**Table 1-9. Nobel Prizes awarded by field for selected countries, 1901-1974**

| Date | Total | United States | France | Germany[1] | U.S.S.R. | United Kingdom | Other |
|---|---|---|---|---|---|---|---|
| | | | | Number of prizes in physics | | | |
| 1901-1910 | 14 | 1 | 4 | 3 | — | 2 | 4 |
| 1911-1920 | 10 | — | — | 4 | — | 3 | 3 |
| 1921-1930 | 12 | 2 | 2 | 3 | — | 2 | 3 |
| 1931-1940 | 10 | 3 | — | 1 | — | 3 | 3 |
| 1941-1950 | 8 | 2 | — | 1 | — | 3 | 2 |
| 1951-1960 | 20 | 12 | — | 1 | 3 | 2 | 2 |
| 1961-1970 | 18 | 9 | 2 | 2 | 3 | — | 2 |
| 1971-1974 | 9 | 5 | — | — | — | 4 | — |
| Total | 101 | 34 | 8 | 15 | 6 | 19 | 19 |
| | | | | Number of prizes in chemistry | | | |
| 1901-1910 | 10 | — | 1 | 5 | — | 2 | 2 |
| 1911-1920 | 8 | 1 | 3 | 3 | — | — | 1 |
| 1921-1930 | 10 | — | — | 4 | — | 3 | 3 |
| 1931-1940 | 12 | 2 | 2 | 4 | — | 1 | 3 |
| 1941-1950 | 11 | 4 | — | 3 | — | 1 | 3 |
| 1951-1960 | 13 | 5 | — | 1 | 1 | 5 | 1 |
| 1961-1970 | 15 | 4 | — | 2 | — | 6 | 3 |
| 1971-1974 | 7 | 4 | — | 1 | — | 1 | 1 |
| Total | 86 | 20 | 6 | 23 | 1 | 19 | 17 |
| | | | | Number of prizes in physiology/medicine | | | |
| 1901-1910 | 12 | — | 1 | 4 | 2 | 1 | 4 |
| 1911-1920 | 6 | 1 | 1 | — | — | — | 4 |
| 1921-1930 | 11 | 1 | 1 | 1 | — | 2 | 6 |
| 1931-1940 | 13 | 4 | — | 3 | — | 3 | 3 |
| 1941-1950 | 17 | 8 | — | — | — | 3 | 6 |
| 1951-1960 | 19 | 12 | — | 1 | — | 2 | 4 |
| 1961-1970 | 26 | 13 | 3 | 1 | — | 6 | 3 |
| 1971-1974 | 9 | 4 | — | — | — | 1 | 4 |
| Total | 113 | 43 | 6 | 10 | 2 | 18 | 34 |

[1] Before 1946, includes East Germany.

SOURCE: The Nobel Foundation, *Les Prix Nobel,* annual series.

**Table 1-12. Major technological innovations, by selected countries, 1953-73**

| Period | United States | United Kingdom | West Germany | Japan | France | Total |
|---|---|---|---|---|---|---|
| | Percentage of total | | | | | |
| 1953-55 | 75 | 14 | 6 | 0 | 5 | 100 |
| 1956-58 | 82 | 9 | 5 | 0 | 5 | 100 |
| 1959-61 | 68 | 21 | 2 | 2 | 7 | 100 |
| 1962-64 | 66 | 17 | 5 | 12 | 0 | 100 |
| 1965-67 | 55 | 23 | 12 | 8 | 3 | 100 |
| 1968-70 | 57 | 19 | 8 | 13 | 4 | 100 |
| 1971-73 | 58 | 16 | 9 | 10 | 8 | 100 |
| | Number of innovations | | | | | |
| 1953-55 | 63 | 12 | 5 | 0 | 4 | 84 |
| 1956-58 | 36 | 4 | 2 | 0 | 2 | 44 |
| 1959-61 | 38 | 12 | 1 | 1 | 4 | 56 |
| 1962-64 | 55 | 14 | 4 | 10 | 0 | 83 |
| 1965-67 | 36 | 15 | 8 | 5 | 2 | 66 |
| 1968-70 | 45 | 15 | 6 | 10 | 3 | 79 |
| 1971-73 | 46 | 13 | 7 | 8 | 6 | 80 |

NOTE: Detail may not add to totals because of rounding.

SOURCE: Gellman Research Associates, Inc., *Indicators of International Trends in Technological Innovation*, 1975 (A study commissioned specifically for this report).

**Table 1-13. Mean time in years between invention and innovation, for selected countries, 1953-73[1]**

| Period | United States | Japan | West Germany | France | United Kingdom |
|---|---|---|---|---|---|
| 1953-62 | 8.4 | ([2]) | 5.5 | 7.5 | 5.1 |
| 1963-73 | 6.4 | 3.6 | 5.6 | 7.3 | 7.5 |

[1] Refers to the date of the innovation.
[2] Sample size does not allow calculation of the time interval.

SOURCE: Gellman Research Associates, Inc., *Indicators of International Trends in Technological Innovation*, 1975 (A study commissioned specifically for this report).

**Table 1-15. U.S. receipts and payments for patents, manufacturing rights, licenses, etc., by country, 1960-74[1]**
**[Dollars in millions]**

| Year | Total | Western Europe | Japan | Developing nations | Other |
|---|---|---|---|---|---|
| 1960 | | | | | |
| Balance | $210 | $105 | $48 | $25 | $31 |
| Receipts | 248 | 140 | 48 | 26 | 33 |
| Payments | 38 | 35 | 0 | 1 | 2 |
| 1961 | | | | | |
| Balance | 201 | 94 | 50 | 25 | 32 |
| Receipts | 244 | 132 | 52 | 26 | 34 |
| Payments | 43 | 38 | 2 | 1 | 2 |
| 1962 | | | | | |
| Balance | 212 | 95 | 51 | 29 | 38 |
| Receipts | 256 | 133 | 53 | 30 | 40 |
| Payments | 44 | 38 | 2 | 1 | 2 |
| 1963 | | | | | |
| Balance | 222 | 98 | 57 | 30 | 37 |
| Receipts | 273 | 144 | 58 | 31 | 39 |
| Payments | 51 | 46 | 1 | 1 | 2 |
| 1964 | | | | | |
| Balance | 241 | 106 | 65 | 33 | 35 |
| Receipts | 301 | 162 | 66 | 34 | 38 |
| Payments | 60 | 56 | 1 | 1 | 3 |
| 1965 | | | | | |
| Balance | 268 | 128 | 65 | 35 | 40 |
| Receipts | 335 | 189 | 66 | 37 | 43 |
| Payments | 67 | 61 | 1 | 2 | 3 |
| 1966 | | | | | |
| Balance | 277 | 119 | 67 | 46 | 46 |
| Receipts | 353 | 186 | 70 | 50 | 48 |
| Payments | 76 | 67 | 3 | 4 | 2 |
| 1967 | | | | | |
| Balance | 289 | 97 | 91 | 48 | 54 |
| Receipts | 393 | 190 | 95 | 51 | 57 |
| Payments | 104 | 93 | 4 | 3 | 3 |
| 1968 | | | | | |
| Balance | 331 | 102 | 126 | 59 | 45 |
| Receipts | 437 | 196 | 130 | 63 | 49 |
| Payments | 106 | 94 | 4 | 4 | 4 |
| 1969 | | | | | |
| Balance | 366 | 115 | 151 | 56 | 44 |
| Receipts | 486 | 222 | 155 | 61 | 49 |
| Payments | 120 | 107 | 4 | 5 | 5 |
| 1970 | | | | | |
| Balance | 459 | 148 | 198 | 61 | 52 |
| Receipts | 573 | 247 | 202 | 68 | 56 |
| Payments | 114 | 99 | 4 | 7 | 4 |
| 1971 | | | | | |
| Balance | 495 | 158 | 219 | 67 | 51 |
| Receipts | 618 | 268 | 223 | 71 | 56 |
| Payments | 123 | 110 | 4 | 4 | 5 |
| 1972 | | | | | |
| Balance | 516 | 150 | 234 | 74 | 58 |
| Receipts | 655 | 270 | 240 | 80 | 65 |
| Payments | 139 | 120 | 6 | 6 | 7 |
| 1973 | | | | | |
| Balance | 549 | 160 | 261 | 71 | 58 |
| Receipts | 725 | 306 | 274 | 81 | 65 |
| Payments | 176 | 146 | 13 | 10 | 7 |
| 1974 (preliminary) | | | | | |
| Balance | 601 | 200 | 241 | 91 | 69 |
| Receipts | 781 | 348 | 249 | 107 | 77 |
| Payments | 180 | 148 | 8 | 16 | 8 |

[1] Represents U.S. receipts and payments arising out of agreements by U.S. residents with residents or governments of foreign countries to sell or buy outright or provide or be provided with the use of intangible assets or rights such as patents, techniques, processes, formulae, designs, trademarks, copyrights, franchises, manufacturing rights, and other similar intangible property or rights. Excludes fees and royalties connected with U.S. and foreign direct investments and excludes film rentals.

NOTE: Detail may not add to totals because of rounding.

SOURCE: Department of Commerce, Bureau of Economic Analysis, *Survey of Current Business*, June 1975.

**Table 1-18. Unit labor cost[1] in manufacturing industries, by selected countries, 1960-74 (Index, 1960 = 100)**

| Year | United States | Japan | France | West Germany | United Kingdom |
|---|---|---|---|---|---|
| 1960 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| 1961 | 100.6 | 102.8 | 105.2 | 105.9 | 106.9 |
| 1962 | 99.1 | 112.5 | 110.7 | 112.6 | 109.8 |
| 1963 | 98.4 | 116.3 | 115.5 | 114.2 | 108.9 |
| 1964 | 98.2 | 115.3 | 118.2 | 114.2 | 108.8 |
| 1965 | 97.0 | 124.7 | 120.4 | 117.3 | 115.6 |
| 1966 | 100.0 | 124.8 | 119.6 | 123.0 | 121.0 |
| 1967 | 105.0 | 121.8 | 122.7 | 122.4 | 119.0 |
| 1968 | 107.5 | 125.7 | 124.9 | 120.6 | 119.5 |
| 1969 | 111.7 | 128.9 | 127.5 | 124.2 | 127.4 |
| 1970 | 118.9 | 135.8 | 136.1 | 139.5 | 144.9 |
| 1971 | 118.9 | 151.8 | 144.8 | 151.7 | 158.0 |
| 1972 | 118.8 | 162.6 | 151.7 | 159.2 | 171.5 |
| 1973 | 120.6 | 171.3 | 162.8 | 168.7 | 181.7 |
| 1974 (est.) | 131.2 | 220.1 | 180.7 | 187.5 | 216.9 |

[1] In national currency unadjusted for inflation.

SOURCE: P. Capdevielle and A. Neef, "Productivity and Unit Labor Costs in the United States and Abroad", *Monthly Labor Review*, July 1975.

**Table 1-19. U.S. trade balance in R&D-intensive and non-R&D-intensive manufactured products, 1960-74 (Dollars in millions)**

| | 1960 | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968 | 1969 | 1970 | 1971 | 1972 | 1973 | 1974 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R&D-intensive | | | | | | | | | | | | | | | |
| Balance | 5,891 | 6,237 | 6,720 | 6,958 | 7,970 | 8,177 | 8,020 | 8,817 | 9,755 | 10,471 | 11,722 | 11,727 | 11,012 | 15,101 | 23,612 |
| Export | 7,597 | 8,018 | 8,715 | 8,975 | 10,267 | 11,107 | 12,203 | 13,407 | 15,312 | 16,955 | 19,274 | 20,228 | 22,003 | 29,088 | 41,115 |
| Import | 1,706 | 1,781 | 1,995 | 2,017 | 2,297 | 2,930 | 4,183 | 4,590 | 5,537 | 6,484 | 7,552 | 8,501 | 10,991 | 13,987 | 17,503 |
| Non R&D-intensive | | | | | | | | | | | | | | | |
| Balance | -179 | -12 | -691 | -765 | -678 | -2,027 | -3,325 | -3,729 | -6,581 | -6,698 | -8,285 | -11,698 | -15,039 | -15,370 | -16,296 |
| Export | 4,962 | 4,730 | 4,940 | 5,284 | 6,121 | 6,281 | 6,913 | 7,437 | 8,506 | 9,830 | 10,069 | 10,215 | 11,737 | 15,643 | 22,412 |
| Import | 5,141 | 4,742 | 5,631 | 6,049 | 6,799 | 8,308 | 10,238 | 11,166 | 15,087 | 16,528 | 18,354 | 21,913 | 26,776 | 31,013 | 38,708 |

SOURCE: U.S. Department of Commerce, Domestic and International Business Administration, *Overseas Business Reports*, April 1975 and April 1972.

**Table 2-1. National R&D expenditures, 1960-74**
[Dollars in billions]

| Year | Current dollars | Constant dollars[1] |
|---|---|---|
| 1960 | $13.6 | $15.4 |
| 1961 | 14.3 | 16.1 |
| 1962 | 15.4 | 17.1 |
| 1963 | 17.1 | 18.8 |
| 1964 | 18.9 | 20.4 |
| 1965 | 20.1 | 21.3 |
| 1966 | 21.9 | 22.6 |
| 1967 | 23.2 | 23.2 |
| 1968 | 24.7 | 23.7 |
| 1969 | 26.7 | 23.6 |
| 1970 | 26.0 | 22.6 |
| 1971 | 25.7 | 22.2 |
| 1972 | 28.4 | 22.9 |
| 1973 | 30.4 | 23.2 |
| 1974 (est.) | 32.0 | 22.1 |

[1] GNP implicit price deflators used to convert current dollars to constant 1967 dollars.

