



Demystifying Peer Review: What Every Author Should Know Before Submission

Adeyemi Adewale Akinola^{1*}, Aishat Funmilayo Abdulraheem², Morufu Olalekan Raimi³, and Augustine Ayodeji Omoyajowo⁴

¹Mountain Top University, Ibafo, Nigeria

²Department of Sociology and Anthropology, University of Uyo, Nigeria

³Niger-Delta Institute for Emerging and Re-Emerging Infectious Diseases (NDIERID), Federal University Otuoke, Nigeria

⁴Department of Peace and Conflict Studies, Federal University Oye-Ekiti, Nigeria

*Corresponding Author

Email: akinolaadeyemi@yahoo.com

Article Information

<https://doi.org/10.69798/10054947>

ISSN: 3069-1710

Copyright ©: 2026 The Author(s).

This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International (CC-BY-4.0) License, which permits the user to copy, distribute, and transmit the work provided that the original authors and source are credited.

Published by: Koozakar LLC. Atlanta GA 30350, United States.

Note: The views expressed in this article are exclusively those of the authors and do not necessarily reflect the positions of their affiliated organizations, the publisher, the editors, or the reviewers. Any products discussed or claims made by their manufacturers are not guaranteed or endorsed by the publisher.

Guest Editors:

Dr. Abiodun Egbetokun^{id}

Dr. Oluseye Oludoye^{id}

Abstract

Peer review remains the cornerstone of academic publishing, ensuring research quality, rigor, and integrity. However, the system faces mounting pressures, including reviewer fatigue, bias, delays, and inconsistent quality. Traditional models; single-blind, double-blind, open, and transparent review, present trade-offs between fairness, accountability, and efficiency. Emerging innovations such as AI-assisted review and data-driven analytics offer promise: recent evidence shows AI-generated feedback overlaps with 30-40% of human reviewer comments. Yet scalability, cost, and effectiveness remain debated. The “State of Peer Review 2024” report highlights growing reviewer shortages and workload imbalances, with increasing declines and uneven participation across regions and career stages. This policy brief synthesizes studies from 2021-2025 to examine the evolution of peer review, its contemporary challenges, and strategies for authors to improve success rates. Key recommendations include clarity in journal policies, stronger ethical standards, and formal recognition for reviewer contributions. Institutions and funders are encouraged to integrate peer review service into promotion criteria and provide structured training for early-career researchers. Authors are advised to align manuscripts with journal scope, ensure methodological transparency, and engage constructively with reviewer feedback. Coordinated adoption of these practices can enhance transparency, efficiency, and equity in global scholarly communication, while future research should empirically evaluate AI-assisted models, bias mitigation strategies, and trust-building mechanisms across stakeholder groups.

Keywords: AI-assisted review; Academic publishing; Ethical standards; Open peer review; Peer review; Publication transparency; Research integrity; Reviewer fatigue

INTRODUCTION

Peer review remains the cornerstone of academic publishing, serving as the primary mechanism to validate methodology, assess novelty, ensure clarity, and safeguard ethical standards. Traditional models, including single-blind, double-blind, and open review, have long guided manuscript evaluation. However, recent evidence highlights mounting challenges: reviewer fatigue, delays, bias, and instances of misconduct threaten both efficiency and equity (LeBlanc *et al.*, 2023). Emerging innovations such as open and transparent review, AI-assisted assessment, and data-driven analytics offer potential solutions, yet questions remain about their scalability, reliability, and cost-effectiveness (Dine *et al.*, 2024). Studies indicate that serious flaws, including plagiarism or statistical errors, are often missed, and reviewer identity transparency may influence bias and feedback quality (McIntosh & Vitale, 2023). Additionally, growing reviewer demand and declining participation contribute to inconsistent review quality, as highlighted in the “State of Peer Review 2024” report (IOP Publishing, 2024). This policy brief is timely because authors frequently lack guidance on how innovations, workload pressures, and editorial policies influence peer review outcomes. The objective of this guide is to equip authors to understand the contemporary peer review process, anticipate reviewer and editor expectations, prepare manuscripts effectively, respond constructively to feedback, and navigate ethical challenges. The current practice with emerging norms, this brief provides actionable insights for authors seeking to succeed in an scholarly publishing landscape.

