The State and Fate of Multilingual, Contextual Evaluation in the NLP World

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Abstract

Multilingual evaluation benchmarks are the primary instrument for assessing whether large language models generalize beyond English, yet the adequacy of these benchmarks has received little systematic scrutiny. We present a data-driven audit of 51 recent multilingual benchmarks spanning 242 datasets and 219 languages, organized around three pillars: *coverage*, *representativeness*, and *rigor*. Our analysis reveals that coverage is wide but thin with 36% of evaluated languages appearing in only a single benchmark, entire regions (Oceania, the Americas, Central Asia) are near-zero, and a stark task equity gap leaves low-resource languages evaluated on only 1–3 task categories versus 14 for high-resource languages. Representativeness is structurally compromised: translation from English remains the dominant construction strategy where 56% of all dataset–language instances are translated introducing artifacts and English-centric framing, while culturally grounded content is concentrated in a handful of community-driven benchmarks with narrow language scope. The ecosystem thus forces a trade-off between breadth and validity. Rigor is undermined by benchmark contamination, including translated benchmark leakage and parallel corpus overlap that evade surface-form detection. We synthesize these findings into concrete recommendations for building evaluation frameworks that are natively constructed, culturally grounded, contamination-aware, and designed to serve the communities whose languages they claim to evaluate.

1 Introduction

Evaluation benchmarks are the primary instrument through which the NLP community measures progress. AI evaluation is critical beyond English, particularly for Global South languages, because most AI systems are designed from an English-centric perspective, with Global North assumptions baked into their data, task design, and notions of success (Akindotuni, 2025; Lamentillo, 2025). Benchmark gains on English can obscure systematic failures in other languages and conditions where AI systems are deployed, potentially leading to marginalized communities being excluded, stereotyped, or exposed to high-stakes failures (Lachini, 2024; Ahmad et al., 2025). Multilingual evaluation for Large Language Models (LLMs) has expanded rapidly in recent years, reflecting a growing recognition that English-only evaluation is insufficient (Weidinger et al., 2022; Mergen et al., 2025; Guo et al., 2025; Upadhayay, 2025; Kargaran et al., 2025; Zhang et al., 2026). However, multilingual evaluation is not simply about measuring in another language what is measured in English, but about capturing the local contexts and cultural nuances that determine quality, usefulness and safety. Recently at the India AI Impact Summit[1], the New Delhi Frontier AI Commitments make this explicit through the commitment titled "Strengthening Multilingual and Contextual Evaluations," which calls for ensuring AI system effectiveness "across languages, cultures, and real-world use cases"[2].

Progress on multilingual evaluation remains limited in important ways (Wu et al., 2025; Sinha et al., 2025; Qin et al., 2025), with many efforts still being Western-centric in their

[1] https://impact.indiaai.gov.in/

[2] https://www.pib.gov.in/PressReleasePage.aspx?PRID=2230201

assumptions, priorities, and task formulations, often extending English benchmarks to other languages rather than grounding evaluation in the linguistic, cultural, and practical realities of diverse communities (Smith, 2025; Oh et al., 2025; Mushtaq et al., 2025; Zahraei & Asgari, 2025; Plum et al., 2025). As a result, existing benchmarks are often not broad enough in the languages, varieties, and tasks they cover, nor sufficiently representative of how people actually use language technologies in different contexts (McIntosh et al., 2025; Ni et al., 2025; Yang et al., 2025). In the spirit of Joshi et al. (2020) "The State and Fate of Linguistic Diversity and Inclusion in the NLP World", which took stock of languages represented in NLP and ones that are left behind, we offer a similar reckoning for multilingual evaluation by examining its growth and gaps. We examine the current state of multilingual LLM evaluation through three key lenses: coverage, representativeness, and rigor, identify limitations in current practice and outline directions for building evaluation frameworks that are more meaningful, valid, and globally relevant. We will release all structured metadata annotations, the full analysis codebase, and an interactive web dashboard that will allow users to explore benchmark coverage, representativeness, and per-language statistics (Appendix C).

2 Related Work

Multilingual Benchmarks and Language Coverage Early cross-lingual benchmarks such as XNLI (Conneau et al., 2018) established the paradigm of translating English datasets into multiple languages to perform multilingual evaluation. This was scaled across dozens of languages and task types by large benchmarking efforts such as XTREME-R, XGLUE, and MEGA (Ruder et al., 2021; Liang et al., 2020; Ahuja et al., 2023). However, language coverage remains heavily skewed toward high-resource Indo-European and CJK languages (Joshi et al., 2020; Blasi et al., 2022; Conneau et al., 2020; Ruder et al., 2021), and low-resource languages continue to lag behind (Ahuja et al., 2023; Asai et al., 2024; Li et al., 2025). LLM-powered data augmentation for multilingual commonsense reasoning also fails to produce meaningful text in certain low-resource languages (Doostmohammadi, 2026; Gain et al., 2025). Furthermore, multilingual LLMs have been shown to use English as an internal pivot, with abstract representations closer to English than to other input languages, revealing a structural English-centrism that needs to be addressed in evaluation (Wendler et al., 2024; Ye, 2025; Blasi et al., 2022; Kumar et al., 2025; Ahuja et al., 2023). These limitations have prompted calls for alternative paradigms such as performance prediction over per-language evaluation sets (Ahuja et al., 2022).

Representativeness: Translation Artifacts and Cultural Grounding A critical concern with multilingual benchmarks is their reliance on translation from English (Huang et al., 2025a), as exemplified by XNLI's use of professionally translated MultiNLI data (Conneau et al., 2018). TyDiQA (Clark et al., 2020) addressed this by eliciting questions directly in each target language, avoiding translationese[3] artifacts and better capturing language-specific information needs. Several studies further highlight how cultural knowledge, pragmatic norms, and world knowledge diverge from the English-centric assumptions embedded in translated datasets (Hershcovich et al., 2022; Ruder et al., 2021; Conneau et al., 2018; Hou et al., 2026; Ebrahimi et al., 2022; Wendler et al., 2024). Language-specific benchmarks such as MasakhaNER, IndicNLPSuite, AmericasNLI, and NusaX have shown that culturally grounded evaluation yields substantially different performance profiles than translated counterparts (Adelani et al., 2021; Kakwani et al., 2020; Ebrahimi et al., 2022; Winata et al., 2023). However, even these benchmarks do not always reflect the priorities or lived realities of the communities they target. Community-driven efforts like Pariksha (Watts et al., 2024) and Samiksha (Bhat et al., 2025) help bridge this gap by incorporating stakeholder input, though such benchmarks remain scarce. More recently, benchmarks like TUMLU (Isbarov et al., 2025) for Turkic languages have begun prioritizing sociolinguistic authenticity over mere cross-lingual alignment.

[3]Translationese refers to unnatural linguistic patterns arising from translation that fail to reflect how native speakers naturally express themselves.

Evaluation Rigor and Data Contamination The integrity of benchmark-based evaluation has come under increasing scrutiny as LLMs are trained on ever-larger web corpora that may include benchmark test data. Contamination has been argued to represent an existential threat to LLM evaluation, necessitating systematic analysis before conclusions are drawn from benchmark results (Ahuja et al., 2024b; Sainz et al., 2023; Jacovi et al., 2023; Ahuja et al., 2023). Practical mitigation strategies have been proposed, including encrypting test data and demanding training exclusion controls from closed API model builders to proactively protect test data rather than retroactively detect leakage (Jacovi et al., 2023; Sainz et al., 2023; Blasi et al., 2022). The problem is further complicated by the opacity of training data in proprietary models, where contamination can only be inferred indirectly (Sainz et al., 2023; Jacovi et al., 2023; Casalnuovo & Farrell, 2025) and agentic behavior showing evidence of knowledge of being tested[4] and deliberate cheating[5]. In the multilingual setting, contamination risks are compounded by the existence of parallel corpora and translated benchmark variants: a model trained on English test data may exhibit inflated performance on translated versions in other languages, yet this cross-lingual leakage pathway remains poorly characterized (Sainz et al., 2023; Liang et al., 2020; Ruder et al., 2021; Conneau et al., 2018; Cruz & Aji, 2026). Contamination detection methods trained on one language often fail to generalize to linguistically dissimilar languages (Macko et al., 2023) and usually rely on surface-form overlap, which is inadequate for detecting semantic leakage through paraphrase or translation (Cheng et al., 2025; Macko et al., 2023; Blevins & Zettlemoyer, 2022; Fu et al., 2025; Cruz & Aji, 2026).

3 Survey of Existing Multilingual Benchmarks

We conduct a unified audit of existing multilingual benchmarks across coverage, representativeness, and rigor in four stages: benchmark collection, structured field extraction, manual verification, and contamination checks.

