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MEASURING DIFFERENTIAL RESPONSES: A CROSS-ENGINE AUDIT OF GENERATIVE AI BIAS [ABSTRACT]

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ABSTRACT

Aim/Purpose	This study analyzes how patterns of bias differentiate responses across multiple generative AI platforms and examines why certain systems converge or diverge in reasoning when presented with identical policy-related prompts.
Background	A cross-platform policy audit using 26 structured prompts was conducted to identify where generative AI systems converge or diverge in reasoning. The analysis highlights how institutional norms, training choices, and governance constraints shape AI responses in high-stakes contexts.
Methodology	A convergent parallel mixed-methods design was used. Twenty AI platforms were given identical prompts, with quantitative analyses mapping convergence patterns and qualitative analyses explaining how and why bias manifested differently across systems.
Contribution	This study offers an audit-ready framework for assessing epistemic alignment across generative AI platforms. By identifying “sentinel prompts” that signal convergence or drift, it extends AI evaluation beyond accuracy measures and provides practical guidance for policy, governance, and educational deployment.
Findings	Strong epistemic convergence emerged on a small subset of prompts, with Prompt 26 serving as the most sensitive indicator of institutional alignment. Systems that converged on this item demonstrated consistent reasoning across

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	related policy, health, and legal questions, while deviations signaled rhetorical harmonization and bias drift.
Recommendations for Practitioners	Practitioners should incorporate sentinel prompts into routine AI evaluation to detect alignment drift and policy-sensitive bias before deployment. Technical audits should be paired with governance training so decision-makers can interpret convergence patterns responsibly. AI tools should be re-evaluated regularly, recognizing alignment as a continuing quality-assurance obligation.
Recommendations for Researchers	Researchers should extend this audit approach across additional domains, languages, and regulatory contexts, while tracking alignment longitudinally as models evolve. Building validated libraries of sentinel prompts and integrating mixed-methods analyses will deepen understanding of how epistemic reliability develops – and when it erodes – across platforms.
Impact on Society	As AI increasingly shapes policy interpretation, healthcare guidance, and educational practice, reliable evaluation frameworks are essential. This work helps institutions differentiate principled alignment from superficial neutrality, reducing governance risks and supporting more trustworthy AI adoption.
Future Research	Future studies should test whether convergence patterns persist across cultures and AI architectures, while monitoring alignment across system updates. Expanding sentinel-prompt libraries and incorporating user-centered perspectives will strengthen ongoing evaluation of epistemic stability in real-world contexts.
Keywords	artificial intelligence, bias, policy auditing, governance, generative AI

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