



GAO: Evolving and Innovating to Meet Congressional Needs

Testimony before the
Subcommittee on Modernization,
Committee on House Administration,
U.S. House of Representatives

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GAO Highlights

Highlights of [GAO-23-900536](#), a report to congressional requesters

Why GAO Did This Study

GAO is a force multiplier to help Congress meet its constitutional responsibilities. Through its oversight, GAO improves the performance and accountability of the federal government for the American people. GAO's work spans the full reach of the federal government, including both domestic and international activities and mandatory and discretionary spending.

GAO has continuously evolved to meet the needs of Congress. From its initial focus on financial management matters, GAO has evolved into a multi-disciplinary professional services organization. Located in the legislative branch, GAO is an independent agency that provides Congress with objective, nonpartisan, and evidence-based information, analysis, and recommendations. As Congress's oversight responsibilities have evolved, GAO has actively modernized its work products and services to benefit its congressional clients and the American people.

This testimony describes how GAO's impactful products, wide-ranging services, and multi-disciplinary workforce help the government save money and be more efficient and effective.

View [GAO-23-900536](#). For more information, contact A. Nicole Clowers at (202) 512-4400 or clowersa@gao.gov

GAO

Evolving and Innovating to Meet Congressional Needs

What GAO Found

For the last 5 years, GAO's work yielded an average of \$145 in financial benefits for every \$1 invested in it. Over the past decade, GAO has delivered an annual average of about \$81 billion in financial benefits. In addition, GAO regularly delivers over 1,200 other benefits annually that improve services to the American people, strengthen public safety, and make government work better. GAO's work is in high demand: each year approximately 90 percent of standing committees submit hundreds of requests for studies, and legislation and committee reports require hundreds more.

GAO accomplishes these results by:



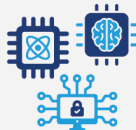
Understanding congressional priorities and needs and evolving national issues. GAO regularly reaches out to Congress to both understand their priorities and highlight emerging issues and challenges, and discuss the array of services that GAO can provide. GAO is working with the Committee on House Administration to have physical space in a House building next year to further these efforts.



Recruiting and retaining a talented, motivated multi-disciplinary workforce. GAO's diverse and dedicated workforce has policy, program, and technical expertise in virtually all major federal domains. GAO has deep institutional knowledge of federal agencies, programs, and operations from decades of work. GAO is recognized by the Partnership for Public Service as one of the best places to work in the federal government. For the past three years, GAO has ranked first among mid-size agencies.



Continuing to modernize its products and services. Efforts include introducing quick-read products that synthesize information on current or emerging issues. GAO is also innovating to produce more accessible and user-friendly digital content. In addition, GAO also increased technical assistance services to Members and committees.



Growing its science, technology, and cybersecurity expertise to meet evolving needs. Since 2019, GAO has more than tripled the size of its Science, Technology Assessment, and Analytics team, with staff who hold over 100 STEM-related advanced degrees. In this time, GAO issued 22 in-depth Technology Assessments and 44 Science and Tech Spotlights, distilling technical issues into two-page summaries. Topics covered in these products include artificial intelligence use in health care, quantum computing, regenerative medicine, generative artificial intelligence, and fusion energy. GAO has also increased the size and capacity of its cybersecurity workforce and its Center for Enhanced Cybersecurity. These efforts resulted in hundreds of recommendations to improve federal agencies' cybersecurity vulnerabilities.

Source: GAO (analysis) and Icons-Studio and Sabavector/stock.adobe.com (icons). | GAO-900536

Chairwoman Bice, Ranking Member Kilmer, and Members of the Subcommittee:

I appreciate this opportunity to discuss the U.S. Government Accountability Office's (GAO) work for the Congress and the American people. GAO's mission is to support Congress in meeting its constitutional responsibilities and to help improve the performance and accountability of the federal government. We do this by examining how federal funds are spent and how federal programs and operations are managed. Our work spans all federal programs and spending—including agriculture to space programs, banking to public health, national security to international aid and more.

GAO provides objective, nonpartisan, professional, and fact-based analysis and recommendations to help the government save money and be more efficient and effective. Congress routinely uses our work to craft legislation, make decisions about authorizing or reauthorizing programs, make funding decisions, and conduct oversight of federal spending and programs.

Today, I will discuss GAO's impact and the factors that have contributed to achieving our mission. In doing so, I will outline how we have actively worked to modernize our work products and services to benefit our congressional clients and efforts to continue this evolution. Several of our efforts also speak to recommendations made by the Select Committee on the Modernization of the Congress (the Select Committee).¹

GAO Consistently Delivers Results

GAO has a well-established record of delivering significant results for the nation. Over the past five years, GAO's return-on-investment is \$145 to every \$1 dollar invested in GAO. Over the past decade, we have delivered an annual average of about \$81 billion in financial benefits. In addition, GAO regularly delivers over 1,200 program and operational benefits annually that improve services to the American people, strengthen public safety, and make government work better. GAO's results stem from agencies and Congress implementing our recommendations. On average we issue about 1,600 each year and consistently over 75 percent of these recommendations are implemented over time.