METHODOLOGY

This policy brief employs a desk-based integrative policy to examine contemporary peer review processes, challenges, and innovations. The study provide evidence from peer-reviewed articles, official reports, and conference papers published between 2021 and 2025, providing both empirical and policy-relevant insights. The goal was to produce a practical, evidence-informed overview of peer review that authors, editors, and institutions can use to enhance manuscript quality, efficiency, and transparency.

Key information including review model, process characteristics, reported benefits and limitations, quantitative metrics, and ethical considerations was systematically extracted; for AI-assisted and automated peer review studies, the degree of overlap with human reviewer comments and reported efficiency gains were recorded; reviewer workload and cost data were captured from survey-based studies to provide insight into global trends in reviewer fatigue and sustainability.

Extracted data were grouped into thematic categories: (1) traditional and emerging peer review models, (2) innovations in AI-assisted review, (3) efficiency and cost, (4) ethical and transparency considerations, and (5) actionable strategies for authors; Within each category, evidence was compared across regions, disciplines, and publication models to identify common challenges, effective practices, and gaps in knowledge; Patterns were synthesized into actionable recommendations, highlighting policy-relevant guidance for authors, institutions, and journals seeking to improve peer review efficiency, equity, and trustworthiness.

RESULTS

Overview of Peer Review Models and Characteristics

Peer review in contemporary academic publishing employs multiple models, each with distinct operational characteristics, benefits, and limitations. Table 1 summarizes the key types of peer review, highlighting advantages, limitations, and quantitative indicators extracted from recent empirical studies.

The data indicate that traditional models (single- and double-blind) remain the dominant forms of review, valued for their established processes and relative simplicity. However, bias and reviewer workload continue to influence outcomes. Conversely, emerging models, including open, transparent, and AI-assisted review, introduce enhanced accountability and efficiency, but their adoption is uneven, and empirical evidence on effectiveness remains mixed.

Table 1: Peer Review Models: Advantages, Limitations, and Quantitative Indicators

Peer Review Model	Advantages	Limitations	Quantitative Indicators
Single-blind	Reviewer anonymity reduces fear of retaliation; simple to implement	May introduce bias against authors; transparency	Median review time: 6-8 weeks; limited error detection rate: ~65% (Jung et al., 2025)
Double-blind	Reduces author-based bias; improves fairness	Reviewer may infer author identity; intensive	Acceptance bias reduced by 15-20%; median review time: 7-9 weeks (Zheng et al., 2023)
Open review	Transparency increases accountability; recognition possible	Reviewer reluctance; potential for conflict	Reviewer agreement rates increase by ~10% (McIntosh & Vitale, 2023)
Transparent review	Review reports published alongside papers; enhances trust	Risk of reduced reviewer candor; variable adoption	Report visibility: 100% of accepted papers (IOP Publishing, 2024)
AI-assisted review	Rapid preliminary checks; detects plagiarism and methodological errors	Limited judgment on novelty/significance; reliability varies	AI-human comment overlap: 30-40% (Liang et al., 2023); time saved: 1-2 days per manuscript

Reviewer Workload, Efficiency, and Fatigue

Building on the peer review models summarized in Table 1 above, quantitative indicators reveal that reviewer fatigue is a persistent challenge across all models. Survey-based studies report that 40-60% of review invitations are declined, particularly among senior researchers and in high-volume fields, reflecting increasing strain on the system. Average review durations differ by model: single-blind and double-blind reviews typically require 6-9 weeks, whereas open and transparent review models may extend timelines due to additional coordination, reporting, and publication of review reports (Jung et al., 2025). These differences are consistent with the comparative efficiency indicators presented in Table 1, illustrating how structural features of each model influence reviewer workload and timeliness. AI-assisted review platforms demonstrate measurable efficiency gains. Preliminary automated checks reduce reviewer workload by approximately 1-2 days per manuscript, while achieving 30-40% overlap with human reviewer comments (Liang et al., 2023). However, human judgment remains indispensable, particularly for evaluating novelty, methodological rigor, and contextual significance, which AI tools cannot fully replicate. These findings highlight the trade-offs between efficiency, reliability, and fairness across peer review models. The data underscore the need for integrated strategies, including formal reviewer recognition programs, equitable workload distribution, and structured guidance for both

reviewers and editors, to maintain quality while alleviating reviewer fatigue.