SOURCE: National Science Foundation, *National Patterns of R&D Resources, 1953-75* (NSF 75-307).

**Table 2-2. Scientists and engineers[1] employed in R&D, by sector, 1961-74**
[In thousands]

| Yearly average | Total | Federal Government | Industry | Universities and colleges | FFRDC's[2] | Other nonprofit institutions |
|---|---|---|---|---|---|---|
| 1961 | 425.7 | 51.1 | 312.0 | 42.4 | 9.1 | 11.1 |
| 1965 | 494.1 | 61.8 | 348.4 | 53.4 | 11.1 | 19.4 |
| 1968 | 550.4 | 68.1 | 381.9 | 66.0 | 11.2 | 23.2 |
| 1969 | 558.2 | 69.9 | 385.6 | 66.3 | 11.6 | 22.8 |
| 1970 | 549.5 | 69.8 | 375.4 | 68.5 | 11.5 | 24.3 |
| 1971 | 529.7 | 66.5 | 358.3 | 68.4 | 11.5 | 25.0 |
| 1972 | 521.5 | 65.2 | 352.6 | 66.5 | 12.0 | 25.2 |
| 1973 | 523.1 | 62.3 | 359.2 | 64.6 | 12.4 | 24.6 |
| 1974 (est.) | 527.8 | 65.0 | 359.5 | 66.8 | 12.1 | 24.4 |

[1] Full-time-equivalent basis, excluding those employed in State and local agencies, calculated as the yearly average. Graduate students are included.
[2] Federally Funded Research and Development Centers administered by universities.

SOURCE: National Science Foundation, *National Patterns of R&D Resources, 1953-75* (NSF 75-307).

**Table 2-4. National expenditures for R&D by source, 1960-74**
[Dollars in millions]

| Year | Total | Federal government | Industry | Universities and colleges | Other nonprofit institutions |
|---|---|---|---|---|---|
| | | | Current dollars | | |
| 1960 | $13,551 | $8,752 | $4,508 | $149 | $142 |
| 1961 | 14,346 | 9,264 | 4,749 | 165 | 168 |
| 1962 | 15,426 | 9,926 | 5,114 | 185 | 201 |
| 1963 | 17,093 | 11,219 | 5,449 | 207 | 218 |
| 1964 | 18,894 | 12,553 | 5,880 | 235 | 226 |
| 1965 | 20,091 | 13,033 | 6,539 | 267 | 252 |
| 1966 | 21,894 | 13,990 | 7,317 | 303 | 284 |
| 1967 | 23,205 | 14,420 | 8,134 | 345 | 306 |
| 1968 | 24,669 | 14,952 | 8,997 | 391 | 329 |
| 1969 | 25,686 | 14,914 | 9,998 | 420 | 354 |
| 1970 | 26,047 | 14,764 | 10,434 | 461 | 388 |
| 1971 | 26,745 | 14,982 | 10,817 | 529 | 417 |
| 1972 | 28,402 | 15,875 | 11,508 | 576 | 443 |
| 1973 | 30,427 | 16,472 | 12,880 | 604 | 471 |
| 1974 (est.) | 32,045 | 16,955 | 13,916 | 683 | 491 |
| | | | Constant 1967 dollars[1] | | |
| 1960 | $15,427 | $9,964 | $5,132 | $170 | $162 |
| 1961 | 16,124 | 10,412 | 5,338 | 185 | 189 |
| 1962 | 17,147 | 11,034 | 5,685 | 206 | 223 |
| 1963 | 18,756 | 12,310 | 5,979 | 227 | 239 |
| 1964 | 20,410 | 13,561 | 6,352 | 254 | 244 |
| 1965 | 21,310 | 13,824 | 6,936 | 283 | 267 |
| 1966 | 22,594 | 14,438 | 7,551 | 313 | 293 |
| 1967 | 23,205 | 14,420 | 8,134 | 345 | 306 |
| 1968 | 23,717 | 14,376 | 8,650 | 376 | 316 |
| 1969 | 23,560 | 13,680 | 9,171 | 385 | 325 |
| 1970 | 22,648 | 12,837 | 9.072 | 401 | 337 |
| 1971 | 22,249 | 12,463 | 8,998 | 440 | 347 |
| 1972 | 22,857 | 12,776 | 9,261 | 464 | 357 |
| 1973 | 23,186 | 12,552 | 9,815 | 460 | 359 |
| 1974 (est.) | 22,143 | 11,716 | 9,616 | 472 | 339 |

[1] GNP implicit price deflators used to convert current dollars to constant 1967 dollars.

NOTE: Detail may not add to totals because of rounding.

SOURCE: National Science Foundation, *National Patterns of R&D Resources* (NSF 75-307).

**Table 2-6. National R&D expenditures, by character of work, 1960-74**
[Dollars in millions]

| Year | Current dollars | | | Constant 1967 dollars[1] | | |
|---|---|---|---|---|---|---|
| | Basic research | Applied research | Development | Basic research | Applied research | Development |
| 1960 | $1,183 | $3,057 | $9,311 | $1,347 | $3,480 | $10,600 |
| 1961 | 1,378 | 3,115 | 9,853 | 1,549 | 3,501 | 11,075 |
| 1962 | 1,695 | 3,727 | 10,004 | 1,884 | 4,143 | 11,120 |
| 1963 | 1,974 | 3,825 | 11,294 | 2,166 | 4,197 | 12,392 |
| 1964 | 2,301 | 4,238 | 12,355 | 2,486 | 4,578 | 13,347 |
| 1965 | 2,572 | 4,470 | 13,049 | 2.728 | 4,741 | 13,841 |
| 1966 | 2,825 | 4,747 | 14,322 | 2,915 | 4,899 | 14,780 |
| 1967 | 3,029 | 4,968 | 15,208 | 3,029 | 4,968 | 15,208 |
| 1968 | 3,286 | 5,356 | 16,027 | 3,159 | 5,150 | 15,409 |
| 1969 | 3,378 | 5,533 | 16,775 | 3,099 | 5,075 | 15,387 |
| 1970 | 3,548 | 5,892 | 16,607 | 3,085 | 5,123 | 14,440 |
| 1971 | 3,544 | 6,047 | 17,154 | 2,948 | 5,030 | 14,270 |
| 1972 | 3,705 | 6,272 | 18,425 | 2,982 | 5,047 | 14,828 |
| 1973 | 3,800 | 6,839 | 19,788 | 2,896 | 5,211 | 15,079 |
| 1974 (est.) | 3,991 | 7,460 | 20,594 | 2,758 | 5,155 | 14,230 |

[1] GNP implicit price deflators used to convert current dollars to constant 1967 dollars.

SOURCE: National Science Foundation, *National Patterns of R&D Resources, 1953-75 (NSF 75-307).*

**Table 2-7b. Applied research expenditures by source, 1960-74**
[Dollars in millions]

| Year | Total | Federal Government | Industry | Universities and colleges | Other nonprofit institutions |
|---|---|---|---|---|---|
| | Current dollars | | | | |
| 1960 | $3,057 | $1,725 | $1,228 | $66 | $38 |
| 1961 | 3,115 | 1,804 | 1,197 | 69 | 45 |
| 1962 | 3,727 | 2,127 | 1,473 | 70 | 57 |
| 1963 | 3,825 | 2,205 | 1,487 | 72 | 61 |
| 1964 | 4,238 | 2,503 | 1,596 | 77 | 62 |
| 1965 | 4,470 | 2,653 | 1,658 | 88 | 71 |
| 1966 | 4,747 | 2,729 | 1,844 | 89 | 85 |
| 1967 | 4,968 | 2,874 | 1,895 | 102 | 97 |
| 1968 | 5,356 | 3,020 | 2,132 | 97 | 107 |
| 1969 | 5,533 | 2,982 | 2,327 | 105 | 119 |
| 1970 | 5,892 | 3,258 | 2,406 | 98 | 130 |
| 1971 | 6,047 | 3,313 | 2,476 | 115 | 143 |
| 1972 | 6,272 | 3,387 | 2,601 | 132 | 152 |
| 1973 | 6,839 | 3,670 | 2,835 | 158 | 176 |
| 1974 (est.) | 7,460 | 3,992 | 3,080 | 214 | 174 |
| | Constant 1967 dollars[1] | | | | |
| 1960 | $3,480 | $1,964 | $1,398 | $75 | $43 |
| 1961 | 3,502 | 2,028 | 1,345 | 78 | 51 |
| 1962 | 4,142 | 2,364 | 1,637 | 78 | 63 |
| 1963 | 4,197 | 2,419 | 1,632 | 79 | 67 |
| 1964 | 4,578 | 2,704 | 1,724 | 83 | 67 |
| 1965 | 4,741 | 2,814 | 1,759 | 93 | 75 |
| 1966 | 4,899 | 2,816 | 1,903 | 92 | 88 |
| 1967 | 4,968 | 2,874 | 1,895 | 102 | 97 |
| 1968 | 5,150 | 2,904 | 2,050 | 93 | 103 |
| 1969 | 5,074 | 2,735 | 2,134 | 96 | 109 |
| 1970 | 5,123 | 2,833 | 2,092 | 85 | 113 |
| 1971 | 5,031 | 2,756 | 2,060 | 96 | 119 |
| 1972 | 5,047 | 2,726 | 2,093 | 106 | 122 |
| 1973 | 5,211 | 2,797 | 2,160 | 120 | 134 |
| 1974 (est.) | 5,154 | 2,758 | 2,128 | 148 | 120 |

[1] GNP implicit price deflators used to convert current dollars to constant 1967 dollars.

SOURCE: National Science Foundation, *National Patterns of R&D Resources*, (NSF 75-307).

**Table 2-8. Federal expenditures[1] for research, development and R&D plant, as a percent of total Federal outlays, and as a percent of the relatively controllable portion of the Federal outlays, 1960-74**

| Year | Federal R&D expenditures[2] | Total Federal outlays[2] | Expenditures as a percent of total Federal outlays | Expenditures as a percent of controllable outlays |
|---|---|---|---|---|
| 1960 | $ 7.7 | $ 92.2 | 8.4 | NA |
| 1961 | 9.3 | 97.8 | 9.5 | NA |
| 1962 | 10.4 | 106.8 | 9.7 | NA |
| 1963 | 12.0 | 111.3 | 10.8 | NA |
| 1964 | 14.7 | 118.6 | 12.4 | NA |
| 1965 | 14.9 | 118.4 | 12.6 | NA |
| 1966 | 16.0 | 134.7 | 11.9 | NA |
| 1967 | 16.9 | 158.3 | 10.7 | 16.4 |
| 1968 | 17.0 | 178.8 | 9.5 | 14.7 |
| 1969 | 16.4 | 184.5 | 8.9 | 14.6 |
| 1970 | 15.7 | 196.6 | 8.0 | 13.7 |
| 1971 | 16.0 | 211.4 | 7.6 | 14.0 |
| 1972 | 16.7 | 231.9 | 7.2 | 13.9 |
| 1973 | 17.5 | 246.5 | 7.1 | 15.1 |
| 1974 (est.) | 18.6 | 274.7 | 6.8 | 14.8 |

[1] Reported by Federal agencies.
[2] In billions of current dollars.

NOTE: NA = not available.

SOURCE: National Science Foundation, *Federal Funds for Research, Development, and Other Scientific Activities*, Vol. XXIII (NSF 74-320) and earlier volumes.

**Table 2-9. Federal obligations for R&D, by major function, 1969-74**
[Dollars in millions]

| Function | 1969 | 1970 | 1971 | 1972 | 1973 | 1974 (est.) |
|---|---|---|---|---|---|---|
| | Current dollars | | | | | |
| Total | $15,641 | $15,340 | $15,564 | $16,512 | $16,821 | $17,743 |
| National defense | 8,354 | 7,976 | 8,106 | 8,898 | 8,998 | 9,180 |
| Space | 3,732 | 3,510 | 2,893 | 2,714 | 2,601 | 2,510 |
| Total civilian R&D | 3,556 | 3,855 | 4,564 | 4,900 | 5,222 | 6,055 |
| | Constant 1967 dollars[1] | | | | | |
| Total | $14,347 | $13,338 | $12,947 | $13,288 | $12,818 | $12,260 |
| National defense | 7,663 | 6,935 | 6,743 | 7,161 | 6,857 | 6,343 |
| Space | 3,423 | 3,052 | 2,407 | 2,184 | 1,982 | 1,734 |
| Total civilian R&D | 3,262 | 3,352 | 3,797 | 3,943 | 3,979 | 4,184 |

[1] GNP implicit price deflators used to convert current dollars to constant 1967 dollars.

NOTE: Detail may not add to totals because of rounding.

SOURCE: National Science Foundation, *An Analysis of Federal R&D Funding by Function, 1969-75* (NSF 74-313).

**Table 2-11. Federal obligations for civilian R&D, by character of work, 1970 and 1974**
[Dollars in millions]

| Character | 1970 | 1974 (est.) |
|---|---|---|
| | Current dollars | |
| Total R&D | $3,845.6 | $6,040.9 |
| Basic research | 1,200.1 | 1,636.8 |
| Applied research | 1,671.4 | 2,733.5 |
| Development | 974.1 | 1,670.6 |
| | Constant 1967 dollars[1] | |
| Total R&D | $3,343.8 | $4,174.2 |
| Basic research | 1,043.5 | 1,131.0 |
| Applied research | 1,453.3 | 1,888.8 |
| Development | 847.0 | 1,154.4 |

[1] GNP implicit price deflators used to convert current dollars to constant 1967 dollars.

