

Report on Actions Taken to Implement Gold Standard Science



Consumer Financial
Protection Bureau

Table of contents

1. Introduction.....	3
1.1 Background.....	3
1.2 Development of Procedures Pursuant to Section 3 of the EO	4
2. Gold Standard Science	5
2.1 <i>Descriptions of how the agency is addressing each of the tenets of Gold Standard Science, including how these tenets are reflected in the agency’s culture, funding opportunities, budget and other resource allocations, award selection and reporting, and other agency actions relevant to the conduct and management of scientific activities.....</i>	<i>5</i>
2.2 <i>Plans for providing training and resources to ensure agency personnel understand and adhere to the tenets of Gold Standard Science, including the use of AI-driven tools when practicable for efficient compliance.....</i>	<i>13</i>
2.3 <i>Development of standardized metrics and evaluation mechanisms to assess adherence to these tenets and their impact on scientific quality, incorporating technology when practicable to facilitate data collection and analysis.</i>	<i>13</i>
2.4 <i>Discussion of how technology will be leveraged for implementing GSS.</i>	<i>14</i>
2.5 <i>Descriptions of any challenges encountered in the implementation of GSS.....</i>	<i>14</i>

1. Introduction

1.1 Background

On May 23, 2025, President Trump issued Executive Order 14303, entitled “Restoring Gold Standard Science” (EO), which directs federal agencies to use Gold Standard Science in the conduct and management of activities that result in the production and use of scientific information.¹ Pursuant to Section 3 of the EO, on June 23, 2025, White House Office of Science and Technology Policy (OSTP) Director Michael Kratsios issued guidance to federal agencies on incorporating Gold Standard Science tenets into their scientific research activities (OSTP Director’s Guidance or Guidance), requiring federal agencies to submit to OSTP and publish on their websites a report on how the agencies plan to implement the Gold Standard Science (GSS) requirements by August 22, 2025.² The EO directs federal agencies to “promptly update applicable agency policies governing the production and use of scientific information, including scientific integrity policies.”

The Consumer Financial Protection Bureau (CFPB) is committed to the principles of Gold Standard Science and to fulfilling these principles by developing a policy to ensure that the CFPB adheres to these directives. Therefore, in this report the CFPB describes its development of procedures and progress toward adopting policies to implement the OSTP Director’s Guidance and ensure adherence to the EO. More specifically, as directed by the OSTP, the CFPB addresses progress regarding:

- *... how the agency is addressing each of the tenets of Gold Standard Science, including how these tenets are reflected in the agency's culture, funding opportunities, budget and other resource allocations, award selection and reporting, and other agency actions relevant to the conduct and management of scientific activities.*
- *Development of standardized metrics and evaluation mechanisms to assess adherence to these tenets and their impact on scientific quality, incorporating technology when practicable to facilitate data collection and analysis.*
- *Plans for providing training and resources to ensure agency personnel understand and adhere to the tenets of Gold Standard Science, including the use of AI-driven tools when practicable for efficient compliance.*

¹ See <https://www.whitehouse.gov/presidential-actions/2025/05/restoring-gold-standard-science>

² See <https://www.whitehouse.gov/wp-content/uploads/2025/03/OSTP-Guidance-for-GSS-June-2025.pdf>

- *Discussion of how technology will be leveraged for implementing Gold Standard Science.*
- *Descriptions of any challenges encountered in the implementation of GSS.*

1.2 Development of Procedures Pursuant to Section 3 of the EO

Until the CFPB adopts formal policies and procedures governing the production and use of scientific information, CFPB staff are developing policies and procedures to help ensure that the scientific information produced and used by the CFPB, to the extent practicable, meets all GSS requirements. CFPB staff are also developing formal policies and procedures to ensure that the CFPB meets all GSS requirements as adapted to meet our unique mission, including encouraging the open exchange of ideas, consideration of different or dissenting viewpoints, and protection of CFPB employees from efforts that may deter consideration of alternative scientific opinions. For example, as part of this, the CFPB continues to evaluate and develop procedures for the application of the EO to the CFPB's supervisory and enforcement functions. Additionally, the CFPB is developing policies and procedures for addressing potential violations of GSS requirements.

