



InfoBrief

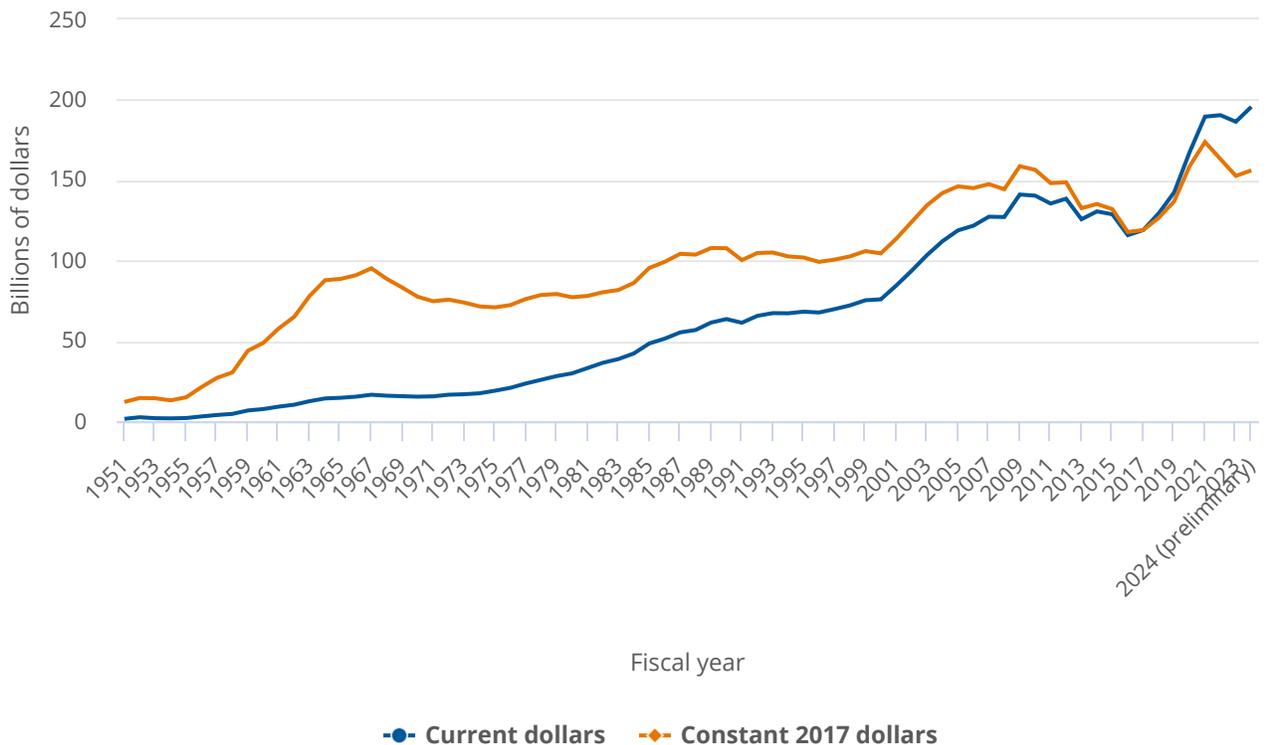
Federal R&D Obligations Declined 2.1% in FY 2023; Estimated to Increase in FY 2024

NSF 25-329 | March 2025

Federal agency obligations for research and experimental development (R&D) declined 2.1% between FY 2022 and FY 2023, from \$190.5 billion to \$186.4 billion (figure 1).¹ However, preliminary data for FY 2024 estimate federal agency obligations for R&D are expected to increase 5.0% to \$195.7 billion. When adjusted for inflation, the FY 2023 amount declined 6.4% from FY 2022.²

Figure 1

Federal obligations for research and development: FYs 1951–2024



Note(s):