To achieve these benefits, we rigorously follow up on our open recommendations to encourage agencies and Congress to take action. Each year I send agency heads a letter that includes information about open recommendations directed to their agencies and identifies a subset of these as "priority recommendations" for their attention.² Our teams also meet regularly with senior officials at agencies to discuss their progress in addressing our open recommendations; for example, senior executives meet quarterly with the Secretary of Agriculture and his team to

¹ The Committee made nine recommendations to GAO across the 116th and 117th Congress. See *Final Report: Select Committee on the Modernization of Congress* (Washington, D.C.: December 2002).

² Priority recommendations are the GAO recommendations that warrant priority attention from heads of key departments or agencies because their implementation could save large amounts of money; improve congressional and/or executive branch decision-making on major issues; eliminate mismanagement, fraud, and abuse; or ensure that programs comply with laws and funds are legally spent, among other benefits.

discuss the recommendations status, among other things. Similar regular, senior-level meetings occur with the Department of Homeland Security, Centers for Medicare and Medicaid Services, and the Office of the Director of National Intelligence. We also plan to support the Department of Defense's new portfolio recommendation reviews which are designed to spur senior-level action on our open recommendations. Individual audit teams also follow up with the agencies at least once a year. We post the status of agencies' progress in implementing each recommendation on our website.

As of August 2023, there were 229 open Matters for Consideration, or recommendations, for Congress. Congress is actively considering many of these recommendations. Bills introduced in the 117th or 118th Congress would have addressed or partially addressed 87 (or 38 percent) of these recommendations, as of September 2023. Action by Congress to address open matters can produce financial and other benefits for the nation. For example, in December 2015, we recommended that Congress consider equalizing the rates Medicare pays for certain health care services, which often vary depending on whether the service is performed in hospital or office settings. The Congressional Budget Office estimated that this could result in \$141 billion in financial benefits from fiscal years 2021 through 2030. Bills to address this recommendation have been introduced in the Senate and the House.

To help get more recommendations to Congress addressed, our senior executives meet with Members and congressional staff to discuss options and provide technical assistance. For example, we have shared legislative text with multiple congressional offices and committees for the 10 recommendations that we made March 2022 to help prevent improper payments and fraud in federal spending. In addition, we are frequently working with committees and Member offices on draft legislative text that address our other recommendations.

Because GAO is a trusted source of nonpartisan, high-quality work, demand for our work is high. We receive hundreds of requests each year to work with about 90 percent of standing committees. Congress also includes provisions for hundreds of studies in legislation and related committee reports. For example, in the 2023 National Defense Authorization Act alone, Congress required 158 GAO reviews. Congress also often asks us to provide expert witnesses at congressional hearings on a wide range of topics such as DOD's F-35 Joint Strike Fighter program, VA and DOD suicide prevention efforts, and the Paycheck Protection Program (see fig. 1.)

Figure 1: Selected Testimony Topics, Fiscal Year 2022

Goal 1: *Address Current and Emerging Challenges to the Well-being and Financial Security of the American People*

- Increasing Paycheck Protection Program Loan Access for Smaller and Underserved Businesses
- Increasing Focus on Access to Mental Health Care
- Increasing the Number of Electric Vehicles in the U.S. Postal Service and Federal Government
- Addressing Bureau of Indian Education Management Weaknesses
- Enhancing DOD and VA Suicide Prevention Efforts
- Strengthening Federal Agency Efforts and Addressing Challenges Repatriating Cultural Items for Tribes
- Improving FAA's Efforts to Address Community Concerns on Aircraft Noise
- Addressing Inaction on Coal Operator Self-Insurance that Increases Financial Risk to Trust Fund
- Improving Opportunities for Minority- and Women-Owned Asset Managers
- Improving DOD's Monitoring of Provider Qualifications and Competence
- Monitoring Efforts to Implement COVID-19 Recommendations and First Step Act at Federal Prisons
- Improving Reform Efforts at the National Weather Service
- Leveraging VA Partnerships to Address VA Health Care Facility Needs

Goal 2: *Respond to Changing Security Threats and the Challenges of Global Interdependence*

- Identifying and Addressing Barriers to Receiving Federal Disaster Recovery Assistance
- Facing Uncertainties of DOD's F-35 Sustainment Strategy May Limit Military Services Achieving Missions
- Helping HUD Focus on Data to Ensure Vulnerable Populations Receive Disaster Block Grant Funds
- Addressing Biodefense National Strategy and Programmatic Challenges
- Improving DOD's Acquisition of Space Systems
- Addressing Continued F-35 Joint Strike Fighter Cost Growth and Schedule Delays
- Ongoing Challenges Could Jeopardize Navy's Ability to Improve Public Shipyards
- Implementing FISMA Cybersecurity Requirements among Agencies
- Improving Missile Defense Acquisition Processes
- Addressing Oversight Challenges of the Military Housing Privatization Initiative
- Prioritizing the Nation's Critical Infrastructure

