

TABLE 4

U.S. applied research expenditures, by performing sector and source of funds: 1953–2019

(Millions of current and of constant 2012 dollars)

| Year | All performers | All federal | Federal intramural ^a | FFRDCs ^b | | Nonfederal government ^c | Business ^d | | | | | | Higher education ^e | | | | NPOs ^f | | | | | |
|--------------------|---------------------|-------------|---------------------------------|---------------------|---------|------------------------------------|-----------------------|--------------|---------|-------------------------|------------------|-------|-------------------------------|---------|-----------------------|----------|-------------------|-----|-------|---------|----------|-----|
| | All funding sources | Total | Federal | Total | Federal | Total | Total | Own domestic | Federal | Other domestic business | Foreign business | Other | Total | Federal | Nonfederal government | Business | Higher education | NPO | Total | Federal | Business | NPO |
| Current \$millions | | | | | | | | | | | | | | | | | | | | | | |
| 1953 | 1,289 | 395 | 347 | 48 | 48 | NA | 726 | 438 | 288 | NA | NA | NA | 134 | 59 | 30 | 7 | 28 | 10 | 35 | 14 | 11 | 10 |
| 1954 | 1,378 | 388 | 330 | 59 | 59 | NA | 814 | 492 | 322 | NA | NA | NA | 137 | 60 | 32 | 8 | 28 | 10 | 40 | 16 | 13 | 11 |
| 1955 | 1,502 | 419 | 333 | 86 | 86 | NA | 899 | 560 | 339 | NA | NA | NA | 142 | 63 | 32 | 9 | 27 | 11 | 43 | 18 | 14 | 11 |
| 1956 | 1,929 | 511 | 387 | 125 | 125 | NA | 1,224 | 794 | 430 | NA | NA | NA | 146 | 65 | 33 | 10 | 27 | 11 | 48 | 20 | 14 | 14 |
| 1957 | 2,413 | 595 | 446 | 149 | 149 | NA | 1,616 | 992 | 624 | NA | NA | NA | 147 | 63 | 34 | 12 | 27 | 11 | 57 | 23 | 14 | 20 |
| 1958 | 2,759 | 672 | 516 | 156 | 156 | NA | 1,868 | 1,137 | 731 | NA | NA | NA | 152 | 66 | 35 | 12 | 27 | 12 | 68 | 29 | 14 | 25 |
| 1959 | 2,940 | 756 | 577 | 179 | 179 | NA | 1,935 | 1,178 | 757 | NA | NA | NA | 167 | 78 | 37 | 13 | 28 | 12 | 82 | 40 | 15 | 27 |
| 1960 | 3,065 | 816 | 615 | 201 | 201 | NA | 1,965 | 1,196 | 769 | NA | NA | NA | 186 | 93 | 39 | 13 | 29 | 12 | 99 | 54 | 17 | 28 |
| 1961 | 3,123 | 908 | 668 | 240 | 240 | NA | 1,903 | 1,165 | 738 | NA | NA | NA | 199 | 104 | 40 | 13 | 30 | 13 | 114 | 62 | 17 | 35 |
| 1962 | 3,698 | 958 | 709 | 249 | 249 | NA | 2,392 | 1,438 | 954 | NA | NA | NA | 216 | 119 | 41 | 14 | 30 | 13 | 132 | 68 | 19 | 45 |
| 1963 | 3,864 | 1,084 | 809 | 275 | 275 | NA | 2,402 | 1,450 | 952 | NA | NA | NA | 230 | 128 | 42 | 14 | 32 | 14 | 150 | 82 | 19 | 49 |
| 1964 | 4,201 | 1,260 | 947 | 313 | 313 | NA | 2,538 | 1,560 | 978 | NA | NA | NA | 256 | 142 | 45 | 14 | 37 | 18 | 148 | 82 | 19 | 47 |
| 1965 | 4,374 | 1,287 | 994 | 294 | 294 | NA | 2,612 | 1,620 | 992 | NA | NA | NA | 304 | 176 | 46 | 13 | 42 | 27 | 171 | 98 | 21 | 52 |
| 1966 | 4,653 | 1,302 | 1,012 | 290 | 290 | NA | 2,790 | 1,804 | 986 | NA | NA | NA | 351 | 208 | 47 | 14 | 48 | 34 | 210 | 129 | 24 | 57 |
| 1967 | 4,848 | 1,402 | 1,069 | 334 | 334 | NA | 2,832 | 1,849 | 983 | NA | NA | NA | 389 | 238 | 46 | 16 | 54 | 36 | 226 | 141 | 25 | 60 |
| 1968 | 5,137 | 1,446 | 1,112 | 334 | 334 | NA | 3,037 | 2,081 | 956 | NA | NA | NA | 405 | 250 | 46 | 16 | 55 | 39 | 250 | 160 | 28 | 62 |
| 1969 | 5,454 | 1,565 | 1,229 | 336 | 336 | NA | 3,192 | 2,272 | 920 | NA | NA | NA | 417 | 257 | 48 | 16 | 54 | 43 | 281 | 183 | 32 | 66 |
| 1970 | 5,752 | 1,670 | 1,334 | 336 | 336 | NA | 3,330 | 2,378 | 952 | NA | NA | NA | 451 | 280 | 51 | 18 | 56 | 47 | 302 | 199 | 33 | 70 |
| 1971 | 5,833 | 1,666 | 1,355 | 312 | 312 | NA | 3,348 | 2,441 | 907 | NA | NA | NA | 499 | 306 | 61 | 19 | 67 | 47 | 320 | 212 | 34 | 74 |
| 1972 | 6,147 | 1,792 | 1,434 | 358 | 358 | NA | 3,407 | 2,562 | 845 | NA | NA | NA | 619 | 391 | 74 | 21 | 82 | 52 | 330 | 216 | 35 | 79 |
| 1973 | 6,655 | 1,861 | 1,527 | 334 | 334 | NA | 3,715 | 2,832 | 883 | NA | NA | NA | 725 | 450 | 88 | 26 | 100 | 62 | 355 | 236 | 36 | 83 |
| 1974 | 7,344 | 1,987 | 1,652 | 335 | 335 | NA | 4,168 | 3,263 | 905 | NA | NA | NA | 794 | 477 | 96 | 32 | 118 | 72 | 396 | 266 | 39 | 91 |
| 1975 | 8,091 | 2,295 | 1,912 | 384 | 384 | NA | 4,431 | 3,440 | 991 | NA | NA | NA | 934 | 550 | 113 | 39 | 141 | 92 | 431 | 290 | 42 | 100 |
| 1976 | 8,976 | 2,525 | 2,068 | 457 | 457 | NA | 4,945 | 3,912 | 1,033 | NA | NA | NA | 1,042 | 596 | 127 | 45 | 166 | 109 | 464 | 310 | 45 | 109 |
| 1977 | 9,662 | 2,621 | 2,081 | 540 | 540 | NA | 5,424 | 4,311 | 1,113 | NA | NA | NA | 1,126 | 626 | 134 | 51 | 194 | 121 | 492 | 324 | 48 | 120 |
| 1978 | 10,704 | 2,838 | 2,242 | 597 | 597 | NA | 6,065 | 4,870 | 1,195 | NA | NA | NA | 1,247 | 676 | 151 | 61 | 232 | 128 | 554 | 371 | 52 | 132 |
| 1979 | 12,097 | 3,069 | 2,415 | 654 | 654 | NA | 6,975 | 5,670 | 1,305 | NA | NA | NA | 1,418 | 793 | 161 | 71 | 263 | 129 | 635 | 436 | 55 | 144 |
| 1980 | 13,729 | 3,295 | 2,546 | 749 | 749 | NA | 8,175 | 6,550 | 1,625 | NA | NA | NA | 1,622 | 912 | 174 | 88 | 308 | 140 | 637 | 420 | 60 | 158 |
| 1981 | 16,329 | 3,520 | 2,731 | 788 | 788 | NA | 10,401 | 8,359 | 2,042 | NA | NA | NA | 1,781 | 953 | 199 | 108 | 363 | 159 | 628 | 391 | 64 | 173 |
| 1982 | 18,218 | 3,692 | 2,802 | 890 | 890 | NA | 11,956 | 9,363 | 2,593 | NA | NA | NA | 1,915 | 1,007 | 207 | 121 | 402 | 178 | 655 | 398 | 69 | 189 |
| 1983 | 20,298 | 3,956 | 2,991 | 965 | 965 | NA | 13,513 | 10,286 | 3,227 | NA | NA | NA | 2,116 | 1,122 | 215 | 141 | 443 | 194 | 713 | 433 | 74 | 207 |
| 1984 | 22,451 | 4,137 | 2,961 | 1,176 | 1,176 | NA | 15,218 | 11,541 | 3,677 | NA | NA | NA | 2,332 | 1,226 | 234 | 168 | 491 | 212 | 764 | 459 | 79 | 226 |
| 1985 | 25,401 | 4,427 | 3,135 | 1,292 | 1,292 | NA | 17,625 | 12,908 | 4,717 | NA | NA | NA | 2,527 | 1,296 | 262 | 198 | 547 | 224 | 822 | 490 | 85 | 247 |