Gross domestic product implicit price deflators (2017 = 1.00000) were used to adjust current dollars for inflation. The federal fiscal year cycle changed for FY 1977, from 1 July–30 June to the current 1 October–30 September cycle; no data were collected for the 3-month transition period of July–September 1976. FYs 2009 and 2010 obligations include additional funding provided by the American Recovery and Reinvestment Act of 2009. Beginning with FY 2016, the totals reported for development obligations represent a refinement to this category by more narrowly defining it to be "experimental development." Most notably, totals for development do not include the Department of Defense (DOD) Budget Activity 7 (Operational System Development) nor Budget Activity 8 (Software and Digital Technology Pilot Programs) obligations. Those funds, previously included in DOD's development obligation totals, support the development efforts to upgrade systems that have been fielded or have received approval for full-rate production and anticipate production funding in the current or subsequent fiscal year. Therefore, the data are not directly comparable with totals reported in previous years. FYs 2020–22 obligations include additional funding provided by supplemental COVID-19 pandemic-related appropriations. FYs 2022–24 obligations include additional funding appropriated under Public Laws 117-58, 117-167, and 117-169.

Source(s):

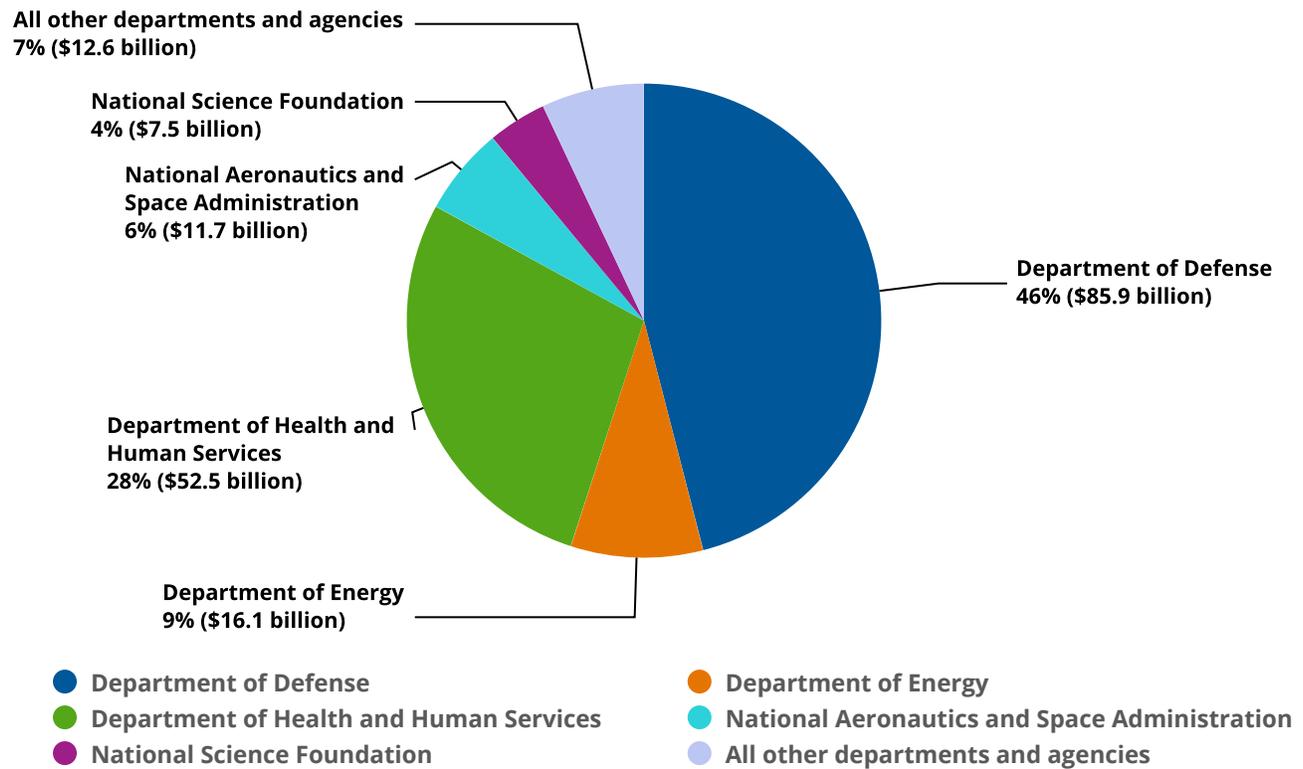
National Center for Science and Engineering Statistics, Survey of Federal Funds for Research and Development.

