

U.S. Investments in Medical and Health Research and Development

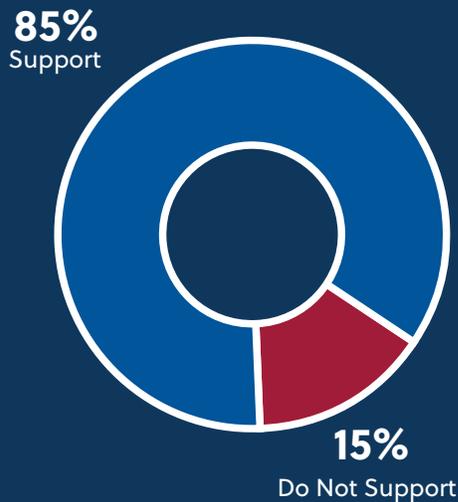
2016-2020

“ The value of biomedical research has never been more self-evident. Indeed the hope for our entire world is dependent upon it.”

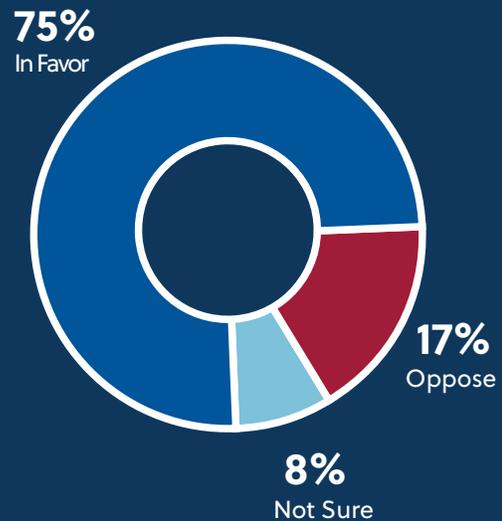
Roy A. Jensen, MD

Director, The University of Kansas Cancer Center

85% of U.S. adults support the federal government investing in basic research



75% of Americans favor doubling federal government spending on medical research



Source: A Research!America poll of U.S. adults conducted in partnership with Zogby Analytics in January 2021.

Introduction

United States (U.S.) medical and health research and development (R&D) investment reached \$245.1 billion in 2020, an 11.1% increase from 2019. The 2020 estimates suggest changes in growth rates across the public-private sector R&D ecosystem, but it is likely these changes predominantly reflect the response to, and impact of, the COVID-19 pandemic.

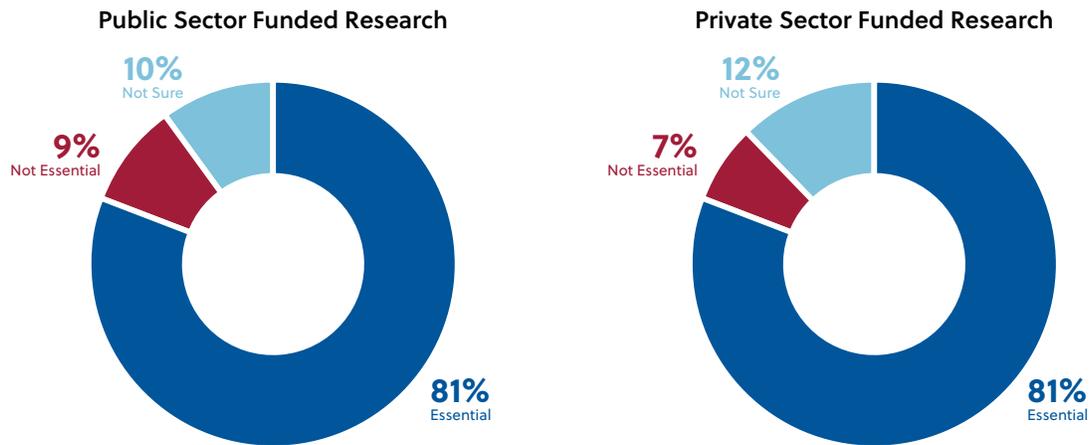
The data in this report attest to the fact that medical progress relies on multi-sector investment. The COVID-19 crisis has driven that point home; we have witnessed the private and public sectors, with support from every other sector captured in this report, working independently and in partnership to rapidly translate decades of scientific discovery into safe, effective diagnostics, vaccines, and treatments.

Even as we combat COVID-19, our nation continues to experience losses from other diseases. The hard truth is that even before the COVID-19 pandemic, premature death was at crisis levels in the U.S. and globally. Every minute of every day, diseases – cancer, heart disease, sickle cell anemia, diabetes, and the list goes on – needlessly rob

individuals in the U.S. and across the globe of their lives. Public and private sector-driven research investment has empowered extraordinary progress against deadly and disabling health threats. That said, by assigning a higher priority to life-saving R&D, our nation can do far more to overcome these threats faster, saving millions of lives and trillions of dollars. Think about it: even with the addition of supplemental federal funding and heightened industry investment in COVID-19 interventions, our nation still spent less than 6 cents of every health care dollar on R&D. As the recently released Lasker Foundation and Research!America report, ***Then. Now. Imagine. An A-to-Z Look at the Diseases, Conditions, and Disorders that Impact Our Lives***, states:

“Patients are urgently awaiting further advances. Finding the answers they need requires sustained increases in research investment. From supporting science education to funding for research labs to incentivizing innovative partnerships, investment in medical research has profound impacts – preventing disease, producing cures, and improving quality of life.”