Goal 3: *Help Transform the Federal Government to Address National Challenges*

- Addressing Challenges in NASA's Moon Landing Plans
- Monitoring Federal Information Technology through Biannual Scorecards
- Reducing Freedom of Information Act Backlogs at Selected Agencies
- Increasing Confidence in Public Health Research by Addressing Political Interference
- Sharing Lessons Learned to Inform Future Space Telescopes
- Applying Lessons from Ongoing NASA Major Acquisitions to Improve Future Outcomes
- Identifying IRS Audit Trends for Individual Taxpayers
- Understanding the Federal Use and Privacy Implications of Facial Recognition Technology
- Highlighting Need for Continued Scrutiny of Agency Proposals for the Technology Modernization Fund
- Sharing Initial Observations on Effects of States' Expanded Authority on Remote Sales Tax
- Ensuring Transparency of Judicial Decision-making on Patents
- Enhancing Data on Opportunity Zones Investment Activities and IRS Challenges Ensuring Compliance

Source: GAO. | GAO-900536

Congress regularly uses the results of GAO's work to inform its legislative decisions. For example, the 2023 National Defense Authorization Act and the Consolidated Appropriations Act

included 60 directives to spur agency action on GAO's recommendations. This includes directing the Department of Transportation to develop a national aviation-preparedness plan for communicable diseases, as we previously recommended.

GAO uses its signature bodies of work as strategic tools to help highlight the most critical issues for congressional attention. These signature series include our biennial High-Risk report and our annual reports on Duplication and Cost Savings. These reports have gotten results. For example, over the past 17 years, progress in addressing issues that we have raised in the High-Risk series has resulted in, on average, \$40 billion in financial benefits per year and key operational improvements, such as the use of more sophisticated satellites for weather forecasting.

Through the Duplication and Cost Savings series, we have made 1,885 recommendations to Congress and executive branch agencies. As of April 2023, 73 percent of these recommendations were fully or partially implemented, resulting in about \$600 billion in financial benefits. To help highlight further opportunities for cost savings or revenue enhancement, the annual reports also include a table listing specific actions that could each generate over \$1 billion in financial benefits.

Figure 2 provides a summary of the range of GAO's services.

Figure 2: Evolution of GAO Services

Since its creation in 1921, GAO has evolved in response to the growing size and scope of the federal government. Today, GAO primarily reviews the efficiency and effectiveness of federal programs and agencies, identifies areas at risk for waste, fraud, abuse, and mismanagement or in need of transformation. We have also become a leading voice in cybersecurity oversight and more expansive in science and technology work for Congress. As these bullets illustrate, GAO is a force-multiplier for Congress.



Evaluating government performance. These assessments represent the majority of GAO's work, and result in hundreds of recommendations each year to improve government operations and billions in financial benefits. Agencies typically implement 75 percent or more of GAO's recommendations, consistently resulting in over \$50 billion in financial benefits and over 1,200 program and operational benefits each year. Congress has adopted 80 percent of GAO's suggestions for it to act.



Conducting real-time analyses. From bi-monthly reporting on the implementation of economic stimulus programs and the Troubled Assets Relief Program during the global financial crisis to providing monthly briefings on its oversight of the federal response to the COVID-19 pandemic, GAO gathers information in real time, from its source. In addition, we offer informal, quick turnaround, technical assistance to provide just-in-time information to Members and committees.



Conducting technology assessments and technical guides. We assess science and technology breakthroughs, along with the opportunities and risks they present to the nation. Our goal is to conduct in-depth analyses on emerging issues and provide policymakers with insight into key technologies, including context, status, benefits and challenges, and policy options.



Improving the government's financial management with audits and investigations. GAO conducts financial and other management audits to determine whether public funds are spent efficiently, effectively, and in accordance with applicable laws. We conduct the annual audit of the U.S. government's consolidated financial statements as well as the audits of the financial statements for certain federal agencies such as IRS and FDIC. We also set generally accepted auditing standards for audits of government funds and internal control standards for managers across government. In addition, GAO conducts investigations to assess whether illegal or improper activities are occurring.



Providing legal decisions and other work. GAO issues decisions on appropriations law and bid protest of government contract awards. We also issue decisions on whether an agency action is a rule is subject to Congressional review and alert Congress to vacant executive positions exceeding legal limits.

Source: GAO (analysis) and Icons-Studio/stock.adobe.com (icons). | GAO-900536

Ongoing Efforts to Modernize our Products and Services

We have a number of recent, ongoing, or planned, efforts to modernize our products and services to continue to meet congressional clients' needs consistent with many of the Select Committee's recommendations.

- Over the last several years, we introduced several quick-read products that synthesize information relevant to current or emerging issues, generally no more than two pages, for the busy reader. Examples include:
 - Our "[Science and Tech Spotlights](#)" explain emerging science and technology—such as brain-computer interfaces and generative Artificial Intelligence (AI)—and highlight the associated opportunities challenges and relevant policy considerations.

