An Extensive Evaluation of LLMs for Sentence Simplification in Portuguese

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Abstract

The sentence simplification (SS) task aims to adapt a sentence to make it easier to understand. Previous works have shown that large language models (LLMs) perform on par with baselines specifically trained for the task of SS in English. However, the performance of LLMs in this task remains underexplored for Portuguese. This paper presents a performance comparison of the latest LLMs in Portuguese SS, alongside two simplification models trained specifically for this task and language. We assess a total of 21 models that vary in size, architecture, pre-training methods, and accessibility. These models are examined on three test sets from scientific, news, and government domains under a one-shot setting. Two of the datasets were previously explored in Portuguese NLP literature, while the third we collected from various Brazilian government agencies, consisting of 2,130 complex-simple sentence pairs. Our investigation employed automatic metrics alongside a large-scale linguistic analysis to examine the transformations performed by the LLMs. Additionally, we conducted a manual qualitative analysis on a subset of model outputs to better assess the quality of the generated simplifications. Our evaluation indicates that, while open-source LLMs have achieved impressive results, closed-source LLMs continue to outperform them on this task.

1 Introduction

Textual simplification of sentences aims to make a sentence easier to read and understand without changing its key points (Alva-Manchego et al., 2020). Text simplification offers numerous important social applications, benefiting a wide range of individuals. For instance, it plays a key role in enhancing accessibility for people with reading difficulties, ensuring that texts are more approachable for those who struggle with complex structures (Aluísio and Gasperin, 2010); it provides support for individuals with cognitive impairments, such as aphasia (Carroll et al., 1998) and dyslexia (Rello et al., 2013; MADJIDI and CRICK, 2024). Moreover, sentence simplification proves valuable for non-native speakers, helping them navigate unfamiliar vocabulary and grammatical forms (Paetzold and Specia, 2016).

In addition, text simplification has emerged as an increasingly useful NLP application to bridge communication gaps in specialized fields, such as medicine and law, where the lexicon is often dominated by technical jargon and complex constructions (Luo et al., 2022; Garimella et al., 2022). Particularly, in Brazil's public administration sector, the government is required to adhere to legal principles when carrying out any administrative act, including the principle of transparency. To ensure public acts are as clear and accessible as possible, it is essential to use plain language in communication with all those affected by the actions of public authorities. The wide range of services provided to citizens, such as legal and tax departments, usually hold specific terms. This often forces people to hire third-party services to address simple issues they could have resolved independently, without incurring financial costs.

LLMs have shown remarkable performance across a wide range of NLP tasks without requiring task-specific training, leading to the belief that they have the potential to solve virtually any task (Brown et al., 2020; Qin et al., 2024; Yang et al., 2024). This prompts the creation of benchmarks in specific domains and tasks to evaluate the capabilities of LLMs (Sainz et al., 2023). However, the vast majority of these benchmarks focus on the English language, and those targeting Portuguese are limited mostly to classification tasks (Pires et al., 2023; Garcia et al., 2024).

Thus, the performance of recent LLMs in the task of sentence simplification in Portuguese remains largely unexplored. The present study focuses on simplification in the Portuguese language,

which typically involves syntactic and lexical simplifications, as well as reordering of phrases (Aluísio et al., 2008). While some studies have evaluated specific LLMs for this task (Kim, 2022; Liu et al., 2024; Alves et al., 2023; Scalercio et al., 2024; Shardlow et al., 2024), there is no comprehensive, large-scale analysis that assesses the potential of different LLMs in this task.

In this paper, we study the capabilities of LLMs and specific simplification models on three datasets: PorSimplesSent (Leal et al., 2018), Museu (Scalercio et al., 2024) and Government Language-BR, our newly curated dataset containing complex-simple pairs from a diverse set of Brazilian public agencies. The datasets cover a wide variety of domains (science, news, and government) and feature diverse simplification operations.

We adopt in-context learning (ICL) to assess LLMs in a one-shot prompting scenario. We evaluate 21 widely used generative models, including both open and closed-weight models across several dimensions. First, we employ automatic evaluation metrics commonly used in the SS literature. Second, we quantify and compare the linguistic transformations that the LLMs perform during simplification. We also study what the best type of exemplar to prompt the LLM is. Finally, we conduct a qualitative analysis to validate our findings and to gain better insights into the quality of the generated simplifications. As expected, the closed-weight models usually outperform their open-weight contenders. However, a family of open-weight LLM has achieved impressive results, even surpassing some closed-weight LLMs. The results from the open-weight models are especially significant because they are quantized, making it possible to run their inference on a single 24GB GPU. Our findings show that Portuguese sentence simplification can be effectively achieved with open-weight LLMs, even in a low-resource regime.