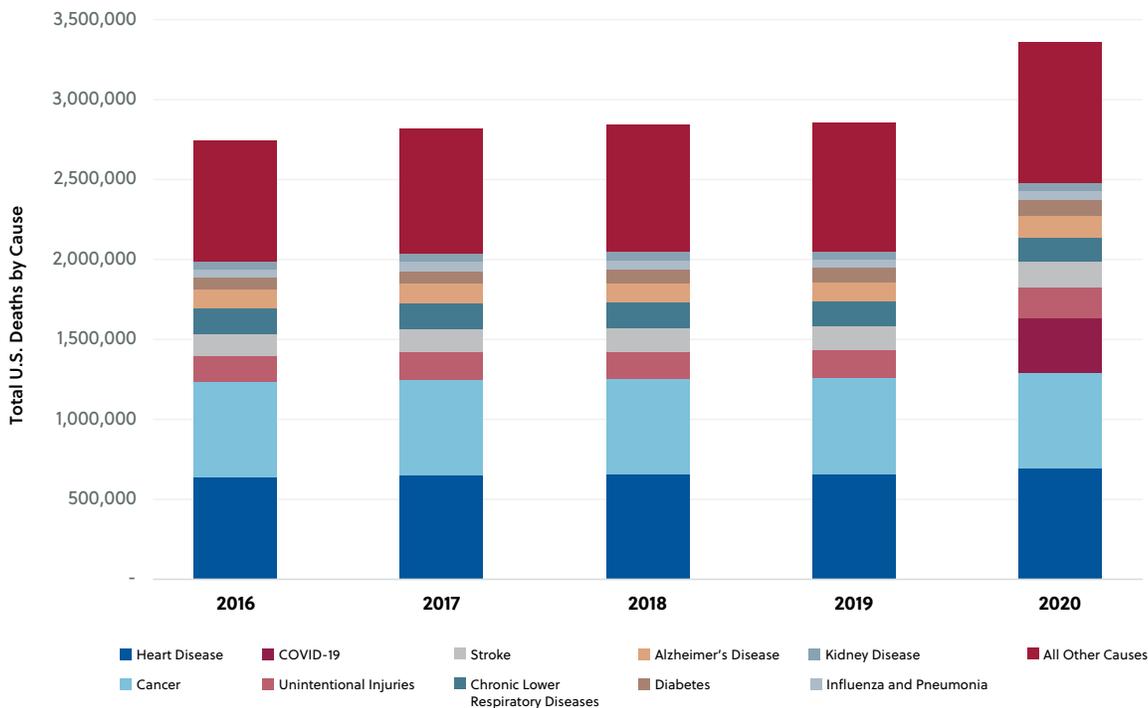
81% of Americans recognize the value of both public and private research in the development of COVID-19 vaccines



Source: A Research!America poll of U.S. adults conducted in partnership with Zogby Analytics in January 2021.

COVID-19 took the lives of more than 345,000 Americans in 2020*—the third largest cause of death behind heart disease and cancer

Figure 1. Leading Causes of Death in the U.S., 2016-2020



*Additionally, over 455,000 Americans died from COVID-19 in 2021.

Source: "The Leading Causes of Death in the US for 2020"; JAMA Network, National Center for Health Statistics, National Vital Statistics System mortality statistics (<http://www.cdc.gov/nchs/deaths.htm>). Data for 2015-2019 are final; data for 2020 are provisional.

Overview of U.S. Investments in Medical and Health R&D

Reaching \$161.8 billion, industry accounts for nearly two-thirds (66%) of U.S. medical and health investment in R&D in 2020. These investments do not include funding directed toward industry from other (e.g., federal) sources. All four medical and health industry segments experienced growth from 2019 to 2020, even though the COVID-19 pandemic appears to have had somewhat differing effects on each.

Federal government investment accounts for one-quarter (25%) of all U.S. medical and health R&D at \$61.5 billion, with the National Institutes of Health (NIH) alone accounting for 20% (\$48.9 billion) of all such investment in 2020. At this level, NIH is the second largest funder of medical and health research after the biopharmaceutical industry.

Estimates of specific federal research funding related to the COVID-19 pandemic include \$3.6 billion in supplemental NIH investment as well as more than \$240 million in existing federal NIH funding redirected toward COVID-19 research needs. Biomedical Advanced Research and Development Authority (BARDA) investments, much of which went to U.S. biopharmaceutical firms, increased more than sevenfold from \$562 million in 2019 to \$4.062 billion in 2020.

All other sources of medical and health R&D investment account for just under 10% of the 2020 total. It is important to note that the COVID-19 pandemic also impacted these resources. For example, many voluntary health associations' overall resources decreased in 2020.

Highlights

U.S. medical and health R&D reached **\$245.1 billion** in 2020. Of that:

- Industry invested **\$161.8 billion** in medical and health R&D (**66.0%**).
- Federal departments and agencies invested **\$61.5 billion** (**25.1%**).
- Academic and research institutions invested **\$16.8 billion** of their own funds (**6.9%**).
- Foundations, voluntary health associations, and professional societies provided **\$3.0 billion** in medical and health R&D funding (**1.2%**).
- State governments spent **\$2.1 billion** on health R&D (**0.9%**).