We compile a corpus of 51 publicly released multilingual evaluation benchmarks, spanning diverse tasks (NLI, QA, NER, sentiment analysis, commonsense reasoning, summarization, and others), language resource levels, and language families. We identify candidate benchmarks through a combination of literature search, leaderboard tracking, and community repositories. We include both widely cited benchmarks (e.g., XNLI, XQuAD, TyDiQA) and recent community-driven efforts targeting underrepresented languages and regions (e.g., AfriSenti, MasakhaNER, IrokoBench). The full list is provided in Table 6. For fine-grained analysis, each benchmark must be annotated with a consistent set of structured fields, including languages covered, language families, scripts, task types, construction methodology (translated vs. natively authored), data sources, and licensing information. To extract these fields at scale, we leverage Claude Opus 4.6[6], prompting the model with the benchmark's paper and metadata as context. The extraction methodology is provided in the Appendix A.1. This semi-automated approach enables consistent, structured annotation across all 51 benchmarks while substantially reducing manual effort. We then perform a thorough manual verification of the annotations by cross-referencing the extracted fields with the original papers, dataset cards, and associated repositories.

3.1 Coverage

We analyze 51 benchmarks encompassing 242 distinct datasets and 219 unique languages along four dimensions: language, typological and geographic diversity, task coverage, and resource-level balance. Because many benchmarks aggregate existing datasets (22 of the 51 are mixed or aggregation suites), we conduct our analysis at the *dataset–language* level to avoid inflating coverage counts when the same dataset appears in multiple benchmarks.

Language Coverage: Across the 51 benchmarks we survey, a total of **219 unique languages** are evaluated across 242 datasets, suggesting reasonable coverage. However, the distribution follows a steep power law, as shown in Figure 1 that plots languages ranked by the number

[4] https://www.nist.gov/caisi/cheating-ai-agent-evaluations

[5] https://www.anthropic.com/engineering/eval-awareness-browsecomp

[6] https://www.anthropic.com/news/claude-opus-4-6

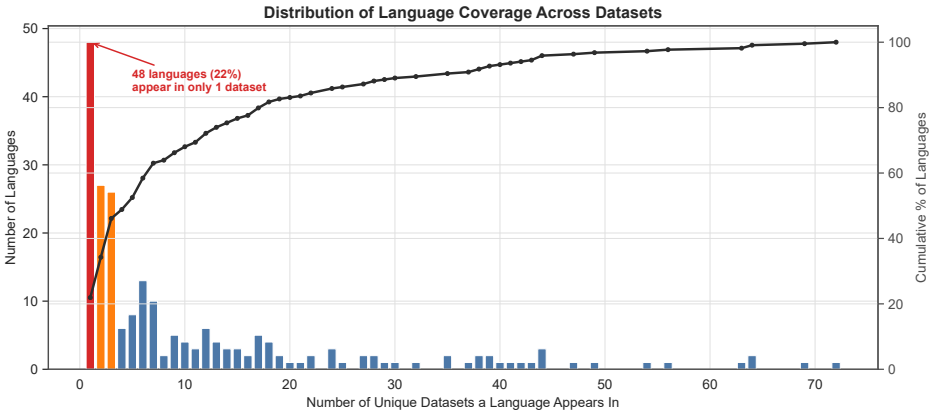
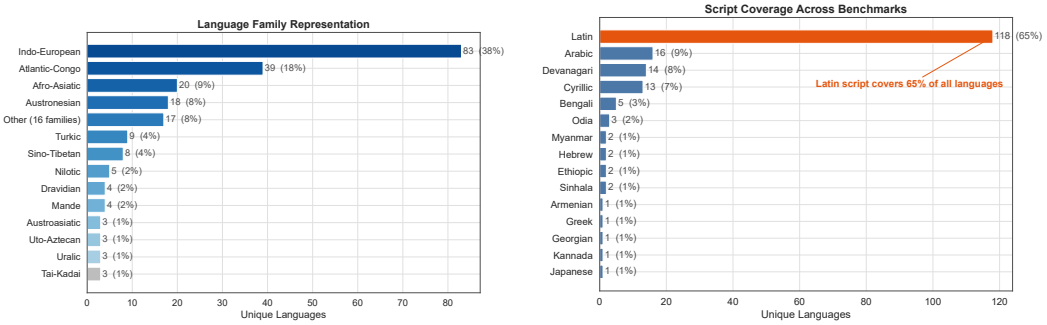


Figure 1: Languages ranked by the number of benchmarks in which they appear. *The long tail reveals that 36% of evaluated languages appear in only a single benchmark.*

of benchmarks in which they appear. A small cluster of high-resource languages Hindi, Chinese, Spanish, Swahili, Arabic appear in 19 or more benchmarks, while **82 of 219 languages (37%) appear in only a single benchmark**. For these 82 languages, there exists no independent replication of evaluation results and no opportunity for cross-benchmark comparison. This long-tail structure has a direct methodological implication: claims of multilingual generalization rest on a dense evaluation of a handful of languages and single-point estimates for the majority.

Typological and Geographical Coverage: Language count alone is an insufficient measure of diversity. Two benchmark suites could each cover 20 languages yet differ vastly in typological range if one samples broadly across families and scripts while the other concentrates on closely related Indo-European varieties. Figure 2a shows the distribution of unique languages across the 29 language families represented in our survey. Indo-European languages account for **83 of 219 languages (38%)**, while Atlantic-Congo (39 languages) ranks second, but this representation is almost entirely attributable to Africa-focused benchmarks like AfroBench, IrokoBench, and Uhuru. Families such as Austroasiatic (3 languages), Tai-Kadai (3), Japonic (1), and Quechuan (2) are poorly represented. The entire Oceanic branch of Austronesian is absent. Figure 2b reveals a similar distribution: Latin script accounts for the majority of evaluated languages, followed by Devanagari, Arabic, and CJK. Scripts used by hundreds of millions of speakers such as Ge'ez (Ethiopic), Khmer, Myanmar appear in only 1–3 benchmarks. Script diversity matters because models may exhibit systematically different tokenization efficiency (Ahia et al., 2023), character-level recall, and decoding accuracy across scripts, and these script-specific failure modes remain invisible when evaluation concentrates on Latin and Devanagari. We find similar trends in Geographical coverage as well with entire regions of the world such as Oceania and South America having very poor or no representation.

Resource-Level Distribution and Task Equity: We examine the resource-level composition of evaluated languages using the taxonomy from Joshi et al. (2020). Across the 51 benchmarks, 65% of evaluated languages fall in the two lowest resource classes (Scraping-Bys and Left-Behinds, levels 0–1), while Winners (level 5) account for only 5% (Figure 7, Appendix). This distribution appears to favor low-resource languages, but a finer-grained analysis reverses the picture. Figure 3 disaggregates task coverage across 15 categories by resource level: the 10 Winner languages are each evaluated on a median of 14 task categories across multiple benchmarks, whereas the 160 low-resource languages (levels 0–2) are typically tested on only 1–3 tasks in a single benchmark. For Left-Behinds, Translation alone accounts for 29% of all evaluation rows and Sentiment/Classification for 25%, while Coding, Safety/Toxicity, and Instruction Following each represent only 1%. By contrast, Winners and Underdogs distribute evaluation more evenly, with Math/Reasoning (11% and 8%), Embedding/Retrieval (9% and 6%), and Safety (7% and 9%) all receiving meaningful



(a) Language family representation.

(b) Script coverage (top 15 scripts).

Figure 2: Typological concentration in multilingual benchmarks. **(a)** *Indo-European dominates at 38% of all languages, with many families represented by fewer than 5 languages.* **(b)** *Latin script accounts for the majority; widely-used scripts such as Ge'ez, Khmer, and Myanmar are barely represented.*

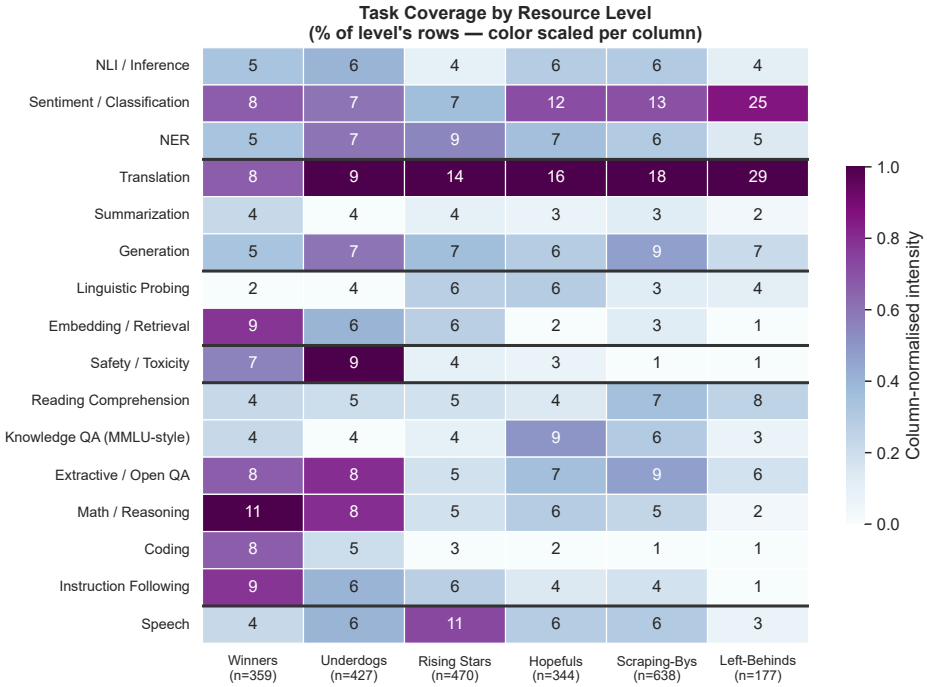
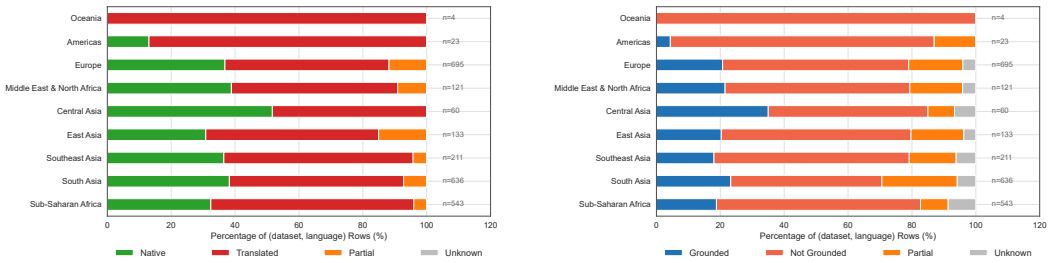