TABLE 4

U.S. applied research expenditures, by performing sector and source of funds: 1953–2019

(Millions of current and of constant 2012 dollars)

| Year | All performers | All federal | Federal intramural ^a | FFRDCs ^b | | Nonfederal government ^c | Business ^d | | | | | | Higher education ^e | | | | NPOs ^f | | | | | |
|-------------------|---------------------|-------------|---------------------------------|---------------------|---------|------------------------------------|-----------------------|--------------|---------|-------------------------|------------------|-------|-------------------------------|---------|-----------------------|----------|-------------------|-------|-------|---------|----------|-------|
| | All funding sources | Total | Federal | Total | Federal | Total | Total | Own domestic | Federal | Other domestic business | Foreign business | Other | Total | Federal | Nonfederal government | Business | Higher education | NPO | Total | Federal | Business | NPO |
| 1986 | 27,240 | 4,462 | 3,204 | 1,258 | 1,258 | NA | 19,131 | 15,082 | 4,049 | NA | NA | NA | 2,780 | 1,393 | 298 | 229 | 620 | 240 | 867 | 506 | 91 | 270 |
| 1987 | 27,951 | 4,594 | 3,366 | 1,228 | 1,228 | NA | 19,190 | 15,153 | 4,037 | NA | NA | NA | 3,219 | 1,643 | 333 | 260 | 707 | 276 | 948 | 555 | 98 | 295 |
| 1988 | 29,528 | 4,346 | 3,362 | 984 | 984 | NA | 20,377 | 16,531 | 3,846 | NA | NA | NA | 3,779 | 1,958 | 377 | 302 | 818 | 325 | 1,026 | 599 | 105 | 322 |
| 1989 | 32,277 | 4,613 | 3,566 | 1,047 | 1,047 | NA | 22,317 | 17,993 | 4,324 | NA | NA | NA | 4,188 | 2,121 | 417 | 347 | 933 | 370 | 1,159 | 695 | 112 | 352 |
| 1990 | 34,897 | 4,808 | 3,652 | 1,156 | 1,156 | NA | 24,399 | 18,432 | 5,967 | NA | NA | NA | 4,406 | 2,140 | 453 | 377 | 1,031 | 404 | 1,284 | 780 | 120 | 384 |
| 1991 | 38,631 | 5,539 | 4,093 | 1,446 | 1,446 | NA | 27,013 | 21,425 | 5,588 | NA | NA | NA | 4,611 | 2,232 | 468 | 392 | 1,091 | 428 | 1,468 | 921 | 129 | 419 |
| 1992 | 37,936 | 5,866 | 4,337 | 1,529 | 1,529 | NA | 25,660 | 21,184 | 4,476 | NA | NA | NA | 4,882 | 2,415 | 479 | 414 | 1,120 | 454 | 1,528 | 933 | 138 | 456 |
| 1993 | 37,283 | 6,338 | 4,838 | 1,500 | 1,500 | NA | 24,251 | 19,956 | 4,295 | NA | NA | NA | 5,149 | 2,542 | 496 | 443 | 1,181 | 487 | 1,544 | 900 | 148 | 497 |
| 1994 | 36,618 | 6,581 | 4,985 | 1,596 | 1,596 | NA | 22,988 | 19,372 | 3,616 | NA | NA | NA | 5,390 | 2,644 | 517 | 464 | 1,256 | 509 | 1,659 | 960 | 158 | 541 |
| 1995 | 40,936 | 6,666 | 4,952 | 1,714 | 1,714 | NA | 26,919 | 23,755 | 3,164 | NA | NA | NA | 5,659 | 2,779 | 559 | 494 | 1,311 | 516 | 1,692 | 934 | 170 | 589 |
| 1996 | 43,170 | 6,495 | 4,872 | 1,623 | 1,623 | NA | 29,010 | 25,370 | 3,640 | NA | NA | NA | 5,885 | 2,864 | 584 | 524 | 1,390 | 522 | 1,781 | 960 | 182 | 640 |
| 1997 | 46,516 | 6,675 | 4,997 | 1,679 | 1,679 | NA | 32,430 | 29,782 | 2,648 | NA | NA | NA | 5,485 | 2,518 | 548 | 515 | 1,396 | 508 | 1,926 | 1,011 | 205 | 711 |
| 1998 | 46,247 | 6,871 | 5,146 | 1,725 | 1,725 | NA | 32,208 | 29,576 | 2,632 | NA | NA | NA | 5,108 | 2,189 | 515 | 509 | 1,393 | 502 | 2,061 | 1,060 | 218 | 784 |
| 1999 | 51,853 | 7,181 | 5,530 | 1,651 | 1,651 | NA | 36,638 | 33,821 | 2,817 | NA | NA | NA | 5,650 | 2,571 | 533 | 529 | 1,480 | 537 | 2,384 | 1,300 | 236 | 849 |
| 2000 | 56,503 | 7,856 | 6,105 | 1,750 | 1,750 | NA | 39,176 | 36,494 | 2,682 | NA | NA | NA | 6,361 | 3,081 | 558 | 540 | 1,604 | 578 | 3,110 | 1,831 | 258 | 1,021 |