From 2016-2020, industry increased funding for medical and health R&D by **42.8%**, federal government by **53.5%**, academic and research institutes by **19.6%**, and state governments by **5.9%**.

Foundation investments in medical and health R&D, though down from earlier funding highs in 2016 and 2017 (reached in part due to significant one-time funding), increased by **7.0%** from 2019 to 2020.

Likely due to the impacts on fundraising during the onset of the COVID-19 pandemic in 2020, investments from voluntary health associations and professional societies declined overall from 2016 to 2020 by **4.8%**.

Overall U.S. health spending (including spending on R&D) was estimated to be **\$4.1 trillion** in 2020, a **25.0%** increase since 2016.

Medical and health R&D investment accounts for **5.9%** of overall health spending in the U.S., or just under 6 cents of each health care dollar.

“ Science pursued as a partnership between patients, government, industry, academia, and philanthropy can smash the status quo to bits. ”

Honorable Michael Castle

*Governor of Delaware, 1985-1992
U.S. Representative, 1993-2011*

Table 1. Estimated U.S. Medical and Health R&D Investments, by Source (\$ in millions), 2020

Source	Estimated 2020	Share of Total Investment
Industry	161,766	66.0%
Federal Government	61,475	25.1%
Academic and Research Institutions	16,814	6.9%
Foundations, Voluntary Health Associations, and Professional Societies	2,986	1.2%
State Government	2,086	0.9%
Total U.S. Medical and Health R&D Spending	245,127	100%

Figure 2. Estimated U.S. Medical and Health R&D Expenditures, by Source (\$ in millions), 2016-2020