The contributions of this paper are:

1. An evaluation benchmark on the Portuguese Sentence simplification task using 21 LLMs in a one-shot scenario.
2. An evaluation framework that includes both automatic and linguistic in-depth simplification metrics.
3. A qualitative analysis of the results, with manual annotation of simplification operations.
4. A newly compiled sentence simplification dataset, the Government Language-BR dataset. We release code, datasets, and generated outputs as a resource for SS research.

2 Related Work

2.1 Sentence Simplification

Most research in text simplification usually follows a generative or an edit-based supervised strategy. The first case includes sequence-to-sequence models (Nisioi et al., 2017) using transformer (Vaswani et al., 2017a) architectures and reinforcement learning (Zhang and Lapata, 2017), leveraging external paraphrase datasets (Zhao et al., 2018), and integration of syntactic rules (Maddela et al., 2021). Conversely, edit-based supervised models use parallel complex-simple sentence pairs. Alva-Manchego et al. (2017) learns which operations should be performed to simplify a sentence, and Omelianchuk et al. (2021) predicts token-level operations in a non-autoregressive manner.

Controllable text simplification refers to fine-grained techniques to guide the generation process in which simplified sentences are generated conditioned not only on the input sentence but also on some desired attributes that must be present in the simplified sentence (Nishihara et al., 2019). These attributes can include low-level linguistic features, like dependency tree depth, word rank, the number of characters, Levenshtein similarity, and high-level features, like the desired target level of readability (Martin et al., 2020; Ristad and Yianilos, 1996). Target-level simplification refers to the process of generating output tailored to specific readability levels or reader profiles, overcoming the need for specific linguistic knowledge(Kew and Ebling, 2022; Chi et al., 2023; Agrawal et al., 2021; Qiu and Zhang, 2024).

2.2 Simplification in Portuguese

Previous works on sentence simplification in Portuguese that utilize machine learning often rely on parallel corpora. Specia (2010) proposed a Statistical Machine Translation (SMT) framework to learn how to convert complex sentences into simpler ones, using a parallel corpus of original and simplified texts. Hartmann and Aluísio (2020) developed a pipeline specifically for the lexical simplification of informational texts in Brazilian Portuguese, focusing on elementary school children. Given the limited resources, zero-shot, few-shot, and unsupervised methods have emerged as promising strategies for simplifying Portuguese texts.

In this context, Martin et al. (2022) introduced a neural model[1] trained on a large corpus of mined Portuguese paraphrases, using control tokens. Scalercio et al., 2024 also trained a neural model using mined paraphrases, but adopts a different training procedure, learning a style representation using context and linguistic features.

2.3 LLM-based Simplification

Recently, work in text simplification has leveraged the new age of foundational LLMs through fine-tuning and prompt engineering to produce simplifications (Cripwell et al., 2023; Farajidizaji et al., 2024). Given the remarkable performance of LLMs in a wide range of tasks, it is currently possible to simplify sentences by using an off-the-shelf LLM without needing to train it in a specific domain. Some specific simplification models compared their simplification capabilities with LLMs to benchmark their performance (Sun et al., 2023; Chi et al., 2023; Ryan et al., 2023; Scalercio et al., 2024).

Feng et al. (2023) analyzed the zero-/few-shot learning ability of LLMs to simplify sentences in several languages, by evaluating them on benchmark test sets in several languages, including Portuguese. However, their results only reached a very limited number of LLMs and evaluation metrics. Kew et al., 2023 is the most extensive work analyzing LLM on sentence simplification, benchmarking 44 LLMs on English Sentence Simplification. Our work also follows the tendency to benchmark LLMs on sentence simplification, but our study focuses on the Portuguese language and provides an extensive linguistic analysis of the simplification process performed by the LLM along with an investigation of the best one-shot examples.

3 Experimental Setting

3.1 Datasets

Our evaluation establishes the performance of recent LLMs on SS according to three datasets, which cover different domains and styles.

PorSimplesSent (Leal et al., 2018), which was built from the parallel corpus PorSimples (Aluísio and Gasperin, 2010). It features multiple versions, distinguishing whether the complex texts were split during simplification. To allow comparison with previous work, we use the same test set as Scalercio et al., 2024 where the complex sentences remain unsplit. It comprises a total of 606 sentences for the test set.