| 2001 | 63,956 | 9,522 | 7,052 | 2,469 | 2,379 | NA | 44,012 | 40,409 | 3,603 | NA | NA | NA | 6,886 | 3,411 | 585 | 535 | 1,734 | 621 | 3,537 | 2,150 | 261 | 1,126 |
| 2002 | 50,521 | 10,506 | 7,487 | 3,019 | 2,905 | NA | 28,533 | 26,081 | 2,452 | NA | NA | NA | 7,670 | 3,877 | 636 | 531 | 1,937 | 689 | 3,812 | 2,267 | 253 | 1,293 |
| 2003 | 61,059 | 10,933 | 7,672 | 3,262 | 3,152 | NA | 37,334 | 32,861 | 4,473 | NA | NA | NA | 8,560 | 4,450 | 708 | 537 | 2,127 | 739 | 4,232 | 2,487 | 259 | 1,486 |
| 2004 | 69,132 | 10,589 | 7,455 | 3,135 | 3,057 | NA | 45,432 | 40,657 | 4,775 | NA | NA | NA | 8,911 | 4,682 | 735 | 545 | 2,190 | 759 | 4,200 | 2,448 | 264 | 1,488 |
| 2005 | 69,653 | 10,886 | 7,557 | 3,329 | 3,241 | NA | 45,284 | 39,995 | 5,289 | NA | NA | NA | 9,144 | 4,810 | 719 | 557 | 2,283 | 774 | 4,339 | 2,432 | 280 | 1,627 |
| 2006 | 76,622 | 11,075 | 7,435 | 3,640 | 3,531 | 255 | 51,173 | 45,033 | 6,140 | NA | NA | NA | 9,522 | 5,080 | 712 | 573 | 2,368 | 789 | 4,596 | 2,592 | 300 | 1,705 |
| 2007 | 85,319 | 12,697 | 7,222 | 5,475 | 5,293 | 321 | 57,570 | 48,625 | 8,945 | NA | NA | NA | 9,945 | 5,284 | 745 | 607 | 2,461 | 848 | 4,786 | 2,583 | 318 | 1,885 |
| 2008 | 76,639 | 13,356 | 7,316 | 6,040 | 5,843 | 407 | 46,864 | 35,382 | 5,397 | 2,815 | 3,094 | 175 | 10,962 | 5,840 | 815 | 675 | 2,682 | 951 | 5,050 | 2,600 | 331 | 2,119 |
| 2009 | 74,136 | 14,063 | 7,874 | 6,189 | 5,979 | 502 | 41,055 | 29,264 | 7,797 | 1,865 | 1,996 | 134 | 12,843 | 7,220 | 942 | 757 | 2,917 | 1,007 | 5,673 | 3,049 | 319 | 2,305 |
| 2010 | 79,055 | 13,203 | 8,016 | 5,187 | 5,025 | 572 | 44,906 | 34,912 | 4,705 | 2,256 | 2,819 | 214 | 14,556 | 8,673 | 1,002 | 764 | 3,083 | 1,036 | 5,818 | 3,041 | 321 | 2,456 |
| 2011 | 81,926 | 13,251 | 8,024 | 5,227 | 5,057 | 575 | 47,186 | 37,047 | 4,404 | 2,413 | 3,131 | 191 | 15,371 | 9,194 | 981 | 781 | 3,341 | 1,074 | 5,544 | 2,693 | 340 | 2,512 |
| 2012 | 86,856 | 14,328 | 8,587 | 5,741 | 5,566 | 550 | 50,755 | 38,891 | 4,137 | 3,336 | 4,209 | 182 | 15,674 | 9,077 | 994 | 862 | 3,609 | 1,133 | 5,550 | 2,629 | 349 | 2,572 |
| 2013 | 88,191 | 15,132 | 8,309 | 6,823 | 6,639 | 513 | 51,013 | 37,385 | 6,028 | 3,275 | 4,078 | 247 | 15,895 | 8,794 | 1,051 | 920 | 3,861 | 1,270 | 5,638 | 2,465 | 371 | 2,802 |
| 2014 | 91,803 | 15,727 | 8,775 | 6,952 | 6,765 | 471 | 53,415 | 38,281 | 6,445 | 3,331 | 5,074 | 285 | 16,198 | 8,616 | 1,075 | 980 | 4,133 | 1,394 | 5,991 | 2,574 | 392 | 3,025 |
| 2015 | 97,273 | 16,698 | 9,347 | 7,351 | 7,182 | 481 | 56,472 | 43,330 | 6,102 | 2,735 | 4,072 | 233 | 17,195 | 8,984 | 1,084 | 1,086 | 4,461 | 1,580 | 6,428 | 2,791 | 407 | 3,230 |
| 2016 | 106,825 | 17,433 | 9,805 | 7,628 | 7,469 | 509 | 62,871 | 48,543 | 5,327 | 3,175 | 5,536 | 291 | 18,756 | 9,683 | 1,160 | 1,202 | 4,883 | 1,828 | 7,256 | 3,297 | 433 | 3,526 |
| 2017 | 110,991 | 18,170 | 10,124 | 8,046 | 7,868 | 510 | 64,040 | 47,727 | 5,386 | 3,853 | 6,849 | 226 | 19,826 | 10,152 | 1,221 | 1,269 | 5,239 | 1,945 | 8,445 | 4,152 | 458 | 3,835 |
| 2018 | 116,319 | 19,704 | 11,111 | 8,593 | 8,407 | 514 | 66,609 | 50,915 | 5,359 | 3,469 | 6,651 | 214 | 20,899 | 10,658 | 1,289 | 1,368 | 5,544 | 2,041 | 8,593 | 4,009 | 496 | 4,088 |
| 2019 ^g | 124,849 | 20,468 | 11,176 | 9,292 | 9,104 | 526 | 72,709 | 55,038 | 5,919 | 4,036 | 7,469 | 247 | 22,085 | 11,175 | 1,353 | 1,492 | 5,868 | 2,197 | 9,061 | 4,197 | 531 | 4,332 |