The CFPB recognizes the importance of ensuring that its policies are robust and has undertaken actions to develop well-designed and responsive policies and procedures. To this end, the Office of Research convened a cross-Bureau working group to develop the implementation plan and this report in response to the OSTP Guidance, which includes reviewing current policies and procedures. The working group will develop and enhance formal policies and procedures in consultation with management and leadership across the CFPB, and propose to the CFPB Director (or Acting Director) for approval, policies that govern the production and use of scientific information.

2. Gold Standard Science

2.1 *Descriptions of how the agency is addressing each of the tenets of Gold Standard Science, including how these tenets are reflected in the agency’s culture, funding opportunities, budget and other resource allocations, award selection and reporting, and other agency actions relevant to the conduct and management of scientific activities.*

As defined in the EO, Gold Standard Science refers to science conducted in a manner that abides by nine key tenets, which are listed below. The tenets described in this report generally apply to scientific research conducted at the CFPB. Though definitions of research can vary across scientific disciplines and institutions, most CFPB research is generally *descriptive*, *inferential*, or both. *Descriptive* research generally aims to describe a population, product, or phenomenon of interest, often without a theoretical framework—for example, ascertaining what percentage of the population has experience using a financial product. *Inferential* research^{3,4} generally applies theories and/or specific subject matter expertise to test specific hypotheses—for example, conducting hypothesis or model testing to determine whether two groups differ significantly on a key characteristic, or whether an intervention had a causal effect on an outcome of interest. Often, descriptive and inferential research are conducted in tandem because they can serve complementary purposes. However, some of the standards described in the tenets below cannot apply to both types of research. For example, standards related to falsification of hypotheses would not apply to exploratory descriptive or qualitative research. Therefore, the CFPB expects staff to apply the tenet standards as appropriate to the type of scientific research.

The OSTP Director’s Guidance provides that “[a]gencies are encouraged to adapt implementation to their unique missions while upholding scientific merit and excellence.”

³ Barnard GA. Statistical inference. Journal of the Royal Statistical Society. Series B (Methodological). 1949 Jan 1;11(2):115-49.

⁴ Fisher RA. The logic of inductive inference. Journal of the Royal Statistical Society. 1935 Jan 1;98(1):39-82.

Consistent with that, the application of the tenets to specific workstreams will depend on the specific nature of the work. For example, CFPB staff continue to evaluate and develop procedures for the application of the EO's tenets to the CFPB's supervisory and enforcement functions.

Tenet 1: Reproducible

To advance reproducible and replicable science, CFPB staff are developing policies and procedures to prioritize disciplined scientific methods and experimental designs, as appropriate. CFPB staff expect that approved research projects would be required to include components appropriate to the research purpose such as: clearly articulated research questions; clear and justifiable protocols; robust statistical methods and validated methodologies; adequate sample sizes; appropriate controls where appropriate; and comprehensive documentation. In addition, CFPB staff expect that surveys will include existing validated measures and previously fielded questions to support replication, as well as newly developed survey questions as appropriate to the research questions.

In addition, the CFPB is developing policies to build upon existing practices to encourage the depositing of well-documented code into publicly accessible repositories, such as GitHub, and assessing whether more data can be made public and shared through the Public Data Inventory page of the CFPB's website.⁵ The CFPB will rely upon the internal Data Release Group in this effort. The CFPB expects to recommend that code and data that are made publicly available will be accompanied by comprehensive documentation sufficient to facilitate reproducibility and support replication. Documentation would likely include components such as: a summary of the research methods and software tools, experimental protocols, details of the data and sample, an index of the computer programs and execution order to reproduce the results, and a high-level summary of each program. For research projects that include primary data collection, the documentation may also include sampling and recruitment materials, as well as the survey instruments and/or moderator guides.

The CFPB's staff recognition and awards program can promote adherence to this and all other tenets. For example, the program can incentivize continued reproducibility and replicability by recognizing staff whose work exemplifies this tenet. Additional resources to aid in reproducible and replicable science, such as training and shared infrastructure, are discussed in the tenets and training section below.

⁵ CFPB's Public Data Inventory is available at <https://www.consumerfinance.gov/data-research/public-data-inventory>.