Museum-PT is a document simplification dataset proposed in Finatto and Tcacenco (2021) with its sentences being aligned in Scalercio et al. (2024). The set comprises written texts accompanying experiments and objects from science and technology museums, aimed at a general audience. The dataset comprises 42 documents, 80 document simplifications, 168 paragraphs, and 460 sentences. Each sentence is also annotated with the operation performed during the simplification, which can be *copy, rephrase, split* or *delete*. For benchmarking the models on SS, we selected all the sentences aligned, totaling 476 complex-simple pairs.

Both PorSimplesSent and Museum-PT datasets originated from simplifications carried out by linguists, aiming to reduce or eliminate complexity by applying Plain Language[2] techniques and adhering to principles of Textual and Terminological Accessibility (Saggion and Hirst, 2017).

Furthermore, we evaluated simplification models on the **Brazilian Government Language (GovLang-BR)** dataset, our newly proposed dataset containing 2,130 complex-simple pairs. To create this dataset, we gathered publicly available pairs of texts and their simplifications from various Brazilian government agency websites.

3.2 Large Language Models

We investigate a total of 21 LLMs with different sizes, architectures, and training objectives. The models we consider range from 3 billion to 72 billion parameters and are all based on the transformer architecture (Vaswani et al., 2017b). All have undergone a self-supervised pre-training stage. Some of these models leverage instruction-tuning, which fine-tunes a pre-trained base model on labeled instruction-response pairs from a diverse set of tasks.

We generally differentiate between open-weight and closed-weight models. Open-weight models refer to those whose trained weights are accessible, enabling users to host them independently. Typically, these models are considered to be 'open source'. However, most do not make the training data and evaluation code available (Liesenfeld and Dingemanse, 2024). The exception is the OLMo

[1] https://github.com/facebookresearch/muss.git

[2] https://www.iso.org/obp/ui#iso:std:iso:24495:-1:ed-1:v1:en,https://snow.idrc.ocadu.ca/accessible-media-and-documents/text-simplification-guidlines/

model[3], the only one included in the fully open-source category. In comparison, closed-weight models refer to those whose weights are kept private and can be queried only through APIs. We included as many as possible the models that perform best according to the open Portuguese LLM leaderboard[4]. The open-weight models include variants of the Qwen family (Bai et al., 2023a), OLMo (Groeneveld et al., 2024a), LLaMA models (Touvron et al., 2023b), Phi-3 models (Abdin et al., 2024a), and a model from Google Gemma family (Team et al., 2024b). We focus on closed-weight models developed by OpenAI[5] and Maritaca AI[6], the first due to the popularity of GPT-based models and the second one because it provides the first PT-BR language-based LLM, the Sabiá model (Pires et al., 2023). Details on each family of models are provided in the Appendix A.

3.3 Baselines

Our evaluation comprises two robust and recent baselines to assess the performance of models trained specifically in the SS task.

MUSS-Unsupervised (Martin et al., 2022): This is an unsupervised multilingual simplification method that fine-tunes BART (Lewis et al., 2020), leveraging paraphrases and control tokens from ACCESS (Martin et al., 2020) during training.

Enhancing-PT-SS (Scalercio et al., 2024): This is an unsupervised Portuguese-only simplification method that employs a T5 (Raffel et al., 2020) Seq2Seq model enhanced with an extra T5 encoder. The extra encoder learns a style representation that aids the decoder during generation. This model is also fine-tuned in mined paraphrase pairs.

3.4 Inference details

We run inference on local GPUs using the LM Studio[7] framework for open-weight models. Unless otherwise specified, we load the models with 4-bit quantization (Q4_K_M method), which allows us to run inference efficiently on a single RTX4090 24GB GPU. We use the APIs provided by Cohere, OpenAI and Maritaca AI for closed-weight models. Following previous work (Kew et al., 2023), we use Nucleus Sampling with a probability of 0.9, a temperature of 1.0, and a context size of 1024 tokens. For our one-shot exemplars, we selected four different complex-simple pairs, each one performing a different type of simplification: syntactic simplifications, changes in phrase order, anaphora resolution, and eliminating redundant information. We perform inference using each one of them individually. We also perform each inference run three times to account for the probabilities. Thus, we generate twelve simplifications for each input sentence and aggregate the results for each metric. We adopted a single prompt throughout the experiments. The other results and more details about the prompts and demonstration selection are in Appendix D.

3.5 Automatic and Linguistic Metrics

Our evaluation comprises automatic metrics widely used in text simplification task (Sheang and Saggion, 2021; Martin et al., 2022). We measure simplicity using SARI (Xu et al., 2016), meaning preservation using BERTScore (Zhang* et al., 2020), and BLEU (Papineni et al., 2002). These metrics are computed using the EASSE package (Alva-Manchego et al., 2019)[8]. We also report the percentage (%) of unchanged outputs (i.e., exact copies), following Agrawal and Carpuat (2023).