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U.S. applied research expenditures, by performing sector and source of funds: 1953–2019

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| Year | All performers | All federal | Federal intramural ^a | FFRDCs ^b | | Nonfederal government ^c | Business ^d | | | | | | Higher education ^e | | | | NPOs ^f | | | | | |
|--------------------------|---------------------|-------------|---------------------------------|---------------------|---------|------------------------------------|-----------------------|--------------|---------|-------------------------|------------------|-------|-------------------------------|---------|-----------------------|----------|-------------------|-----|-------|---------|----------|-----|
| | All funding sources | Total | Federal | Total | Federal | Total | Total | Own domestic | Federal | Other domestic business | Foreign business | Other | Total | Federal | Nonfederal government | Business | Higher education | NPO | Total | Federal | Business | NPO |
| Constant 2012 \$millions | | | | | | | | | | | | | | | | | | | | | | |
| 1953 | 8,928 | 2,732 | 2,403 | 329 | 329 | NA | 5,028 | 3,034 | 1,995 | NA | NA | NA | 925 | 409 | 209 | 45 | 193 | 69 | 242 | 97 | 76 | 69 |
| 1954 | 9,457 | 2,663 | 2,261 | 401 | 401 | NA | 5,586 | 3,377 | 2,210 | NA | NA | NA | 937 | 408 | 216 | 51 | 192 | 69 | 271 | 106 | 89 | 75 |
| 1955 | 10,133 | 2,827 | 2,247 | 580 | 580 | NA | 6,064 | 3,779 | 2,285 | NA | NA | NA | 955 | 425 | 218 | 57 | 183 | 71 | 287 | 118 | 94 | 74 |
| 1956 | 12,584 | 3,334 | 2,522 | 812 | 812 | NA | 7,984 | 5,181 | 2,803 | NA | NA | NA | 953 | 424 | 216 | 65 | 176 | 72 | 313 | 131 | 91 | 91 |
| 1957 | 15,243 | 3,755 | 2,814 | 941 | 941 | NA | 10,206 | 6,266 | 3,940 | NA | NA | NA | 925 | 398 | 214 | 73 | 171 | 69 | 357 | 142 | 88 | 126 |
| 1958 | 17,040 | 4,150 | 3,187 | 963 | 963 | NA | 11,537 | 7,022 | 4,514 | NA | NA | NA | 936 | 405 | 218 | 74 | 168 | 71 | 417 | 176 | 86 | 154 |
| 1959 | 17,909 | 4,603 | 3,512 | 1,090 | 1,090 | NA | 11,789 | 7,176 | 4,613 | NA | NA | NA | 1,017 | 472 | 225 | 76 | 171 | 73 | 500 | 244 | 91 | 164 |
| 1960 | 18,424 | 4,901 | 3,693 | 1,208 | 1,208 | NA | 11,813 | 7,188 | 4,624 | NA | NA | NA | 1,115 | 559 | 233 | 78 | 173 | 72 | 595 | 325 | 102 | 168 |
| 1961 | 18,573 | 5,397 | 3,973 | 1,424 | 1,424 | NA | 11,317 | 6,928 | 4,389 | NA | NA | NA | 1,181 | 616 | 237 | 77 | 176 | 74 | 678 | 369 | 101 | 208 |
| 1962 | 21,727 | 5,626 | 4,163 | 1,463 | 1,463 | NA | 14,056 | 8,449 | 5,607 | NA | NA | NA | 1,269 | 696 | 238 | 79 | 179 | 76 | 776 | 400 | 112 | 264 |
| 1963 | 22,446 | 6,293 | 4,699 | 1,594 | 1,594 | NA | 13,951 | 8,422 | 5,528 | NA | NA | NA | 1,333 | 741 | 245 | 81 | 188 | 78 | 868 | 473 | 110 | 285 |
| 1964 | 24,036 | 7,206 | 5,415 | 1,791 | 1,791 | NA | 14,521 | 8,925 | 5,596 | NA | NA | NA | 1,462 | 812 | 259 | 77 | 213 | 100 | 847 | 469 | 109 | 269 |
| 1965 | 24,574 | 7,231 | 5,582 | 1,649 | 1,649 | NA | 14,676 | 9,102 | 5,574 | NA | NA | NA | 1,705 | 986 | 261 | 73 | 237 | 149 | 961 | 551 | 118 | 292 |