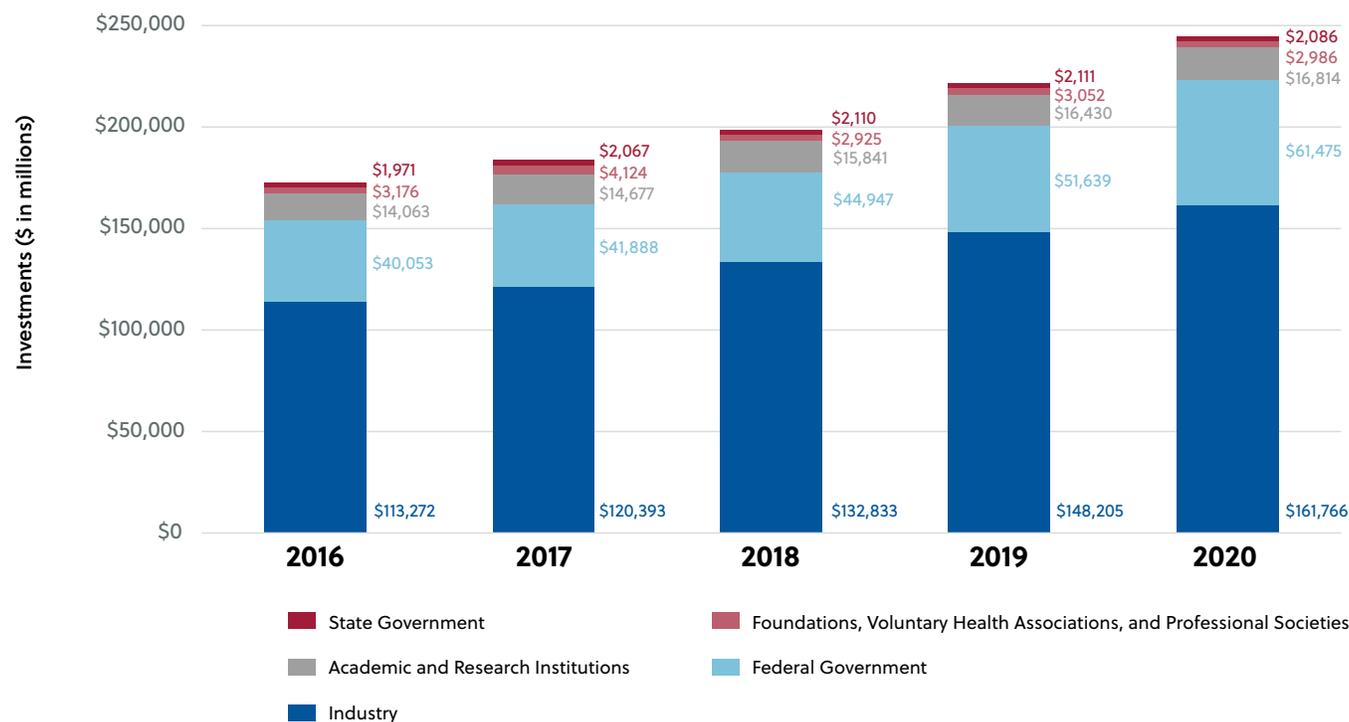


Figure 3. U.S. Medical and Health R&D Investments Shares by Source, 2020

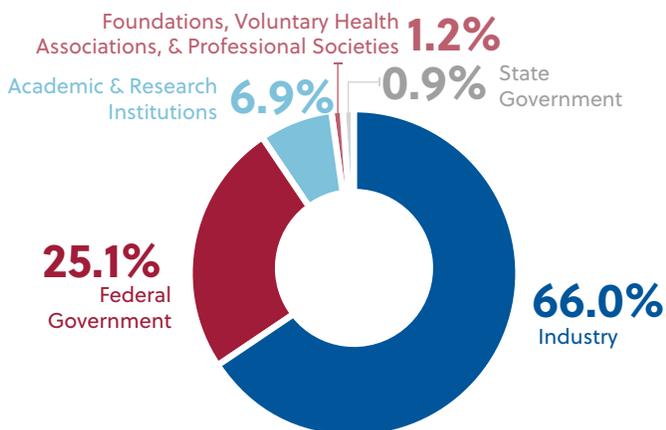


Figure 4. R&D Investment as a Percentage of Overall U.S. Health Spending, 2020

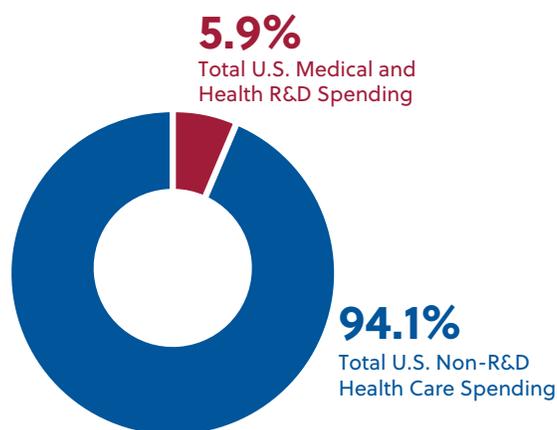


Table 2. Estimated U.S. Medical and Health R&D Investment by Source (\$ millions), 2016-2020

Source	2016	2017	2018	2019	Estimated 2020
Industry	113,272	120,393	132,833	148,205	161,766
Federal Government	40,053	41,888	44,947	51,639	61,475
Academic and Research Institutions	14,063	14,677	15,841	16,430	16,814
Foundations, Voluntary Health Associations, and Professional Societies	3,176	4,124	2,925	3,052	2,986
State Government	1,971	2,067	2,110	2,111	2,086
Total U.S. Medical and Health R&D Spending	172,534	183,150	198,656	221,438	245,127

Table 3. Estimated U.S. Medical and Health R&D Investment Percentage Change by Source, 2016-2020

Source	'16-'17 Change	'17-'18 Change	'18-'19 Change	'19-'20 Change	'16-'20 Change
Industry	6.29%	10.33%	11.57%	9.15%	42.81%
Federal Government	4.58%	7.30%	14.89%	19.05%	53.48%
Academic and Research Institutions	4.37%	7.93%	3.72%	2.33%	19.57%
Foundations, Voluntary Health Associations, and Professional Societies	29.87%	-29.08%	4.34%	-2.17%	-5.98%
State Government	4.90%	2.05%	0.04%	-1.16%	5.86%
Total U.S. Medical and Health R&D Spending	6.15%	8.47%	11.47%	10.70%	42.07%

Table 4. Total Health Spending versus Medical and Health R&D Investment (\$ in millions), 2016-2020

Source	2016	2017	2018	2019	Estimated 2020
Total U.S. Medical and Health R&D Investment	172,534	183,150	198,656	221,438	245,127
Total U.S. Health Spending*	3,317,366	3,458,529	3,616,755	3,776,133	4,147,217
R&D Share of Total U.S. Health Spending	5.20%	5.30%	5.49%	5.86%	5.91%

*Total U.S. Health Spending = Adjusted U.S. Non-R&D Health Care Spending (Adjusted NHE) + U.S. Medical and Health R&D Spending (Research!America and TEconomy; see methodology for detailed discussion.)

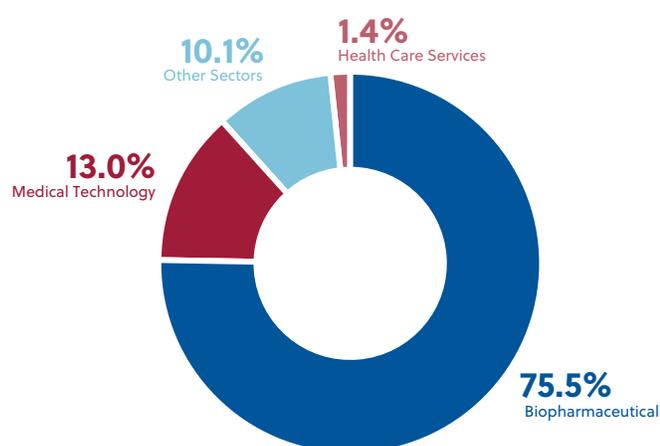
Source by Detailed Segment

The data captured and discussed in this report represent an estimate of the dollars invested in medical and health R&D performed in the U.S. The data are categorized by funding source of the investment, not by the sector actually performing the R&D.

Industry

Industry investment in medical and health R&D grew by \$13.6 billion or 9.2% from 2019 to 2020 and by \$48.5 billion or 42.8% since 2016.