- We developed “Snapshots” to summarize bodies of work in other policy areas and highlight open recommendations. For example, we have issued Snapshots on DOD and the Intelligence Community’s preparedness for biological threats and the federal government’s disaster assistance efforts.
- All reports have a “Fast Facts,” a brief summary of our findings and recommendations. We also use podcasts, blogs, and social media to draw attention to our work.
- We are currently implementing our new Digital Strategy that aims to innovate and produce more accessible and user-friendly content across digital devices. Consistent with this strategy, we already issue signature products, like the High Risk Report, in a digital-first format. We have also launched a pilot to make traditional reports more mobile-friendly as well.
- In May 2023, GAO brought on board a new Chief Information Officer (CIO), who will lead GAO’s information technology modernization efforts. Prior to joining GAO, the CIO served in similar senior leadership roles at large executive branch agencies for over two decades. GAO also recently hired an experienced Deputy CIO as well.
- We have increased congressional outreach about our ability to provide technical assistance to individual Members and congressional committees. Technical assistance is quick-turnaround, informal assistance on discrete topics. Examples of this assistance include reviewing draft legislation, analyzing publicly available data, providing congressional hearing support, or briefing Hill staff on the workings of a particular federal program or technical issue. Technical assistance requests have increased as more Members and committees are made aware of this service.
- In July 2023, GAO hired its first Chief Data Officer (CDO). The CDO will develop and implement best in class data strategy, management, and governance in pursuit of digital innovation, reduced costs, improved timeliness, and ultimately more opportunities for cost savings. For example, an initial project involves consolidating our data catalogs and upgrading our tools so that analysts have better visibility into data availability.
- GAO is launching its new Enterprise Content Management strategy to modernize how we gather, share, and retain information and documents obtained from audited agencies. Analysts will have a robust set of tools to use in carrying out their audits, which should drive audit efficiency and timely reporting to Congress.
- To help ensure we obtain timely, detailed, and sufficient information from audited agencies, we enhanced GAO’s strategies for addressing access to information challenges as soon as they arise. Our strategy emphasizes timely elevation of issues to agency senior officials by GAO’s most senior officials, including myself and the General Counsel as well as our congressional clients.

Factors Contributing to GAO’s Impact

Understanding Congressional Priorities and Needs and Evolving National Issues

GAO conducts ongoing outreach to our congressional clients to both understand their priorities and make them aware of our services, capabilities, and work. Our senior executives conduct

annual outreach to congressional staff to discuss the committees' legislative and oversight priorities and our work. These executives then conduct regular, ongoing outreach to understand how the committees' priorities may be evolving and to ensure that we are meeting the committee's informational needs.

GAO also conducts special outreach at the beginning of each Congress to make sure new Members and staff are aware of GAO's role and services. For example, in early 2023, we emailed new Member offices and included an introductory video about GAO's work, services, and impact. We subsequently provided a more tailored outreach to these Members on our science and technology work that aligned with their new committee portfolios.

We also conduct periodic outreach on specific topics, like science and technology. For instance, in the spring of 2022 and 2023, we met with staff from 13 committee and 11 Member offices about our science and technology capabilities. We sought to make staff aware of our science and technology work and how they could use or request work in this area. We also solicited ideas for emerging topics we should explore.

I also meet with the Chairs and Ranking Members of congressional committees to discuss their committee work and priorities; how GAO's work can support them in their committee assignments; and any feedback and suggestions they have for GAO.

Coupling the information that we obtain through ongoing outreach with our strategic plan, we aim to develop a shared work agenda with the committees. In addition to laying out strategies to accomplish our mission, our strategic plan identifies key emerging challenges and opportunities facing the nation. For example, our strategic plan, as far back as 2000, has identified opportunities and challenges of technological advances with subsequent plans highlighting key issues like quantum computing and nanotechnology in 2010 and AI in 2018.

AI remains a top priority for many congressional committees and offices. In meeting our congressional clients' need for information on AI's promise and risks, we have developed a robust body of work on this topic. For example, we have examined AI's use in facial recognition technology, deepfakes, health care, automated trucking, and money laundering. In recognition of the opportunities and risks of AI, in 2021, GAO's Innovation Lab and GAO's Center for Strategic Foresight led the development of an AI Accountability Framework. This framework identifies key practices to help ensure accountability and responsible AI use by federal agencies and other entities involved in the design, development, deployment, and continuous monitoring of AI systems. In addition, GAO has planned two technology assessments and one audit on generative AI, intended to gain insight into commercial development, human and environmental effects, and agencies' research and implementation efforts.

In addition to conducting outreach on congressional priorities, we continually seek feedback on the work that we provide Congress, consistent with recommendations from the Select Committee. Through a client feedback survey, we seek feedback on the usefulness, clarity, and timeliness on each product that we issue. We also periodically undertake extensive, systematic efforts to collect feedback; our most recent efforts resulted in 20 recommendations we are currently implementing to improve client services, such as a new tip sheet for staff on principles and helpful practices for working with congressional staff.

While we have a good understanding of congressional priorities and informational needs, we continually look for opportunities to enhance our efforts as the Select Committee recommended. Some recent, ongoing, or planned efforts including the following.

- To make it easier for congressional staff to access our services, experts, and work, we revamped our “For Congress” webpage. This one-stop page is designed to contain everything that a staff person may want to know about GAO or our services—from contact information for all GAO subject matter experts (searchable by topic) to how to request a GAO study or legal decision.
- We modernized our client feedback survey instrument. The survey is now mobile-friendly and the survey questions have been streamlined for ease of use.
- We collaborated with the House’s Office of the Chief Administrative Officer to deliver a “GAO 101” training this spring, which featured the Comptroller General. We also worked with the Congressional Staff Academy to offer seminars in 2022 on AI, blockchain, and food safety and security policy.
- We are currently working with the full committee to secure office space in a House building. Having space on site will offer a number of benefits, including more visibility with congressional staff, increased opportunities for impromptu consults, and space for in-person meetings or training sessions.
- We are currently updating our protocols for legal decisions to help ensure that we are meeting Congress’ need for timely information. These updates will reflect feedback from committees and Members and will outline key touch points and status updates on our work.

