SIDEBAR

Federal Support for Open Science and Public Engagement in Science

The White House and other federal agencies declared 2023 to be a year of open science, highlighting information about federal activities that share the results of its research and other work (OSTP 2023). In addition to knowledge creation through publications and patenting, the federal government also shares knowledge it has supported through access to data sets and to software code. As of October 2023, more than 250,000 data sets have been shared (Data.gov). The measures reported here are from federal websites; they are not based on mandatory reporting or comprehensive administrative data. As a result, they can be understood as a limited view of the activity described.

Open-source software provides a form of knowledge transfer through the sharing of digital tools. The U.S. federal government supports the sharing of software developed by and for the federal government through its federal Source Code Policy, which provides a framework for government code to be released and reused through open-source software licensing. This policy allows software created for narrow federal purposes to be reused elsewhere within the federal government, multiplying its value to the government, and outside of the federal government, further extending its impact. In 2009, only the Department of Energy (DOE), the Department of Commerce, and the National Aeronautics and Space Administration (NASA) used open-source platforms to share software with other users; by 2023, 26 federal departments and agencies did so, based on data at Code.gov.

Federal support for individuals to participate in organized science activity is one way that knowledge about the conduct of science is transferred to the lay public to use. *Public science*, or *citizen science*, is a form of open collaboration in which individuals or organizations participate as volunteers in scientific progress. Data collected from the U.S. federal government website CitizenScience.gov (https://www.citizenscience.gov/#) provide the number of citizen science projects per agency. While the federal government uses the term *citizen science* as well as *crowdsourcing*, this thematic report has adopted the more accurate and inclusive term *public science*.

In 2023, there were 579 projects sponsored by U.S. federal agencies and departments and reported on CitizenScience.gov (Table INV-C). With 174 projects, the National Park Service leads federal agencies and departments in sponsoring public science projects, followed by the National Science Foundation (with 77 projects) and the National Oceanic and Atmospheric Administration (with 60 projects) (Table INV-C). The sharing of data sets and of open-source software projects comprise another aspect of open science for the government. As of 2020, NASA has made publicly available more than 32,000 data sets, and DOE has made public almost 2,000 software projects (Table INV-D).

Table INV-C

Cumulative federally sponsored public science projects on CitizenScience.gov, by federal department or agency: 2022

(Number)

Sponsor	Number
Total	579
National Park Service	174
National Science Foundation	77
National Oceanic and Atmospheric Administration	60
Environmental Protection Agency	47
Geological Survey	44
Department of Agriculture	37
National Aeronautics and Space Administration	28
Forest Service	21
Fish and Wildlife Service	16
Smithsonian Institution	14
National Institutes of Health	12
Department of Energy	8
Department of the Interior	8
Centers for Disease Control and Prevention	7
Bureau of Land Management	4
All other U.S. federal projects	22

Source(s):
CitizenScience.gov, tabulated by RTI International, April 2023.

Science and Engineering Indicators

Table INV-D

Knowledge products posted by selected federal agencies: 2020

(Number)

Agency	Data sets	Software code
DOD	378	17
DOE	2,868	1,948
HHS	2,041	179
NASA	32,089	1,257

DOD = Department of Defense; DOE = Department of Energy; HHS = Department of Health and Human Services; NASA = National Aeronautics and Space Administration.

Note(s):
Data are cumulative as of March 2020. Data are reported for the agencies whose laboratories have the largest R&D budgets.

Source(s):
National Academies of Sciences, Engineering, and Medicine, 2021, *Advancing Commercialization of Digital Products from Federal Laboratories*, Table 7.2, https://doi.org/10.17226/26006; Data.gov; Code.gov.

Science and Engineering Indicators