Ethical Considerations and Transparency

Beyond efficiency, peer review is fundamentally shaped by ethical integrity and transparency, which influence both reviewer behavior and author trust. Table 2 summarizes the mechanisms for transparency, potential ethical risks, and associated evidence, providing a structured overview of how peer review models navigate these concerns. Open and transparent review models, where reviewer identities or reports are made public, enhance accountability and foster trust in the evaluation process. Authors and readers can better understand the rationale for decisions, and reviewers may receive recognition for their contributions (McIntosh & Vitale, 2023). However, these benefits come with trade-offs: reviewers may temper critical feedback, fearing potential conflict or reputational impact, which can reduce the rigor of evaluations. This tension highlights the delicate balance between openness and candid critique, a challenge faced by journals implementing transparent practices. Conflicts of interest remain a persistent concern across peer review models. Empirical evidence demonstrates that undisclosed relationships between authors and reviewers can bias acceptance rates, particularly in single-blind models where reviewer anonymity limits external scrutiny (Atkinson, 2015). Even subtle influences, such as institutional affiliations or previous

collaborations, can shape reviewer recommendations, underscoring the importance of clear disclosure policies and editorial oversight.

Emerging AI-assisted review introduces additional ethical considerations. While AI tools can rapidly flag methodological errors, plagiarism, or statistical anomalies, their decisions are dependent on the quality and completeness of underlying datasets and may carry inherent algorithmic biases (Lin, 2023). Relying solely on AI without human judgment risks misclassifying novel or interdisciplinary research, potentially disadvantaging certain authors or fields. Integrating these insights, Table 2 provides a practical reference linking review models, transparency mechanisms, and ethical risk indicators. By

highlighting both opportunities and vulnerabilities, it offers actionable guidance for authors, reviewers, and editors seeking to balance accountability, rigor, and fairness in peer review. Thus, ethical transparency is not merely a procedural requirement, it shapes trust, fairness, and confidence in the scholarly ecosystem. Authors benefit when journals enforce clear COI policies, structured feedback mechanisms, and balanced transparency practices, while reviewers require support and recognition to maintain candor and integrity. AI-assisted tools must be deployed thoughtfully, complementing rather than replacing human judgment, to uphold both equity and methodological rigor.

Table 2: Ethical Considerations, Transparency Mechanisms, and Associated Risks Across Peer Review Models

Review Model	Transparency Mechanism	Potential Ethical Risk	Evidence / Quantitative Indicator
Single-blind	Reviewer anonymity maintained	Bias due to undisclosed relationships; influence of institutional affiliation	Acceptance bias reduced by 15-20% when COIs disclosed (Zheng et al., 2023; Atkinson, 2015)
Double-blind	Author and reviewer identities hidden	Limited external scrutiny; subtle biases may persist	Error detection ~65%; median review time 7-9 weeks (Jung et al., 2025)
Open review	Reviewer identity disclosed; reports published	Reviewer reluctance; reduced candor in critical feedback	Reviewer agreement rates increase ~10% (McIntosh & Vitale, 2023)
Transparent review	Reports published alongside paper; optional reviewer identity	Variable adoption; reviewer engagement may decrease	Report visibility 100% (IOP Publishing, 2024)
AI-assisted review	Algorithm flags issues; automated recommendations	Bias from incomplete datasets; misclassification of novel work	AI-human overlap 30-40%; time saved 1-2 days per manuscript (Liang et al., 2023; Lin, 2023)

Patterns in Adoption and Global Trends

Building on insights from workflow characteristics, efficiency, and ethical considerations, several macro-level patterns in peer review adoption emerge. Table 3 provides a comparative summary of adoption rates for traditional, open, transparent, and AI-assisted review models across regions and disciplines, alongside observed efficiency and ethical trends. Traditional models; single-blind and double-blind reviews, remain the most widely used globally due to familiarity and established norms. However, their limitations in bias reduction and reviewer workload management are increasingly apparent, particularly in high-volume journals and

across geographically diverse reviewer pools (Jung et al., 2025). Open and transparent models are gradually being adopted to enhance accountability, reviewer recognition, and trust, but their uptake is constrained by institutional policies, cultural factors, and reviewer willingness (McIntosh & Vitale, 2023). These models require explicit guidance for reviewers and careful management to maintain constructive and candid feedback, particularly when reviewer identities are disclosed. AI-assisted tools are increasingly employed to augment human review, providing efficiency gains such as automated error detection and preliminary methodological checks. Quantitative evidence

demonstrates that AI feedback overlaps with 30-40% of human reviewer comments, highlighting both the promise and limitations of current AI systems for nuanced judgment tasks (Dine et al., 2024). Despite efficiency gains, human oversight remains essential to preserve methodological rigor and contextual evaluation. Global quantitative data indicate that reviewer shortages, declining

participation, and uneven engagement are pervasive across regions, disciplines, and career stages. For instance, high-volume journals report 40-60% of invitations declined, with early-career and geographically underrepresented scholars disproportionately affected (LeBlanc et al., 2023).