Figure 5. Distribution of Industry Medical and Health R&D Investment, by Segment, 2020



“ [The rapid development of COVID-19 vaccines] shows we can come together and mount battles against some of the most threatening medical conditions. ”

Mikael Dolsten, MD, PhD
Chief Scientific Officer & President,
Worldwide Research, Development and Medical, Pfizer

Table 5. Estimated Medical and Health R&D Expenditures (\$ in millions) and Percentage Change, 2016-2020 – Industry

Industry (U.S. Operations)	2016	2019	'19-'20 Change	Estimated 2020	'16-'20 Change
Biopharmaceutical	89,426	110,932	10.16%	122,204	36.65%
Medical Technology	15,386	20,552	2.19%	21,001	36.49%
Health Care Services*	813	1,994	15.36%	2,300	182.93%
Other Sectors**	7,647	14,727	10.41%	16,260	112.63%
Industry (U.S. Operations) Total	113,272	148,205	9.15%	161,766	42.81%

* **Health Care Services** represents research conducted by companies that perform services ancillary to the direct provision of care (e.g., R&D expenditures by diagnostic testing companies and electronic medical record firms).

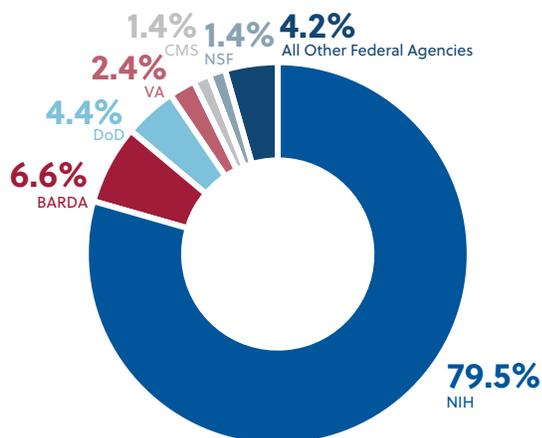
****Other Sectors** includes medical and health-related R&D expenditures by firms in sectors not typically included in the medical and health industry (e.g., health-related R&D performed by software and computer firms).

Federal Government

Federal government investment in medical and health R&D grew by \$9.8 billion or 19.0% from 2019 to 2020 and by \$21.4 billion or 53.5% since 2016.

From a relatively flat budget earlier in the decade, the growth in the NIH's ability to invest in medical and health R&D is shown by an increase of more than \$16.5 billion from 2016-2020.

Figure 6. Distribution of Federal Government Medical and Health R&D Investment, by Segment, 2020



“ The scientific community's unprecedented innovation during the pandemic — across vaccines, diagnostic testing, and therapeutics — was made possible on the foundation of decades of NIH-funded research. ”

Lance Baldo, MD

Chief Medical Officer, Adaptive Biotechnologies

Table 6. Estimated Medical and Health R&D Expenditures (\$ in millions) and Percentage Change, 2016-2020 – Federal Government

Federal Government	2016	2019	'19-'20 Change	Estimated 2020	'16-'20 Change
National Institutes of Health (HHS)	32,259	34,147	36,801	43,263	48,869
Biomedical Advanced Research and Development Authority (BARDA)	512	510	537	562	4,062
Department of Defense (DoD)	2,132	2,110	2,046	2,184	2,721
Department of Veterans Affairs (VA)	677	669	1,247	1,407	1,495
Centers for Medicare and Medicaid Services (CMS)	1,156	1,136	931	808	884
National Science Foundation (NSF)	776	832	903	824	838
Food and Drug Administration (FDA)	486	375	478	493	508
Agency for Healthcare Research and Quality (AHRQ)	428	470	434	454	444
Centers for Disease Control and Prevention (CDC)	521	471	451	419	424
Department of Energy (DoE)	294	306	307	368	405
Patient Centered Outcomes Research Institute (PCORI)	346	400	385	390	361
National Aeronautics and Space Administration (NASA)	145	140	140	145	125
Environmental Protection Agency (EPA)	122	118	117	114	115
Department of Commerce (DoC)	31	35	39	38	52
U.S. Agency for International Development (USAID)	16	46	20	37	37
Other Health and Human Services (Other HHS)	23	22	23	37	36
Health Resources and Services Administration (HRSA)	41	46	36	33	33
Department of Transportation (DoT)	32	28	29	31	30
Department of Agriculture (USDA)	23	22	23	24	29
Department of Homeland Security (DHS)	34	3	1	8	7
Federal Government Total	40,053	51,639	19.05%	61,475	53.48%

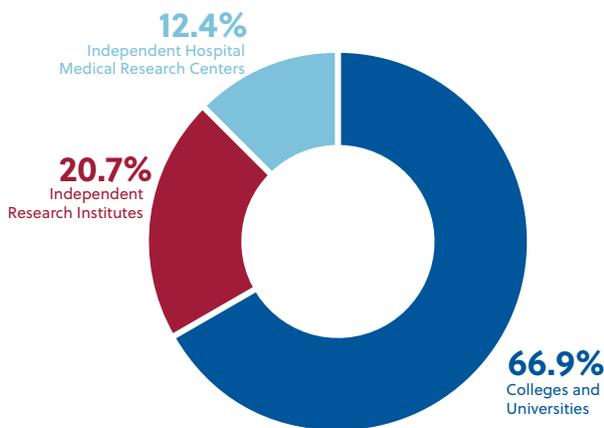
* PCORI is not technically a federal agency, but rather a congressionally-authorized, non-governmental, independent organization. However, for this report's purposes, it was categorized as a federal agency due to its funding source.

Academic and Research Institutions

Internal (intramural) investments made by U.S. colleges and universities, independent research institutes, and independent hospital medical research centers grew by \$384 million (2.3%) from 2019 to 2020, and by \$2.8 billion (19.6%) from 2016.