Figure 3: Task coverage by resource level. Each cell shows the percentage of a resource level's dataset–language rows devoted to that task category. *Left-Behinds are overwhelmingly evaluated on Translation (29%) and Sentiment/Classification (25%); specialised tasks such as Coding, Safety, Instruction Following, each account for $\leq$1% of their evaluation, whereas Winners are evaluated more evenly across all 15 categories.*

attention. In absolute terms, Safety/Toxicity evaluation is scarce—only roughly 25 dataset–language rows across all 51 benchmarks—and these are concentrated almost entirely at higher resource levels, meaning that safety coverage for low-resource languages is effectively nonexistent. Figure 8 (Appendix) cross-tabulates task categories against world regions and confirms that QA and knowledge tasks dominate everywhere, while specialized capabilities show uneven coverage. This *task equity gap* means that for most low-resource languages, a model's "evaluation" amounts to a narrow probe on translation and classification, making it far too limited to support claims of general competence.



(a) Translation status by world region.

(b) Cultural grounding by world region.

Figure 4: Representativeness of multilingual benchmarks by world region. **(a)** *Europe and East Asia are the most translation-dependent; Sub-Saharan Africa has the highest share of natively authored content.* **(b)** *Community-driven benchmarks in Sub-Saharan Africa and South Asia achieve the highest cultural grounding rates; broad-coverage suites score lower.*

The coverage analysis reveals a benchmark ecosystem that is *wide but thin*: many languages are nominally included, but the depth of evaluation measured by replication across benchmarks, typological diversity, task breadth, and resource-level balance is concentrated in a small core. The next section asks whether the quality of coverage that does exist is adequate.

3.2 Representativeness

Coverage establishes *what* is evaluated; representativeness asks whether that evaluation is *valid*. A benchmark may nominally cover a language, yet evaluate it using content translated from English, written by non-native speakers, or detached from local cultural context and assumptions. We audit the 51 benchmarks (242 datasets) along two axes: translation and cultural grounding. At the dataset–language level, 56% of all instances are translated from English, 36% are natively authored, and 8% are partially adapted.

Translation vs. Native Construction: The dominant construction strategy for multilingual benchmarks remains translation from English source datasets. This approach scales efficiently as one annotation effort produces content in many languages but comes with the cost of translationese artifacts, English-centric framing, and inherited contamination risk (Section 3.3) (Artetxe et al., 2020a; Graham et al., 2020). Figure 4a disaggregates translation status by world region. In every region, a substantial fraction of languages are evaluated primarily through translated content. Benchmarks covering Europe and East Asia are the most translation-dependent, while Sub-Saharan Africa shows the highest share of natively authored content, which is a direct consequence of language-specific benchmarks created from scratch such as AfroBench (Ojo et al., 2025), IrokoBench Adelani et al. (2025), and MasakhaNER (Adelani et al., 2021).

Cultural Representativeness: Culturally grounded benchmarks reflect the norms, knowledge, and pragmatic conventions of the target language community. A benchmark can be natively authored yet culturally shallow (e.g., factoid QA drawn from Wikipedia), and a translated benchmark can incorporate cultural adaptation (transcreation) to make it more culturally grounded. However, in practice, the two are correlated: benchmarks constructed from scratch by native-speaker communities are far more likely to be culturally grounded. Figure 4b shows cultural grounding rates by region. Benchmarks targeting Sub-Saharan Africa and South Asia exhibit the highest cultural grounding rates, reflecting the deliberate design philosophy of community-driven efforts like CulturalBench (Chiu et al., 2025), Samiksha Hamna et al. (2026), and TUMLU (Isbarov et al., 2025). By contrast, benchmarks with broad cross-regional scope tend to have lower cultural grounding as it is difficult to achieve at scale. This finding reinforces the pattern: the benchmarks that are methodologically strongest along the representativeness axis are those with the narrowest language coverage.

Annotator Demographics: Transparency around annotation workforces remains limited: only 8 of 51 benchmarks (16%) report annotator demographics such as geographic origin, ethnicity, or educational background, and only 17 (33%) disclose compensation details.

Benchmark	Task	Prior Work	STAMP
PAWS-X	Paraphrase Det.	9/10	67.9%
MGSM	Math	—	45.5%
XCOPA	Commonsense	9/10	—
XQUAD	QA	9/10	—
AFRIMGSM	Math	—	21.0%
XNLI	NLI	7/10	—
XSTORYCLOZE	Story Cloze	7/10	—
FLORES	Translation	7/7	1.2%
XLSUM	Summarization	5/7	—
INDICPARAM	Knowledge	—	4.3%
MMMLU	Knowledge	—	2.0%
GLOBAL MMLU	Knowledge	—	1.7%
INCLUDE	Knowledge	—	1.0%
MILU	Knowledge	—	0.0%

Table 1: Summary of contamination evidence across 14 multilingual benchmarks. **Prior Work**: fraction of models flagged as contaminated by surface-form and overlap methods (Ahuja et al., 2024a;b; Yao et al., 2024) (details in Table 2). **STAMP**: overall contamination rate (% of model–language pairs flagged at $p<0.05$) from our analysis using STAMP (Rastogi et al., 2025) (details in Table 4). Benchmarks above the mid-rule show strong contamination signals; those below show little to no evidence.

Researchers are the dominant creator type across datasets, with community volunteers and crowdworkers accounting for a small minority, raising questions about whose linguistic backgrounds and priorities shape "ground truth" for underrepresented languages. The few benchmarks that do document their annotation pipeline in detail (CulturalBench, Aya, and Uhuru) tend to be the same ones that score highest on cultural grounding, suggesting that annotator transparency and evaluation validity go hand in hand.

3.3 Rigor

3.3.1 Metrics

Metrics determine what counts as success, and poorly chosen metrics can give a misleading picture of model quality. Most benchmarks rely either on standard reference-based metrics to compare model outputs against ground truth, or on reference-free metrics such as LLM judges. However, many widely used metrics, such as BLEU, ROUGE, exact match, and Word Error Rate, were developed largely in English-centric settings and can be poor proxies for quality in morphologically rich languages or languages with non-standard spellings, where valid responses may differ substantially in surface form. Similarly, although LLM judges are increasingly becoming standard in evaluation pipelines, prior work shows that they often align poorly with human judgments in multilingual and multicultural settings, particularly for low-resource languages and in culturally grounded, context-sensitive evaluations (Hada et al., 2024b; Watts et al., 2024; Hamna et al., 2026; Hada et al., 2024a).

3.3.2 Contamination

Contamination is especially consequential in multilingual evaluation because much of the evaluation ecosystem is *thin*: **36% of languages** appear in only one benchmark (Figure 1), and **56% of dataset–language rows** rely on translated content (Figure 4a). When a language's evaluation rests on a single translated benchmark, contamination through any pathway **invalidates the only evidence of model competence** for that language. The **task equity gap** (Figure 3) further amplifies this risk: for low-resource languages evaluated on only 1–2 task categories, contamination on even a single task can dominate the reported result.

Prior Contamination Analyses. Several studies have investigated multilingual benchmark contamination using surface-form overlap and membership inference methods. Ahuja et al. (2024a) found that GPT-4, Llama-2, and Gemini-Pro are likely contaminated on PAWS-X,

XCopa, and XQuAD. Ahuja et al. (2024b) extended this analysis to newer models (Llama-3.1, Mistral-v0.3, Gemma-2) and confirmed pervasive contamination across 7 benchmarks. Yao et al. (2024) further demonstrated that contamination *transfers cross-lingually*: models contaminated on the English version of a benchmark show inflated scores on non-English translations (Table 3, Appendix). Aggregating across these studies, 9 of the 10 models tested are contaminated on PAWS-X, XCopa, and XQuAD, and 7 of 7 are contaminated on Flores (Table 1; per-model details in Table 2, Appendix). However, these analyses examined a limited set of established benchmarks, leaving open the question of whether contamination extends to newer evaluation suites.