The FY 2023 decline is due, in large part, to declines in R&D obligations from the Department of Health and Human Services (HHS). However, the effect of these declines on the federal-wide R&D portfolio are partially offset by increases in the Department of Defense (DOD) R&D obligations. The FY 2024 estimated increase in R&D is driven by further increases in DOD's R&D programs as well as from increased R&D obligations from the Department of Commerce (DOC). While the end of the COVID-19 pandemic funding is responsible for the FY 2023 decrease in HHS's R&D obligations, the FY 2024 increases from DOC can be attributed to additional R&D obligations appropriated to the agency from other supplemental appropriations. This InfoBrief will provide additional details and context regarding these trends and the unique geopolitical circumstances accompanying federal funding for R&D in FYs 2023 and 2024.

Data are from the latest cycle of the Survey of Federal Funds for Research and Development (Federal Funds for R&D Survey), sponsored by the National Center for Science and Engineering Statistics (NCSES) within the U.S. National Science Foundation (NSF). Data for FY 2023 are actual amounts as of the fiscal year end. FY 2024 data are preliminary and subject to revision in future surveys. Data presented in this InfoBrief are in current dollars unless noted otherwise.

FY 2023 Federal R&D Obligations

In FY 2023, the five largest federal agencies by R&D obligations accounted for 93% (\$173.8 billion) of the total federal-wide R&D portfolio ([figure 2](#)).³ DOD and HHS were the two largest contributors to federal R&D obligations, accounting for 46% (\$85.9 billion) and 28% (\$52.5 billion), respectively. Department of Energy (DOE) was third at nearly 9% (\$16.1 billion), followed by the National Aeronautics and Space Administration (NASA) at 6% (\$11.7 billion), and NSF at 4% (\$7.5 billion). All other departments and agencies account for 7% (\$12.6 billion) of total federal R&D.

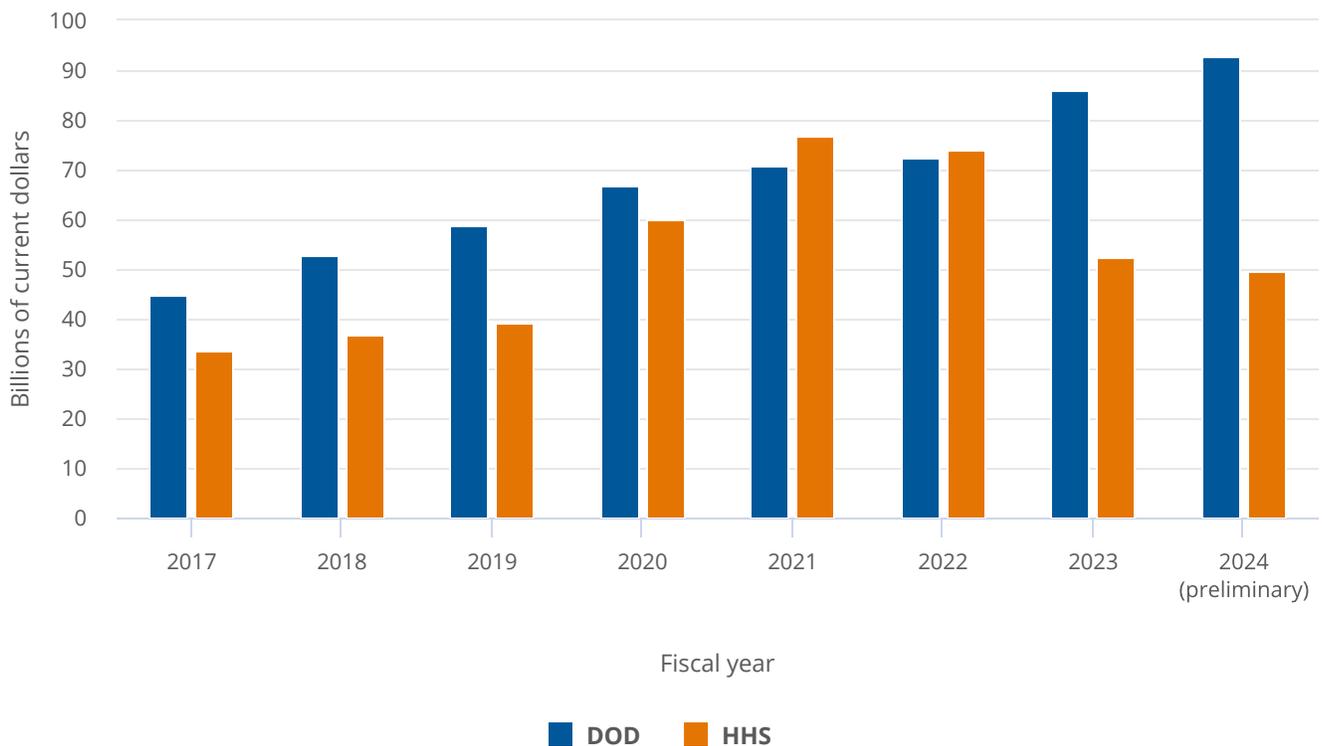
Figure 2**Federal obligations for research and experimental development, by agency: FY 2023****Note(s):**