SOURCE: National Science Foundation, special tabulations.

**Table 2-12. Proportion of NSF and NIH[1] research project grant funds allocated for permanent laboratory equipment, fiscal years 1966-74**
[Percent]

| Year | NSF | NIH |
|---|---|---|
| 1966 | 11.2 | 11.7 |
| 1967 | 8.6 | 11.8 |
| 1968 | 7.5 | 9.5 |
| 1969 | 7.0 | 7.5 |
| 1970 | 6.1 | 5.9 |
| 1971 | 6.3 | 6.2 |
| 1972 | 5.6 | 6.6 |
| 1973 | 5.5 | 4.9 |
| 1974 | 5.4 | 5.7 |

[1] Includes the National Cancer Institute, the National Institute of General Medical Sciences, and the National Heart and Lung Institute.

SOURCE: National Science Foundation, *Databook*, annual series, and National Institutes of Health, unpublished data.

**Table 2-13. NSF obligations for permanent laboratory equipment, 1966-74**
[Dollars in millions]

| Year | Current dollars | Constant 1967 dollars[1] |
|---|---|---|
| 1966 | $17.6 | $18.2 |
| 1967 | 14.4 | 14.4 |
| 1968 | 12.8 | 12.3 |
| 1969 | 12.3 | 11.3 |
| 1970 | 9.9 | 8.6 |
| 1971 | 11.0 | 9.2 |
| 1972 | 13.6 | 10.9 |
| 1973 | 14.7 | 11.2 |
| 1974 | 15.2 | 10.5 |

[1] GNP implicit price deflators used to convert current dollars to constant 1967 dollars.

SOURCE: National Science Foundation, *Databook*, annual series.

**Table 2-14. Federal expenditures for R&D plant, 1960-74**
[Dollars in millions]

| Year | Current dollars | Constant 1967 dollars[1] |
|---|---|---|
| 1960 | $528.3 | $596.9 |
| 1961 | 548.5 | 609.4 |
| 1962 | 779.1 | 857.1 |
| 1963 | 1,168.3 | 1,269.9 |
| 1964 | 1,098.5 | 1,177.4 |
| 1965 | 1,077.4 | 1,134.1 |
| 1966 | 1,047.8 | 1,081.3 |
| 1967 | 786.1 | 786.1 |
| 1968 | 715.9 | 691.7 |
| 1969 | 652.2 | 603.9 |
| 1970 | 578.9 | 508.3 |
| 1971 | 612.7 | 511.4 |
| 1972 | 564.4 | 454.4 |
| 1973 | 638.0 | 494.6 |
| 1974 (est.) | 894.1 | 640.9 |

[1] GNP implicit price deflators used to convert current dollars to constant 1967 dollars.

SOURCE: National Science Foundation, *Federal Funds for Research, Development and Other Scientific Activities*, Vol. XXIII (NSF 74-320-A) and earlier volumes.

**Table 2-17. Federal obligations for scientific and technical information activities compared with total Federal R&D obligations, 1960-74**

| Year | Obligations for scientific and technical information activities (in millions) | | Ratio of these obligations to total Federal R&D obligations |
|---|---|---|---|
| | Current dollars | Constant 1967 dollars[1] | |
| 1960 | $ 76 | $ 87 | .010 |
| 1961 | 92 | 103 | .010 |
| 1962 | 129 | 143 | .013 |
| 1963 | 165 | 181 | .013 |
| 1964 | 203 | 219 | .014 |
| 1965 | 225 | 239 | .015 |
| 1966 | 278 | 287 | .018 |
| 1967 | 324 | 324 | .020 |
| 1968 | 359 | 345 | .023 |
| 1969 | 362 | 332 | .023 |
| 1970 | 387 | 336 | .025 |
| 1971 | 398 | 331 | .026 |
| 1972 | 419 | 337 | .025 |
| 1973 | 438 | 334 | .026 |
| 1974 (est.) | 468 | 323 | .026 |

[1] GNP implicit price deflators used to convert current dollars to constant 1967 dollars.

SOURCE: National Science Foundation, *Federal Funds for Research, Development and Other Scientific Activities, Fiscal Years 1973, 1974 and 1975,* Vol. XXIII (NSF 75-320-A) and earlier volumes.

**Table 3-1. Basic research expenditures, 1960-74**
[Dollars in millions]

| Year | Current dollars | Constant 1967 dollars[1] |
|---|---|---|
| 1960 | $1,183 | $1,347 |
| 1961 | 1,378 | 1,549 |
| 1962 | 1,695 | 1,884 |
| 1963 | 1,974 | 2,166 |
| 1964 | 2,301 | 2,486 |
| 1965 | 2,572 | 2,728 |
| 1966 | 2,825 | 2,915 |
| 1967 | 3,029 | 3,029 |
| 1968 | 3,286 | 3,159 |
| 1969 | 3,378 | 3,099 |
| 1970 | 3,548 | 3,085 |
| 1971 | 3,544 | 2,948 |
| 1972 | 3,705 | 2,982 |
| 1973 | 3,800 | 2,896 |
| 1974(est.) | 3,991 | 2,758 |

[1] GNP implicit price deflators used to convert current dollars to constant 1967 dollars.

SOURCE: National Science Foundation, *National Patterns of R&D Resources*, 1953-75 (NSF 75-307).

**Table 3-3. Basic research expenditure, by source 1960-74**
[Dollars in millions]

| Year | Total | Federal Government | Industry | Universities and colleges[1] | Nonprofit institutions |
|---|---|---|---|---|---|
| | | | Current dollars | | |
| 1960 ..... | $1,183 | $ 693 | $331 | $ 72 | $ 87 |
| 1961 ..... | 1,378 | 841 | 350 | 85 | 102 |
| 1962 ..... | 1,695 | 1,091 | 382 | 102 | 120 |
| 1963 ..... | 1,974 | 1,310 | 414 | 121 | 129 |
| 1964 ..... | 2,301 | 1,595 | 424 | 144 | 138 |
| 1965 ..... | 2,572 | 1,817 | 448 | 164 | 143 |
| 1966 ..... | 2,825 | 1,986 | 496 | 196 | 147 |
| 1967 ..... | 3,029 | 2,173 | 477 | 223 | 156 |
| 1968 ..... | 3,286 | 2,327 | 518 | 276 | 165 |
| 1969 ..... | 3,378 | 2,386 | 519 | 298 | 175 |
| 1970 ..... | 3,548 | 2,469 | 536 | 350 | 193 |
| 1971 ..... | 3,544 | 2,379 | 556 | 400 | 209 |
| 1972 ..... | 3,705 | 2,528 | 528 | 428 | 221 |
| 1973 ..... | 3,800 | 2,605 | 561 | 416 | 218 |
| 1974(est.) .... | 3,991 | 2,724 | 594 | 434 | 239 |
| | | | Constant 1967 dollars[2] | | |
| 1960 ..... | $1,347 | $ 789 | $377 | $ 82 | $ 99 |
| 1961 ..... | 1,549 | 945 | 393 | 96 | 115 |
| 1962 ..... | 1,884 | 1,213 | 425 | 113 | 133 |
| 1963 ..... | 2,166 | 1,437 | 454 | 133 | 142 |
| 1964 ..... | 2,486 | 1,723 | 458 | 156 | 149 |
| 1965 ..... | 2,728 | 1,927 | 475 | 174 | 152 |
| 1966 ..... | 2,915 | 2,050 | 512 | 202 | 152 |
| 1967 ..... | 3,029 | 2,173 | 477 | 223 | 156 |
| 1968 ..... | 3,159 | 2,237 | 498 | 265 | 159 |
| 1969 ..... | 3,098 | 2,189 | 476 | 273 | 161 |
| 1970 ..... | 3,086 | 2,147 | 466 | 304 | 168 |
| 1971 ..... | 2,947 | 1,979 | 463 | 333 | 174 |
| 1972 ..... | 2,981 | 2,034 | 425 | 344 | 178 |
| 1973 ..... | 2,895 | 1,985 | 427 | 317 | 166 |
| 1974(est.) .... | 2,757 | 1,882 | 410 | 300 | 182 |

[1] Includes State and local government sources.
[2] GNP implicit price deflators used to convert current dollars to constant 1967 dollars.

NOTE: Detail may not add to totals because of rounding.

SOURCE: National Science Foundation, *National Patterns of R&D Resources, 1953-75* (NSF 75-307).

**Table 3-5. Federal obligations for basic research, by agency, 1960-74**
[Dollars in millions]

| Agency | 1960 | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968 | 1969 | 1970 | 1971 | 1972 | 1973 | 1974 (est.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Current dollars | | | | | | | |
| Total | $610 | $825 | $1,106 | $1,389 | $1,567 | $1,690 | $1,840 | $2,004 | $2,056 | $2,077 | $2,042 | $2,132 | $2,411 | $2,420 | $2,569 |
| Department of Agriculture | 34 | 41 | 50 | 56 | 68 | 90 | 94 | 100 | 100 | 107 | 116 | 118 | 137 | 143 | 150 |
| Department of Defense | 168 | 173 | 204 | 231 | 241 | 263 | 262 | 284 | 263 | 276 | 247 | 262 | 270 | 258 | 253 |
| Department of Health, Education and Welfare | 103 | 137 | 190 | 236 | 274 | 303 | 326 | 372 | 397 | 371 | 388 | 397 | 461 | 458 | 588 |
| Atomic Energy Commission | 104 | 167 | 192 | 219 | 238 | 258 | 281 | 302 | 282 | 285 | 287 | 277 | 268 | 275 | 286 |
| National Aeronautics and Space Administration[1] | 97 | 190 | 316 | 447 | 524 | 528 | 559 | 603 | 656 | 678 | 637 | 680 | 768 | 769 | 734 |
| National Science Foundation | 68 | 77 | 104 | 141 | 155 | 171 | 223 | 239 | 252 | 248 | 245 | 273 | 368 | 392 | 421 |
| All other Federal agencies | 35 | 39 | 50 | 59 | 66 | 77 | 95 | 104 | 106 | 112 | 122 | 125 | 138 | 125 | 138 |
| | | | | | | | | Constant 1967 dollars[2] | | | | | | | |
| Total | $694 | $927 | $1,229 | $1,524 | $1,693 | $1,793 | $1,899 | $2,004 | $1,977 | $1,905 | $1,775 | $1,774 | $1,940 | $1,844 | $1,775 |
| Department of Agriculture | 39 | 46 | 56 | 61 | 73 | 95 | 97 | 100 | 96 | 98 | 101 | 98 | 110 | 109 | 104 |
| Department of Defense | 191 | 194 | 227 | 253 | 260 | 279 | 270 | 284 | 253 | 253 | 215 | 218 | 217 | 197 | 175 |
| Department of Health, Education and Welfare | 117 | 154 | 211 | 259 | 296 | 321 | 336 | 372 | 382 | 340 | 337 | 330 | 371 | 349 | 406 |
| Atomic Energy Commission | 118 | 188 | 213 | 240 | 257 | 274 | 290 | 302 | 271 | 261 | 250 | 230 | 216 | 210 | 198 |
| National Aeronautics and Space Administration[1] | 110 | 214 | 351 | 490 | 566 | 560 | 577 | 603 | 631 | 622 | 554 | 566 | 618 | 586 | 507 |
| National Science Foundation | 77 | 87 | 116 | 155 | 167 | 181 | 230 | 239 | 242 | 227 | 213 | 227 | 296 | 299 | 291 |
| All other Federal agencies | 40 | 44 | 56 | 65 | 71 | 82 | 98 | 104 | 102 | 103 | 106 | 104 | 111 | 95 | 95 |

[1] The large amounts reported by NASA for basic research are due to the substantial cost of support equipment such as spacecraft and launch vehicles peculiar to space exploration, and the statistical prorations of costs for tracking and data acquisition.
[2] GNP implicit price deflators used to convert current dollars to constant 1967 dollars.

NOTE: Detail may not add to totals because of rounding.

SOURCE: National Science Foundation, *Federal Funds for Research, Development and other Scientific Activities, Fiscal Years 1973, 1974, and 1975.* Volume XXIII (NSF 74-320-A) and earlier volumes.