Tenet 2: Transparent

The CFPB recognizes that transparency in scientific research entails the open, accessible, and comprehensive sharing of all components of the research process—experimental protocols, methodologies, data, analytical tools, and findings—to enable stringent scrutiny, validation, and reuse by the scientific community and the public. The CFPB is developing policies and procedures to ensure that CFPB’s scientific research adheres to this tenet also recognizing that some research would not be made public as noted in the EO.

Complementing the CFPB’s commitment to reproducibility, the CFPB is developing procedures to ensure that, as appropriate, materials and processes needed to replicate CFPB scientific research studies are accessible and clearly reported for transparency, as appropriate. This includes elements discussed under reproducibility above, as well as disclosure of funding sources and potential conflicts of interest (see Tenet 9).

As noted above, the CFPB staff will develop procedures to encourage transparency in its research through sharing of data and source code as appropriate. This includes sharing metadata in the Federal data catalog (data.gov). To ensure accessibility and interoperability, the CFPB is committed to supporting standardized metadata formats and data sharing platforms. This includes ensuring that CFPB’s data inventory, available on data.gov, conforms to the OMB-approved standard metadata schema, W3C Data Catalog Vocabulary Version 3, known as the DCAT-US 3.0.⁶ The CFPB also uses existing internal Data Release Group processes to move towards standardization of supporting materials, such as codebooks and data dictionaries, that define metadata elements and accompany public use files released on CFPB’s Public Data Inventory.⁷ The CFPB also supports the evaluation of and appropriate response to Freedom of Information Act (FOIA) data requests.

For research involving primary data collection, CFPB staff comply with Paperwork Reduction Act (PRA) requirements, as overseen by the CFPB PRA Office. This compliance with PRA requirements supports transparency as it often includes notice to the public of the data collection activities and offers the public the ability to provide feedback on key elements of the research.

CFPB staff are considering how research transparency extends to peer and merit review processes. For example, as appropriate and feasible, the CFPB will consider procedures that

⁶ Office of Management and Budget Memorandum M-25-05, Phase 2 Implementation of the Foundations for Evidence-Based Policymaking Act of 2018: Open Government Data Access and Management Guidance (Jan. 15, 2015) outlines the requirements agencies must apply to comprehensive data inventories.

⁷ See <https://www.consumerfinance.gov/data-research/public-data-inventory>

disclose review criteria publicly and share reviewer comments with researchers.⁸ Also, as appropriate, CFPB contracts include a data rights clause and process that create a pathway to publication of contracted research.

Tenet 3: Communicative of Error and Uncertainty

The CFPB is formalizing and enhancing policies and procedures to ensure that communication of scientific information adheres to established best practices for communicating error and uncertainty in research processes and results. At a high level, these best practices can include communicating statistical and quantitative uncertainty and variability by, for example, reporting confidence intervals and/or standard errors.

Specific to quantitative research, effective and comprehensive uncertainty quantification entails communicating both inferential uncertainty (for example, the degree of noise or variability around statistical estimates) and outcome variability (for example, the distribution of outcomes on the measure of interest across and within participant subgroups).⁹ CFPB staff are developing policies and procedures to encourage presentation of both types of uncertainty when appropriate. These types of uncertainty together provide non-overlapping insights into research replicability (e.g., how noisy or precise an inference is) and generalizability or applicability (e.g., whether a newly discovered finding will scale up; whether an effect is large enough to have practical consequences).

Statistical uncertainty can also be conveyed in research reports via reporting formats that are appropriate for the analyses being reported. This can include, for example, reporting exact *p*-values for hypothesis tests in inferential research,¹⁰ measures of outcome variability in inferential and descriptive research (e.g., standard deviations and/or distributional properties), and qualitative summaries of effect size (e.g., how “small” or “large” a significant difference is, often in comparison with accepted benchmarks).¹¹ Descriptive research will be encouraged to include information about variability in the measures and samples. If subgroups are analyzed, variability reporting will be encouraged for subgroup analyses.

⁸ For examples of peer reviews previously made available, see <https://www.consumerfinance.gov/data-research/research-reports/peer-reviewed-reports>.