Organizations in these segments are also recipients of substantial research investments from the federal government and philanthropic organizations.

Figure 7. Distribution of Academic and Research Institutions Medical and Health R&D Investment, by Segment, 2020



“ Most people... don’t understand the role of research in keeping America competitive and us alive and well. ”

M. Roy Wilson, MD, MS
President, Wayne State University

Table 7. Estimated Medical and Health R&D Expenditures (\$ in millions) and Percentage Change, 2016-2020 – Academic and Research Institutions

Academic & Research Institutions (Internal Funds)	2016	2019	'19-'20 Change	Estimated 2020	'16-'20 Change
Colleges and Universities	9,004	10,826	3.86%	11,244	24.88%
Independent Research Institutes	3,256	3,624	-3.90%	3,483	6.97%
Independent Hospital Medical Research Centers*	1,802	1,980	5.40%	2,087	15.79%
Academic & Research Institutions (Internal Funds) Total	14,063	16,430	2.33%	16,814	19.57%

* *Independent Hospital Medical Research Centers* represents research conducted by independent stand-alone hospitals (e.g., not as a research center or research institute that is part of a university hospital or medical center).

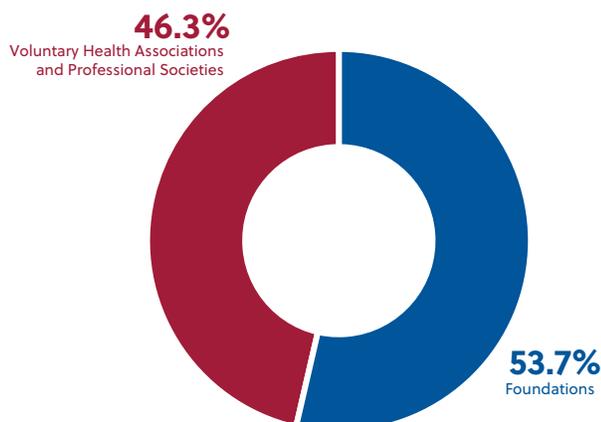
Foundations, Voluntary Health Associations, and Professional Societies

Total investments made in medical and health R&D by U.S. foundations, voluntary health associations, and professional societies declined by \$66 million (-2.2%) from 2019 to 2020 and experienced an overall decline across the segments of \$190 million (-6.0%) from 2016. These results, however, reflect different investment realities.

This overall five year decrease reflects lower foundation investments in health R&D compared to 2016 and 2017 highs, which were driven by significant one-time foundation investments. However, it also represents an actual 7.0% increase from 2019.

The decreased investments in 2020 by voluntary health associations and professional societies were likely caused by reduced contributions during the pandemic as well as prioritization of funding to non-R&D related COVID-19 needs.

Figure 8. Distribution of Foundations, Voluntary Health Associations, and Professional Societies Medical and Health R&D Investment, by Segment, 2020



“ Cancer treatment drugs specifically for children are limited. Most current cancer treatment drugs were developed and tested in adults prior to use in children. These [research] grants and the collaborative work between the American Cancer Society and the St. Baldrick’s Foundation will help develop more novel and effective treatments that will lead to more personalized care and will ultimately save more children’s lives. ”

Ellie Daniels, MD, MPH
*Senior Vice President of Extramural
 Discovery Science, American Cancer Society*

Table 8. Estimated Medical and Health R&D Expenditures (\$ in millions) and Percentage Change, 2016-2020 – Foundations, Voluntary Health Associations, and Professional Societies

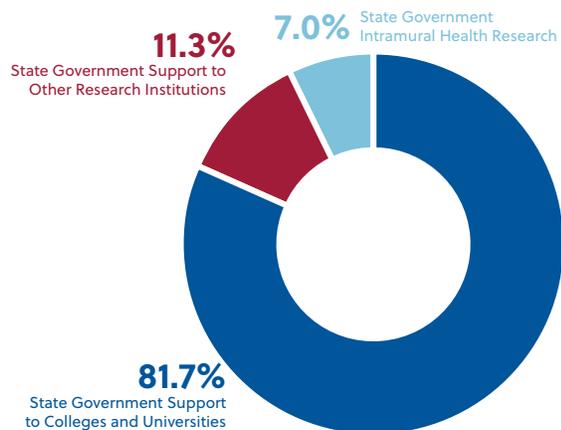
Foundations, Voluntary Health Associations, and Professional Societies	2016	2019	'19-'20 Change	Estimated 2020	'16-'20 Change
Foundations	1,725	1,499	6.96%	1,604	-7.01%
Voluntary Health Associations and Professional Societies	1,451	1,552	-10.98%	1,382	-4.76%
Foundations, Voluntary Health Associations, and Professional Societies Total	3,176	3,052	-2.17%	2,986	-5.98%

State Government

State government investments in medical and health R&D also declined slightly from 2019 to 2020. Investment decreased by \$24 million (-1.2%) over this time. Throughout the entire 2016 to 2020 period, state government investments have been relatively flat, increasing by \$115 million over these five years (5.86%).

Additionally, while major state initiatives to support medical and health R&D in locations such as California and Texas have seen new or renewed funding over the period, other significant initiatives such as the New York State Stem Cell Science funding program (NYSTEM) have seen their funding eliminated.