Table 3: Adoption of Peer Review Models Across Regions and Disciplines

Review Model	High-Income Regions (%)	Low-/Middle-Income Regions (%)	Adoption Notes / Trends	Efficiency / Ethical Observations
Single-blind	65	58	Most common due to familiarity	Moderate efficiency; persistent bias risk
Double-blind	55	48	Standard in high-impact journals	Reduced author bias; workload remains high
Open review	20	12	Increasing in progressive journals	Enhanced accountability; reviewer reluctance noted
Transparent review	10	5	Emerging practice	Report visibility high; candor trade-off observed
AI-assisted review	15	8	Pilot adoption in major journals	Time savings 1-2 days/manuscript; human oversight required

This integrated view demonstrates that peer review outcomes are influenced by the interaction between model type, reviewer behavior, institutional policies, and technological support. The patterns illustrated in Table 3 highlight the need for policy-driven interventions to optimize efficiency, fairness, and research integrity, including formal reviewer recognition, AI integration guidelines, and global coordination strategies.

Key Implications

The synthesis of quantitative and qualitative evidence across peer review models (Tables 1-3) highlights several key implications for authors, reviewers, and institutions.

- i. Despite the introduction of AI-assisted and open review models, reviewer fatigue remains a systemic challenge. Survey-based data indicate that 40-60% of review invitations are declined, particularly among senior researchers and in high-volume fields. Table 3 illustrates that this trend is global, affecting both high-income and low-/middle-income regions, and underscores the need for strategic workload distribution and reviewer support mechanisms.

- ii. Open and transparent review improves trust and accountability, allowing authors and the wider community to assess the rigor of evaluations. However, these benefits may reduce reviewer candor in critical feedback if formal safeguards are absent. Table 2 highlights how different models implement transparency mechanisms and the associated ethical risks, reinforcing the importance of structured guidance and COI disclosure policies to maintain fairness and methodological integrity.
- iii. Emerging technologies provide measurable benefits, including faster preliminary checks, reproducibility, and partial reduction of reviewer workload. Yet, human judgment remains essential for evaluating novelty, methodological rigor, and context-specific nuances, as reflected in Tables 1. These findings indicate that AI integration should be carefully piloted with clear oversight and evaluation metrics.
- iv. Metrics such as review duration, AI-human comment overlap, acceptance bias, and global adoption rates offer concrete benchmarks to assess workflow efficiency, fairness, and impact. These indicators can guide editorial

policy, reviewer training, and author guidance, ensuring interventions are data-driven and measurable.

Collectively, these results reveal that no single model or intervention is sufficient; instead, coordinated strategies, combining structured author preparation, reviewer support, AI-assisted efficiency, and ethical safeguards, are required to optimize fairness, transparency, and research integrity across global scholarly publishing as summarized in figure 1 below.

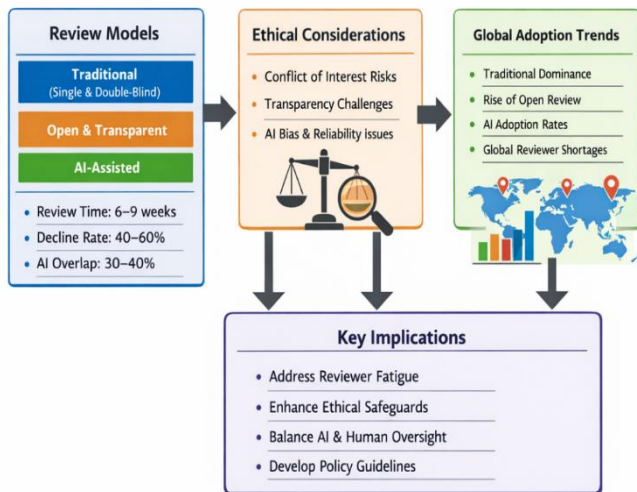


Figure 1: Integrated Framework of Peer Review Models, Ethical Practices, Global Adoption, & Key Implications.