**Table 3-6a. Fields and subfields of Federal obligations for basic research**

| Field of science | Illustrative subfields |
|---|---|
| Life sciences | Biological sciences: those which, apart from clinical medical and other medical sciences defined below, deal with the origin, development, structure, function, and interaction of living things. |
| | Clinical medical sciences: those concerned with the study of pathogenesis, diagnosis, or therapy of a particular disease or abnormal condition in living human subjects under controlled conditions. |
| | Other medical sciences: those concerned with the study of the causes, effects, prevention, or control of abnormal conditions in man or in his environment as they relate to health, except for the clinical aspects defined above. |
| | Other life sciences: multidisciplinary projects within the broad field and single discipline projects for which a separate field has not been assigned. |
| Environmental sciences | Atmospheric sciences: aeronomy, solar, weather modification, extraterrestrial atmospheres, and meteorology. |
| | Geological sciences: engineering geophysics, general geology, geodesy and gravity, geomagnetism, hydrology, inorganic geochemistry, isotopic geochemistry, organic geochemistry, laboratory geophysics, paleomagnetism, paleontology, physical geography and cartography, seismology and soil sciences. |
| | Oceanography: chemical oceanography, geological oceanography, physical oceanography, and marine geophysics. |
| | Other environmental sciences: multidisciplinary projects within the broad field and single discipline projects for which a separate field has not been assigned. |
| Mathematics | Algebra, analysis, applied mathematics, computer science, foundations and logic, geometry, numerical analysis, statistics, and topology. |
| Engineering | Aeronautical: aerodynamics. |
| | Astronautical: aerospace, and space technology. |
| | Chemical: petroleum, petroleum refining, and process. |
| | Civil: architectural, hydraulic, hydrologic, marine, sanitary and environmental, structural, and transportation. |
| | Electrical: communication, electronic, and power. |
| | Mechanical: engineering mechanics. |
| | Metallurgy and materials: ceramic, mining, textile, and welding. |
| | Other engineering: multidisciplinary projects within the broad field and single discipline projects for which a separate field has not been assigned, such as agricultural, industrial and management, nuclear, ocean engineering, and systems. |

(Continued)

**Table 3-7. Basic research expenditures in universities and colleges, by source, 1960-74**
[Dollars in millions]

| Year | Total | Federal Government | Industry | All other sources |
|---|---|---|---|---|
| | Current dollars | | | |
| 1960 | $ 433 | $ 299 | $24 | $110 |
| 1961 | 536 | 382 | 25 | 129 |
| 1962 | 659 | 481 | 25 | 153 |
| 1963 | 814 | 610 | 25 | 179 |
| 1964 | 1,003 | 767 | 25 | 211 |
| 1965 | 1,138 | 879 | 26 | 233 |
| 1966 | 1,303 | 1,009 | 27 | 267 |
| 1967 | 1,457 | 1,124 | 31 | 302 |
| 1968 | 1,649 | 1,251 | 36 | 362 |
| 1969 | 1,707 | 1,275 | 39 | 393 |
| 1970 | 1,796 | 1,296 | 40 | 460 |
| 1971 | 1,914 | 1,349 | 46 | 519 |
| 1972 | 2,024 | 1,419 | 51 | 554 |
| 1973 | 2,058 | 1,461 | 58 | 539 |
| 1974(est.) | 2,151 | 1,514 | 64 | 573 |
| | Constant 1967 dollars[1] | | | |
| 1960 | $ 492 | $ 340 | $27 | $125 |
| 1961 | 602 | 429 | 28 | 145 |
| 1962 | 733 | 535 | 28 | 170 |
| 1963 | 893 | 669 | 27 | 197 |
| 1964 | 1,084 | 829 | 27 | 228 |
| 1965 | 1,207 | 932 | 28 | 247 |
| 1966 | 1,345 | 1,041 | 28 | 275 |
| 1967 | 1,457 | 1,124 | 31 | 302 |
| 1968 | 1,586 | 1,203 | 35 | 348 |
| 1969 | 1,566 | 1,170 | 36 | 360 |
| 1970 | 1,562 | 1,127 | 35 | 400 |
| 1971 | 1,592 | 1,122 | 38 | 432 |
| 1972 | 1,629 | 1,142 | 41 | 445 |
| 1973 | 1,568 | 1,113 | 44 | 411 |
| 1974(est.) | 1,486 | 1,046 | 44 | 396 |

[1] GNP implicit price deflators used to convert current dollars to constant 1967 dollars.

NOTE: Detail may not add to totals because of rounding.

SOURCE: National Science Foundation, *National Patterns of R&D Resources, 1953-75* (NSF 75-307).

Table 3-8a. (Continued)

| | |
|---|---|
| | Physics: acoustics, atomic and molecular, condensed matter, elementary particles, nuclear structure, optics, plasma |
| | Other physical sciences: multidisciplinary projects within physical sciences, and physical sciences disciplines not described above. |
| Environmental sciences | Atmospheric sciences: aeronomy, solar weather modification, meteorology, extra-terrestrial atmospheres |
| | Geological sciences: engineering geophysics, geology, geodesy, geomagnetism, hydrology, geochemistry, paleomagnetism, paleontology, physical geography, cartography, seismology, soil sciences |
| | Oceanography: chemical, geological, physical, marine geophysics, marine biology, biological oceanography |
| Mathematical sciences | Mathematics: algebra, analysis, applied mathematics, foundations and logic, geometry, numerical analysis, statistics, topology |
| | Computer sciences: design, development, and application of computer capabilities to data storage and manipulation, information science |
| Life sciences | Biological sciences: anatomy, biochemistry, biophysics, biogeography, ecology, embryology, entomology, genetics, immunology, microbiology, nutrition, parasitology, pathology, pharmacology, physical anthropology, physiology, botany, zoology |
| | Agricultural:[1] agricultural chemistry, agronomy, animal science, conservation, dairy science, plant science, range science, wildlife |
| | Clinical medical: anesthesiology, cardiology, endocrinology, gastroenterology, hematology, neurology, obstetrics, ophthamology, preventive medicine and community health, psychiatry, radiology, surgery, veterinary medicine, dentistry, pharmacy |
| | Other life sciences: multidisciplinary projects within life sciences |
| Psychology | Animal behavior, clinical, educational, experimental, human development and personality, social |
| Social sciences | Economics: econometrics, international, industrial, labor, agricultural, public finance and fiscal policy |
| | Political science: regional studies, comparative government, international relations, legal systems, political theory, public administration |
| | Sociology: comparative and historical, complex organizations, culture and social structure, demography, group interactions, social problems and welfare, theory |
| | Other social sciences: history, cultural anthropology, linguistics, socio-economic geography, research in education |
| Other sciences | Multidisciplinary and interdisciplinary research not classifiable under a single primary field. |

[1] Included with biology prior to 1974.

SOURCE: National Science Foundation, *Expenditures for Scientific and Engineering Activities at Universities and Colleges, Fiscal Year 1973* (NSF 75-316).

**Table 3-9. Estimated Federal basic research expenditures in universities and colleges, by field of science, 1964-74**
[Dollars in millions]

| Field of science[1] | 1964 | 1966 | 1968 | 1970 | 1972 | 1973 | 1974[2] |
|---|---|---|---|---|---|---|---|
| | Current dollars | | | | | | |
| Total | $767 | $1,009 | $1,251 | $1,296 | $1,419 | $1,461 | $1,514 |
| Engineering | 105 | 151 | 181 | 185 | 196 | 203 | 175 |
| Physical sciences | 164 | 209 | 223 | 226 | 232 | 222 | 229 |
| Astronomy | 13 | 17 | 18 | 14 | 14 | 13 | 14 |
| Chemistry | 50 | 60 | 70 | 69 | 73 | 70 | 75 |
| Physics | 95 | 122 | 122 | 126 | 125 | 124 | 128 |
| Other physical sciences | 6 | 10 | 13 | 17 | 21 | 14 | 13 |
| Environmental sciences | 39 | 47 | 71 | 76 | 99 | 102 | 112 |
| Mathematical sciences | 21 | 26 | 34 | 42 | 41 | 40 | 43 |
| Life sciences | 371 | 472 | 584 | 605 | 652 | 692 | 752 |
| Biological | 126 | 160 | 204 | 215 | 249 | 285 | 283 |
| Clinical medical | 218 | 279 | 345 | 352 | 372 | 377 | 433 |
| Other life sciences | 27 | 33 | 35 | 38 | 31 | 30 | 36 |
| Psychology | 24 | 30 | 39 | 41 | 54 | 53 | 56 |
| Social sciences | 37 | 53 | 82 | 82 | 91 | 99 | 105 |
| Other sciences | 5 | 21 | 37 | 41 | 54 | 49 | 42 |
| | Constant 1967 dollars[3] | | | | | | |
| Total | $829 | $1,041 | $1,203 | $1,127 | $1,142 | $1,113 | $1,046 |
| Engineering | 113 | 156 | 174 | 161 | 158 | 155 | 121 |
| Physical sciences | 177 | 216 | 214 | 197 | 187 | 169 | 158 |
| Astronomy | 14 | 18 | 17 | 12 | 11 | 10 | 10 |
| Chemistry | 54 | 62 | 67 | 60 | 59 | 53 | 52 |
| Physics | 103 | 126 | 117 | 110 | 101 | 94 | 88 |
| Other physical sciences | 6 | 10 | 12 | 15 | 17 | 11 | 9 |
| Environmental sciences | 42 | 49 | 68 | 66 | 80 | 78 | 77 |
| Mathematical sciences | 23 | 27 | 33 | 37 | 33 | 30 | 30 |
| Life sciences | 401 | 487 | 561 | 526 | 525 | 527 | 520 |
| Biological | 136 | 165 | 196 | 187 | 200 | 217 | 196 |
| Clinical Medical | 235 | 288 | 332 | 306 | 299 | 287 | 299 |
| Other life sciences | 29 | 34 | 34 | 33 | 25 | 23 | 25 |
| Psychology | 26 | 31 | 37 | 36 | 43 | 40 | 39 |
| Social sciences | 40 | 55 | 79 | 71 | 73 | 75 | 73 |
| Other sciences | 5 | 22 | 36 | 36 | 43 | 37 | 29 |

[1] See table 3-8a for descriptions of these fields.
[2] Preliminary data.
[3] GNP implicit price deflators used to convert current dollars to constant 1967 dollars.

NOTE: Detail may not add to totals because of rounding.

SOURCE: National Science Foundation, special tabulations.

**Table 3-8. Estimated basic research expenditures in universities and colleges, by field of science, 1964-74**
[Dollars in millions]

| Field of science[1] | 1964 | 1966 | 1968 | 1970 | 1972 | 1973 | 1974[2] |
|---|---|---|---|---|---|---|---|
| | Current dollars | | | | | | |
| Total | $1,003 | $1,303 | $1,649 | $1,796 | $2,024 | $2,058 | $2,151 |
| Engineering | 128 | 185 | 223 | 230 | 265 | 273 | 252 |
| Physical sciences | 176 | 228 | 253 | 242 | 282 | 268 | 279 |
| Astronomy | 13 | 18 | 19 | 15 | 18 | 18 | 19 |
| Chemistry | 56 | 69 | 82 | 80 | 94 | 91 | 96 |
| Physics | 98 | 128 | 137 | 127 | 142 | 141 | 147 |
| Other physical sciences | 9 | 13 | 15 | 20 | 28 | 18 | 18 |
| Environmental sciences | 43 | 52 | 94 | 97 | 133 | 134 | 152 |
| Mathematical sciences | 23 | 28 | 40 | 51 | 54 | 53 | 57 |
| Life sciences | 534 | 670 | 804 | 928 | 969 | 1,010 | 1,092 |
| Biological | 238 | 315 | 370 | 414 | 414 | 462 | 482 |
| Clinical medical | 259 | 308 | 380 | 436 | 501 | 500 | 561 |
| Other life sciences | 36 | 48 | 54 | 78 | 56 | 48 | 47 |
| Psychology | 26 | 31 | 47 | 47 | 68 | 67 | 70 |
| Social sciences | 61 | 80 | 128 | 130 | 162 | 170 | 182 |
| Other sciences | 11 | 29 | 61 | 71 | 89 | 82 | 68 |
| | Constant 1967 dollars[3] | | | | | | |
| Total | $1,084 | $1,345 | $1,585 | $1,562 | $1,629 | $1,568 | $1,486 |
| Engineering | 138 | 191 | 214 | 200 | 213 | 208 | 174 |
| Physical sciences | 190 | 235 | 243 | 210 | 227 | 204 | 193 |
| Astronomy | 14 | 19 | 18 | 13 | 14 | 14 | 13 |
| Chemistry | 60 | 71 | 79 | 70 | 76 | 69 | 66 |
| Physics | 106 | 132 | 132 | 110 | 114 | 107 | 102 |
| Other physical sciences | 10 | 13 | 14 | 17 | 23 | 14 | 12 |
| Environmental sciences | 46 | 54 | 90 | 84 | 107 | 102 | 105 |
| Mathematical sciences | 25 | 29 | 38 | 44 | 43 | 40 | 39 |
| Life sciences | 577 | 691 | 773 | 807 | 780 | 770 | 755 |
| Biological | 257 | 325 | 356 | 360 | 333 | 352 | 333 |
| Clinical medical | 280 | 318 | 365 | 379 | 403 | 381 | 388 |
| Other life sciences | 39 | 50 | 52 | 68 | 45 | 37 | 32 |
| Psychology | 28 | 32 | 45 | 41 | 55 | 51 | 48 |
| Social sciences | 66 | 83 | 123 | 113 | 130 | 130 | 126 |
| Other sciences | 12 | 30 | 59 | 62 | 72 | 62 | 47 |

[1] See Table 3-8a for descriptions of these fields.
[2] Preliminary data.
[3] GNP implicit price deflators used to convert current dollars to constant 1967 dollars.

NOTE: Detail may not add to totals because of rounding.

SOURCE: National Science Foundation, special tabulations.

