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Federal Research Support Shows Rapid Recent Growth

- Federal R&D funding is frequently analyzed in terms of the type of activity that is being supported—basic research, applied research, or development. Since the two research components are similar to each other yet quite different from development, it is worthwhile to analyze Federal support in terms of aggregate research (basic and applied research combined) as compared to development. The development component is almost twice as large as research in terms of overall funding and often consists of more highly structured activities, since development involves the last step in the R&D process leading to the actual production of new materials, devices, systems or methods. By contrast, research generally involves studies that are less structured or specific and are oriented toward obtaining a fuller knowledge of the properties, structures and relationships of natural and social phenomena required for a deeper understanding of the world we live in and particular applications of that knowledge and understanding.

- In the 1969-79 decade the level of Federal support for research (basic research and applied research combined) rose from \$4.7 billion to an estimated \$10.5 billion. The average annual increase in research funding for this period was 8.3 percent, or 1.5 percent when an adjustment is made for inflation. Total Federal R&D obligations showed an average annual decline of 0.6 percent in constant dollars over the same period.

- In the earlier part of the 1969-79 decade, applied research funding by Federal agencies grew more rapidly than funding for basic research, and in most years basic research support actually declined in real terms. Starting with the 1977 Federal budget, however, special emphasis has been placed on basic research, and funding has increased rapidly. Thus, total basic research obligations in the 1979 budget represented a constant-dollar level 7 percent above that of 1969. Even so, applied research obligations were 22 percent above 1969 on a constant-dollar basis.

- Federal research expenditures now represent 56 percent of all national research expenditures, compared with 60 percent in 1969. Industry, which has always provided the second largest share of national research support, has been expanding research activities in recent years and now accounts for 34 percent of the national total. Most of the industry effort is in applied research.

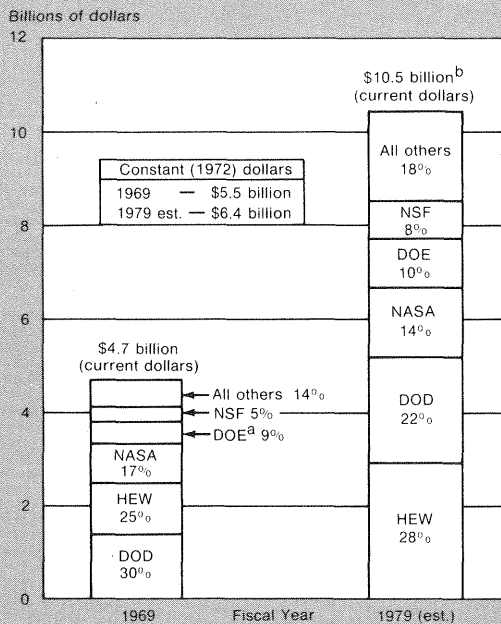
- The chief area of Federal research performance has been the intramural laboratory, but in recent years universities and colleges have been increasingly used to accomplish Federal research objectives. Thus, in 1979 an estimated 33 percent of the research total will be performed intramurally—31 percent by academic institutions, 22 percent by industry and 14 percent by other performers.

- In 1979 the life sciences represent an estimated 33 percent of all Federal research support, engineering 27 percent and the physical sciences 17 percent.

- All the leading research support agencies have contributed to the growth of Federal research funding in the 1969-79 decade. Since 1975 the Department of Health, Education and Welfare (HEW) has been the chief support agency, moving ahead of the Department of Defense (DOD). Most HEW programs are sponsored by the National Institutes of Health in biomedical research. DOD research programs provide the basis for new weapons systems and improvements in existing systems.

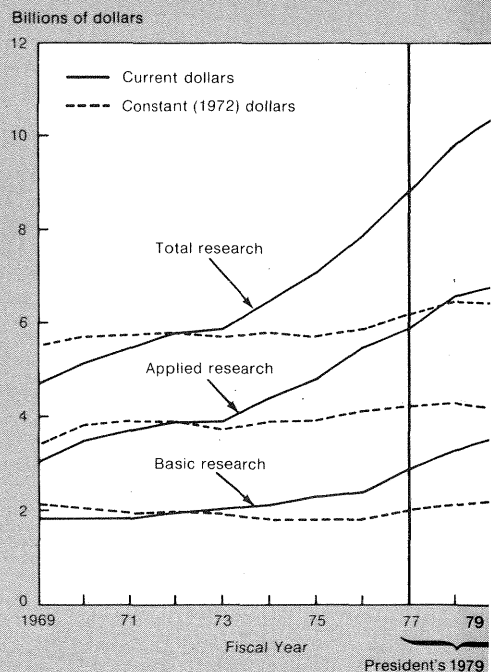
- Next in size of research support are the National Aeronautics and Space Administration (NASA), with work in aeronautical research, space sciences and space applications; the Department of Energy (DOE), with work in high-energy physics, environmental effects of energy, fusion power, coal research and weapons research, and the National Science Foundation (NSF), which supports research, chiefly basic research, in all the major fields of science.

Distribution of Federal Obligations for Research by Leading Support Agencies: FY 1969 and 1979



^aAtomic Energy Commission data used.
^bData based on the President's 1979 budget.
SOURCE: National Science Foundation

Trends in Federal Obligations for Research by Character of Work



Average Annual Percent Change			
Character of work	1969-73	1973-78	1978-79 (est.)
Current dollars			
Research	+ 5.7	+ 10.8	+ 6.3
Basic research	+ 3.0	+ 10.5	+ 10.5
Applied research	+ 7.3	+ 10.9	+ 4.3
Constant dollars ^a			
Research	+ 0.8	+ 2.7	- 1.6
Basic research	- 1.9	+ 2.5	+ 2.3
Applied research	+ 2.3	+ 2.9	- 3.5

^aBased on GNP implicit price deflator with an estimate for 1979.
SOURCE: National Science Foundation