Updated Analysis with STAMP. To provide an updated assessment, we apply **STAMP** (Rastogi et al., 2025) to a broader and more contemporary suite of **9 benchmarks** including recent ones such as Global MMLU, MILU, INCLUDE, and IndicParam alongside established ones like PAWS-X, MGSM, and AfriMGSM across **7 recent models** (Table 4, Appendix). STAMP makes minimal assumptions about data format, enabling reliable membership detection at trace levels while strictly preserving the semantic meaning and evaluation utility of the original content. Following Rastogi et al. (2025), we operationalize contamination detection by generating 9 paraphrased versions of each benchmark item and measuring the performance gap between the original and its variants. Paraphrases are produced using **Qwen-3.5 397B**, a large multilingual model chosen because its scale ensures high-quality rephrasings across diverse writing systems. Our results reveal that contamination remains **pervasive** for older benchmarks: **PAWS-X** (67.9% of model–language pairs flagged), **MGSM** (45.5%), and **AfriMGSM** (21.0%) show significant contamination signals across all seven models (Table 1). By contrast, newer benchmarks—MILU (0.0%), INCLUDE (1.0%), and Global MMLU (1.7%) exhibit markedly lower contamination rates, suggesting that benchmark age and prominence are strong predictors of contamination risk. One notable discrepancy emerges for **Flores**: prior surface-form methods flag 7 of 7 models, yet STAMP detects contamination in only 1.2% of model–language pairs. This divergence likely reflects differences in what each method measures, i.e. surface-form overlap versus memorization-driven performance gaps and underscores that no single detection approach suffices for multilingual contamination.

Challenges of Multilingual Contamination Detection. Extending STAMP to multilingual contexts introduces three challenges. First, **semantic faithfulness** is harder to guarantee: generating reliable watermarked rephrasings across typologically distant languages places greater demands on the rephrasing model and may compromise the quality of the watermarked copies. Second, **signal quality** becomes less consistent, as paraphrase quality can vary substantially across languages, introducing noise that obscures genuine contamination signals in the paired t-test. Third, **tokenization divergence** poses a major challenge: STAMP inherits the KGW watermarking scheme (Kirchenbauer et al., 2023), which partitions vocabulary into green and red lists via a hash function tied to the model's tokenizer. For low-resource languages, sparser and less stable vocabularies make it significantly harder to embed reliable watermark signals, potentially weakening the statistical power of the test. This suggests that contamination detection for multilingual benchmarks must move beyond English-centric techniques, further increasing its complexity.

3.3.3 Reporting Practices in Model Releases

Based on our analysis, we ask: how do model developers report multilingual evaluation? We audit 23 recent model releases (15 open-weight, 8 closed-models, 2024–2026) across five binary transparency dimensions (1) whether training language composition is explicitly disclosed, (2) whether any multilingual evaluation benchmark is reported, (3) whether the specific evaluation languages are listed, (4) whether a contamination detection technique is named, and (5) whether contamination results are reported. The composite transparency score is the sum (0–5) (Figure 12; full methodology and per-model breakdown in Appendix A.7). The results are stark: 35% of releases report *zero* multilingual benchmarks, and 87% provide no contamination analysis. Only 3 models (all open-weight) report any contamination testing, and even these leave cross-lingual contamination pathways unexamined. When multilingual evaluation *is* reported, it concentrates on a handful of benchmarks, the model–benchmark matrix is 93% sparse, while natively authored benchmarks from our survey (AfroBench, IrokoBench, MILU) are almost entirely unused. Open-weight models

are more transparent (mean score 2.47/5) than closed (0.75/5), but both fall well below adequacy: the overall mean is 1.87/5, and no closed model discloses training language composition or reports contamination. These findings argue for a standardized multilingual evaluation card mandating per-language benchmark disclosure accounting for contamination. Finally, multilingual safety evaluation is reported by only 4 of 23 models: Tiny Aya, Claude Opus 4.6, Claude Sonnet 4.6, and CommandA. All other models either test safety only in English or do not report safety testing at all.

4 Discussion

Our audit of 51 recent multilingual benchmarks spanning 242 datasets reveals a consistent pattern across all three pillars. **Coverage** is wide but thin: 36% of languages appear in only a single benchmark and entire regions of the world are completely absent. Multilingual safety benchmarks remain few in number and provide little coverage of low-resource languages. **Representativeness** is structurally compromised: the benchmarks with the broadest language coverage are the most translated and least culturally grounded, while the most valid benchmarks cover the fewest languages. Annotator demographics are rarely reported, with researchers being the primary data creators of multilingual benchmarks, raising concerns about whose values and priorities are reflected in these benchmarks. **Rigor** is undermined by multiple contamination pathways that are amplified by translation-based construction, English-centric metrics that do not always work well on diverse languages and a lack of meaningful reporting of multilingual evaluation in model releases. These findings point to a systemic misalignment between how multilingual evaluation is currently conducted and what it would need to be to support trustworthy claims of cross-lingual competence. If these issues are not taken seriously, multilingual evaluation risks becoming performative: creating the appearance of inclusion while masking shallow support, overstating progress, and ultimately widening existing linguistic and cultural gaps in AI.

Supporting a language is not simply a matter of translating prompts, reporting a score, or listing it in a benchmark; it requires evidence that the system works in ways that are meaningful for users in their local linguistic and cultural contexts. Similarly, evaluating a language is not just measuring in another language what was originally defined in English, but assessing model behavior under the norms, knowledge systems, communicative practices, and risks that shape real use. Our work aims to raise the bar for how multilingual evaluation is conducted and reported. Reporting should make clear what was evaluated, how data was created or adapted, what contexts are covered, and what claims the results do and do not support. Meaningful community participation must go beyond translation or validation to include communities in defining tasks, rubrics, and failure modes. AI itself can also help scale multilingual evaluation through advances in multilingual synthetic data (Chitale et al., 2026), aligned multilingual LLM judges, and dynamic benchmarks to avoid contamination. Multilingual evaluation must also move beyond model-level assessment to include product, user, and real-world impact evaluation[7], since model performance alone cannot capture how systems behave in deployed, culturally situated settings.

There is an inherent tension between coverage and representativeness in multilingual evaluation: approaches that scale across many languages often depend on standardization, while representativeness requires deeper engagement with local variation, context, and heterogeneity. If the field is committed to supporting everyone with AI, it must accept this tension as a fundamental reality: meaningful evaluation cannot always be reduced to uniform or fully replicable patterns across highly diverse settings, and some degree of variation must be expected as a consequence of taking linguistic, cultural, and contextual diversity seriously.

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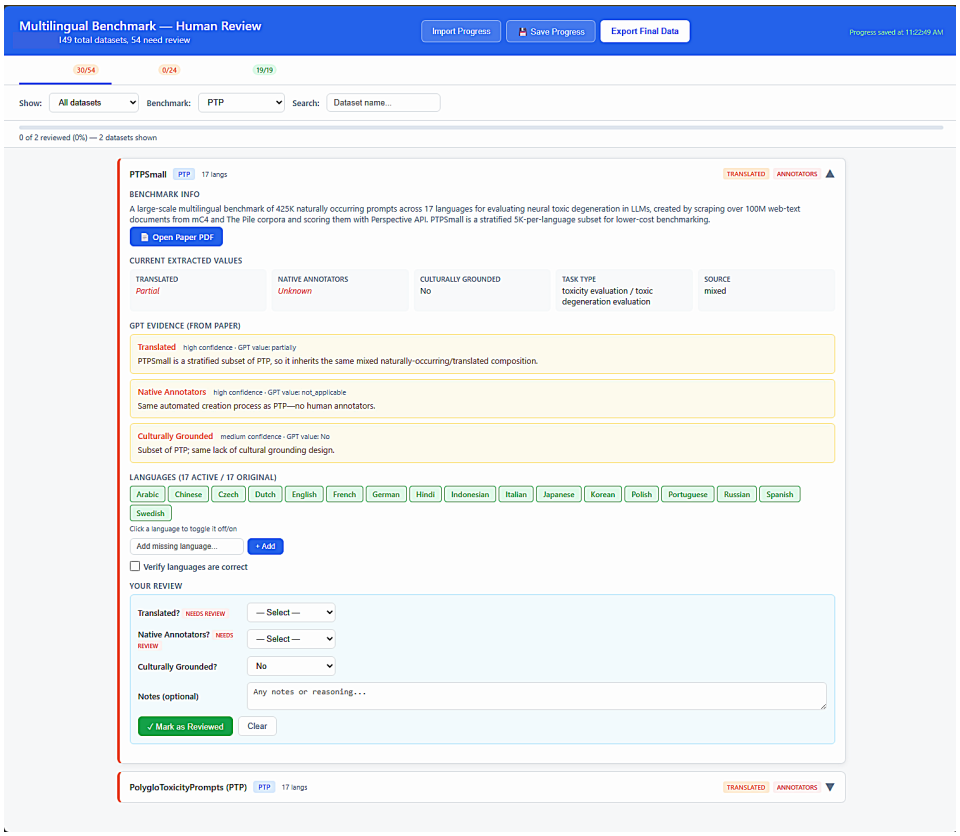

Figure 5: Human review interface showing extracted dataset properties with evidence passages and confidence ratings, alongside structured dropdowns for reviewer adjudication of translation status, native annotator involvement, and cultural grounding.