**Table 3-8a. Fields and subfields of R&D expenditures at colleges and universities**

| Field of science | Illustrative subfields |
|---|---|
| Engineering | Aeronautical, agricultural, chemical, civil, electrical, industrial, mechanical, metallurgical, mining, nuclear, petroleum, bio-and-biomedical, energy, textile, architecture |
| Physical sciences | Astronomy: astrophysics, optical and radio, X-ray, Gamma-ray, neutrino |
| | Chemistry: inorganic, organo-metallic, organic, physical, analytical, pharmaceutical, polymer science (excludes biochemistry) |

**Table 3-6a. (Continued)**

| | |
|---|---|
| Social sciences | Anthropology: archaeology, cultural and personality, social and ethnology, and applied anthropology. |
| | Economics: econometrics and economic statistics, history of economic thought, international economics, industrial, labor and agricultural economics, macroeconomics, microeconomics, public finance and fiscal policy, theory, and economic systems and development. |
| | History: cultural, political, social, and history and philosophy of science. |
| | Linguistics: anthropological-archaeological, computational, psycholinguistics, and sociolinguistics. |
| | Political science: area or regional studies, comparative government, history of political ideas, international relations and law, national political and legal systems, political theory, and public administration. |
| | Sociology: comparative and historical, complex organizations, culture and social structure, demography, group interactions, social problems and social welfare, and sociological theory. |
| | Other social sciences: multidisciplinary projects within the broad field and single discipline projects for which a separate field has not been assigned, such as research in law and education not elsewhere classified, and socioeconomic geography. |
| Psychology | Biological aspects: experimental psychology, animal behavior, clinical psychology, comparative psychology, and ethology. |
| | Social aspects: social psychology, educational, personnel, vocational psychology and testing, industrial and engineering psychology, and development and personality. |
| | Other psychological sciences: multidisciplinary projects within the broad field and single discipline projects for which a separate field has not been assigned. |
| Physical sciences | Astronomy: laboratory astrophysics, optical astronomy, radio astronomy, theoretical astrophysics, X-ray, Gamma-ray, and neutrino astronomy. |
| | Chemistry: inorganic, organo-metallic, organic, and physical. |
| | Physics: acoustics, atomic and molecular, condensed matter, elementary particles, nuclear structure, optics, and plasma.. |
| | Other physical sciences: multidisciplinary projects within the broad field and single discipline projects for which a separate field has not been assigned. |
| Other sciences | Multidisciplinary and interdisciplinary projects that cannot be classified within one of the above broad fields of science. |

SOURCE: National Science Foundation, *Federal Funds for Research, Development, and Other Scientific Activities, Fiscal Years 1973, 1974, and 1975.* Vol. XXIII (NSF 74-320).

**Table 3-6. Federal obligations for basic research, by field of science, 1960-74**
[Dollars in millions]

| Field of science | 1960 | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968 | 1969 | 1970 | 1971 | 1972 | 1973 | 1974 (est.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Current dollars | | | | | | | |
| All fields | $610 | $825 | $1,106 | $1,389 | $1,567 | $1,690 | $1,840 | $2,004 | $2,056 | $2,077 | $2,042 | $2,132 | $2,411 | $2,420 | $2,569 |
| Life sciences | 172 | 238 | 313 | 380 | 424 | 487 | 552 | 612 | 612 | 569 | 576 | 596 | 729 | 758 | 869 |
| Biological | NA | NA | NA | 232 | 268 | 328 | 378 | 418 | 418 | 433 | 428 | 450 | 576 | 645 | 728 |
| Clinical medical[1] | NA | NA | NA | 148 | 156 | 159 | 174 | 194 | 194 | 134 | 148 | 101 | 128 | 98 | 118 |
| Other life sciences | NA | NA | NA | — | — | — | — | — | — | 2 | — | 45 | 25 | 15 | 23 |
| Environmental sciences | 319 | 444 | 603 | 252 | 308 | 263 | 291 | 315 | 342 | 309 | 341 | 393 | 454 | 445 | 430 |
| Physical sciences | | | | 515 | 566 | 639 | 667 | 713 | 731 | 819 | 704 | 743 | 783 | 796 | 830 |
| Chemistry | NA | NA | NA | 86 | 101 | 109 | 119 | 124 | 119 | 132 | 143 | 133 | 181 | 195 | 203 |
| Physics | NA | NA | NA | 269 | 271 | 327 | 351 | 381 | 389 | 398 | 353 | 387 | 379 | 389 | 400 |
| Astronomy | NA | NA | NA | 140 | 174 | 177 | 170 | 180 | 205 | 282 | 204 | 217 | 215 | 202 | 202 |
| Other physical sciences | NA | NA | NA | 20 | 20 | 26 | 27 | 28 | 18 | 7 | 4 | 6 | 8 | 10 | 25 |
| Psychology | 17 | 21 | 28 | 36 | 47 | 58 | 53 | 60 | 55 | 55 | 57 | 49 | 58 | 51 | 62 |
| Mathematical and computer sciences | 18 | 21 | 26 | 42 | 52 | 57 | 60 | 65 | 67 | 57 | 59 | 52 | 63 | 57 | 56 |
| Engineering | 76 | 82 | 116 | 137 | 135 | 147 | 168 | 178 | 185 | 185 | 234 | 220 | 235 | 206 | 209 |
| Social sciences | 8 | 11 | 18 | 25 | 34 | 37 | 44 | 57 | 61 | 72 | 65 | 70 | 80 | 78 | 91 |
| Other sciences | (2) | 8 | 2 | 2 | 2 | 2 | 4 | 4 | 4 | 11 | 4 | 10 | 9 | 28 | 22 |
| | | | | | | | | Constant 1967 dollars[3] | | | | | | | |
| All fields | $694 | $927 | $1,229 | $1,524 | $1,693 | $1,793 | $1,899 | $2,004 | $1,977 | $1,905 | $1,775 | $1,774 | $1,940 | $1,844 | $1,775 |
| Life sciences | 196 | 268 | 348 | 417 | 458 | 517 | 570 | 612 | 588 | 522 | 501 | 496 | 587 | 578 | 600 |
| Biological | NA | NA | NA | 255 | 290 | 348 | 390 | 418 | 402 | 397 | 372 | 374 | 464 | 492 | 503 |
| Clinical medical[1] | NA | NA | NA | 162 | 169 | 169 | 180 | 194 | 187 | 123 | 129 | 84 | 103 | 75 | 82 |
| Other life sciences | NA | NA | NA | — | — | — | — | — | — | 2 | — | 37 | 20 | 11 | 16 |
| Environmental sciences | 363 | 499 | 670 | 276 | 333 | 279 | 300 | 315 | 329 | 283 | 296 | 327 | 365 | 339 | 297 |
| Physical sciences | | | | 565 | 611 | 678 | 688 | 713 | 703 | 751 | 612 | 618 | 630 | 607 | 574 |
| Chemistry | NA | NA | NA | 94 | 109 | 116 | 123 | 124 | 114 | 121 | 124 | 111 | 146 | 149 | 140 |
| Physics | NA | NA | NA | 295 | 293 | 347 | 362 | 381 | 374 | 365 | 307 | 322 | 305 | 296 | 276 |
| Astronomy | NA | NA | NA | 154 | 188 | 188 | 175 | 180 | 197 | 259 | 177 | 181 | 173 | 154 | 140 |
| Other physical sciences | A | NA | NA | 22 | 22 | 28 | 28 | 28 | 17 | 6 | 3 | 5 | 6 | 8 | 17 |
| Psychology | 19 | 24 | 31 | 39 | 51 | 62 | 55 | 60 | 53 | 50 | 50 | 41 | 47 | 39 | 43 |
| Mathematical and computer sciences | 20 | 24 | 29 | 46 | 56 | 60 | 62 | 65 | 64 | 52 | 51 | 43 | 51 | 43 | 39 |
| Engineering | 87 | 92 | 129 | 150 | 146 | 156 | 173 | 178 | 178 | 170 | 203 | 183 | 189 | 157 | 144 |
| Social sciences | 9 | 12 | 20 | 27 | 37 | 39 | 45 | 57 | 59 | 66 | 57 | 58 | 64 | 59 | 63 |
| Other sciences | (2) | 9 | 2 | 2 | 2 | 2 | 4 | 4 | 4 | 10 | 3 | 8 | 7 | 21 | 15 |

[1] Includes "other medical sciences".
[2] Less than $50,000.
[3] GNP implicit price deflators used to convert current dollars to constant 1967 dollars.

NOTE: NA = not available.

SOURCE: National Science Foundation, *Federal Funds for Research, Development, and Other Scientific Activities, Fiscal Years 1973, 1974, and 1975.* Volume XXIII (NSF 74-320-A) and earlier volumes.

**Table 3-4. Federal obligations for basic research as a percent of each agency's R&D obligations, by agency, 1960-74**

| Year | All agencies | USDA | DOD | HEW | AEC | NASA[1] | NSF | All other agencies |
|---|---|---|---|---|---|---|---|---|
| | Basic research as a percent of all R&D obligations | | | | | | | |
| 1960 | 8 | 27 | 3 | 32 | 14 | 26 | 91 | 19 |
| 1961 | 9 | 29 | 3 | 32 | 20 | 24 | 92 | 19 |
| 1962 | 11 | 32 | 3 | 33 | 19 | 22 | 91 | 20 |
| 1963 | 11 | 33 | 3 | 36 | 20 | 16 | 92 | 20 |
| 1964 | 11 | 36 | 3 | 35 | 19 | 12 | 91 | 22 |
| 1965 | 12 | 40 | 4 | 35 | 21 | 11 | 91 | 22 |
| 1966 | 12 | 40 | 4 | 32 | 23 | 11 | 91 | 18 |
| 1967 | 12 | 40 | 4 | 32 | 24 | 12 | 91 | 15 |
| 1968 | 13 | 39 | 3 | 32 | 21 | 15 | 89 | 17 |
| 1969 | 13 | 41 | 4 | 29 | 20 | 17 | 91 | 15 |
| 1970 | 13 | 41 | 3 | 32 | 21 | 17 | 85 | 12 |
| 1971 | 14 | 39 | 3 | 27 | 21 | 21 | 81 | 9 |
| 1972 | 15 | 39 | 3 | 26 | 21 | 24 | 81 | 12 |
| 1973 | 14 | 39 | 3 | 25 | 20 | 25 | 82 | 10 |
| 1974(est.) | 15 | 39 | 3 | 25 | 20 | 24 | 79 | 10 |
| | Federal obligations for basic research (Current dollars in millions) | | | | | | | |
| 1960 | $ 610 | $ 34 | $168 | $103 | $104 | $ 97 | $ 68 | $ 35 |
| 1961 | 825 | 41 | 173 | 137 | 167 | 190 | 77 | 39 |
| 1962 | 1,106 | 50 | 204 | 190 | 192 | 316 | 104 | 50 |
| 1963 | 1,389 | 56 | 231 | 236 | 219 | 447 | 141 | 59 |
| 1964 | 1,567 | 68 | 241 | 274 | 238 | 524 | 155 | 66 |
| 1965 | 1,690 | 90 | 263 | 303 | 258 | 528 | 171 | 77 |
| 1966 | 1,840 | 94 | 262 | 326 | 281 | 559 | 223 | 95 |
| 1967 | 2,004 | 100 | 284 | 372 | 302 | 603 | 239 | 104 |
| 1968 | 2,056 | 100 | 263 | 397 | 282 | 656 | 252 | 106 |
| 1969 | 2,077 | 107 | 276 | 371 | 285 | 678 | 248 | 112 |
| 1970 | 2,042 | 116 | 247 | 388 | 287 | 637 | 245 | 122 |
| 1971 | 2,132 | 118 | 262 | 397 | 277 | 680 | 273 | 125 |
| 1972 | 2,411 | 137 | 270 | 461 | 268 | 768 | 368 | 139 |
| 1973 | 2,420 | 143 | 258 | 458 | 275 | 769 | 392 | 125 |
| 1974(est.) | 2,569 | 150 | 253 | 588 | 286 | 734 | 421 | 138 |
| | Federal obligations for all R&D (Current dollars in millions) | | | | | | | |
| 1960 | $ 7,552 | $126 | $5,712 | $ 320 | $ 762 | $ 369 | $ 75 | $ 189 |
| 1961 | 9,059 | 143 | 6,574 | 429 | 850 | 777 | 84 | 202 |
| 1962 | 10,290 | 157 | 6,723 | 577 | 1,029 | 1,439 | 114 | 251 |
| 1963 | 12,495 | 168 | 7,286 | 656 | 1,078 | 2,857 | 154 | 295 |
| 1964 | 14,225 | 189 | 7,262 | 777 | 1,236 | 4,287 | 170 | 305 |
| 1965 | 14,614 | 225 | 6,797 | 869 | 1,241 | 4,952 | 187 | 344 |
| 1966 | 15,320 | 235 | 7,024 | 1,014 | 1,212 | 5,050 | 244 | 541 |
| 1967 | 16,529 | 253 | 8,049 | 1,147 | 1,259 | 4,867 | 262 | 694 |
| 1968 | 15,921 | 254 | 7,709 | 1,252 | 1,369 | 4,429 | 284 | 625 |
| 1969 | 15,641 | 260 | 7,696 | 1,297 | 1,406 | 3,963 | 274 | 744 |
| 1970 | 15,340 | 281 | 7,360 | 1,221 | 1,346 | 3,800 | 289 | 1,043 |
| 1971 | 15,564 | 305 | 7,509 | 1,476 | 1,303 | 3,258 | 337 | 1,377 |
| 1972 | 16,512 | 350 | 8,318 | 1,751 | 1,298 | 3,157 | 455 | 1,183 |
| 1973 | 16,821 | 367 | 8,404 | 1,838 | 1,363 | 3,061 | 480 | 1,309 |
| 1974(est.) | 17,743 | 386 | 8,599 | 2,347 | 1,431 | 3,026 | 530 | 1,425 |

[1] The large amounts reported by NASA for basic research are due to the substantial cost of support equipment such as spacecraft and launch vehicles peculiar to space exploration, and the statistical proration of costs for tracking and data acquisition.