⁹ Zhang S, Heck PR, Meyer MN, Chabris CF, Goldstein DG, Hofman JM. An illusion of predictability in scientific results: Even experts confuse inferential uncertainty and outcome variability. *Proc Natl Acad Sci U S A*. 2023 Aug 15;120(33):e2302491120. doi: 10.1073/pnas.2302491120. Epub 2023 Aug 9. PMID: 37556500; PMCID: PMC10438372.

¹⁰ Aguinis H, Vassar M, Wayant C. On reporting and interpreting statistical significance and *p* values in medical research. *BMJ Evid Based Med*. 2021 Apr;26(2):39-42. doi: 10.1136/bmjebm-2019-111264. Epub 2019 Nov 15. PMID: 31732498; PMCID: PMC8005799.

¹¹ Kelley K, Preacher KJ. On effect size. *Psychological methods*. 2012 Jun;17(2):137.

Qualitative research often entails uncertainty and error considerations that are separate from those of quantitative research. Qualitative research is often exploratory and used to uncover rather than test hypotheses. CFPB staff are working on formal policies and procedures for qualitative research that staff expect would require clear research objectives, moderator guides with questions that align with objectives, and systematic analysis and reporting techniques. Overall, CFPB staff expect to recommend that limitations in data and analysis are clearly communicated, including any limitations on the generalizability of research findings.

Tenet 4: Collaborative and Interdisciplinary

CFPB research generally reflects a wide range of stakeholder expertise, methodologies, professional backgrounds, and voices supported by several cross-Bureau working groups and the CFPB's clearance process for external communications. In addition, different Offices and Divisions with different specializations take the lead in producing scientific information and research as appropriate.

The CFPB includes people with different training and experience, which fosters interdisciplinary collaboration. The Office of Research, for example, includes staff with training in several scientific disciplines, including economics, psychology, and marketing. CFPB staff more broadly include professionals with experience and training in the consumer finance industry, law, policy, scientific research, community affairs and engagement, education, and other fields. The CFPB has set up shared digital workspaces and interoperable software, with protocols for use, to aid collaboration for scientific research. The CFPB also collaborates with and obtains information from people and organizations outside the CFPB, including directly from consumers, other federal agencies, private sector firms, and non-profit organizations.

As part of the CFPB's broader commitment to transparency, collaboration, and reproducibility, the CFPB Enterprise Data and Analytics (EDA) team has supported the deployment of a shared cloud data infrastructure to enable cross-office access to analytical workflows, data transformations, and reusable logic. This environment provides a centralized workspace where teams can contribute to and leverage common code and curated data products, helping to reduce duplication and improve analytic consistency. The EDA team continues to explore ways to integrate scalable tools that facilitate interdisciplinary collaboration, reproducible research, and alignment with enterprise data governance practices. Where appropriate, the CFPB will incorporate technology to streamline data collection, standardize processing, and increase the transparency of analytic activities across the CFPB. The EDA team is also developing an AI governance strategy that will include structured reviews and interdisciplinary participation from across the CFPB to promote transparency, accountability, and responsible AI integration.

Tenet 5: Skeptical of its Findings and Assumptions

The CFPB is developing policies and procedures to promote a culture of constructive skepticism in the scientific research process, building upon current best practices. Effective skepticism requires researchers to employ robust validation methods, including the methods discussed in earlier tenets. The CFPB expects that the policies and procedures will encourage staff to conduct robustness and validation checks as appropriate, and that data and methodological limitations and the implications of those limitations are reported. Such policies would allow others to assess the validity and quality of research. Policies and procedures will encourage researchers to include literature reviews sufficient to assess the likely contribution of the research to the state of knowledge. Broad literature reviews can also promote skepticism by identifying competing hypotheses that might otherwise be overlooked. The CFPB also expects that policies and procedures will build upon the practice of having CFPB researchers present their early-stage work both internally and externally to diverse audiences to receive critical feedback, including at research conferences. CFPB staff will continue to explore additional innovative methods to promote constructive skepticism.

Tenet 6: Structured for Falsifiability of Hypotheses

The CFPB is developing policies and procedures to prioritize falsifiable research, primarily, by encouraging researchers to specify their hypotheses in research proposals and published projects, as appropriate. These hypotheses must be testable with the data and methods proposed. When the CFPB hosts future research conferences or research seminars, CFPB staff expect to recommend to organizers that they prioritize accepting papers that report open and transparent results (e.g., preregistered analyses; a full range of analyses including null or inconclusive results; heterogeneity and robustness analyses) and follow best practices for testing hypotheses.