A Appendix

A.1 Data Extraction Methodology

We survey 51 multilingual evaluation benchmarks and extract structured metadata at dataset-level granularity through a multi-step pipeline. For each benchmark paper, Claude Opus 4.6 extracts the constituent datasets, their member languages, and three key properties per dataset: whether the evaluation content was translated from another language (typically English), whether native speakers were involved in annotation, and whether the dataset is culturally grounded in the target locale rather than reflecting source-culture assumptions. The extraction operates at a three-level hierarchy—benchmark $\rightarrow$ dataset $\rightarrow$ language. Language metadata is enriched deterministically from authoritative sources: family and macroarea, primary script from Glottolog[8], and resource classification (levels 0–5) from Joshi et al. (2020)'s taxonomy. To avoid inflated counts from shared datasets appearing across multiple aggregation benchmarks, we deduplicate at the (dataset, language) level while retaining benchmark provenance. Each property is assessed at the dataset level with an associated confidence rating (high, medium, or low) and a supporting evidence passage extracted from the paper. These produced assessments are then surfaced in a web-based human review interface (Figure 5), where reviewers inspect the extracted values and evidence, verify or correct language membership through interactive toggles, and provide final judgments via structured dropdowns. Certain datasets are automatically flagged for mandatory review due to missing or uncertain property values (e.g., unknown native annotator status), indicated by colored NEEDS REVIEW badges.

[8]https://glottolog.org/meta/downloads

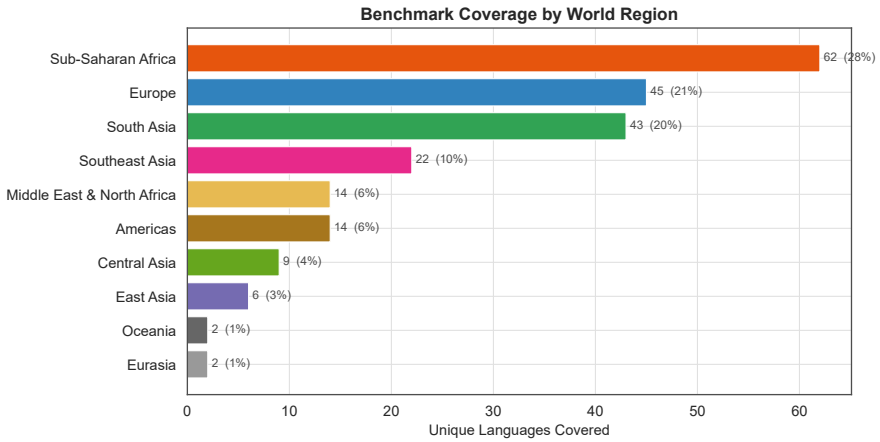

Figure 6: Number of unique languages covered by world region. ***Takeaway***: *Coverage is concentrated in Sub-Saharan Africa, Europe, and South Asia; Oceania remains near-zero.*

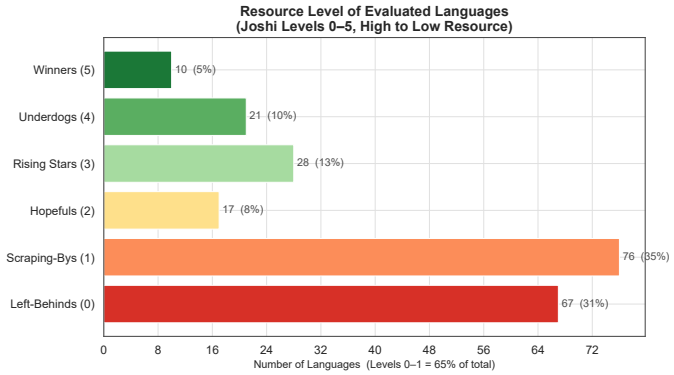

Figure 7: Resource-level distribution of all evaluated languages. ***Takeaway***: *65% of evaluated languages fall in the two lowest resource classes (levels 0–1), yet depth of evaluation remains concentrated in high-resource languages.*

A.2 Geographic Distribution

Figure 6 maps languages to macro-regions. Sub-Saharan Africa leads in raw language count (62 languages, 28%, driven by dedicated benchmarks), followed by Europe (45, 21%) and South Asia (43, 20%). The Americas (14) and Central Asia (9) have gained modest representation through recent benchmarks, but Oceania remains near-zero (2 languages, 1%)—a region home to over 1,400 living languages that remain almost entirely outside the evaluation perimeter.

A.3 Resource-Level Distribution

Figure 7 shows the resource-level composition of all evaluated languages, complementing the task equity analysis in the section 3.2 (Figure 3).

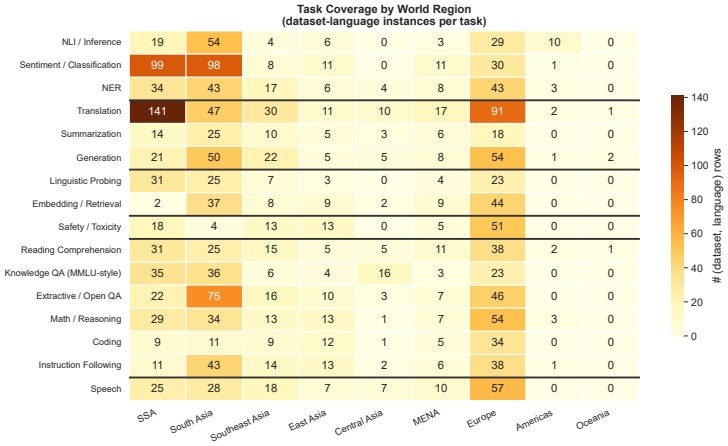

Figure 8: Task category coverage by world region (number of benchmarks evaluating each task). ***Takeaway***: *QA/Knowledge dominates everywhere; specialized tasks (safety, reasoning, coding) are unevenly distributed, with Central Asia and MENA consistently thinnest.*

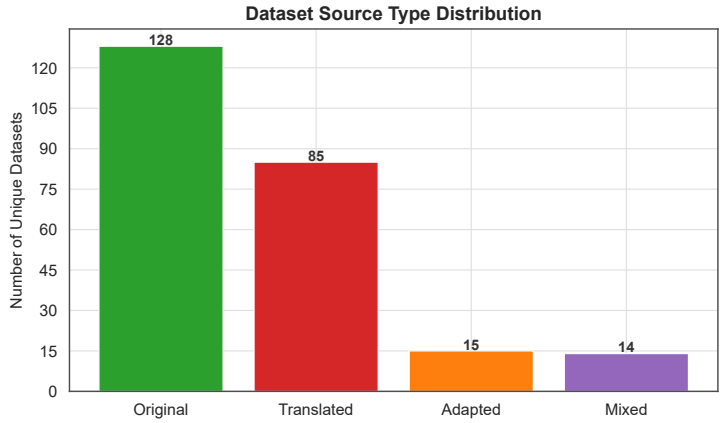

Figure 9: Distribution of dataset construction methods across 242 unique datasets. *35% of datasets are translated from English; only 53% are originally authored in the target language(s).*

A.4 Dataset Source Type Breakdown

Figure 9 breaks down the 242 unique datasets by construction method. While 128 datasets (53%) are originally authored, 85 (35%) are translated from English sources. The remaining datasets are either adapted from existing resources (15, 6%) or use a mix of methods (14, 6%). This means that over a third of the evaluation data that multilingual models are tested on originates from English, carrying the associated risks of translationese artifacts and cultural misalignment.

A.5 Translation Status by Resource Level

Figure 10 reveals how translation status interacts with resource level. Across all resource levels, roughly 35–40% of dataset–language instances involve native data. However, the composition shifts at the extremes: Left-Behinds ($n = 178$) have the lowest native share ($\sim$20%) and are overwhelmingly evaluated through translated datasets, while Winners ($n = 360$) maintain a higher native proportion ($\sim$40%) but still rely heavily on translated data. This pattern suggests that the most under-served languages are also the most likely to be evaluated using data that does not originate from their speech communities.