| 1966 | 25,430 | 7,117 | 5,531 | 1,585 | 1,585 | NA | 15,250 | 9,860 | 5,389 | NA | NA | NA | 1,919 | 1,137 | 257 | 77 | 265 | 183 | 1,145 | 702 | 131 | 312 |
| 1967 | 25,750 | 7,447 | 5,675 | 1,771 | 1,771 | NA | 15,042 | 9,821 | 5,221 | NA | NA | NA | 2,063 | 1,261 | 242 | 82 | 286 | 191 | 1,198 | 746 | 133 | 319 |
| 1968 | 26,170 | 7,364 | 5,662 | 1,702 | 1,702 | NA | 15,472 | 10,601 | 4,870 | NA | NA | NA | 2,063 | 1,271 | 234 | 82 | 280 | 196 | 1,271 | 813 | 143 | 316 |
| 1969 | 26,489 | 7,599 | 5,970 | 1,629 | 1,629 | NA | 15,502 | 11,034 | 4,468 | NA | NA | NA | 2,025 | 1,246 | 234 | 78 | 262 | 206 | 1,362 | 886 | 155 | 321 |
| 1970 | 26,537 | 7,704 | 6,154 | 1,550 | 1,550 | NA | 15,362 | 10,970 | 4,392 | NA | NA | NA | 2,078 | 1,289 | 236 | 81 | 257 | 215 | 1,393 | 918 | 152 | 323 |
| 1971 | 25,609 | 7,316 | 5,949 | 1,368 | 1,368 | NA | 14,699 | 10,717 | 3,982 | NA | NA | NA | 2,191 | 1,343 | 266 | 81 | 294 | 206 | 1,403 | 929 | 149 | 325 |
| 1972 | 25,870 | 7,542 | 6,035 | 1,507 | 1,507 | NA | 14,339 | 10,783 | 3,556 | NA | NA | NA | 2,603 | 1,643 | 312 | 86 | 344 | 217 | 1,387 | 907 | 147 | 332 |
| 1973 | 26,554 | 7,427 | 6,094 | 1,333 | 1,333 | NA | 14,822 | 11,299 | 3,523 | NA | NA | NA | 2,891 | 1,793 | 350 | 104 | 398 | 245 | 1,414 | 940 | 144 | 331 |
| 1974 | 26,884 | 7,273 | 6,048 | 1,225 | 1,225 | NA | 15,258 | 11,945 | 3,313 | NA | NA | NA | 2,905 | 1,744 | 352 | 115 | 432 | 262 | 1,449 | 974 | 142 | 333 |
| 1975 | 27,107 | 7,689 | 6,405 | 1,285 | 1,285 | NA | 14,845 | 11,525 | 3,320 | NA | NA | NA | 3,129 | 1,841 | 380 | 129 | 471 | 308 | 1,444 | 970 | 139 | 335 |
| 1976 | 28,505 | 8,019 | 6,568 | 1,451 | 1,451 | NA | 15,703 | 12,423 | 3,280 | NA | NA | NA | 3,309 | 1,891 | 404 | 141 | 526 | 346 | 1,474 | 984 | 142 | 348 |
| 1977 | 28,888 | 7,835 | 6,220 | 1,614 | 1,614 | NA | 16,217 | 12,889 | 3,328 | NA | NA | NA | 3,365 | 1,870 | 402 | 152 | 580 | 360 | 1,472 | 969 | 144 | 359 |
| 1978 | 29,900 | 7,928 | 6,261 | 1,666 | 1,666 | NA | 16,941 | 13,603 | 3,338 | NA | NA | NA | 3,482 | 1,888 | 422 | 169 | 647 | 356 | 1,549 | 1,037 | 144 | 367 |
| 1979 | 31,202 | 7,916 | 6,229 | 1,687 | 1,687 | NA | 17,991 | 14,625 | 3,366 | NA | NA | NA | 3,656 | 2,044 | 417 | 184 | 679 | 333 | 1,639 | 1,124 | 143 | 372 |
| 1980 | 32,478 | 7,794 | 6,023 | 1,772 | 1,772 | NA | 19,339 | 15,495 | 3,844 | NA | NA | NA | 3,838 | 2,158 | 411 | 209 | 729 | 332 | 1,507 | 993 | 141 | 373 |
| 1981 | 35,289 | 7,607 | 5,903 | 1,703 | 1,703 | NA | 22,478 | 18,065 | 4,413 | NA | NA | NA | 3,849 | 2,059 | 431 | 233 | 784 | 343 | 1,357 | 845 | 138 | 373 |
| 1982 | 37,080 | 7,514 | 5,702 | 1,812 | 1,812 | NA | 24,335 | 19,057 | 5,278 | NA | NA | NA | 3,897 | 2,049 | 422 | 246 | 818 | 362 | 1,334 | 810 | 140 | 385 |
| 1983 | 39,756 | 7,748 | 5,859 | 1,890 | 1,890 | NA | 26,467 | 20,147 | 6,321 | NA | NA | NA | 4,144 | 2,198 | 421 | 277 | 868 | 380 | 1,397 | 848 | 144 | 405 |
| 1984 | 42,442 | 7,820 | 5,597 | 2,223 | 2,223 | NA | 28,769 | 21,817 | 6,951 | NA | NA | NA | 4,408 | 2,318 | 443 | 317 | 929 | 401 | 1,445 | 868 | 149 | 428 |
| 1985 | 46,546 | 8,112 | 5,745 | 2,367 | 2,367 | NA | 32,297 | 23,654 | 8,644 | NA | NA | NA | 4,631 | 2,376 | 479 | 362 | 1,003 | 411 | 1,506 | 897 | 155 | 453 |