Figure 9. 2020 Distribution of State Government Medical and Health R&D Investment, by Segment, 2020



“ Our best chance for developing better treatments for Parkinson’s is to test as many logical approaches as possible. CIRM [CA Institute for Regenerative Medicine] encourages out-of-the-box thinking by providing funding for novel approaches. ”

David Higgins, PhD
Parkinson’s Disease Patient Advocate

Table 9. Estimated Medical and Health R&D Expenditures (\$ in millions) and Percentage Change, 2016-2020 – State Government

State Government	2016	2019	'19-'20 Change	Estimated 2020	'16-'20 Change
State Government Support to Colleges and Universities	1,564	1,717	-0.73%	1,705	9.01%
State Government Support to Other Research Institutions	284	237	-0.24%	236	-16.70%
State Government Intramural Health Research	123	157	-7.23%	145	17.73%
State Government Total	1,971	2,111	-1.16%	2,086	5.86%

Investment Summary Table

Table 10. Estimated Medical and Health R&D Expenditures (\$ in millions) and Percentage Change, 2016-2020 – All Sources and Segments

Research Source and Segment	2016	2017	2018	2019	Estimated 2020
Industry (U.S. Operations)					
Biopharmaceutical	89,426	93,836	103,103	110,932	122,204
Medical Technology	15,386	17,675	19,010	20,552	21,001
Health Care Services	813	992	1,481	1,994	2,300
Other Sectors	7,647	7,890	9,239	14,727	16,260
Industry (U.S. Operations) Total	113,272	120,393	132,833	148,205	161,766
Federal Government					
National Institutes of Health (HHS)	32,259	34,147	36,801	43,263	48,869
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National Aeronautics and Space Administration (NASA)	145	140	140	145	125
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Department of Transportation (DoT)	32	28	29	31	30
Department of Agriculture (USDA)	23	22	23	24	29
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Federal Government Total	40,053	41,888	44,947	51,639	61,475
Academic & Research Institutions (Internal Funds)					
Colleges and Universities	9,004	9,631	10,358	10,826	11,244
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State Government					
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State Government Support to Other Research Institutions	284	292	269	237	236
State Government Intramural Health Research	123	130	142	157	145
State Government Total	1,971	2,067	2,110	2,111	2,086
Total U.S. Medical and Health R&D Spending	172,534	183,150	198,656	221,438	245,127

Methodology

The total U.S. medical and health R&D data developed and discussed in this report represent an estimate of the full amount of medical and health R&D investment performed in the U.S. over a five-year period (2016-2020). The data are categorized by the originating source of the investment – whether industry, the federal government, or other contributors to the pool of resources. These source of funding data are distinct from data capturing the performance of R&D, which align the resources with where they are spent (e.g., NIH research grants would be captured within universities or other research institutes that receive the NIH awards).

Within the context of this report, the terms funding, investments, and contributions have all been used interchangeably, all in reference to U.S.-based investments leading to U.S.-based medical and health R&D. To the extent that the data and estimates in this report rely on publicly available data sources, the most current data available are used for all data years presented. Due to corrections and restatements within these data, values presented in this current report are deemed to be more accurate and supersede previously released data.

Industry Estimates

Industry medical and health R&D investment estimates were developed using the NSF's National Center for Science and Engineering Statistics (NSF-NCSES) Business Enterprise Research and Development Survey (BERD) and its predecessor surveys' data as the baseline. Industry sectors captured include pharmaceuticals, electromedical devices, medical equipment and supplies, scientific R&D (apportioned to the biopharmaceutical and medical technology sectors using data from NSF-NCSES and the 2017 U.S. Economic Census), health care services, and firms in other industry sectors funding and performing medical and health related research. Included in these data are funding from foreign-parents of U.S.-located facilities. Extensions and approximations needed to develop the 2020 estimates relied on forward-looking data from the BERD survey and additional data on internal R&D investment from 10-K (annual) reporting to the U.S. Securities and Exchange Commission (SEC) of key firms in the industry. To the extent possible, these SEC data are examined for true investments in R&D as opposed to accounting-based statements of R&D expenditures (e.g., removing the value of in-process R&D obtained through merger and acquisition activities that are stated within R&D discussions).

Federal Government Estimates

NIH spending data were obtained from NIH Office of Budget's Financial Management Reports for 2020 and 2019 (including data for Fiscal Year 2018). 2016 and 2017 figures are from NIH Total Obligations data. The DoD value was derived from American Association for the Advancement of Science's federal budget analysis. Beyond NIH and DoD, many departments' specific medical and health R&D investments were determined using the NSF-NCSES Survey of Federal Funds for Research and Development (SFFRD). Research funding within the medical sciences discipline was the primary field used in this analysis. Based upon individual agency missions and efforts, other disciplines were also included such as biological sciences, other life sciences, other engineering (which includes biomedical engineering), and psychology, as appropriate. This process was supplemented or replaced for NSF, CDC, DoE, PCORI, and CMS, where specific profiles, operations, and budget documents were used.

Academic and Research Institutions

College and University Estimates

The NSF-NCSES Higher Education Research and Development (HERD) Survey was used to estimate institutional internal funding (including direct institutional funding from budgets and endowments and waived indirect expenses on research grants). Combined data for all U.S. higher education institutions in the medical sciences, biological sciences, other (non-agricultural) life sciences, bioengineering, and psychology fields were used for the years 2016–2020.