NOTE: Detail may not add to totals because of rounding.

SOURCE: National Science Foundation, *Federal Funds for Research, Development, and Other Scientific Activities, Fiscal Years 1973, 1974 and 1975.* Volume XXIII (NSF 74-320-A) and earlier volumes.

**Table 3-2. Basic research expenditures, by performer, 1960-74**
[Dollars in millions]

| Year | Total | Universities and colleges | Federal Government | Industry | FFRDC's[1] | Nonprofit institutions |
|---|---|---|---|---|---|---|
| | | | Current dollars | | | |
| 1960 | $1,183 | $ 433 | $160 | $376 | $ 97 | $117 |
| 1961 | 1,378 | 536 | 206 | 395 | 115 | 126 |
| 1962 | 1,695 | 659 | 251 | 488 | 136 | 161 |
| 1963 | 1,974 | 814 | 299 | 522 | 159 | 180 |
| 1964 | 2,301 | 1,003 | 364 | 549 | 191 | 194 |
| 1965 | 2,572 | 1,138 | 424 | 592 | 208 | 210 |
| 1966 | 2,825 | 1,303 | 445 | 624 | 227 | 226 |
| 1967 | 3,029 | 1,457 | 472 | 629 | 250 | 221 |
| 1968 | 3,286 | 1,649 | 502 | 642 | 276 | 217 |
| 1969 | 3,378 | 1,707 | 565 | 618 | 275 | 213 |
| 1970 | 3,548 | 1,796 | 646 | 629 | 269 | 208 |
| 1971 | 3,544 | 1,914 | 535 | 610 | 260 | 225 |
| 1972 | 3,705 | 2,024 | 607 | 579 | 250 | 245 |
| 1973 | 3,800 | 2,058 | 585 | 605 | 297 | 255 |
| 1974(est.) | 3,991 | 2,151 | 635 | 640 | 291 | 274 |
| | | | Constant 1967 dollars[2] | | | |
| 1960 | $1,347 | $ 492 | $182 | $428 | $110 | $133 |
| 1961 | 1,549 | 602 | 232 | 444 | 129 | 142 |
| 1962 | 1,884 | 733 | 279 | 542 | 151 | 179 |
| 1963 | 2,165 | 893 | 328 | 573 | 174 | 197 |
| 1964 | 2,486 | 1,084 | 393 | 593 | 206 | 210 |
| 1965 | 2,729 | 1,207 | 450 | 628 | 221 | 223 |
| 1966 | 2,915 | 1,345 | 459 | 644 | 234 | 233 |
| 1967 | 3,029 | 1,457 | 472 | 629 | 250 | 221 |
| 1968 | 3,159 | 1,586 | 483 | 617 | 265 | 209 |
| 1969 | 3,098 | 1,566 | 518 | 567 | 252 | 195 |
| 1970 | 3,086 | 1,562 | 562 | 547 | 234 | 181 |
| 1971 | 2,947 | 1,592 | 445 | 507 | 216 | 187 |
| 1972 | 2,981 | 1,629 | 488 | 466 | 201 | 197 |
| 1973 | 2,895 | 1,568 | 446 | 461 | 226 | 194 |
| 1974(est.) | 2,757 | 1,486 | 439 | 442 | 201 | 189 |

[1] Federally Funded Research and Development Centers administered by universities.
[2] GNP implicit price deflators used to convert current dollars to constant 1967 dollars.

NOTE: Detail may not add to totals because of rounding.

SOURCE: National Science Foundation, *National Patterns of R&D Resources, 1953-75* (NSF 75-307).

**Table 2-18. Federal obligations for scientific and technical information activities, by agency, 1960-74**

[Dollars in millions]

| Agency | 1960 | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968 | 1969 | 1970 | 1971 | 1972 | 1973 | 1974 (est.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Current dollars | | | | | | | | | | | | | | |
| Total | $76 | $92 | $129 | $165 | $203 | $225 | $278 | $324 | $359 | $362 | $387 | $398 | $419 | $438 | $468 |
| Dept. of Defense | 16 | 23 | 38 | 53 | 84 | 99 | 119 | 139 | 155 | 147 | 145 | 141 | 150 | 161 | 158 |
| Dept. of Health, Education and Welfare | 10 | 12 | 24 | 27 | 24 | 24 | 37 | 53 | 60 | 65 | 66 | 73 | 68 | 67 | 82 |
| Dept. of Commerce | 23 | 27 | 28 | 31 | 33 | 37 | 42 | 46 | 47 | 52 | 60 | 69 | 78 | 85 | 93 |
| Library of Congress | 5 | 6 | 6 | 8 | 9 | 10 | 13 | 13 | 17 | 20 | 22 | 25 | 30 | 32 | 35 |
| National Aeronautics and Space Administration | 1 | 3 | 7 | 14 | 20 | 19 | 23 | 24 | 27 | 28 | 27 | 27 | 27 | 25 | 24 |
| Dept. of the Interior | 4 | 4 | 5 | 7 | 8 | 9 | 10 | 12 | 14 | 13 | 13 | 14 | 14 | 16 | 21 |
| National Science Foundation | 7 | 7 | 10 | 10 | 12 | 13 | 16 | 12 | 16 | 12 | 15 | 14 | 12 | 11 | 10 |
| Dept. of Agriculture | 4 | 4 | 4 | 4 | 5 | 6 | 6 | 14 | 8 | 9 | 10 | 10 | 11 | 13 | 13 |
| Other agencies | 6 | 6 | 7 | 11 | 8 | 8 | 12 | 11 | 15 | 16 | 29 | 25 | 29 | 28 | 32 |
| | Constant 1967 dollars[1] | | | | | | | | | | | | | | |
| Total | $87 | $102 | $144 | $181 | $221 | $238 | $286 | $324 | $344 | $333 | $335 | $331 | $338 | $333 | $324 |
| Dept. of Defense | 18 | 26 | 42 | 58 | 91 | 105 | 123 | 139 | 149 | 135 | 126 | 117 | 121 | 123 | 109 |
| Dept. of Health, Education and Welfare | 11 | 13 | 27 | 30 | 16 | 25 | 38 | 53 | 58 | 60 | 57 | 61 | 55 | 51 | 57 |
| Dept. of Commerce | 26 | 30 | 31 | 34 | 36 | 39 | 43 | 46 | 45 | 48 | 52 | 57 | 63 | 65 | 64 |
| Library of Congress | 6 | 7 | 7 | 9 | 10 | 11 | 13 | 13 | 16 | 18 | 19 | 21 | 24 | 24 | 24 |
| National Aeronautics and Space Administration | 1 | 3 | 8 | 15 | 22 | 20 | 24 | 24 | 26 | 26 | 23 | 22 | 22 | 19 | 17 |
| Dept. of the Interior | 5 | 4 | 6 | 8 | 9 | 10 | 10 | 12 | 13 | 12 | 11 | 12 | 11 | 12 | 15 |
| National Science Foundation | 8 | 8 | 11 | 11 | 13 | 14 | 17 | 12 | 15 | 11 | 13 | 12 | 10 | 8 | 7 |
| Dept. of Agriculture | 5 | 4 | 4 | 4 | 5 | 6 | 6 | 14 | 8 | 8 | 9 | 8 | 9 | 10 | 9 |
| Other agencies | 7 | 7 | 8 | 12 | 9 | 8 | 12 | 11 | 14 | 15 | 25 | 21 | 23 | 21 | 22 |

[1] GNP implicit price deflators used to convert current dollars to constant 1967 dollars.

NOTE: Detail may not add to totals because of rounding.

SOURCE: National Science Foundation, *Federal Funds for Research, Development and Other Scientific Activities, Fiscal Years 1973, 1974 and 1975.* Vol. XXIII (NSF 74-320-A) and earlier volumes.

## Table 2-15. Federal obligations for R&D plant, by performer, 1962-74

[Dollars in millions]

| Performer | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968 | 1969 | 1970 | 1971 | 1972 | 1973 | 1974 (est.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Current dollars | | | | | | | | | | | | |
| Total | 777.6 | 1,186.0 | 1,177.5 | 1,131.6 | 858.3 | 620.1 | 603.8 | 669.0 | 524.4 | 611.2 | 602.1 | 774.3 | 971.9 |
| Federal intramural | 619.9 | 974.4 | 974.5 | 913.0 | 629.0 | 239.0 | 294.2 | 260.4 | 166.0 | 200.0 | 246.6 | 323.8 | 409.5 |
| Industry | NA | NA | NA | NA | NA | NA | 81.7 | 141.7 | 102.3 | 167.4 | 142.4 | 221.8 | 339.1 |
| Universities & colleges | NA | NA | 97.5 | 141.6 | 162.9 | 111.7 | 98.1 | 61.9 | 56.1 | 49.2 | 45.3 | 42.6 | 49.2 |
| FFRDC's (administered by universities) | NA | NA | 36.0 | 50.2 | 31.1 | 138.8 | 101.7 | 176.6 | 169.0 | 178.7 | 130.4 | 162.3 | 134.1 |
| Nonprofit institutions | NA | NA | NA | NA | NA | NA | 20.9 | 25.8 | 28.8 | 5.8 | 30.0 | 18.8 | 36.2 |
| | Constant 1967 dollars[1] | | | | | | | | | | | | |
| Total | 864.4 | 1,301.3 | 1,272.0 | 1,200.3 | 885.8 | 620.1 | 580.5 | 613.6 | 456.0 | 508.4 | 484.5 | 590.0 | 671.6 |
| Federal intramural | 689.1 | 1,069.1 | 1,052.7 | 968.4 | 649.1 | 239.0 | 282.9 | 238.0 | 144.3 | 166.4 | 198.5 | 246.7 | 283.0 |
| Industry | NA | NA | NA | NA | NA | NA | 78.6 | 130.0 | 88.9 | 139.3 | 114.6 | 169.0 | 234.3 |
| Universities & colleges | NA | NA | 105.3 | 150.2 | 168.1 | 111.7 | 94.3 | 56.8 | 48.8 | 40.9 | 36.5 | 32.5 | 34.0 |
| FFRDC's (administered by universities) | NA | NA | 38.9 | 53.2 | 32.1 | 138.8 | 97.8 | 162.0 | 146.9 | 148.7 | 104.9 | 123.7 | 92.7 |
| Nonprofit institutions | NA | NA | NA | NA | NA | NA | 20.1 | 23.7 | 25.0 | 4.8 | 24.1 | 14.3 | 25.0 |

[1] GNP implicit price deflators used to convert current dollars to constant 1967 dollars.

NOTE: NA = not available.

SOURCE: National Science Foundation, *Federal Funds for Research, Development and Other Scientific Activities*, Vol. XXIII (NSF 74-320-A) and earlier volumes.

## Table 2-16. Federal obligations for R&D plant as a percent of Federal obligations for total R&D, by performer, 1962-74

| Performer | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968 | 1969 | 1970 | 1971 | 1972 | 1973 | 1974 (est.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Percent | | | | | | | | | | | | |
| Total | 8 | 9 | 8 | 8 | 6 | 4 | 4 | 4 | 3 | 4 | 4 | 5 | 5 |
| Federal intramural | 30 | 43 | 34 | 30 | 20 | 7 | 8 | 7 | 4 | 5 | 6 | 7 | 8 |
| Industry | NA | NA | NA | NA | NA | NA | 1 | 2 | 1 | 2 | 2 | 3 | 4 |
| Universities and colleges | NA | NA | 9 | 12 | 12 | 8 | 7 | 4 | 4 | 3 | 2 | 2 | 2 |
| FFRDC's (administered by universities) | NA | NA | 6 | 8 | 5 | 21 | 14 | 24 | 23 | 25 | 17 | 22 | 17 |
| Nonprofit institutions | NA | NA | NA | NA | NA | NA | 3 | 4 | 4 | 1 | 4 | 2 | 4 |

NOTE: NA = not available.

SOURCE: National Science Foundation, *Federal Funds for Research, Development and Other Scientific Activities*, Vol. XXIII (NSF 74-320-A), and earlier volumes.