Because of rounding, detail may not add to total.

Source(s):

National Center for Science and Engineering Statistics, Survey of Federal Funds for Research and Development, FYs 2023–24.

Although the total R&D obligations decreased by 2.1% (\$4.0 billion) from FY 2022, HHS alone declined 29.1%, from \$74.1 billion in FY 2022 to \$52.5 billion in FY 2023 (figure 3). This decrease is mostly attributable to the decline in R&D obligations by the Biomedical Advanced Research Development Authority (BARDA) within HHS.⁴ BARDA's R&D obligations increased substantially during the COVID-19 pandemic, rising from \$736 million in FY 2019 to \$15.7 billion in FY 2020 and \$33.9 billion in FY 2021. The obligations declined 16.1% to \$28.4 billion in FY 2022, and then decreased 79% to \$5.9 billion in FY 2023. While other HHS component units had modest increases in R&D obligations between FY 2022 and FY 2023—for example, the National Institutes of Health increased from \$43.6 billion to \$44.0 billion, including \$794 million in R&D from the newly established Advanced Research Project Agency for Health—these were not enough to offset the \$22.5 billion decrease from BARDA.

Figure 3**Federal obligations for research and experimental development, for DOD and HHS: FYs 2017–24**

DOD = Department of Defense; HHS = Department of Health and Human Services.

Note(s):

FYs 2020–22 obligations include additional funding provided by supplemental COVID-19 pandemic-related appropriations. FYs 2022–24 obligations include additional funding appropriated under Public Laws 117-58, 117-167, and 117-169.

Source(s):

National Center for Science and Engineering Statistics, Survey of Federal Funds for Research and Development.

While HHS saw a substantial decrease in R&D obligations in FY 2023, the effect on the total federal-wide portfolio was offset by substantial increases in R&D obligations by DOD. In FY 2023, DOD's R&D obligations increased 18.6% from \$72.4 billion in FY 2022 to \$85.9 billion in FY 2023. This increase in DOD's R&D obligations between FY 2022 and FY 2023 is consistent with an increase in R&D budget authority for national defense functions seen in the NCSSES report *Federal R&D Funding, by Budget Function (Budget Function)* and the DOD's own *RDT&E Programs (R-1)* report.^{5,6} The *Budget Function* report shows total DOD research, development, test, and evaluation (RDT&E), DOD's primary account for R&D funding, increased 17.6% from FY 2022 to FY 2023, while the *RDT&E Programs (R-1)* report shows a similar trend of 16.8% from FY 2022 to FY 2023.^{7,8}

According to DOD, concerns over competitiveness with China contributed to the largest investment in the Department's R&D portfolio. "As [China] races to modernize its military, this budget will sharpen our edge by making critical investments across all timeframes, theaters, and domains. Among numerous important actions that bolster our combat credibility in the short term, this budget makes the Department's largest-ever investments in readiness and procurement—and our largest investment in research and development."⁹ The Congressional Budget Office (CBO) has also noted the increases