Moving forward, as we continue to evolve our congressional outreach we would appreciate this subcommittee’s support in securing our in-person participation in the New Member Orientation at the beginning of each Congress. We would also appreciate your help in making the link to GAO on the House and Senate intranet sites more prominent. Both actions will further raise Members and staff’s awareness about how GAO can help them carry out their work.

Recruiting and Retaining a Talented, Diverse, Motivated Multi-Disciplinary Workforce

GAO’s diverse, dedicated and talented workforce has policy and programmatic expertise that spans the entire federal government. GAO has deep institutional, subject matter knowledge of federal agencies, programs and operations from decades of work. We also possess a rich array of technical expertise in many disciplines and fields. Our staff have degrees in law, engineering, information technology, economics, public policy, social sciences, physical and life sciences, accounting, contracts and acquisition, national security policy, and international relations, among others. For example, our Health Care team has three nurses on staff to help with the clinical aspects of some audit work. Our Science, Technology Assessment and Analytics (STAA) team has an array of scientists along with civil, electrical, chemical, and systems engineers who provide expertise on technical matters. About three-fourths of our analyst and attorney community have post-graduate degrees.

GAO’s 3,500 staff are located in headquarters in Washington, D.C. and 11 offices throughout the country. This decentralized structure allows us to be co-located with key federal operations, such as NASA and Army operations in Huntsville, AL; Navy operations in Norfolk, VA; and Air Force operations in Dayton, OH. It also allows us to draw on the diverse backgrounds of our staff and recruit and retain staff from across the country. We also use the geographical diversity of our staff to meet congressional needs. For example, our staff located throughout the country are visiting 30 sites for our mandated work on community project funding. GAO’s workforce also

reflects the American public: in fiscal year 2022, women and people of color made up about 58 percent and 36 percent of the GAO workforce, respectively.

We use a national recruiting strategy to attract and hire our talented and diverse workforce. We have longstanding relationships with university staff and professors at about 70 schools across the country, and professional organizations nationwide that we collaborate with throughout the year to attract and hire high-performing, skilled, and diverse talent. We promote job vacancies through job posting platforms, social media posts, recruiting materials, job fairs, and other recruiting events. We also have a robust intern program that draws undergraduate and graduate students from top universities from across the country. The program serves as an important recruiting mechanism; most of the people that we hire each year come from our intern program.

After we recruit and hire candidates, we tend to keep them. We consistently maintain low attrition rates— about 6 percent, on average, over the past 6 years. Our low attrition rate contributes to our significant institutional knowledge of the programs we audit.

We are able to recruit and retain highly qualified staff because we offer an important and meaningful public service mission. Our staff believe in the mission of improving government performance and operations, and they get to work on challenging, topical, and important public policy issues. They perform this work in an organization that is committed to creating a workplace where employees feel valued, respected, and treated fairly. We also offer a number of important employee benefits for today's worker, such as telework.

As a result, GAO staff morale and job satisfaction is high. In our fiscal year 2022 employee feedback survey, just over 90 percent of staff reported that they would recommend GAO as a good place to work. GAO is recognized by the Partnership for Public Service as one of the best places to work in the federal government, consistently ranking among the top four mid-size federal agencies during my 15-year tenure so far in the Comptroller General position. For the past three years, GAO has ranked first among mid-size agencies. We also have consistently ranked among the top mid-size agencies for our commitment to diversity, equity, and inclusion. Our reputation as an employer of choice enhances our ability to attract and retain the talent at all levels needed to meet congressional needs.