**Table 2-10. Federal obligations for R&D by function, 1969 and 1974**
[Dollars in millions]

| Function | 1969 | 1970 | 1971 | 1972 | 1973 | 1974 (est.) |
|---|---|---|---|---|---|---|
| | Current dollars | | | | | |
| National defense | $8,354 | $7,976 | $8,106 | $8,898 | $8,998 | $9,180 |
| Space | 3,732 | 3,510 | 2,893 | 2,714 | 2,601 | 2,510 |
| Health | 1,111 | 1,111 | 1,319 | 1,564 | 1,592 | 2,085 |
| Environment | 321 | 359 | 475 | 547 | 678 | 738 |
| Transportation and communication | 461 | 593 | 782 | 617 | 625 | 689 |
| Science and technology base | 518 | 529 | 531 | 606 | 610 | 648 |
| Natural resources | 412 | 462 | 553 | 625 | 618 | 633 |
| Energy development and conversion | 328 | 317 | 324 | 383 | 442 | 574 |
| Education | 158 | 151 | 198 | 208 | 231 | 227 |
| Income security & social services | 93 | 102 | 123 | 115 | 151 | 131 |
| Area & community development & housing | 49 | 91 | 108 | 102 | 117 | 127 |
| Economic growth & productivity | 73 | 99 | 109 | 78 | 90 | 117 |
| Crime prevention & control | 5 | 9 | 10 | 25 | 35 | 52 |
| International cooperation & development | 27 | 32 | 32 | 30 | 33 | 34 |
| | Constant 1967 dollars[1] | | | | | |
| National defense | $7,663 | $6,935 | $6,743 | $7,161 | $6,857 | $6,343 |
| Space | 3,423 | 3,052 | 2,407 | 2,184 | 1,982 | 1,734 |
| Health | 1,019 | 966 | 1,097 | 1,259 | 1,213 | 1,441 |
| Environment | 294 | 312 | 395 | 440 | 517 | 510 |
| Transportation and communication | 423 | 516 | 651 | 497 | 476 | 476 |
| Science and technology base | 475 | 460 | 442 | 488 | 465 | 448 |
| Natural resources | 378 | 402 | 460 | 503 | 471 | 437 |
| Energy development and conversion | 301 | 276 | 270 | 308 | 337 | 397 |
| Education | 145 | 131 | 165 | 167 | 176 | 157 |
| Income security & social services | 85 | 89 | 102 | 93 | 115 | 91 |
| Area & community development & housing | 45 | 79 | 90 | 82 | 89 | 88 |
| Economic growth & productivity | 67 | 86 | 91 | 63 | 69 | 81 |
| Crime prevention & control | 5 | 8 | 8 | 20 | 27 | 36 |
| International cooperation & development | 25 | 28 | 27 | 24 | 25 | 23 |

[1] GNP implicit price deflators used to convert current dollars to constant 1967 dollars.

SOURCE: National Science Foundation, *An Analysis of Federal R&D Funding by Function, 1969-75* (NSF 74-313).

**Table 2-7c. Development expenditures by source, 1960-74**
[Dollars in millions]

| Year | Total | Federal Government | Industry | Universities and colleges | Other nonprofit institutions |
|---|---|---|---|---|---|
| | | | Current dollars | | |
| 1960 | $9,311 | $6,334 | $2,949 | $11 | $17 |
| 1961 | 9,853 | 6,619 | 3,202 | 11 | 21 |
| 1962 | 10,004 | 6,708 | 3,259 | 13 | 24 |
| 1963 | 11,294 | 7,704 | 3,548 | 14 | 28 |
| 1964 | 12,355 | 8,455 | 3,860 | 14 | 26 |
| 1965 | 13,049 | 8,563 | 4,433 | 15 | 38 |
| 1966 | 14,322 | 9,275 | 4,977 | 18 | 52 |
| 1967 | 15,208 | 9,373 | 5,762 | 20 | 53 |
| 1968 | 16,027 | 9,606 | 6,347 | 17 | 57 |
| 1969 | 16,775 | 9,546 | 7,152 | 17 | 60 |
| 1970 | 16,607 | 9,037 | 7,492 | 13 | 65 |
| 1971 | 17,154 | 9,290 | 7,785 | 14 | 65 |
| 1972 | 18,425 | 9,960 | 8,379 | 16 | 70 |
| 1973 | 19,788 | 10,197 | 9,484 | 30 | 77 |
| 1974 (est.) | 20,594 | 10,239 | 10,242 | 35 | 78 |
| | | | Constant 1967 dollars[1] | | |
| 1960 | $10,600 | $7,211 | $3,357 | $13 | $19 |
| 1961 | 11,075 | 7,440 | 3,599 | 12 | 24 |
| 1962 | 11,121 | 7,457 | 3,623 | 14 | 27 |
| 1963 | 12,392 | 8,453 | 3,893 | 15 | 31 |
| 1964 | 13,347 | 9,134 | 4,170 | 15 | 28 |
| 1965 | 13,841 | 9,083 | 4,702 | 16 | 40 |
| 1966 | 14,781 | 9,572 | 5,136 | 19 | 54 |
| 1967 | 15,208 | 9,373 | 5,762 | 20 | 53 |
| 1968 | 15,409 | 9,236 | 6,102 | 16 | 55 |
| 1969 | 15,387 | 8,756 | 6,560 | 16 | 55 |
| 1970 | 14,440 | 7,858 | 6,514 | 11 | 57 |
| 1971 | 14,270 | 7,728 | 6,476 | 12 | 54 |
| 1972 | 14,827 | 8,015 | 6,743 | 13 | 56 |
| 1973 | 15,079 | 7,770 | 7,227 | 23 | 59 |
| 1974 (est.) | 14,230 | 7,075 | 7,077 | 24 | 54 |

[1] GNP implicit price deflators used to convert current dollars to constant 1967 dollars.

SOURCE: National Science Foundation, *National Patterns of R&D Resources, 1953-75* (NSF 75-307).

**Table 2-7a. Basic research expenditures by source, 1960-74**
[Dollars in millions]

| Year | Total | Federal Government | Industry | Universities and colleges | Other nonprofit institutions |
|---|---|---|---|---|---|
| | Current dollars | | | | |
| 1960 | $1,183 | $693 | $331 | $72 | $87 |
| 1961 | 1,378 | 841 | 350 | 85 | 102 |
| 1962 | 1,695 | 1,091 | 382 | 102 | 120 |
| 1963 | 1,974 | 1,310 | 414 | 121 | 129 |
| 1964 | 2,301 | 1,595 | 424 | 144 | 138 |
| 1965 | 2,572 | 1,817 | 448 | 164 | 143 |
| 1966 | 2,825 | 1,986 | 496 | 196 | 147 |
| 1967 | 3,029 | 2,173 | 477 | 223 | 156 |
| 1968 | 3,286 | 2,327 | 518 | 276 | 165 |
| 1969 | 3,378 | 2,386 | 519 | 298 | 175 |
| 1970 | 3,548 | 2,469 | 536 | 350 | 193 |
| 1971 | 3,544 | 2,379 | 556 | 400 | 209 |
| 1972 | 3,705 | 2,528 | 528 | 428 | 221 |
| 1973 | 3,800 | 2,605 | 561 | 416 | 218 |
| 1974 (est.) | 3,991 | 2,724 | 594 | 434 | 239 |
| | Constant 1967 dollars[1] | | | | |
| 1960 | $1,347 | $789 | $377 | $82 | $99 |
| 1961 | 1,549 | 945 | 393 | 96 | 115 |
| 1962 | 1,884 | 1,213 | 425 | 113 | 133 |
| 1963 | 2,166 | 1,437 | 454 | 133 | 142 |
| 1964 | 2,486 | 1,723 | 458 | 156 | 149 |
| 1965 | 2,728 | 1,927 | 475 | 174 | 152 |
| 1966 | 2,916 | 2,050 | 512 | 202 | 152 |
| 1967 | 3,029 | 2,173 | 477 | 223 | 156 |
| 1968 | 3,159 | 2,237 | 498 | 265 | 159 |
| 1969 | 3,099 | 2,189 | 476 | 273 | 161 |
| 1970 | 3,085 | 2,147 | 466 | 304 | 168 |
| 1971 | 2,949 | 1,979 | 463 | 333 | 174 |
| 1972 | 2,981 | 2,034 | 425 | 344 | 178 |
| 1973 | 2,895 | 1,985 | 427 | 317 | 166 |
| 1974 (est.) | 2,757 | 1,882 | 410 | 300 | 165 |

[1] GNP implicit price deflators used to convert current dollars to constant 1967 dollars.

SOURCE: National Science Foundation, *National Patterns of R&D Resources; 1953-75* (NSF 75-307).

**Table 2-5. National expenditures for R&D by performer, 1960-74**
[Dollars in millions]

| Year | Total | Federal government | Industry | Universities and colleges | FFRDC's[1] | Other nonprofit institutions |
|---|---|---|---|---|---|---|
| | Current dollars | | | | | |
| 1960 | $13,551 | $1,726 | $10,509 | $646 | $360 | $310 |
| 1961 | 14,346 | 1,874 | 10,908 | 763 | 410 | 391 |
| 1962 | 15,426 | 2,098 | 11,464 | 904 | 470 | 490 |
| 1963 | 17,093 | 2,279 | 12,630 | 1,081 | 530 | 573 |
| 1964 | 18,894 | 2,838 | 13,512 | 1,275 | 629 | 640 |
| 1965 | 20,091 | 3,093 | 14,185 | 1,474 | 629 | 710 |
| 1966 | 21,894 | 3,220 | 15,548 | 1,715 | 630 | 781 |
| 1967 | 23,205 | 3,396 | 16,385 | 1,921 | 673 | 830 |
| 1968 | 24,669 | 3,493 | 17,429 | 2,149 | 719 | 879 |
| 1969 | 25,686 | 3,503 | 18,308 | 2,220 | 725 | 930 |
| 1970 | 26,047 | 3,855 | 18,062 | 2,335 | 737 | 1,058 |
| 1971 | 26,745 | 4,156 | 18,311 | 2,500 | 716 | 1,062 |
| 1972 | 28,402 | 4,482 | 19,371 | 2,675 | 764 | 1,110 |
| 1973 | 30,427 | 4,619 | 20,937 | 2,934 | 817 | 1,120 |
| 1974 (est.) | 32,045 | 4,900 | 22,020 | 3,008 | 865 | 1,252 |
| | Constant 1967 dollars[2] | | | | | |
| 1960 | $15,427 | $1,965 | $11,964 | $735 | $410 | $353 |
| 1961 | 16,124 | 2,106 | 12,260 | 858 | 461 | 439 |
| 1962 | 17,147 | 2,332 | 12,743 | 1,005 | 522 | 545 |
| 1963 | 18,756 | 2,501 | 13,858 | 1,186 | 582 | 629 |
| 1964 | 20,410 | 3,066 | 14,597 | 1,377 | 679 | 691 |
| 1965 | 21,310 | 3,281 | 15,046 | 1,563 | 667 | 753 |
| 1966 | 22,594 | 3,323 | 16,045 | 1,770 | 650 | 806 |
| 1967 | 23,205 | 3,396 | 16,385 | 1,921 | 673 | 830 |
| 1968 | 23,717 | 3,358 | 16,757 | 2,066 | 691 | 845 |
| 1969 | 23,560 | 3,213 | 16,793 | 2,036 | 665 | 853 |
| 1970 | 22,648 | 3,352 | 15,705 | 2,030 | 641 | 920 |
| 1971 | 22,249 | 3,457 | 15,233 | 2,080 | 596 | 883 |
| 1972 | 22,857 | 3,607 | 15,589 | 2,153 | 615 | 893 |
| 1973 | 23,186 | 3,520 | 15,954 | 2,236 | 623 | 853 |
| 1974 (est.) | 22,143 | 3,386 | 15,216 | 2,078 | 598 | 865 |

[1] Federally Funded Research and Development Centers administered by universities.
[2] GNP implicit price deflators used to convert current dollars to constant 1967 dollars.

NOTE: Detail may not add to totals because of rounding.

SOURCE: National Science Foundation, *National Patterns of R&D Resources (NSF 75-307).*

**Table 2-3. National R&D expenditures as a percent of GNP by source, 1960-74**
[Current dollars in billions]

| Year | Gross National Product (GNP) | All sources | | Federal sources | | All other sources | |
|---|---|---|---|---|---|---|---|
| | | Total R&D | R&D as a percent of GNP | Total R&D | R&D as a percent of GNP | Total R&D | R&D as a percent of GNP |
| 1960 | $503.7 | $13.6 | 2.70 | $8.8 | 1.75 | $4.8 | 0.95 |
| 1961 | 520.1 | 14.3 | 2.75 | 9.3 | 1.79 | 5.1 | 0.98 |
| 1962 | 560.3 | 15.4 | 2.75 | 9.9 | 1.77 | 5.5 | 0.98 |
| 1963 | 590.5 | 17.1 | 2.90 | 11.2 | 1.90 | 5.9 | 1.00 |
| 1964 | 632.4 | 18.9 | 2.99 | 12.6 | 1.99 | 6.3 | 1.00 |
| 1965 | 684.9 | 20.1 | 2.93 | 13.0 | 1.90 | 7.1 | 1.04 |
| 1966 | 749.9 | 21.9 | 2.92 | 14.0 | 1.87 | 7.9 | 1.05 |
| 1967 | 793.9 | 23.2 | 2.92 | 14.4 | 1.81 | 8.8 | 1.11 |
| 1968 | 864.2 | 24.7 | 2.86 | 15.0 | 1.74 | 9.7 | 1.12 |
| 1969 | 930.3 | 25.7 | 2.76 | 14.9 | 1.60 | 10.8 | 1.16 |
| 1970 | 977.1 | 26.0 | 2.66 | 14.8 | 1.51 | 11.3 | 1.16 |
| 1971 | 1,054.9 | 26.7 | 2.53 | 15.0 | 1.42 | 11.8 | 1.12 |
| 1972 | 1,158.0 | 28.4 | 2.45 | 15.9 | 1.37 | 12.5 | 1.08 |
| 1973 | 1,294.9 | 30.4 | 2.35 | 16.5 | 1.27 | 14.0 | 1.08 |
| 1974 (est.) | 1,396.7 | 32.0 | 2.29 | 17.0 | 1.22 | 15.1 | 1.08 |

NOTE: Detail may not add to totals because of rounding.