CFPB staff are examining processes to allow for pre-registration of randomized experiments and field studies outside of existing processes, such as the Paperwork Reduction Act, where study protocols may be published or reviewed externally. In addition, CFPB staff expect to propose formal policies to encourage research that incorporates statistical techniques (e.g., equivalence testing) to determine whether a null result is sufficient to provide evidence for the absence of an effect or finding. When appropriate, research designs (including sampling and sample size calculations) would likely be expected to include consideration of how results can be interpreted if they produce a null or negative result. For example, in randomized experiments and field studies, statistical power calculations are conducted to ensure that studies are adequately powered to test specific hypotheses. Similarly, for study designs where a null (or result that can explicitly falsify a hypothesis) would be informative, CFPB staff expect to recommend formal

policies that will encourage researchers to consider what sample size would be necessary to obtain a precise null (or falsifying) result.

In some instances, it may be appropriate to publish exploratory analysis or other descriptive research. For these kinds of research projects, the CFPB expects that policies will require accurate descriptions, including transparent explanations of the data and methods used, and their limitations.

Tenet 7: Subject to Unbiased Peer Review

The CFPB does not participate in traditional peer-reviewed grant-making. However, aspects of standards from peer-reviewed grantmaking and publication processes can be incorporated at both the proposal and publication stages. CFPB staff are assessing the current processes for the review of CFPB research, which can include review by subject matter experts, those in the management chain, and where appropriate and available, by external experts through approved channels and policies. Additionally, when reviewing and awarding contracts, CFPB staff are expected to follow all Federal Acquisition Regulation requirements, as overseen by the CFPB Office of Finance and Procurement.

Separately, as is standard in all fields of science, CFPB research that is submitted for publication in peer-reviewed journals undergoes a rigorous review process by peer reviewers assigned by the journal before it can be published. Further disclosure of potential conflicts of interest are described in Tenet 9.

Tenet 8: Accepting of Negative Results as Positive Outcomes

The CFPB recognizes the importance of negative or null results as contributions to scientific knowledge and is developing formal policies and procedures that will promote the submission and dissemination of these research results. As discussed in Tenet 6, and where appropriate, CFPB staff will formalize and enhance policies and procedures to ensure that research designs at the CFPB should include consideration of how results can be interpreted if they produce a null or negative result. CFPB staff expect to design formal policies that encourage staff to maintain clear internal documentation of all methods and hypotheses that they have tested and the results of those tests. The CFPB also expects to adopt policies that will encourage staff to present negative or null research results during internal and external presentations of their early-stage work to diverse audiences to receive critical feedback.

CFPB staff expect that the formal compliance policies ultimately in place will include requirements for staff to, as appropriate, cite prior relevant research that has null or negative results and to consider research outside of the traditional academic publishing framework, potentially including unpublished working papers as a means of avoiding “publication bias” (i.e.,

null findings less likely to be published). The CFPB expects that policy will include encouraging research conference organizers to include research with null or negative results at future research conferences, so long as that research meets best practices for the type of research conducted.

Tenet 9: Without Conflicts of Interest

To ensure that research is conducted without conflicts of interest, the CFPB will review its current policies and procedures to ensure that policies require that all researchers, reviewers, and agency officials involved in the funding or performance of federal research will disclose in a comprehensive and standardized manner all financial, personal, or institutional interests in research proposals, publications, peer and merit reviews, and data repositories. Any such employees who have not already been doing so will be required to file financial disclosure reports electronically with the CFPB Ethics Office as part of the CFPB's financial disclosure program. All such employees will continue to comply with the CFPB Ethics Regulations requirement that they disclose and obtain written approval from their supervisor and concurrence from the CFPB Ethics Office prior to engaging in any outside employment or activities. The CFPB also expects staff to adhere to the stringent ethical standards set forth in the federal ethics statutes, the Standards of Ethical Conduct for Employees of the Executive Branch, and the Supplemental Standards of Ethical Conduct for Employees of the Bureau of Consumer Financial Protection (CFPB Ethics Regulations).