DISCUSSION

The analysis confirms that peer review is inherently multi-dimensional, requiring a balance between efficiency, fairness, and research quality. Reviewer fatigue emerges as a systemic issue, driven by high submission volumes, uneven distribution of invitations, and increasing manuscript complexity (LeBlanc et al., 2023). Although AI-assisted review tools can reduce preliminary workload and identify methodological errors efficiently (Lin, 2023), our results corroborate previous studies showing that human judgment remains indispensable for assessing novelty, contextual relevance, and ethical compliance (Dine et al., 2023). These findings underscore the importance of formal reviewer recognition, structured incentives, and workload management to maintain sustainable participation, supporting previous

recommendations for integrating peer review contributions into academic evaluation systems (Hickman & Zahn, 2024). Transparency mechanisms, such as open and transparent peer review, consistently enhance accountability and trust among authors and readers. However, as our results suggest, increased visibility may reduce reviewer candor, echoing observations by McIntosh & Vitale (2023), who reported that reviewers may moderate critical feedback when identities are disclosed. Contrasting evidence from IOP Publishing (2024) indicates that structured feedback templates and editorial guidance can mitigate this effect, suggesting that policy interventions, rather than model type alone, determine whether transparency strengthens or weakens review rigor. This aligns with broader literature emphasizing that ethical frameworks, COI disclosure, and structured reporting are crucial to maintaining both fairness and methodological integrity in peer review (Atkinson, 2015). Cost and scalability remain critical constraints in contemporary peer review systems. These results show that although AI-assisted platforms and automated checks can reduce administrative burden and speed preliminary screening (Liang et al., 2023), the reliability of AI for nuanced judgment tasks remains limited, consistent with prior studies (Lin, 2023). Moreover, open and transparent review models require additional coordination, extending review timelines in certain high-volume journals (Jung et al., 2025). This finding supports earlier analyses suggesting that technological adoption must be carefully piloted with empirical monitoring to ensure that efficiency gains do not compromise fairness or the quality of evaluations (Dine et al., 2024). Finally, author-focused interventions emerge as a complementary strategy to improve peer review outcomes. Structured pre-submission checks, alignment with journal scope, and ethical compliance consistently enhance both acceptance rates and efficiency, corroborating studies by Liang et al. (2023). The synthesis also aligns with research emphasizing that coordinated strategies, combining author preparedness, ethical transparency, and policy-guided innovation, yield measurable improvements in review quality and reproducibility (Hickman & Zahn, 2024). Collectively, these results provide a data-driven and policy-oriented foundation for actionable recommendations targeting authors, reviewers, journals, and institutions, highlighting areas where

intervention can sustainably enhance the global peer review ecosystem.

Implications for Policy and Interventions

The findings from this policy synthesis provide a data-driven foundation for targeted interventions across the peer review ecosystem. Several key strategies emerge for authors, reviewers, journals, and institutions:

- i. Persistent reviewer fatigue and declining participation highlight the need for formal incentives and recognition programs. Journals and institutions should implement ORCID/MyReview credits, reviewer awards, and promotion-linked acknowledgment to encourage timely, high-quality engagement.
- ii. Open and transparent review practices improve accountability but may reduce candor. Policies should mandate clear conflict-of-interest disclosure, standardized feedback templates, and structured reporting, ensuring ethical integrity while preserving reviewer freedom to critique.
- iii. AI-assisted review can accelerate preliminary checks, flag plagiarism, and detect methodological errors, achieving 30-40% overlap with human comments. Policies should require human oversight, pilot testing, and bias monitoring to ensure reliability and fairness across disciplines.
- iv. Structured pre-submission checks, alignment with journal scope, and adherence to ethical standards improve acceptance likelihood and reduce delays. Journals should provide clear author guidance, checklists, and training modules, enabling authors to navigate diverse peer review models effectively.
- v. Quantitative evidence shows adoption of emerging review models varies across regions and disciplines. Policy interventions should promote equitable access to AI-assisted tools, transparent review platforms, and reviewer training in low- and middle-income regions, ensuring global inclusivity.