TABLE 4

U.S. applied research expenditures, by performing sector and source of funds: 1953–2019

(Millions of current and of constant 2012 dollars)

| Year | All performers | All federal | Federal intramural ^a | FFRDCs ^b | | Nonfederal government ^c | Business ^d | | | | | | Higher education ^e | | | | NPOs ^f | | | | | |
|-------------------|---------------------|-------------|---------------------------------|---------------------|---------|------------------------------------|-----------------------|--------------|---------|-------------------------|------------------|-------|-------------------------------|---------|-----------------------|----------|-------------------|-------|-------|---------|----------|-------|
| | All funding sources | Total | Federal | Total | Federal | Total | Total | Own domestic | Federal | Other domestic business | Foreign business | Other | Total | Federal | Nonfederal government | Business | Higher education | NPO | Total | Federal | Business | NPO |
| 1986 | 48,931 | 8,015 | 5,755 | 2,260 | 2,260 | NA | 34,365 | 27,092 | 7,273 | NA | NA | NA | 4,993 | 2,502 | 535 | 411 | 1,114 | 431 | 1,557 | 908 | 163 | 486 |
| 1987 | 48,997 | 8,053 | 5,900 | 2,153 | 2,153 | NA | 33,639 | 26,563 | 7,077 | NA | NA | NA | 5,643 | 2,880 | 584 | 456 | 1,240 | 483 | 1,662 | 973 | 171 | 518 |
| 1988 | 49,998 | 7,358 | 5,693 | 1,665 | 1,665 | NA | 34,503 | 27,991 | 6,512 | NA | NA | NA | 6,400 | 3,316 | 638 | 511 | 1,385 | 550 | 1,737 | 1,014 | 177 | 546 |
| 1989 | 52,590 | 7,516 | 5,811 | 1,705 | 1,705 | NA | 36,362 | 29,317 | 7,045 | NA | NA | NA | 6,824 | 3,456 | 679 | 565 | 1,520 | 603 | 1,888 | 1,132 | 183 | 573 |
| 1990 | 54,808 | 7,552 | 5,736 | 1,816 | 1,816 | NA | 38,320 | 28,949 | 9,372 | NA | NA | NA | 6,920 | 3,362 | 711 | 592 | 1,619 | 635 | 2,016 | 1,224 | 189 | 603 |
| 1991 | 58,689 | 8,415 | 6,219 | 2,196 | 2,196 | NA | 41,038 | 32,549 | 8,489 | NA | NA | NA | 7,004 | 3,390 | 711 | 595 | 1,657 | 651 | 2,231 | 1,399 | 196 | 636 |
| 1992 | 56,347 | 8,712 | 6,442 | 2,271 | 2,271 | NA | 38,114 | 31,466 | 6,648 | NA | NA | NA | 7,252 | 3,587 | 711 | 615 | 1,664 | 675 | 2,269 | 1,387 | 205 | 678 |
| 1993 | 54,095 | 9,196 | 7,020 | 2,176 | 2,176 | NA | 35,187 | 28,955 | 6,232 | NA | NA | NA | 7,471 | 3,688 | 719 | 643 | 1,714 | 707 | 2,241 | 1,305 | 215 | 721 |
| 1994 | 52,020 | 9,349 | 7,082 | 2,267 | 2,267 | NA | 32,657 | 27,520 | 5,137 | NA | NA | NA | 7,657 | 3,756 | 735 | 660 | 1,784 | 722 | 2,357 | 1,363 | 225 | 769 |
| 1995 | 56,961 | 9,276 | 6,891 | 2,385 | 2,385 | NA | 37,457 | 33,054 | 4,403 | NA | NA | NA | 7,874 | 3,867 | 777 | 687 | 1,825 | 718 | 2,354 | 1,299 | 236 | 819 |
| 1996 | 58,989 | 8,874 | 6,657 | 2,217 | 2,217 | NA | 39,640 | 34,667 | 4,974 | NA | NA | NA | 8,041 | 3,913 | 798 | 716 | 1,900 | 714 | 2,434 | 1,311 | 248 | 875 |
| 1997 | 62,483 | 8,967 | 6,712 | 2,255 | 2,255 | NA | 43,562 | 40,005 | 3,557 | NA | NA | NA | 7,367 | 3,382 | 737 | 691 | 1,875 | 683 | 2,588 | 1,358 | 275 | 954 |
| 1998 | 61,431 | 9,126 | 6,835 | 2,291 | 2,291 | NA | 42,783 | 39,286 | 3,496 | NA | NA | NA | 6,785 | 2,908 | 684 | 676 | 1,850 | 667 | 2,738 | 1,408 | 289 | 1,041 |
| 1999 | 67,897 | 9,402 | 7,241 | 2,161 | 2,161 | NA | 47,974 | 44,285 | 3,689 | NA | NA | NA | 7,399 | 3,367 | 698 | 693 | 1,938 | 703 | 3,122 | 1,702 | 309 | 1,111 |
| 2000 | 72,368 | 10,061 | 7,819 | 2,242 | 2,242 | NA | 50,176 | 46,741 | 3,435 | NA | NA | NA | 8,147 | 3,947 | 715 | 692 | 2,054 | 740 | 3,983 | 2,345 | 331 | 1,307 |