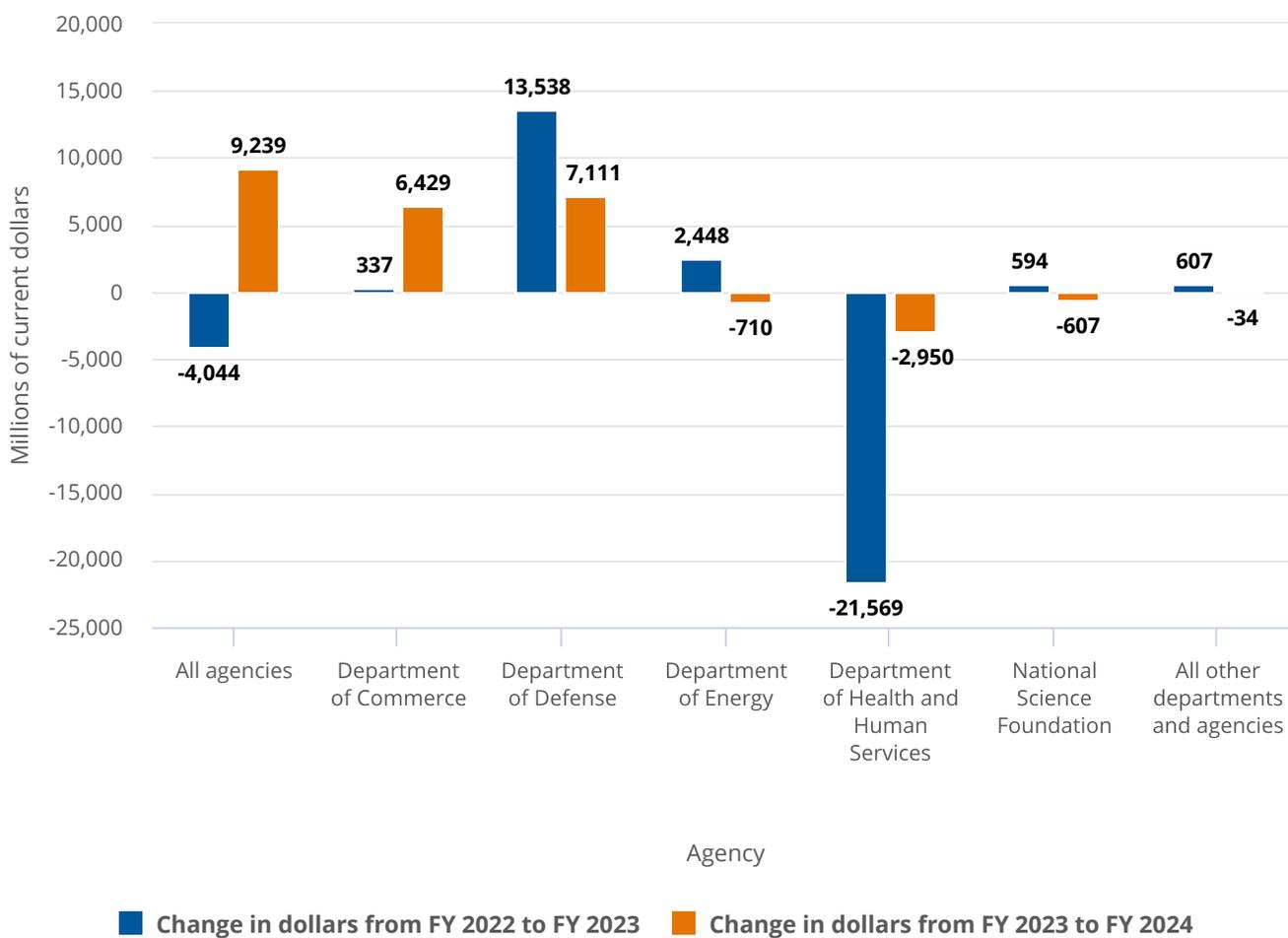
in DOD’s RDT&E account is to shift toward weapons systems for more conventional warfare. According to the CBO, “Since the mid-2010s, RDT&E has accounted for a steadily increasing share of acquisition funding, reaching 46 percent in 2023. That increase is the result of [DOD] changing its focus from procuring weapons for counterinsurgency operations to developing new weapons for potential conflicts against adversaries with advanced military capabilities.”¹⁰

FY 2024 Estimated Federal R&D Obligations

Based on preliminary data for FY 2024, federal agency obligations for R&D are estimated to increase by 5.0% (\$9.2 billion) to \$195.7 billion.¹¹ While R&D obligations from HHS are estimated to continue to decline from \$52.5 billion in FY 2023 to \$49.6 billion in FY 2024, DOD’s R&D obligations are estimated to increase by an additional 8.3% (\$7.1 billion) to \$93.0 billion. In addition, the data show an increase of \$6.4 billion from DOC (figure 4).