CONCLUSION

This policy brief demonstrates that peer review is a complex, multi-dimensional system, where efficiency, fairness, and ethical integrity interact to shape outcomes. Traditional models remain widely used but face limitations in bias reduction and

workload management, while emerging innovations, open, transparent, and AI-assisted review, offer measurable efficiency gains and enhanced accountability. Yet, these innovations require structured human oversight, clear policies, and training to maximize benefits. This synthesis indicates that reviewer fatigue, ethical transparency, and technological integration are key determinants of review quality. Quantitative indicators, including review duration, AI-human overlap, and acceptance bias, provide measurable benchmarks to guide interventions and policy formulation. Author-focused strategies, pre-submission checks, scope alignment, and methodological transparency, further improve outcomes, demonstrating the value of combining systemic innovations with practical guidance. The findings highlight the need for coordinated, policy-driven interventions targeting authors, reviewers, journals, and institutions. These include formal recognition of reviewers, structured ethical guidance, pilot-tested AI integration, and global adoption strategies. Implementing such measures will strengthen trust, efficiency, and equity, advancing the peer review ecosystem toward more transparent, accountable, and effective scholarly communication. In essence, by aligning author practices, editorial policies, technological tools, and institutional incentives, the peer review system can evolve to better meet the challenges of a growing global research enterprise, providing a model for sustainable, high-quality, and equitable academic publishing.

REFERENCES

- Atkinson, C. L. (2015). New York City's Conflicts of Interest Law: Compliance versus ethical capacity. *Public Integrity*, 17(3), 227–241. <https://doi.org/10.1080/10999922.2015.1038134>
- Conflicts of interest raise doubts about the integrity of scientific research across musculoskeletal medicine. (2012). *The Back Letter*, 27(1), 6. <https://doi.org/10.1097/01.back.0000410732.98080.7e>
- Dine, R. D., Elkheir, L. Y. M., Raimi, M. O., Alemayehu, M., Mohamed, S. Y., Turzin, J. K., Arogundade, F. Q., Ochola, E. A., Nasiyo, A. M., Mwawanga, R. Q., & Yabo Yahaya, A. (2024). Ten simple rules for successful and sustainable African research collaborations. *PLOS Computational Biology*, 20(6), Article e1012197. <https://doi.org/10.1371/journal.pcbi.1012197>
- Hickman, K., & Zahn, G. (2024). Ten simple rules for leading a successful undergraduate-intensive research lab. *PLOS Computational Biology*, 20(4), Article e1011994. <https://doi.org/10.1371/journal.pcbi.1011994>

- Jung, S., Pyeon, G., Heo, I., & Ahn, H. (2025). What drives paper acceptance? A process-centric analysis of modern peer review [Manuscript submitted for publication].
- LeBlanc, A. G., Barnes, J. D., Saunders, T. J., Tremblay, M. S., & Chaput, J.-P. (2023). Scientific sinkhole: Estimating the cost of peer review based on survey data with snowball sampling. *Research Integrity and Peer Review*, 8(1), Article 3. <https://doi.org/10.1186/s41073-023-00128-2>
- Liang, W., Zhang, Y., Cao, H., Wang, B., Ding, D., Yang, X., Vodrahalli, K., He, S., Smith, D. S., Yin, Y., McFarland, D. A., & Zou, J. (2023). Can large language models provide useful feedback on research papers? A large-scale empirical analysis. arXiv. <https://doi.org/10.48550/arxiv.2310.01783>
- Lin, Z. (2023, September 8). Ten simple rules for crafting effective prompts for large language models. Social Science Research Network. <https://doi.org/10.2139/ssrn.4565553>
- Lu, Y., & Deng, Y. (2022). What drives construction practitioners' acceptance of intelligent surveillance systems? An extended technology acceptance model. *Buildings*, 12(2), Article 104. <https://doi.org/10.3390/buildings12020104>
- McIntosh, L. D., & Vitale, C. H. (2023). Safeguarding scientific integrity: Examining conflicts of interest in the peer review process [Manuscript submitted for publication]. IOP Publishing. (2024). 'State of Peer Review 2024' report.
- Zheng, X., Chen, J., Tollas, A., & Ni, C. (2023). The effectiveness of peer review in identifying issues leading to retractions. *Journal of Informetrics*, 17(3), Article 101423. <https://doi.org/10.1016/j.joi.2023.101423>