| 2001 | 80,156 | 11,933 | 8,839 | 3,095 | 2,982 | NA | 55,160 | 50,644 | 4,516 | NA | NA | NA | 8,630 | 4,275 | 733 | 671 | 2,173 | 778 | 4,433 | 2,695 | 327 | 1,411 |
| 2002 | 62,332 | 12,962 | 9,238 | 3,725 | 3,584 | NA | 35,203 | 32,178 | 3,025 | NA | NA | NA | 9,462 | 4,783 | 785 | 655 | 2,390 | 851 | 4,704 | 2,796 | 312 | 1,595 |
| 2003 | 73,960 | 13,243 | 9,292 | 3,951 | 3,818 | NA | 45,222 | 39,804 | 5,418 | NA | NA | NA | 10,369 | 5,390 | 857 | 650 | 2,576 | 895 | 5,126 | 3,012 | 313 | 1,800 |
| 2004 | 81,543 | 12,491 | 8,793 | 3,698 | 3,606 | NA | 53,588 | 47,956 | 5,632 | NA | NA | NA | 10,510 | 5,523 | 867 | 642 | 2,583 | 895 | 4,954 | 2,888 | 311 | 1,755 |
| 2005 | 79,676 | 12,453 | 8,645 | 3,808 | 3,707 | NA | 51,800 | 45,750 | 6,050 | NA | NA | NA | 10,460 | 5,503 | 823 | 637 | 2,612 | 886 | 4,964 | 2,781 | 321 | 1,861 |
| 2006 | 85,073 | 12,296 | 8,255 | 4,042 | 3,920 | 284 | 56,817 | 50,000 | 6,817 | NA | NA | NA | 10,573 | 5,640 | 791 | 636 | 2,629 | 877 | 5,103 | 2,878 | 333 | 1,893 |
| 2007 | 92,251 | 13,729 | 7,808 | 5,920 | 5,723 | 347 | 62,247 | 52,575 | 9,672 | NA | NA | NA | 10,753 | 5,713 | 805 | 656 | 2,661 | 917 | 5,175 | 2,793 | 344 | 2,038 |
| 2008 | 81,285 | 14,165 | 7,760 | 6,406 | 6,197 | 432 | 49,705 | 37,527 | 5,724 | 2,986 | 3,282 | 186 | 11,627 | 6,194 | 864 | 716 | 2,844 | 1,008 | 5,356 | 2,758 | 351 | 2,248 |
| 2009 | 78,035 | 14,803 | 8,288 | 6,515 | 6,294 | 528 | 43,214 | 30,803 | 8,207 | 1,963 | 2,101 | 141 | 13,519 | 7,600 | 991 | 797 | 3,070 | 1,060 | 5,972 | 3,209 | 335 | 2,427 |
| 2010 | 82,254 | 13,738 | 8,340 | 5,397 | 5,229 | 595 | 46,723 | 36,325 | 4,895 | 2,347 | 2,933 | 223 | 15,145 | 9,024 | 1,042 | 794 | 3,207 | 1,077 | 6,053 | 3,164 | 334 | 2,555 |
| 2011 | 83,498 | 13,505 | 8,178 | 5,327 | 5,154 | 586 | 48,091 | 37,758 | 4,488 | 2,459 | 3,191 | 195 | 15,665 | 9,370 | 999 | 796 | 3,405 | 1,095 | 5,651 | 2,745 | 346 | 2,560 |
| 2012 | 86,856 | 14,328 | 8,587 | 5,741 | 5,566 | 550 | 50,755 | 38,891 | 4,137 | 3,336 | 4,209 | 182 | 15,674 | 9,077 | 994 | 862 | 3,609 | 1,133 | 5,550 | 2,629 | 349 | 2,572 |
| 2013 | 86,669 | 14,871 | 8,165 | 6,705 | 6,524 | 504 | 50,133 | 36,740 | 5,924 | 3,219 | 4,008 | 243 | 15,620 | 8,642 | 1,033 | 904 | 3,794 | 1,248 | 5,541 | 2,423 | 365 | 2,754 |
| 2014 | 88,580 | 15,175 | 8,467 | 6,708 | 6,528 | 455 | 51,540 | 36,937 | 6,219 | 3,214 | 4,896 | 275 | 15,629 | 8,314 | 1,037 | 946 | 3,988 | 1,345 | 5,781 | 2,484 | 378 | 2,919 |
| 2015 | 92,974 | 15,960 | 8,934 | 7,026 | 6,864 | 459 | 53,976 | 41,415 | 5,832 | 2,614 | 3,892 | 222 | 16,435 | 8,587 | 1,036 | 1,038 | 4,263 | 1,510 | 6,144 | 2,668 | 389 | 3,088 |
| 2016 | 101,043 | 16,489 | 9,274 | 7,215 | 7,064 | 482 | 59,468 | 45,916 | 5,039 | 3,003 | 5,236 | 275 | 17,740 | 9,159 | 1,097 | 1,136 | 4,619 | 1,729 | 6,863 | 3,118 | 410 | 3,335 |
| 2017 | 103,046 | 16,869 | 9,399 | 7,470 | 7,305 | 474 | 59,456 | 44,311 | 5,000 | 3,577 | 6,359 | 210 | 18,407 | 9,425 | 1,134 | 1,178 | 4,864 | 1,806 | 7,840 | 3,855 | 425 | 3,560 |
| 2018 | 105,461 | 17,865 | 10,074 | 7,791 | 7,622 | 466 | 60,391 | 46,162 | 4,859 | 3,146 | 6,030 | 194 | 18,948 | 9,663 | 1,169 | 1,240 | 5,026 | 1,850 | 7,791 | 3,635 | 450 | 3,706 |
| 2019 ^g | 111,210 | 18,232 | 9,955 | 8,277 | 8,110 | 468 | 64,766 | 49,026 | 5,272 | 3,595 | 6,653 | 220 | 19,672 | 9,954 | 1,206 | 1,329 | 5,227 | 1,957 | 8,071 | 3,739 | 473 | 3,859 |