Independent Research Institute Estimates

To estimate the internally-funded health and medical research investments from Independent Research Institutes (IRI) a sample set was drawn from the NIH RePORT database and crosschecked against/supplemented by membership information from the Association of Independent Research Institutes (AIRI). For each of these institutes a calculation was made using their total expenses (including research and any other expenses), reduced by contributions/grants and program service revenue received and, where applicable, increased by an amount equal to additional annual internal funds (income/revenue from internal investments, endowments, or related organizations) as the basis for an annual internal medical and health “investment” estimate for each of the sample institutes. Having developed these sample-based values for 2016–2019, a statistical approach based upon the relationship of these sample institutions to the total list of NIH-funded research institutes was used to derive a 2020 investment estimate.

Independent Hospital Medical Research Center Estimates

These Independent Hospital Medical Research Centers (IHMRC) are part of independent stand-alone hospitals (e.g., not as a research center or research arm of a university; includes many children’s hospitals throughout the U.S.). Example institutions captured within this category include Mayo Clinic and St. Jude’s Children’s Research Hospital. Data for these IHMRC institutions were developed similarly to the IRI category using the NIH RePORT database to identify non-academic hospitals and medical centers receiving at least \$5 million in NIH research funding in 2020 (reflecting a significant research presence). To estimate the additional, internally funded research resources of these Research Centers (often through numerous, small individual donations) we focused, conservatively, on the Net Community Benefit Research as captured in IRS Form 990s for hospitals. In some instances, this information was supplemented with specific organizational budget information. Having developed these sample-based values for 2016–2019, a statistical approach was used to estimate the 2020 values based upon the relationship of these sample institutions (including some having already submitted 2020 IRS 990 forms) to the total list of independent hospitals receiving NIH research funding.

Foundations, Voluntary Health Associations, and Professional Societies

Foundation Estimates

Organizations included in this source group are philanthropic grant-awarding bodies filed as foundations with the U.S. government on official tax documents. Baseline medical and health R&D funding was determined using data from Candid's Foundation Maps grants and recipient database with additional information gathered from the Candid's GuideStar nonprofit information database. Using historical data from the Foundation Center and more recent, complete financial reporting (both annual financial reports and IRS Form 990s), estimates were developed with emphasis on the funding efforts of major foundations (e.g., "individual" foundations such as the Bill & Melinda Gates Foundation, the Eli & Edythe Broad Foundation, and the Leona M. and Harry B. Helmsley Charitable Trust and "community foundations" such as the Silicon Valley Community Foundation and the Grand Rapids Community Foundation) that historically have accounted for a significant majority of medical and health-related R&D funding. These data also include funding from institution-specific foundations (e.g., funding for the Gates Medical Research Institute is captured in this investment category, not the Independent Research Institutes category).

Voluntary Health Association and Professional Society Estimates

Funding estimates for U.S. Voluntary Health Associations and Professional Societies were developed from a continually updated master list of such associations developed by Research!America and TEconomy and based, in part, on data provided by the Health Research Alliance and information from the State Science and Technology Institute. Data were calculated using specified research grant funding expenditures (distinct from education, patient advocacy, or other types of expenditures) as identified within the association's annual reports and/or IRS Form 990s. Data consistency and funding magnitude were also checked against both grants received and granting activities (via IRS Form 990s from both Candid's GuideStar and ProPublica's Non-Profit Explorer).

State Government Estimates

The NSF-NCSES HERD Survey data were used to estimate R&D funding from state governments to colleges and universities. The NSF-NCSES Survey of State Government Research and Development (SGRD) was used to capture state funding for other (non-university) research institutions and for state governmental agency intramural research. Funding for other research institutions is a combination of both health mission-specific (e.g., a state department of health funding required research with an external consultant) and supportive investments (e.g., a state department of economic development's industry research grant program or signature research efforts such as the California Institute for Regenerative Medicine and the Cancer Prevention and Research Institute of Texas). To the extent possible, state resources that flow to these signature research "institutes" that are, in turn, granted to state universities are captured and reflected within the State Government Support to Colleges and Universities investment line. The NSF SGRD data also allow for an estimation of the amount of medical and health-related R&D performed by state agency employees (intramural), typically by state departments of health.

Though the three sources of state funding described above are significant, additional state support for R&D through state R&D tax incentives is not captured in these values. However, to the extent that medical and health firms use these tax incentives to increase the amount of research performed, the increased value would be captured within increased industry funding metrics.

Total U.S. Health Spending Comparison

Data for total U.S. health spending for 2016 through 2020 were obtained from CMS' National Health Expenditures (NHE) latest data series (NHE20 released in December 2021).

The NHE values are modified to reflect our report's different methodology for estimating medical and health R&D. The value for "research" contained within the NHE data series solely reflects non-commercial research as the NHE series considers commercial and industrial R&D to be captured in overall retail cost data through health-related purchases. For improved comparability, we subtracted both the NHE value for non-commercial research and our industry R&D estimate from the CMS NHE values to establish an adjusted NHE non-R&D estimate. We then added our entire medical and health R&D value (\$245.1 billion in this report) to this estimate for a revised overall U.S. health spending value (\$4,147.2 billion in this report).

Quote Sources:

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Representative Bill Foster

11th District of Illinois



Research!America increases public and policymaker awareness of the health and economic benefits of medical research and builds a strong base of citizen support for more research and innovation.



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