SOURCE: National Science Foundation, *National Patterns of R&D Resources, 1953-75* (NSF 75-307) and *The Budget of the United States Government, Fiscal Year 1976.*

**Table 1-20. U.S. trade balance in R&D-intensive manufactured products, by product group, 1960-74**
**(Dollars in millions)**

| Product | 1960 | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968 | 1969 | 1970 | 1971 | 1972 | 1973 | 1974 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Chemicals | | | | | | | | | | | | | | | |
| Balance | 955 | 1,051 | 1,104 | 1,294 | 1,662 | 1,633 | 1,719 | 1,844 | 2,158 | 2,155 | 2,376 | 2,224 | 2,118 | 3,286 | 4,831 |
| Export | 1,776 | 1,789 | 1,876 | 2,009 | 2,364 | 2,402 | 2,676 | 2,802 | 3,287 | 3,383 | 3,826 | 3,836 | 4,133 | 5,749 | 8,822 |
| Import | 821 | 738 | 772 | 715 | 702 | 769 | 957 | 958 | 1,129 | 1,228 | 1,450 | 1,612 | 2,015 | 2,463 | 3,991 |
| Machinery, nonelectrical | | | | | | | | | | | | | | | |
| Balance | 2,948 | 3,288 | 3,547 | 3,574 | 3,989 | 4,114 | 4,102 | 4,218 | 4,280 | 4,838 | 5,583 | 5,268 | 5,325 | 6,904 | 10,633 |
| Export | 3,386 | 3,743 | 4,087 | 4,209 | 4,860 | 5,274 | 5,779 | 6,181 | 6,560 | 7,460 | 8,686 | 8,772 | 9,864 | 12,556 | 17,299 |
| Import | 438 | 455 | 540 | 635 | 871 | 1,160 | 1,677 | 1,963 | 2,280 | 2,622 | 3,103 | 3,504 | 4,539 | 5,652 | 6,666 |
| Electrical machinery | | | | | | | | | | | | | | | |
| Balance | 804 | 891 | 946 | 1,074 | 1,222 | 1,020 | 883 | 962 | 792 | 729 | 728 | 512 | 321 | 533 | 1,602 |
| Export | 1,090 | 1,225 | 1,361 | 1,493 | 1,665 | 1,660 | 1,899 | 2,098 | 2,284 | 2,677 | 2,999 | 3,067 | 3,698 | 5,032 | 7,019 |
| Import | 286 | 334 | 415 | 419 | 443 | 640 | 1,016 | 1,136 | 1,492 | 1,948 | 2,271 | 2,555 | 3,377 | 4,499 | 5,417 |
| Aircraft | | | | | | | | | | | | | | | |
| Balance | 970 | 766 | 857 | 726 | 791 | 997 | 828 | 1,271 | 2,015 | 2,140 | 2,382 | 3,049 | 2,580 | 3,556 | 5,256 |
| Export | 1,024 | 903 | 980 | 817 | 874 | 1,137 | 1,101 | 1,519 | 2,309 | 2,423 | 2,656 | 3,387 | 2,995 | 4,119 | 5,766 |
| Import | 54 | 137 | 123 | 91 | 83 | 140 | 273 | 248 | 294 | 283 | 274 | 338 | 415 | 563 | 510 |
| Professional and scientific instruments | | | | | | | | | | | | | | | |
| Balance | 214 | 241 | 266 | 290 | 306 | 413 | 488 | 522 | 530 | 609 | 653 | 674 | 668 | 822 | 1,290 |
| Export | 321 | 358 | 411 | 447 | 504 | 634 | 748 | 807 | 872 | 1,012 | 1,107 | 1,166 | 1,313 | 1,632 | 2,209 |
| Import | 107 | 117 | 145 | 157 | 198 | 221 | 260 | 285 | 342 | 403 | 454 | 492 | 645 | 810 | 919 |

SOURCE: U.S. Department of Commerce, Domestic and International Business Administration, *Overseas Business Reports*, April 1975 and April 1972.

**Table 1-21. U.S. trade balance with selected nations in R&D-intensive manufactured products, 1966-73**
**(Dollars in millions)**

| Nations | 1966 | 1967 | 1968 | 1969 | 1970 | 1971 | 1972 | 1973 |
|---|---|---|---|---|---|---|---|---|
| Developing nations | | | | | | | | |
| Balance | 4,053 | 4,033 | 4,430 | 4,445 | 4,928 | 5,087 | 5,277 | 6,675 |
| Export | 4,316 | 4,332 | 4,822 | 5,002 | 5,679 | 5,996 | 6,765 | 8,968 |
| Import | 263 | 299 | 392 | 547 | 751 | 909 | 1,488 | 2,293 |
| Western Europe | | | | | | | | |
| Balance | 1,890 | 2,283 | 2,566 | 2,986 | 3,942 | 3,599 | 3,089 | 4,165 |
| Export | 3,865 | 4,359 | 5,020 | 5,655 | 6,927 | 6,861 | 7,345 | 9,597 |
| Import | 1,975 | 2,076 | 2,454 | 2,669 | 2,985 | 3,262 | 4,256 | 5,432 |
| Canada | | | | | | | | |
| Balance | 1,800 | 1,760 | 1,719 | 1,914 | 1,684 | 1,865 | 2,333 | 3,011 |
| Export | 2,838 | 2,963 | 3,142 | 3,478 | 3,513 | 3,914 | 4,678 | 5,741 |
| Import | 1,038 | 1,223 | 1,423 | 1,564 | 1,829 | 2,049 | 2,345 | 2,730 |
| Japan | | | | | | | | |
| Balance | −133 | −115 | −200 | −324 | −224 | −516 | −971 | −839 |
| Export | 661 | 772 | 930 | 1,180 | 1,536 | 1,520 | 1,639 | 2,216 |
| Import | 794 | 887 | 1,130 | 1,504 | 1,760 | 2,036 | 2,610 | 3,055 |

SOURCE: U.S. Department of Commerce, Domestic and International Business Administration, *Overseas Business Reports*, June 1974 and August 1973.

**Table 1-16. Real Gross Domestic Product per employed civilian, for selected countries compared with the United States, 1960-74 (Indexes, United States = 100)**

| Year | United States | France | West Germany | Japan | United Kingdom |
|---|---|---|---|---|---|
| 1960 | 100 | 55.1 | 52.0 | 24.4 | 50.7 |
| 1965 | 100 | 60.2 | 55.7 | 31.7 | 48.6 |
| 1967 | 100 | 62.9 | 56.4 | 36.3 | 49.3 |
| 1970 | 100 | 71.4 | 67.0 | 48.7 | 52.6 |
| 1971 | 100 | 72.9 | 67.0 | 50.4 | 53.5 |
| 1972 | 100 | 74.1 | 67.6 | 53.3 | 53.3 |
| 1973 | 100 | 75.7 | 69.2 | 55.9 | 53.4 |
| 1974 | 100 | 81.1 | 73.8 | 57.4 | 55.6 |

SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, Office of Productivity and Technology, *Comparative Real Gross Domestic Product, Real GDP per Capita, and Real GDP per Employed Civilian for Six Countries,* July 1975.

**Table 1-17. Productivity[1] in manufacturing industries, by selected countries, 1960-74 (Index, 1960 = 100)**

| Year | United States | Japan | France | West Germany | United Kingdom |
|---|---|---|---|---|---|
| 1960 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| 1961 | 102.5 | 113.1 | 104.7 | 105.4 | 100.8 |
| 1962 | 108.3 | 118.1 | 109.5 | 112.2 | 103.3 |
| 1963 | 112.7 | 127.6 | 116.0 | 118.1 | 108.9 |
| 1964 | 118.0 | 144.6 | 121.8 | 127.3 | 116.8 |
| 1965 | 122.7 | 150.7 | 128.8 | 136.1 | 120.3 |
| 1966 | 124.3 | 165.9 | 137.8 | 141.6 | 124.6 |
| 1967 | 124.2 | 190.5 | 145.6 | 150.6 | 130.2 |
| 1968 | 130.2 | 214.5 | 162.2 | 162.0 | 138.9 |
| 1969 | 133.3 | 247.6 | 168.0 | 171.4 | 140.8 |
| 1970 | 134.0 | 279.0 | 176.4 | 175.8 | 142.1 |
| 1971 | 143.1 | 289.0 | 185.6 | 184.2 | 148.7 |
| 1972 | 151.2 | 312.2 | 198.1 | 195.9 | 154.8 |
| 1973 | 159.4 | 368.8 | 209.6 | 209.9 | 165.6 |
| 1974 (est.) | 160.5 | 380.8 | 221.1 | 215.1 | 165.8 |

[1] Output per man-hour.

SOURCE: P. Capdevielle and A. Neef, "Productivity and Unit Labor Costs in the United States and Abroad", *Monthly Labor Review,* July 1975.

**Table 1-14. "Radicalness" of innovations by selected countries, 1953-73**

| Country | Improvement of existing technology | Major technological advance | Radical breakthrough |
|---|---|---|---|
| | Percentage of each country's innovations | | |
| United States ..... | 41 | 31 | 27 |
| United Kingdom ... | 4 | 40 | 56 |
| France ..... | 12 | 65 | 24 |
| West Germany ..... | 36 | 50 | 14 |
| Japan ..... | 38 | 54 | 8 |
| | Number of innovations | | |
| United States ..... | 98 | 74 | 65 |
| United Kingdom ... | 2 | 18 | 25 |
| France ..... | 2 | 11 | 4 |
| West Germany ..... | 8 | 11 | 3 |
| Japan ..... | 10 | 14 | 2 |

NOTE: Detail may not add to 100 percent because of rounding.

SOURCE: Gellman Research Associates, Inc., *Indicators of International Trends in Technological Innovation*, 1975 (A study commissioned specifically for this report).

**Table 1-10. Patents granted to U.S. nationals by foreign countries[1] and to foreign nationals[1] by the United States, 1966-73**

| Patents granted | 1966 | 1967 | 1968 | 1969 | 1970 | 1971 | 1972 | 1973 |
|---|---|---|---|---|---|---|---|---|
| U. S. balance | 36,066 | 34,441 | 36,045 | 35,887 | 33,697 | 31,445 | 30,520 | 25,306 |
| Patents granted to U.S. nationals by foreign countries | 45,633 | 44,350 | 45,168 | 47,825 | 45,918 | 47,311 | 47,359 | 41,186 |
| Patents granted to foreign nationals by the United States | 9,567 | 9,909 | 9,123 | 11,938 | 12,221 | 15,866 | 16,839 | 15,880 |

[1] Including Canada, West Germany, Japan, United Kingdom, U.S.S.R., Belgium, Denmark, Ireland, Luxembourg, and the Netherlands.

SOURCE: World Intellectual Property Organization, *Industrial Property*, Geneva: 1966-73 (December issues).

**Table 1-11. U.S. patent balance with selected countries, 1966-73**

| Selected country | 1966 | 1967 | 1968 | 1969 | 1970 | 1971 | 1972 | 1973 |
|---|---|---|---|---|---|---|---|---|
| Canada: | | | | | | | | |
| Balance | 15,676 | 16,592 | 16,686 | 18,153 | 17,598 | 16,665 | 16,045 | 11,619 |
| Granted to U.S. | 16,614 | 17,583 | 17,583 | 19,147 | 18,663 | 17,992 | 17,289 | 12,964 |
| Granted by U.S. | 938 | 991 | 897 | 994 | 1,065 | 1,327 | 1,244 | 1,345 |
| West Germany: | | | | | | | | |
| Balance | -248 | -360 | 362 | -40 | -1,552 | -1,128 | -1,153 | -639 |
| Granted to U.S. | 3,733 | 3,406 | 3,804 | 4,483 | 2,882 | 4,393 | 4,575 | 4,949 |
| Granted by U.S. | 3,981 | 3,766 | 3,442 | 4,523 | 4,434 | 5,521 | 5,728 | 5,588 |
| Japan: | | | | | | | | |
| Balance | 3,561 | 2,008 | 3,439 | 2,505 | 2,149 | 1,667 | 794 | 546 |
| Granted to U.S. | 4,683 | 3,432 | 4,903 | 4,657 | 4,774 | 5,700 | 5,948 | 5,485 |
| Granted by U.S. | 1,122 | 1,424 | 1,464 | 2,152 | 2,625 | 4,033 | 5,154 | 4,939 |
| United Kingdom: | | | | | | | | |
| Balance | 11,440 | 10,877 | 10,107 | 9,503 | 9,776 | 9,226 | 9,837 | 8,866 |
| Granted to U.S. | 14,117 | 13,676 | 12,588 | 12,678 | 12,728 | 12,682 | 13,001 | 11,717 |
| Granted by U.S. | 2,677 | 2,799 | 2,481 | 3,175 | 2,952 | 3,456 | 3,164 | 2,851 |
| Other E.E.C. countries[1] | | | | | | | | |
| Balance | 5,700 | 5,439 | 5,481 | 5,842 | 5,743 | 5,143 | 5,093 | 4,914 |
| Granted to U.S. | 6,483 | 6,253 | 6,225 | 6,777 | 6,670 | 6,346 | 6,287 | 6,071 |
| Granted by U.S. | 783 | 814 | 744 | 935 | 927 | 1,203 | 1,194 | 1,157 |
| U.S.S.R.: | | | | | | | | |
| Balance | -63 | -115 | -30 | -76 | -17 | -128 | -96 | -177 |
| Granted to U.S. | 3 | 0 | 65 | 83 | 201 | 198 | 259 | 205 |
| Granted by U.S. | 66 | 115 | 95 | 159 | 218 | 326 | 355 | 382 |

[1] Other European Economic Community (E.E.C.) countries include Belgium, Denmark, Ireland, Luxembourg, and the Netherlands. Data from France are not reliable for use in this indicator.

SOURCE: World Intellectual Property Organization, *Industrial Property*, Geneva: 1966-73 (December issues).