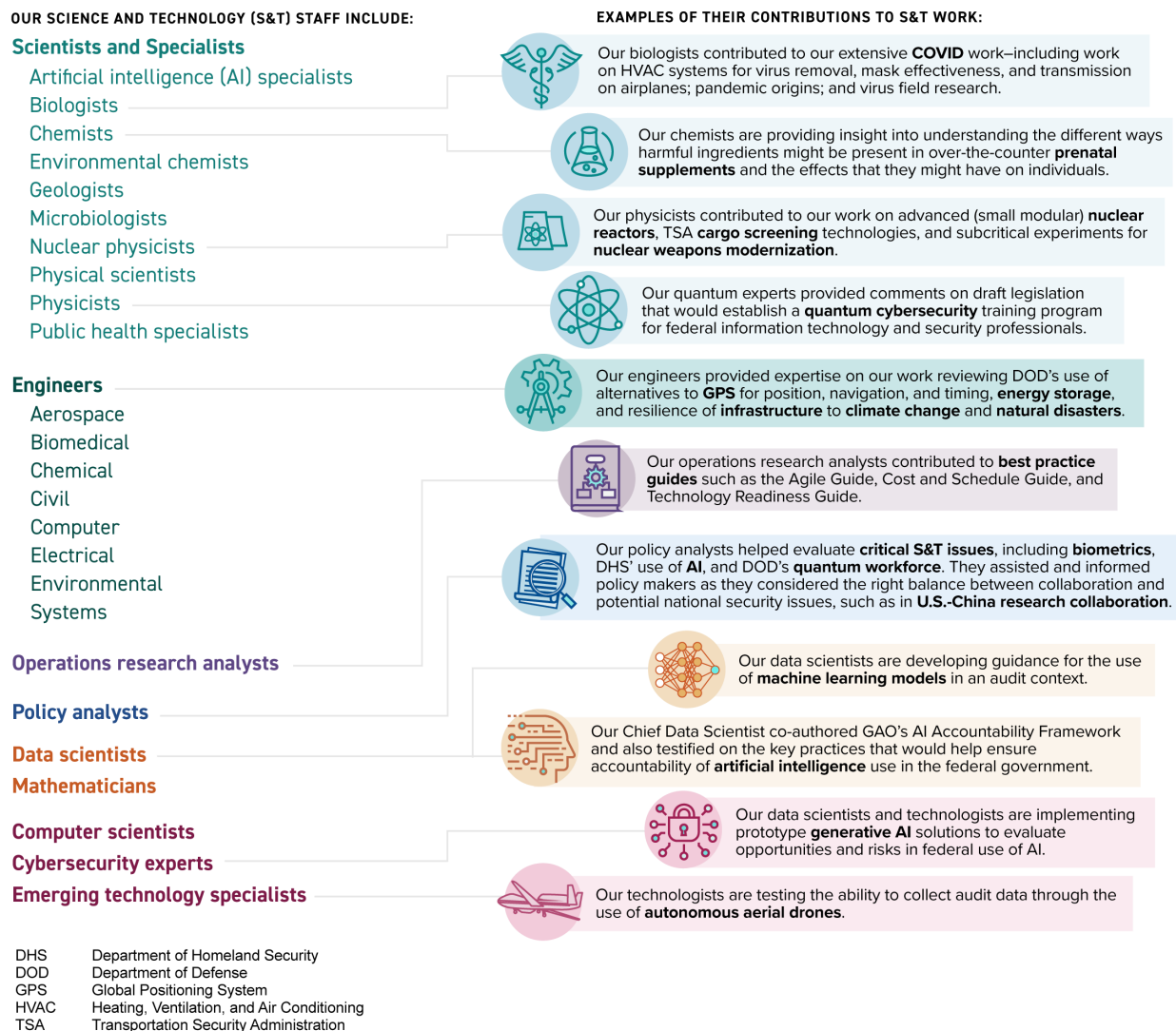
Growing our Science, Technology and Cybersecurity Expertise to Meet Evolving Needs

Science and Technology

To meet congressional needs, we have significantly expanded our science and technology and cybersecurity expertise. This has allowed us to meet growing demand for work in these areas. Our continued growth is consistent with congressional encouragement that we continue to develop and expand our science and technology capabilities.

Since 2019, we have increased staff resources in our Science, Technology Assessment and Analytics (STAA) team from 49 to 156 employees, as of September 2023. Collectively these staff hold over 100 advanced STEM-related degrees, including 38 STEM PhDs, as of September 2023. These degrees are in a variety of fields such as microbiology, quantum mechanics, nuclear physics, public health, chemical engineering, mathematics, physical sciences, and digital sciences. (See fig. 3.)

Figure 3: Expertise of Science, Technology Assessment and Analytics Team Staff



Source: GAO analysis. | GAO-23-900536

Since 2019, we have issued 44 Science and Tech Spotlights, which distill complex issues into a two-page summary. For example, we have issued Spotlights on generative AI, quantum technologies, and non-fungible tokens. During this period, we also issued 22 in-depth Technology Assessments on various topics, including regenerative medicine, fusion energy, and quantum computing and communications. (See fig. 4). We also issued a series of reports, in collaboration with the National Academy of Medicine that examined the potential use of AI in healthcare. These reports focused on accelerating drug development; medical diagnostics; and the provision of healthcare.³

³The National Academy of Sciences (NAS) is a private, non-profit society of distinguished scholars. Established by an Act of Congress, NAS is charged with providing independent, objective advice to the nation on matters related to science and technology and is composed of the National Academy of Sciences, the National Academy of Engineering, and the National Academy of Medicine.

Figure 4: Examples of Recently Issued Reports on Critical Science and Tech Issues (including Technology Assessments)



U.S. GOVERNMENT ACCOUNTABILITY OFFICE
SCIENCE, TECHNOLOGY ASSESSMENT, AND ANALYTICS

FALL 2023

- Audit report
- Spotlight
- ▲ Technology Assessment

Recently issued reports on critical S&T issues

Biomedical and Health Innovations

- ▲ **Economic Incentives for Therapeutic Development for Potential Pandemics**, [GAO-23-105847](#)
- ▲ **Regenerative Medicine**: Therapeutic Applications, Challenges, and Policy Options, [GAO-23-105430](#)
- **Synthetic Biology**, [GAO-23-106648](#)
- ▲ **Pandemic Origins**: Technologies and Challenges for Biological Investigations ([GAO-23-105406](#)); and related Testimony, ([GAO-23-106562](#))
- ▲ **Artificial Intelligence in Health Care**: Benefits and Challenges of Machine Learning Technologies for Medical Diagnostics, [GAO-22-104629](#)
- **Brain-Computer Interfaces**, [GAO-22-106118](#)
- **Long COVID**, [GAO-22-105666](#)