The CFPB enforces strict employee compliance with the conflict of interest laws. The CFPB Ethics Office has a robust and comprehensive ethics program with clear and standardized protocols to identify, mitigate, and manage potential or actual conflicts of interest and other ethics concerns. For potential violations of the conflict-of-interest laws, the CFPB Ethics Office makes appropriate referrals to the Inspector General or the Department of Justice, and assists agency officials in taking appropriate disciplinary or corrective actions. The CFPB ethics program is subject to the independent oversight of the U.S. Office of Government Ethics.

Budget, Resource Allocations, and Contract Awards

CFPB staff will develop policies and procedures to ensure that the CFPB will only budget for research-related spending that incorporates the tenet standards as appropriate to the research type. The CFPB will continue to award only research contracts that are in the best interest of the government, in accordance with all applicable laws and regulations, to include adherence to the GSS. The CFPB will work to incorporate as many relevant aspects as possible of the tenets in its research acquisitions to include contract clauses, Performance Work Statements, and selection criteria to ensure compliance extends to its contractor base.

2.2 Plans for providing training and resources to ensure agency personnel understand and adhere to the tenets of Gold Standard Science, including the use of AI-driven tools when practicable for efficient compliance.

As described in Tenet 4, the CFPB is developing an AI governance strategy that can be used to support the use of AI-driven tools when practicable for efficient compliance with the GSS requirements. In addition to the technology and other resources mentioned above, the CFPB will create a self-paced training course for staff to complete in the CFPB's Learning Management System (LMS). The training materials will contain content from the OSTP guidance and the CFPB's implementation plan report to ensure that staff are familiar with the GSS tenets. Each office will be asked to identify existing staff (present), and any new hires (future), who engage in the scientific research covered by the GSS executive order. Identified staff will be required to take the training within 30 days of assignment in the LMS. Additionally, the training materials will be made available for staff on a GSS intranet page for staff to reference at any time.

2.3 Development of standardized metrics and evaluation mechanisms to assess adherence to these tenets and their impact on scientific quality, incorporating technology when practicable to facilitate data collection and analysis.

CFPB staff expect to develop a resource guide of standardized GSS metrics for staff to use in the development of their research projects. The guide would also serve as a key tool in the review process of the CFPB's research products to assess adherence of the research to these tenets and their impact on scientific quality. The CFPB will continue to improve upon its standardized metrics and evaluation mechanisms in consultation with the designated senior appointee. The CFPB will, where appropriate, incorporate technology when practicable to facilitate data

collection and analysis. As described in Tenet 4, the CFPB will increase the transparency of analytic activities across the CFPB and will also incorporate technology and AI-driven tools when practicable to facilitate data collection and analysis.

2.4 Discussion of how technology will be leveraged for implementing GSS.

As described in Tenet 4 above, the CFPB has set up shared digital workspaces and interoperable software, such as a shared cloud data infrastructure to enable cross-office access to analytical workflows, data transformations, and reusable logic. The CFPB continues to explore ways to integrate scalable tools that facilitate interdisciplinary collaboration, reproducible research, and alignment with the GSS tenets and enterprise data governance practices. Where appropriate, the CFPB will incorporate technology to streamline data collection, standardize processing, and increase the transparency of analytic activities across the CFPB. CFPB staff are also developing an AI governance strategy that will include structured reviews and interdisciplinary participation from across the CFPB to promote transparency, accountability, and responsible AI integration.

2.5 Descriptions of any challenges encountered in the implementation of GSS.

The CFPB anticipates facing challenges in scoping and tailoring research output when implementing the GSS standards. For example, it may not be appropriate to include technical details that are otherwise recommended by the GSS standards in a scientific blog post scoped for rapid communication to a non-expert audience. Similarly, comprehensive scientific reports that satisfy the GSS tenets may report technical details that reduce research findings' accessibility and interpretability among non-research stakeholders. To address this challenge, the CFPB will evaluate, iterate, and improve its implementation process, adjusting recommendations and materials for research outputs of varying scope and messaging, ensuring they are GSS-compliant while also meeting the needs of the professional audiences and the American public.