracker/#demographics

12 Cox C, Amin K, Kamal R. Health system tracker: how have health spending and utilization changed during the coronavirus pandemic? [Internet]. San Francisco (CA): Henry J. Kaiser Family Foundation; 2021 Mar 22 [cited 2021 Nov 19]. Available from: https://www.healthsystemtracker.org/chart-collection/how-have-healthcare-utilization-and-spending-changed-so-far-during-the-coronavirus-pandemic/#item-covidcostsuse_march update_5

13 Martin K, Kurowski D, Given P, Kennedy K, Clayton E. The impact of COVID-19 on the use of preventative health care [Internet]. Washington (DC): Health Care Cost Institute; 2021 Apr 16 [cited 2021 Nov 19]. Available from: https://healthcostinstitute.org/hcci-research/the-impact-of-covid-19-on-the-use-of-preventive-health-care

14 Internal Revenue Service. Part III—administrative, procedural, and miscellaneous: health insurance providers fee; procedural and administrative guidance. Notice 2019-50 [Internet]. Washington (DC): IRS; 2019 Sep 3 [cited 2021 Nov 19]. Available from: https://www.irs.gov/pub/irs-drop/n-19-50.pdf

15 Medicare Payment Advisory Commission. Report to the Congress: Medicare payment policy [Internet]. Washington (DC): MedPAC; 2021 Mar [cited 2021 Nov 19]. Available from https://www.medpac.gov/wp-content/uploads/import_data/scrape_files/docs/default-source/reports/mar21_medpac_report_to_the_congress_sec.pdf

16 The increase in the net cost of insurance for Medicare private plans in 2020 also reflects the impact of the reinstatement of the health insurance tax, which had been suspended in 2019.

17 Centers for Medicare and Medicaid Services. CMS adult elective surgery and procedures recommendations: limit all non-essential planned surgeries and procedures, including dental, until further notice [Internet]. Baltimore (MD): CMS; 2020 Apr 7 [cited 2021 Nov 19]. Available from: https://www.cms.gov/files/document/covid-elective-surgery-recommendations.pdf

18 Ranney ML, Griffeth V, Jha AK. Critical supply shortages—the need for ventilators and personal protective equipment during the Covid-19 pandemic. N Engl J Med. 2020; 382(18):e41.

19 Yu J, Hammond G, Waken RJ, Fox D, Joynt Maddox KE. Changes in non-COVID-19 emergency department visits by acuity and insurance status during the COVID-19 pandemic. Health Aff (Millwood). 2021;40(6): 896–903.

20 Census Bureau. Business and industry: time series/trend charts: hospitals: U.S. total—not seasonally adjusted total inpatient days [Internet]. Washington (DC): Census Bureau; 2021 Nov 19 [cited 2021 Nov 19]. Available from: https://www.census.gov/econ/currentdata/dbsearch?program=QSS&startYear=2003&endYear=2021&categories=622A&dataType=INPAT&geoLevel=US&notAdjusted=1&submit=GET+DATA&releaseScheduleId=

21 Census Bureau. Business and industry: time series/trend charts: hospitals: U.S. total—not seasonally adjusted total discharges [Internet]. Washington (DC): Census Bureau; 2021 Nov 19 [cited 2021 Nov 19]. Available from: https://www.census.gov/econ/currentdata/dbsearch?program=QSS&startYear=2003&endYear=2021&categories=622A&dataType=-DISC&geoLevel=US&notAdjusted=1&submit=GET+DATA&releaseScheduleId=

22 Reid LD, Fang Z. Changes in hospitalizations and in-hospital deaths in the initial period of the COVID-19 pandemic (April–September 2020), 13 states [Internet]. Rockville (MD): Agency for Healthcare Research and Quality; 2021 Sep [cited 2021 Nov 19]. Available from: https://www.hcup-us.ahrq.gov/reports/statbriefs/sb282-COVID-19-All Hospital.pdf

23 Bureau of Labor Statistics. Producer Price Index industry data, series report: series ID PCU622---622--- [Internet]. Washington (DC): BLS; [cited 2021 Nov 19]. Available for download from: https://data.bls.gov/cgi-bin/srgate

24 Census Bureau. Quarterly Services Survey historical data: 2020 quarterly services releases; 4th quarter, quarterly services report [Internet]. Washington (DC): Census Bureau; 2021 Mar 12 [cited 2021 Nov 19]. Available for download from: https://www.census.gov/services/qss/historic_data.html

25 IQVIA Institute for Human Data Science. The use of medicines in the U.S.: spending and usage trends and outlook to 2025 [Internet]. Parsippany (NJ): IQVIA; 2021 May [cited 2021 Nov 19]. Available for download from: https://www.iqvia.com/insights/the-iqvia-institute/reports/the-use-of-medicines-in-the-us

26 Based on the Centers for Medicare and Medicaid Services Office of the Actuary's adjustments to the published Consumer Price Index for prescription drugs to account for the impact of discounts and rebates.

27 Based on unpublished data from the Bureau of Labor Statistics, Consumer Price Index.

28 Authors' analysis of unpublished data purchased from IQVIA.