Figure 4

Change in federal obligations for research and experimental development, by agency: FYs 2022–24



Note(s):

Because of rounding, detail may not add to total. FY 2022 obligations include additional funding provided by supplemental COVID-19 pandemic-related appropriations. FYs 2022–24 obligations include additional funding appropriated under Public Laws 117-58, 117-167, and 117-169.

Source(s):

National Center for Science and Engineering Statistics, Survey of Federal Funds for Research and Development, FYs 2023–24.

Three bills signed into law in 2022 authorized additional funds that contributed to federal R&D in FYs 2023 and 2024.¹² Federal agency obligations from Public Law (P.L.) 117-58 and P.L. 117-169 contributed \$867 million and \$99 million, respectively, in additional R&D funds for FY 2023; however, obligations from P.L. 117-58 started to decline in FY 2024. R&D obligations drawn from P.L. 117-167 grew from \$500 million in FY 2023 to nearly \$6.8 billion in FY 2024, an increase of 1,255.7%. In FY 2024, DOC R&D obligations are estimated to increase from \$2.3 billion in FY 2023 to \$8.8 billion in FY 2024.¹³ Most of this increase in R&D obligations by DOC are from are from P.L.117-167 appropriations, specifically by the National Institute of Standards and Technology (NIST), an agency within the DOC, whose R&D obligations increased from \$898 million in FY 2023 to an estimated \$7.4 billion in FY 2024.¹⁴

Interest in ensuring national defense preparedness as well as funding appropriated under several supplemental appropriations have resulted in federal R&D obligations rebounding in FY 2024, after a decline in FY 2023 associated with the end of COVID-19 pandemic funds.

Data Sources, Limitations, and Availability

The Federal Funds for R&D Survey is a census of all federal agencies that fund R&D programs, as identified from information in the president’s budget submission to Congress, excluding the Central Intelligence Agency and the National Security Agency. Federal agencies that fund R&D are identified in *Analytical Perspectives, Budget of the United States Government, Fiscal Year 2024*.¹⁵ Data were obtained from 30 federal agencies (14 federal departments and 16 independent agencies) that had obligations for R&D during FY 2023 or FY 2024. Because multiple subdivisions of some federal departments completed the survey, there were agency-level responses from 6 federal departments, 46 agencies (within another 8 federal departments), and 16 independent agencies. However, lower offices could also be authorized to enter data. In Federal Funds for R&D nomenclature, agency-level offices could authorize program offices, program offices could authorize field offices, and field offices could authorize branch offices. When these suboffices are included, there were 587 total respondents: 68 agencies, 105 program offices, 183 field offices, and 231 branch offices.

Volume 73 of Federal Funds for R&D collected final FY 2023 data and preliminary FY 2024 totals. FY 2024 data are subject to revision when collected under next year’s survey, volume 74 (FY 2024 data and preliminary FY 2025 totals).

Beginning with volume 66 of the survey (FYs 2016 and 2017), the totals reported for development obligations and outlays represent a refinement to this category by more narrowly defining it to be “experimental development” to align with federal R&D budget formulation as per the Office of Management and Budget’s Circular A-11, Section 84.¹⁶ As a result, totals for experimental development from FY 2016 and on do not include DOD Budget Activity 7 (Operational System Development) nor Budget Activity 8 (Software and Digital Technology Pilot Programs) obligations and outlays. Those funds, previously included in DOD’s development totals, support the development efforts to upgrade systems that have been fielded or have received approval for full-rate production and anticipate production funding in the current or subsequent fiscal year.

Therefore, the development data and total R&D data are not directly comparable with totals reported prior to FY 2016.¹⁷ Although this survey is a census of federal agencies that fund R&D and there is no sampling error, survey data are still subject to some degree of unmeasured nonsampling error, which may include errors in classification or measurement of certain aspects of an agency’s R&D. For additional information see the section “Survey Quality Measures” within the Technical Notes of the survey.¹⁸

The full set of data tables for FYs 2023 and 2024 are available at <https://nces.gov/surveys/federal-funds-research-development/2023-2024#data>. For more information, please contact NCSES.