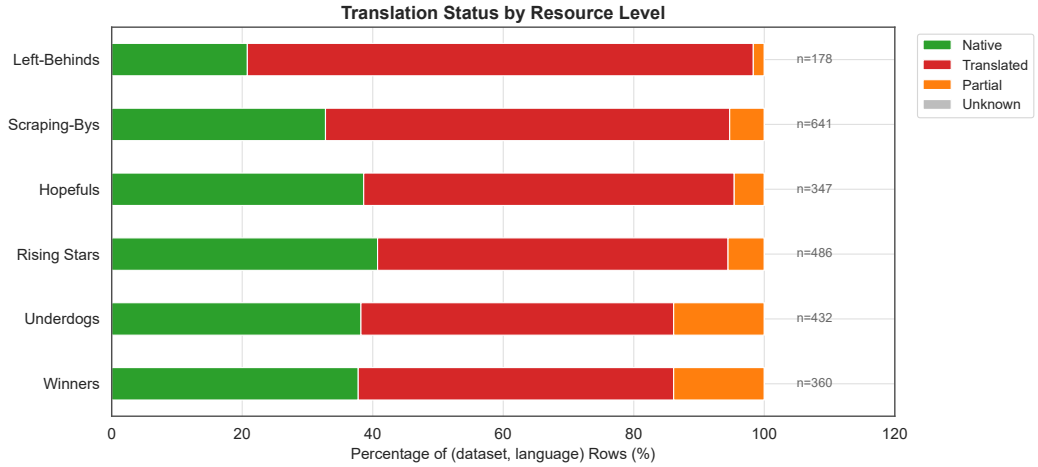

Figure 10: Translation status of dataset–language instances by Joshi resource level. ***Takeaway***: *Left-Behinds have the lowest native data share; the most under-resourced languages are predominantly evaluated through translated benchmarks.*

A.6 Native Annotators by Region

Figure 11 examines whether dataset annotations were produced by native speakers of the target language, broken down by region. Central Asia and South Asia have the highest native-annotator share (∼50%), driven by dedicated regional benchmarks (e.g., IndicGen-Bench, INCLUDE). Sub-Saharan Africa ($n = 543$) shows ∼45% native annotators but a large "Unknown" fraction, reflecting that many aggregation benchmarks do not document annotator provenance. The Americas ($n = 23$) have the lowest native share, consistent with minimal community-driven benchmark development for indigenous languages.

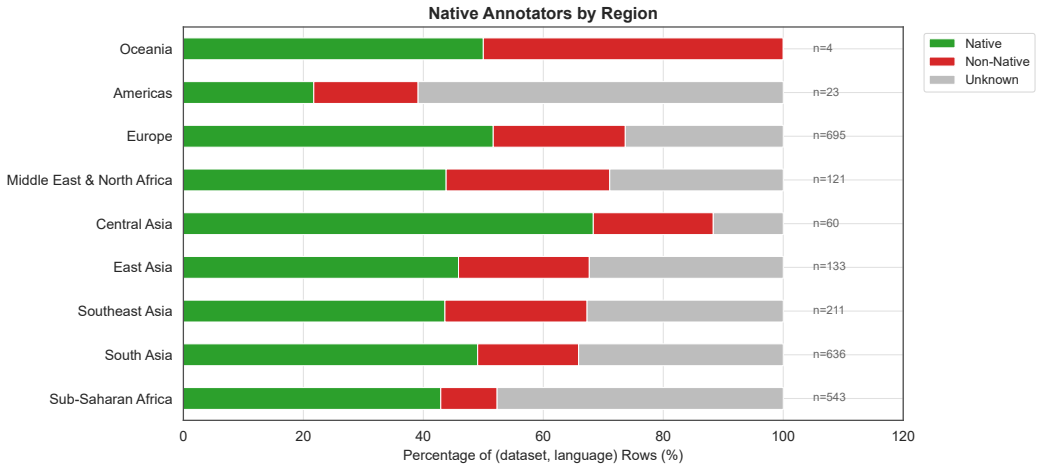

Figure 11: Native vs. non-native annotator status by region. ***Takeaway***: *Annotator provenance is under-documented; where reported, South Asia and Central Asia lead in native-speaker annotation, while the Americas lag.*

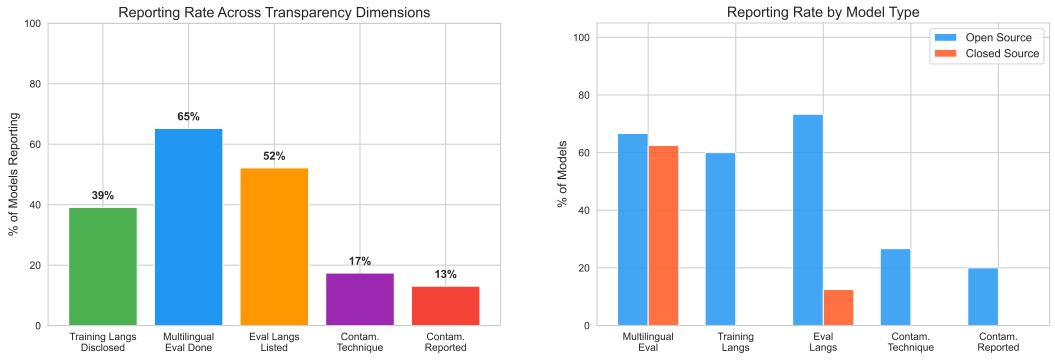

Figure 12: Multilingual evaluation transparency across 23 recent model releases (15 open-weight, 8 closed). **Left:** Reporting rate across five transparency dimensions—only 65% report any multilingual evaluation, and just 13% report contamination results. **Right:** Breakdown by model type—closed models disclose significantly less across all dimensions.

A.7 Model Release Transparency Audit

Section 3.3.3 reports summary statistics from our audit of 23 recent model releases. Here we describe the methodology and provide the detailed per-model breakdown.

Methodology We examine technical reports, model cards, and blog posts for 23 model releases spanning 2024–2026 (15 open-weight, 8 closed-models). Each release is scored on five binary transparency dimensions: (1) whether training language composition is explicitly disclosed, (2) whether any multilingual evaluation benchmark is reported, (3) whether the specific evaluation languages are listed, (4) whether a contamination detection technique is named, and (5) whether contamination results are reported. The composite transparency score is the sum (0–5).

Detailed Findings

Models with sparse multilingual evaluation evidence include GPT, Grok, Mistral 3, BharatGen, Command-R+, OLMo, and Kimi K2.5. Kimi K2.5, for example, is described by its authors as "very English centric." Similarly, while Sarvam is trained on 22 Indian languages, its reported evaluation appears to center on a newly introduced benchmark scored using an LLM judge, without corresponding results on other widely used multilingual benchmarks. Consequently, the multilingual capabilities of these releases remain difficult to verify comprehensively, given the limited publicly reported evaluation evidence.

Contamination testing is reported by only 3 models: Llama-3 (ConTAM), Gemma (quality reweighting), and GPT-OSS (TroubleshootingBench). All are open-weight. Even these three use techniques designed for English benchmarks; cross-lingual contamination pathways like translated benchmark leakage, parallel corpus overlap, instruction-tuning propagation go unexamined.

Benchmark concentration: INCLUDE, FLORES-200, and MGSM are the three most frequently cited multilingual benchmarks, each appearing in only 4 of 23 reports. Natively authored, culturally grounded benchmarks like AfroBench, IrokoBench, MILU, CulturalBench, TUMLU are almost never cited.

Open weight vs. closed: Open-weight models average 2.47/5 on the transparency score vs. 0.75/5 for closed models. The gap is largest on training language disclosure (60% vs. 0%), evaluation language listing (73% vs. 12%), and contamination reporting (20% vs. 0%). The Aya model family (Aya-23, Aya-Expanse, Tiny Aya) stands out as the transparency exemplar, reporting multilingual benchmarks across 23–70 languages. However, even the most transparent open-weight models rarely report contamination testing for multilingual benchmarks.

Multilingual safety evaluation is reported by only 4 of 23 models: Tiny Aya, Claude Opus 4.6, Claude Sonnet 4.6, and CommandA. All other models either test safety only in English or do not report safety testing at all.

B Contamination Detection Results

	Llama-3.1-8B	Llama-3.1-8B-it	Mistral-7B-v0.3	Mistral-7B-v0.3-it	Gemma-2-9B-it	Gemma-2-9B	Aya-23-8B	Gemma-7B-it	Llama-2-7B-it	Mistral-7B-v0.1-it
Flores	✗	✗	✗	✗	✗	✗	✗	–	–	–
Paws-X	✗	✗	✗	✗	✗	✗	✓	✗	✗	✗
XCopa	✗	✗	✗	✗	✗	✗	✓	✗	✗	✗
XLSum	✓	✓	✗	✗	✗	✗	✗	–	–	–
Xnli	✗	✗	✗	✗	✗	✗	✗	✓	✓	✓
XQuad	✗	✗	✗	✗	✗	✗	✗	✓	✗	✗
XStoryCloze	✗	✗	✗	✗	✗	✗	✗	✓	✓	✓

Table 2: Benchmark contamination presence across all evaluated models based on Ahuja et al. (2024a), Ahuja et al. (2024b), and Yao et al. (2024). ✗ = **contaminated**, ✓ = **not contaminated**, – = not evaluated.