Computing and Communications

- **Generative AI**, [GAO-23-106782](#)
- **Artificial Intelligence**: Key Practices to Help Ensure Accountability in Federal Use, [GAO-23-106811](#)
- **Securing Data for a Post-Quantum World**, [GAO-23-106559](#)
- **Digital Twins—Virtual Models of People and Objects**, [GAO-23-106453](#)
- **Zero Trust Architecture**, [GAO-23-106065](#)
- ▲ **Blockchain**: Emerging Technology Offers Benefits for Some Applications but Faces Challenges [GAO-22-104625](#)
- **Extended Reality Technologies**, [GAO-22-105541](#)
- ▲ **Quantum Computing and Communications**: Status and Prospects, [GAO-22-104422](#)
- **Artificial Intelligence**: An Accountability Framework for Federal Agencies and Other Entities, [GAO-21-5195P](#)

Defense and Homeland Security

- ▲ **Chemical Weapons**: Status of Forensic Technologies and Challenges to Source Attribution, [GAO-23-105439](#)
- **Directed Energy Weapons**, [GAO-23-106717](#)
- **Counter-Drone Technologies**, [GAO-22-105705](#)
- **Facial Recognition Technology**: Current and Planned Uses by Federal Agencies, [GAO-21-526](#)
- ▲ **Forensic Technology**: Algorithms Strengthen Forensic Analysis, but Several Factors Can Affect Outcomes, [GAO-21-4355P](#)
- **Biodefense**: DHS Exploring New Methods to Replace BioWatch and Could Benefit from Additional Guidance, [GAO-21-292](#)

Environment, Energy, and Agriculture

- ▲ **Utility-Scale Energy Storage**: Technologies and Challenges for an Evolving Grid, [GAO-23-105583](#)
- ▲ **Fusion Energy**: Potentially Transformative Technology Still Faces Fundamental Challenges, [GAO-23-105813](#)
- ▲ **Decarbonization**: Status, Challenges, and Policy Options for Carbon Capture, Utilization, and Storage, [GAO-22-105274](#)
- ▲ **Large Constellations of Satellites**: Mitigating Environmental and Other Effects, [GAO-22-105166](#)
- ▲ **Persistent Chemicals**: Technologies for PFAS Assessment, Detection, and Treatment, [GAO-22-105088](#)
- **Deep-Sea Mining**, [GAO-22-105507](#)

Federal R&D Oversight and Cross-Cutting R&D

- **Federal Research**: NIH Could Take Additional Actions to Manage Risks Involving Foreign Subrecipients, [GAO-23-106119](#)
- **Priority Open Recommendations**: Office of Science and Technology Policy, [GAO-23-106571](#)
- **National Institutes of Health**: Better Data Will Improve Understanding of Federal Contributions to Drug Development, [GAO-23-105656](#)
- **Small Business Research Programs**: Reporting on Award Timeliness Could Be Enhanced, [GAO-23-105591](#)
- **Scientific Integrity**: HHS Agencies Need to Develop Procedures and Train Staff on Reporting and Addressing Political Interference, [GAO-22-104613](#)
- **National Science Foundation**: Better Reporting Could Give More Visibility into Gains in States' Research Competitiveness, [GAO-22-105043](#)

Manufacturing and Innovation

- **Semiconductor Supply Chain**: Policy Considerations from Selected Experts for Reducing Risks and Mitigating Shortages, [GAO-22-105923](#)
- **Advanced Manufacturing**: Innovation Institutes Report Technology Progress and Members Report Satisfaction with Their Involvement, [GAO-22-103979](#)

Patent and Intellectual Property

- **Patent Trial and Appeal Board**: Increased Transparency Needed in Oversight of Judicial Decision-Making, [GAO-23-105336](#)
- **Department of Energy**: Improved Performance Planning Could Strengthen Technology Transfer, [GAO-21-202](#)
- **Biomedical Research**: NIH Should Publicly Report More Information about the Licensing of Its Intellectual Property, [GAO-21-52](#)

Space and Transportation

- **Drone Swarm Technologies**, [GAO-23-106930](#)
- **Advanced Batteries**, [GAO-23-106332](#)
- **Satellite Licensing**: FCC Should Reexamine Its Environmental Review Process for Large Constellations of Satellites, [GAO-23-105005](#)
- ▲ **Defense Navigation Capabilities**: DOD is Developing Positioning, Navigation, and Timing Technologies to Complement GPS, [GAO-21-320SP](#)

S&T Workforce

- **National Institute of Standards and Technology**: Improved Workforce Planning Needed to Address Recruitment and Retention Challenges, [GAO-23-105521](#)
- **Digital Services**: Considerations for a Federal Academy to Develop a Pipeline of Digital Staff, [GAO-22-105388](#)
- **High-Performance Computing**: Advances Made Towards Implementing the National Strategy, but Better Reporting and a More Detailed Plan Are Needed, [GAO-21-104500](#)
- **Science and Technology**: Strengthening and Sustaining the Federal Science and Technology Workforce, [GAO-21-461T](#)

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GAO's Innovation Lab, housed within STAA, leverages advanced analytic capabilities to bolster the federal accountability community. For example, the Lab helped pioneer the ID Verification Controls Simulator, an interactive web-based resource that helps federal agencies analyze controls in their programs and prevent improper payments. The Lab is also developing a generative AI prototype with the same basic capabilities as those found in industry. This AI

prototype could summarize GAO products on specific topics, which will help us efficiently use and digest past work and target outreach to congressional clients.