NCSES has reviewed this product for unauthorized disclosure of confidential information and approved its release (NCSES-DRN24-013).

Notes

1 Obligations represent the amount for orders placed, contracts awarded, services received, and similar transactions during a given period, regardless of when the funds were appropriated or when future payment of money is required.

2 Gross domestic product implicit price deflators were used to convert current dollars to constant 2017 dollars. Data on federal fiscal year historical figures, 1951–2024, can be found in: Office of Management and Budget (OMB). 2025. *Budget of the U.S. Government, Fiscal Year 2025*. Historical Tables. Table 10.1. Gross Domestic Product and Deflators Used in the Historical Tables: 1940–2029. Available at <https://www.govinfo.gov/app/details/BUDGET-2025-TAB/BUDGET-2025-TAB-11-1/context>.

3 While year-to-year trend data are presented in this report to the tenth place, data presented as a percentage share are presented as rounded whole-percents.

4 For specific R&D obligations by the Biomedical Advanced Research Development Authority in FYs 2023 and 2024, see tables 5 and 6, respectively, in the [full set of data tables](#).

5 Budget authority is the primary source of legal authorization to enter into obligations that will result in outlays.

6 The *RDT&E Programs (R-1)* report is issued annually by the Office of the Under Secretary of Defense (Comptroller) and identifies budget authority for all research, development, test, and evaluation (RDT&E) program elements. The FY 2024 report covering FYs 2022–24 is available at https://comptroller.defense.gov/Portals/45/Documents/defbudget/FY2024/FY2024_r1.pdf.

7 For more data on DOD RDT&E budget authority, see table 6 in *Federal R&D Funding, by Budget Function: Fiscal Years 2022–24*.

8 For more information on the relationship between R&D and the DOD RDT&E obligations, see National Center for Science and Engineering Statistics (NCSES). 2024. *Analysis of Department of Defense Funding for R&D and RDT&E in FY 2022*. NSF 25-301. Alexandria, VA: U.S. National Science Foundation. Available at <https://ncses.nsf.gov/pubs/nsf25301>.

9 Department of Defense Releases the President’s Fiscal Year 2024 Defense Budget, 13 March 2023. <https://www.defense.gov/News/Releases/Release/Article/3326875/department-of-defense-releases-the-presidents-fiscal-year-2024-defense-budget/>.

10 Congressional Budget Office. Long-Term Implications of the 2024 Future Years Defense Program. Page 19. October 2023. <https://www.cbo.gov/system/files/2023-10/59511-FYDP.pdf>.

11 At the time of data collection, the FY 2024 period had not ended. Agencies are asked to estimate their FY 2024 obligations during that same fiscal year.

12 Specifically, Public Laws 117-58, 117-167, and 117-169.

13 For specific R&D obligations by the Department of Commerce and its component agencies see tables 5 and 6, respectively, in the [full set of data tables](#).

14 For specific data on R&D obligations by the National Institute for Standards and Technology in FY 2023 and FY 2024, see tables 5 and 6, respectively, in the [full set of data tables](#).

15 See chapter 6, Research and Development, *Analytical Perspectives, Budget of the United States Government, Fiscal Year 2024*. Available at <https://www.govinfo.gov/content/pkg/BUDGET-2024-PER/pdf/BUDGET-2024-PER.pdf>.

16 See Section 84, Character Classification (Schedule C), *Circular A-11: Preparation, Submission, and Execution of the Budget*. Available at <https://bidenwhitehouse.archives.gov/wp-content/uploads/2018/06/a11.pdf>.

17 For additional information see National Center for Science and Engineering Statistics (NCSES). 2021. *Statistical Definition of Development Clarified: Effect on Reported Federal R&D Totals*. NSF 21-326. Alexandria, VA: U.S. National Science Foundation. Available at <https://ncses.nsf.gov/pubs/nsf21326/>.

18 Survey technical notes are available at <https://ncses.nsf.gov/surveys/federal-funds-research-development/>.

Suggested Citation

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