	Phi2 2.7B	Phi3 3.8B	Phi3.5-mini 3.8B	Phi3.5-MoE 3.8B×16	GrinMoE 3.8B×16	Abel-7B 7B	LLaMA2 7B	Mistral 7B	Qwen2 7B	GLM4 9B	LLaMA3 70B	Reflection 70B
MMLU	23.83	67.27	68.64	76.62	77.55	47.08	44.88	57.29	69.05	67.36	78.55	75.83
MMLU-g	25.02	85.29	87.00	91.65	92.83	68.37	72.87	82.71	89.23	84.91	92.17	88.37
difference	1.20	18.02	18.36	15.03	15.28	**21.29**	**27.99**	**25.42**	20.18	17.55	13.62	12.54
ARC-C	42.92	80.20	59.56	54.78	63.57	50.34	36.18	64.08	84.81	86.35	61.52	56.74
ARC-C-g	47.27	92.15	93.94	96.50	96.25	66.04	44.71	85.75	95.22	91.81	95.99	94.45
difference	**4.35**	11.95	**34.38**	**41.72**	32.68	15.70	8.53	21.67	10.41	**5.46**	**34.47**	**37.71**
MathQA	31.32	41.14	41.14	37.42	47.67	34.30	28.71	36.88	44.36	43.05	56.52	58.29
MathQA-g	38.70	49.06	47.38	43.96	56.27	35.71	36.18	45.77	49.03	56.04	61.84	63.92
difference	7.38	7.92	6.24	6.54	8.60	**1.41**	7.47	8.89	4.67	12.99	5.32	5.63

Table 3: Detecting inadvertent contamination in popular open-source LLMs from Yao et al. (2024). Each benchmark is tested in its original form and a paraphrased variant (-g); the *difference* row shows the generalizability gap. **Bold** values indicate significantly lower generalizability, implying potential contamination.

Model	PAW-SX	Global MMLU	IndicParam	MILU	MMMLU	INCLUDE	FLORES	MGSM	AFRiMGSM	Overall
Aya-Expanse-32B	**100% (4/4)**	0% (0/42)	0% (0/6)	0% (0/11)	0% (0/14)	0% (0/44)	4% (1/28)	**55% (6/11)**	**16% (3/19)**	7.8%
Gemma-3-12B	**50% (2/4)**	12% (5/40)	0% (0/7)	0% (0/11)	**14% (2/14)**	**5% (2/44)**	0% (1/204)	**55% (6/11)**	**16% (3/19)**	5.9%
Tiny-Aya-Global	**100% (4/4)**	0% (0/42)	0% (0/12)	0% (0/11)	0% (0/14)	0% (0/44)	2% (5/204)	**55% (6/11)**	**26% (5/19)**	5.5%
Aya-Expanse-8B	**75% (3/4)**	0% (0/42)	10% (1/10)	0% (0/11)	0% (0/14)	0% (0/44)	1% (2/204)	**64% (7/11)**	**26% (5/19)**	5.0%
Qwen3-4B	**100% (4/4)**	0% (0/42)	8% (1/12)	0% (0/11)	0% (0/14)	0% (0/44)	0% (1/204)	**36% (4/11)**	**21% (4/19)**	3.9%
Phi-4	**25% (1/4)**	0% (0/42)	**8% (1/12)**	0% (0/11)	0% (0/14)	2% (1/44)	1% (2/204)	**18% (2/11)**	**21% (4/19)**	3.0%
Llama-3.1-8B	**25% (1/4)**	0% (0/42)	0% (0/10)	0% (0/11)	0% (0/14)	0% (0/44)	1% (3/204)	**36% (4/11)**	**20% (2/10)**	2.9%
Overall	67.9%	1.7%	4.3%	0.0%	2.0%	1.0%	1.2%	45.5%	21.0%	4.6%

Table 4: Contamination rate per model and benchmark. Each cell shows the fraction of languages flagged as contaminated ($p < 0.05$), with the count in parentheses. **Bold** indicates the benchmark is contaminated as a whole (Fisher's combined $p < 0.05$).

Type	Name	Release Date
Model	Aya-Expanse-32B	December 2024
	Aya-Expanse-8B	December 2024
	Tiny-Aya-Global	February 2026
	Gemma-3-12B	March 2025
	Llama-3.1-8B	July 2024
	Phi-4	December 2024
	Qwen3-4B	April 2025
Benchmark	PAW-SX	November 2019
	Global MMLU	December 2024
	IndicParam	November 2025
	MILU	November 2024
	MMMLU	September 2020
	INCLUDE	November 2024
	FLORES	June 2021
	MGSM	October 2022
	AFRiMGSM	May 2024

Table 5: Release dates of models and benchmarks used in this study.

C Released Resources and Interactive Dashboard

To facilitate community engagement with these findings, we will release three resources upon acceptance. First, we will provide the **structured metadata annotations** for all 51 benchmarks and 242 datasets, including per-language fields for script, language family, resource level, task categories, translation status, native annotator provenance, and cultural grounding. Second, we will release the **full analysis codebase** used to produce all figures, tables, and statistics in this paper, enabling researchers to reproduce our analysis and extend it as new benchmarks appear. Third, we provide an **interactive web dashboard** that allows users to explore coverage and representativeness statistics, browse individual benchmarks via a searchable explorer, and look up per-language benchmark coverage. The dashboard is designed to be a living resource that will be updated as new benchmarks are added to the survey.

The dashboard provides four main views:

- **Coverage Analysis**: Interactive visualisations of language, family, script, regional, resource-level, and task-type distributions, mirroring and extending the figures in this paper. Users can click on individual bars to drill down into which benchmarks cover specific languages (Figure 14).
- **Representativeness**: Translation status and cultural grounding breakdowns by region and resource level.
- **Benchmark Explorer**: A searchable, sortable table of all 51 benchmarks with expandable rows showing paper links, descriptions, language lists, task categories, and language family coverage (Figure 15).
- **Language Lookup**: A per-language search interface that returns all benchmarks covering a given language, with metadata on translation status and task types.

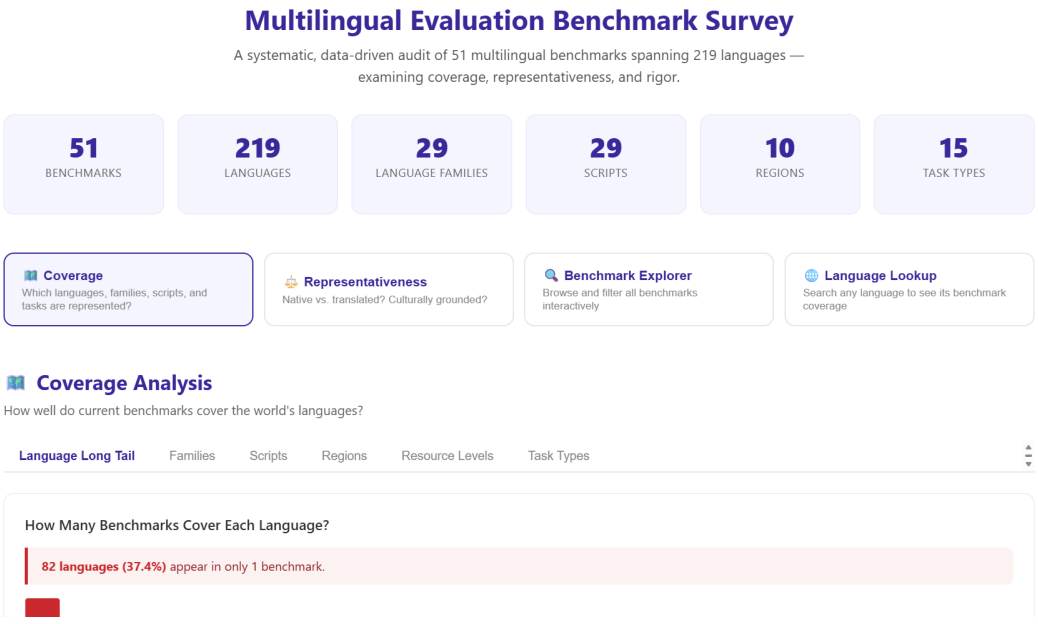

Figure 13: Landing page of the interactive dashboard showing summary statistics (51 benchmarks, 219 languages, 29 families, 29 scripts, 10 regions, 15 task types) and navigation to the four main views: Coverage, Representativeness, Benchmark Explorer, and Language Lookup.

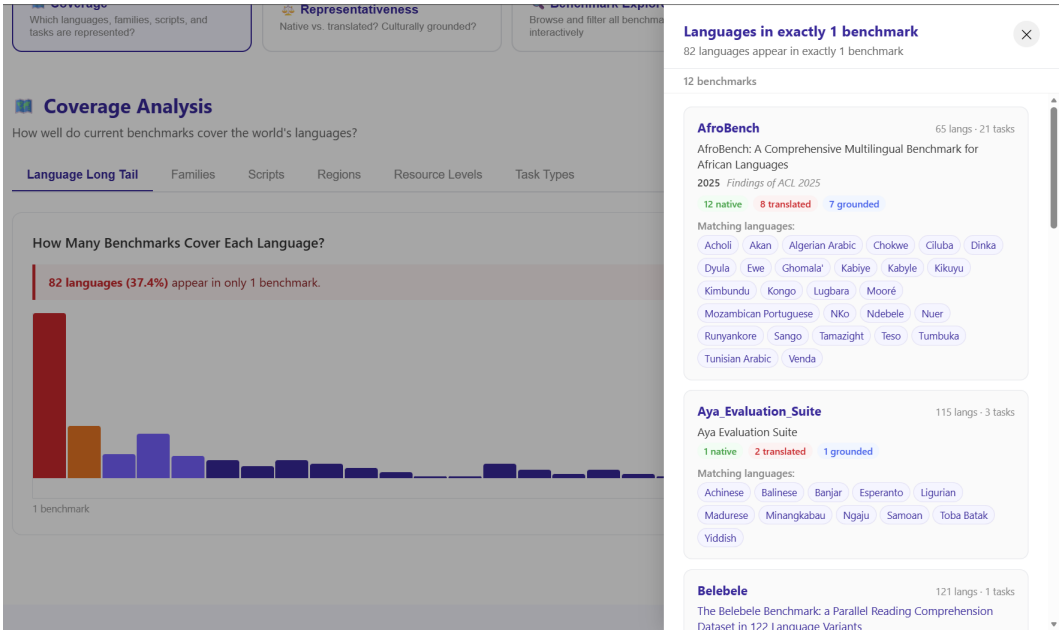

Figure 14: Coverage Analysis view with interactive drill-down. Clicking on a bar in the language long-tail chart opens a panel listing the specific benchmarks that cover languages appearing in exactly that number of benchmarks, along with matching languages for each benchmark.