To ensure STAA continues to attract the diverse interdisciplinary expertise required for evolving science and technology needs, we plan to leverage two additional flexible hiring authorities moving forward. First, we are strengthening an entry-level pathway to hire data science students through undergraduate and graduate internships. Second, for more advanced and specialized expertise needed on a temporary basis, we are pursuing the appointment of Science and Technology Fellows. Both of these flexible hiring authorities could help STAA in supporting requests from Congress.

Cybersecurity

GAO has also worked to expand its cybersecurity expertise. We have a decades-long track record of informing congressional decision-making on cybersecurity and information technology issues. Since 2004, the Information Technology and Cybersecurity team (ITC) has made about 8,400 recommendations to agencies to improve their information technology and cybersecurity operations and programs. Of these recommendations, 82 percent have been closed/implemented.

In 2019, we created our Center for Enhanced Cybersecurity within ITC, bringing additional focus and capacity to GAO's work. This Center is a dedicated group of cyber professionals who dig deep into the technical details of systems and networks to get to the bottom of persistent cybersecurity weaknesses within federal agencies as well as helping to ensure that the nation's critical infrastructure is protected. This critical infrastructure includes systems and assets so vital to the nation that their incapacitation or destruction would be debilitating to U.S. security, economic stability, or public health and safety.⁴ Since 2019, we have increased ITC's staff resources from 172 to 206 employees.

GAO will continue to assess multiple cybersecurity priorities. We are currently evaluating the execution of the Administration's recently announced national cybersecurity strategy and the need for sustained leadership to perform effective oversight. In fiscal years 2023 and 2024, GAO's cybersecurity assessments will include federal efforts to enhance cybersecurity protections in areas such as the implementation of zero-trust architectures, the deployment of sophisticated systems to monitor federal networks for intrusions and other malicious activity, and strategies for leveraging AI to enhance cybersecurity and for addressing cyber risks to operational technology.

Leveraging External Networks

GAO continues to develop and leverage external networks to meet Congress's information needs. Our well-developed professional networks allow us to avoid duplication of effort, identify emerging issues, and most importantly, connect with subject matter experts for our audit work and other technical, strategic topics. For example, at the start of every audit, we reach out to officials with the Congressional Budget Office and Congressional Research Service to make

⁴The 16 critical infrastructure sectors are Chemical; Commercial Facilities; Communications; Critical Manufacturing; Dams; Defense Industrial Base; Emergency Services; Energy; Financial Services; Food and Agriculture; Government Facilities; Health Care and Public Health; Information Technology; Nuclear Reactors, Materials, and Waste; Transportation Systems; and Water and Wastewater Systems

sure we are not duplicating efforts. Similarly, we work closely with the Inspectors General and other audit communities at the federal, state, and local levels to leverage each other's work and share insights. Through our networks, we also tap public and private experts to get their input when we are developing guidance, such as our [Technology Assessment Design Handbook](#), [Cost Estimating and Assessment Guide](#), and [Technology Readiness Assessment Guide](#). By seeking input and sharing drafts for public comment, we work to ensure that our guidance is comprehensive and reliable and reflects leading private and public sector practices.

Our network includes officials and experts from government, nonprofit, and private sector entities, academic institutions, and associations. For example, for over a decade, we have maintained a standing contract with the National Academy of Sciences; this enables us to quickly engage the Academy when we need outside expert help with our work.

Our network is also global. Through our leadership and participation in the International Organization of Supreme Audit Institutions (INTOSAI), we have contacts at national audit offices from over 190 countries. This network is especially important given today's interconnected world. GAO participates in multiple INTOSAI committees and currently chairs the Working Group on Financial and Economic Stability.

We also consult a number of advisory boards for various issues. For example, the Polaris Council brings together exceptional science, technology, and policy leaders and experts who advise the Chief Scientist and others on emerging science and technology issues. The Educators Advisory Panel advises me and other GAO executives on existing and emergent public policy issues as well as strategies, best practices, and trends related to recruiting, hiring, and developing a talented workforce. The panel is composed of deans and highly qualified professors from a range of public and private academic institutions.

Finally, our network includes eight fellows who are experts in foresight and futures thinking from around the world. They are part of our Center for Strategic Foresight, which was created in 2018 to provide foresight on emerging issues. Collectively, the fellows' backgrounds span government, the private sector, non-governmental organizations, academia, and international organizations.

Chairwoman Bice and Ranking Member Kilmer, this concludes my prepared statement. I would be pleased to answer the subcommittee's questions at the appropriate time.