NA = not available.

FFRDC = federally funded research and development center; NPO = nonprofit organization.

^a See table 2, footnote a.

^b Type-of-R&D data for FFRDC R&D in 1953–63 reflect the R&D performance of only university-administered FFRDCs. In 1953–63, the R&D performance and funding of industry-administered FFRDCs were not separately reported but are included instead in the business R&D data for these years. Similarly, in 1953–63, the R&D performance and funding for nonprofit-administered FFRDCs were not separately reported but are included instead in the NPO R&D data for these years. The data for 1964–80 reflect the R&D performance of only university-administered FFRDCs and industry-administered FFRDCs; the R&D performance for nonprofit-administered FFRDCs is included in the NPO R&D data for these years. Starting in 2001, type-of-R&D data provide detail on federal and nonfederal sources of funding for FFRDC R&D. (See also table 2, footnote b.)

^c Type-of-R&D data for state intramural R&D became available in the 2016 Survey of State Government Research and Development. These data prior to 2016 are estimated. (See also table 2, footnote c.)

^d Type-of-R&D data for business R&D in 1998–2007 were revised in response to data quality review considerations and are not directly comparable with the data for 1997 and earlier years. For 2008 and later years, the type-of-R&D splits for other than total, own-funded, and federally funded R&D are estimated. (See also table 2, footnote d.)

^e The type-of-R&D estimation procedure for higher education R&D was revised in 1998 and again in 2010; hence, these data are not directly comparable with data reported for earlier years. The pass-through adjusted data on higher education R&D, applied 1998 and forward, reflect institution-specific detail on the type of R&D performed. Type-of-R&D splits for other than total and federally funded are estimated. (See also table 2, footnote e.)

^f Type-of-R&D data for R&D by NPOs in 1998 and later years are estimated, except for the R&D that is federally funded. (See also table 2, footnote f.)

^g The data for 2019 are estimates and will later be revised.

Note(s):

Detail may not add to total because of rounding. Constant-dollar estimates are derived from unrounded data. For trend comparisons, use only the historical data reported in this table because some back-year data may have been revised. Except for the nonprofit sector, data are based on annual reports by performers in the National Center for Science and Engineering Statistics' annual R&D expenditure surveys: Business Research and Development Survey, Higher Education Research and Development Survey, Survey of Federal Funds for Research and Development, FFRDC Research and Development Expenditures Survey, and Survey of State Government Research and Development. R&D expenditures by business performers—and, before 2001, also industry-administered FFRDCs—are collected on a calendar year basis. Expenditures for other performers are calendar year approximations based on fiscal year data. For federal performers from 1977 and after, the approximation equals 75% of the amount reported in the same fiscal year plus 25% of the amount reported in the subsequent fiscal year. Prior to 1977, the federal fiscal year began on 1 July, not 1 October, and the approximation is 50% of the amount reported in the same fiscal year plus 50% of the amount reported in the subsequent fiscal year. The fiscal year for higher education performers and state government performers generally begins 1 July, and the calendar year approximation is 50% of the amount reported in the same fiscal year plus 50% of amount reported in the subsequent fiscal year.

Source(s):

National Center for Science and Engineering Statistics, National Patterns of R&D Resources (annual series).