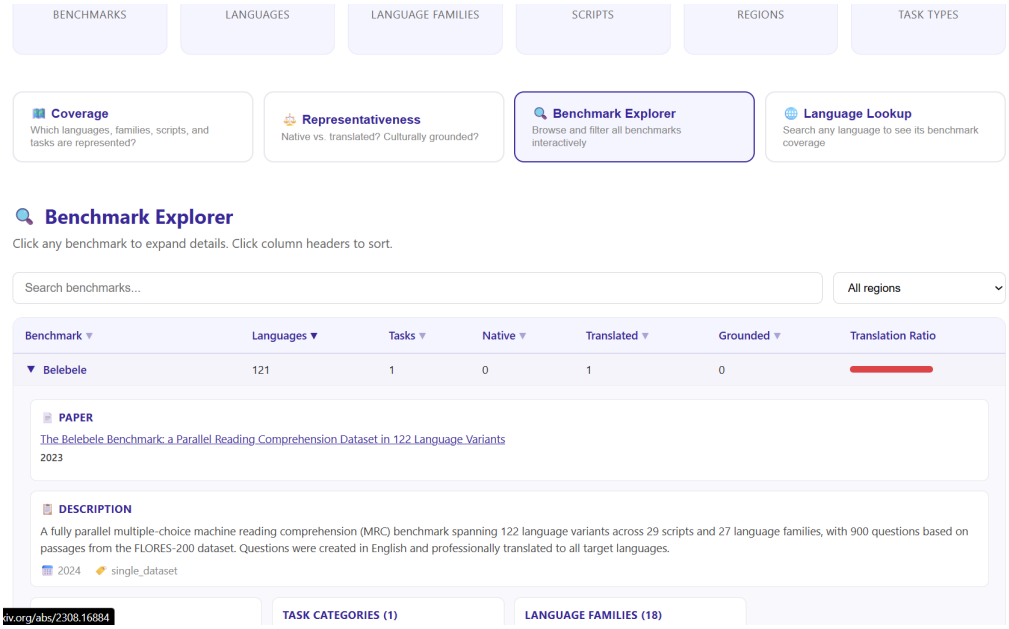

Figure 15: Benchmark Explorer view. Users can search, sort by column, and filter by region. Expanding a row reveals the paper reference, description, year, benchmark type, task categories, and full language family breakdown.

#	Benchmark	Task Categories	Year	Venue	Citation
1	MMTEB	Classification / QA / Knowledge (550 tasks)	2025	ICLR	(Enevoldsen et al., 2025)
2	Belebele	QA / Knowledge	2024	ACL	(Bandarkar et al., 2024)
3	Aya_Evaluation_Suite	Generation	2024	ACL	(Singh et al., 2024)
4	FLORES-101	Translation	2022	TACL	(Goyal et al., 2022)
5	XTREME_UP	Linguistic Probing, Other, QA / Knowledge, …	2023	ACL	(Ruder et al., 2023)
6	MEGA	NER, NLI / Inference, QA / Knowledge, …	2023	EMNLP	(Ahuja et al., 2023)
7	AfroBench	Linguistic Probing, Math / Reasoning, NER, …	2025	ACL	(Ojo et al., 2025)
8	BUFFET	NER, NLI / Inference, QA / Knowledge, …	2024	NAACL	(Asai et al., 2024)
9	XTREME-R	Embedding / Retrieval, Linguistic Probing, …	2021	EMNLP	(Ruder et al., 2021)
10	XTREME	Embedding / Retrieval, NLI / Inference, …	2020	ICML	(Siddhant et al., 2020)
11	MUG_Eval	Coding, Instruction Following, Math / Reasoning	2025	EMNLP	(Song et al., 2025)
12	MMLU-ProX	QA / Knowledge	2025	EMNLP	(Xuan et al., 2025)
13	MaXIFE	Instruction Following	2025	ACL	(Liu et al., 2025)
14	IndiSentiment140	Sentiment / Classification	2024	NAACL	(Kumar et al., 2024)
15	JailNewsBench	Safety / Toxicity	2026	ICLR	(Kaneko et al., 2026)
16	IndicXTREME	Embedding / Retrieval, NER, NLI / Inference, …	2023	ACL	(Doddapaneni et al., 2023)
17	IrokoBench	Math / Reasoning, NLI / Inference, QA / Knowledge	2025	NAACL	(Adelani et al., 2025)
18	XGLUE	Embedding / Retrieval, Linguistic Probing, …	2020	EMNLP	(Liang et al., 2020)
19	BenchMAX	Coding, Instruction Following, …	2025	EMNLP	(Huang et al., 2025b)
20	PTP	Safety / Toxicity	2024	COLM	(Jain et al., 2024)
21	BeMyCheese	Sentiment / Classification	2026	ArXiv	(Van Doren et al., 2026)
22	XNLI	NLI / Inference	2018	EMNLP	(Conneau et al., 2018)
23	IndicIFEval	Instruction Following	2026	ArXiv	(Jayakumar et al., 2026)
24	INDIC-DIALECT	QA / Knowledge, Sentiment / Classification, …	2026	ArXiv	(Sharma et al., 2026)
25	LinguaSafe	Safety / Toxicity	2025	ArXiv	(Ning et al., 2025)
26	MAKIEVAL	Sentiment / Classification	2025	EMNLP	(Zhao et al., 2025)
27	GSM8K-Indic	Math / Reasoning	2025	—	sarvamai/gsm8k-indic
28	IndicNLG	Generation, NLI / Inference, QA / Knowledge, …	2022	EMNLP	(Kumar et al., 2022)
29	IndicNLPSuite	Embedding / Retrieval, NER, NLI / Inference, …	2020	EMNLP	(Kakwani et al., 2020)
30	IndicParam	QA / Knowledge	2025	ArXiv	(Maheshwari et al., 2025)
31	MILU	QA / Knowledge	2025	NAACL	(Verma et al., 2025)
32	Naamapadam	NER	2023	ACL	(Mhaske et al., 2023)
33	TriviaQA-Indic	QA / Knowledge	2025	—	sarvamai/trivia-qa-indic-mcq
34	XQuAD	QA / Knowledge	2020	ACL	(Artetxe et al., 2020b)
35	BoolQ-Indic	QA / Knowledge	2025	—	sarvamai/boolq-indic
36	MMLU-Indic	QA / Knowledge	2025	—	sarvamai/mmlu-indic
37	MultiJail	Safety / Toxicity	2024	ICLR 2024	(Deng et al., 2024)
38	IndicMMLU-Pro	QA / Knowledge	2025	ArXiv	(KJ et al., 2025)
39	M3Exam	QA / Knowledge	2023	NeurIPS 2023	(Zhang et al., 2023)
40	TUMLU	QA / Knowledge	2025	ACL	(Isbarov et al., 2025)
41	XORQA	Embedding / Retrieval	2021	NAACL	(Asai et al., 2021)
42	CL-IFEval	Instruction Following, Math / Reasoning	2025	ArXiv	(Ojewale et al., 2026)
43	Uhura	QA / Knowledge	2024	ArXiv	(Bayes et al., 2024)
44	IberoBench	Linguistic Probing, Math / Reasoning, …	2025	COLING 2025	(Baucells et al., 2025)
45	SeaHELM	Generation, Instruction Following, …	2025	Findings of ACL 2025	(Susanto et al., 2025)
46	BHASA	Linguistic Probing, Math / Reasoning, NER, …	2023	ArXiv	(Leong et al., 2023)
47	M-IFEval	Instruction Following	2025	Findings of NAACL 2025	(Dussolle et al., 2025)
48	MUCH	Sentiment / Classification	2026	LREC	(Dentan et al., 2025)
49	FluidQA	QA / Knowledge, Sentiment / Classification	2025	EMNLP 2025	(Park et al., 2025)
50	BhashaBench_V1	QA / Knowledge	2025	ArXiv	(Devane et al., 2025)
51	CulturalBench	QA / Knowledge	2025	ACL 2025	(Chiu et al., 2025)

Table 6: Comprehensive overview of all 51 multilingual evaluation benchmarks surveyed.