To understand the simplification process performed by an LLM, a morphosyntactic analysis was conducted on the simplifications generated by the LLM compared to human simplification (Section 4.2). Among a set of linguistic metrics, four metrics that showed the most variation were selected when comparing the original sentences with their respective references. Only the Museum-PT and PorSimplesSent datasets were used in this initial analysis, as their references are texts generated by linguists. The metrics are: (1) Lemma / Token Ratio (LTR); (2) Passive voice verbs compared to active voice (P/A); Adverbial clauses preceding the main clause (AdvLeft); and (4) Fully developed to reduced relative clauses (D/R). More details about the initially considered metrics and the filtering process that led to the four mentioned can be found in Appendix B.

[3] https://blog.allenai.org/olmo-open-language-model-87ccfc95f580
[4] https://huggingface.co/spaces/eduagarcia/open_pt_llm_leaderboard
[5] https://openai.com/
[6] https://www.maritaca.ai/
[7] https://lmstudio.ai/
[8] https://github.com/feralvam/easse

		PorSimplesSent		Museum-PT		Gov-Lang-BR	
		SARI	BScore	SARI	BScore	SARI	BScore
Baseline	MUSS	38.30	.8976	39.31	.8534	27.90	.8211
	Enhanc-PT-SS	**39.64**	.9024	**41.62**	.8550	**31.72**	.8125
LLM	Aya-23-8B	33.87	.8534	43.61	.8269	41.42	.7790
	Gemma2-27B-it	30.84	.8352	41.12	.8130	41.27	.7809
	Phi-3-medium	29.06	.8230	38.56	.8002	39.26	.7687
	Llama3.1-8B-Instr	30.17	.8289	40.28	.8101	41.21	.7788
	Llama3.1-8B-Instr-Q8	29.55	.8257	39.65	.8070	40.64	.7758
	Llama3.2-3B-Instr	30.24	.8104	38.56	.7897	37.79	.7504
	Mistral-7B-Instr	33.08	.8465	41.32	.8154	39.92	.7875
	Qwen2-7B-Instr	35.75	.8661	**44.54**	.8319	41.67	.7954
	Qwen2-72B-Instr	34.69	.8576	43.94	.8296	41.12	.7808
	Qwen2.5-7B-Instr	**36.61**	.8701	**44.20**	.8347	**43.18**	.7961
	Qwen2.5-7B-Instr-Q8	36.30	.8694	**44.51**	.8354	**43.22**	.7979
	Qwen2.5-14B-Instr	33.96	.8534	43.42	.8183	42.70	.7830
	Command-r-08-2024	32.60	.8329	42.79	.8110	**44.25**	.7913
	GPT3.5-Turbo	**38.18**	.8805	**47.23**	.8468	-	-
	GPT4o-mini	**39.75**	.8838	**48.92**	.8508	**44.80**	.8133
	Sabia-2-small	**38.16**	.8732	44.44	.8353	**44.10**	.8157
	Sabia-3	35.12	.8546	44.72	.8270	42.44	.7875

Table 1: Simplification (SARI) and Meaning Preservation (BERTScore) metrics for the best-performing LLMs and baselines. The best SARI results for Baselines, and open- and closed-weight LLMs are in bold. The best BERTScore results are underlined.

4 Quantitative Results

4.1 Automatic Evaluation

We evaluate all LLMs and baselines automatically on the three datasets. Table 1 reports the SARI and BERTScore results of the best-performing LLMs and baselines. We provide the complete results for the 21 models in Appendix C. We observe that closed-source LLMs achieved the best results in all datasets as a general trend. However, the open-weight Qwen2.5-7B-Instruct model reached very good results across all datasets, staying close to closed-source results. Contrary to what one might expect, scaling the size of the LLM did not improve performance on any of the datasets. For example, Qwen2-7B-Instruct and Qwen2.5-7B-Instruct outperformed both Qwen2.5-14B-Instruct and Qwen2-72B-Instruct models. Sabia-2-small also outperformed Sabia-3 in two of the three datasets. Also, counterintuitively, quantization using 4 bits achieved better results than with 8 bits. Many models that were at the top of the leaderboard did not perform as well. This is most likely due to the fact that the tasks evaluated for the leaderboard ranking are exclusively classification tasks, with no generation tasks included.

PorSimplesSent On News-style data, OpenAI's GPT4o-mini outperform all other tested LLMs according to SARI, with GPT3.5-Turbo, Sabia-2-small and both baselines very close to it. Meanwhile, we can see that only Qwen2.5-7B-Instruct is competitive for open-weight contenders, achieving the best balance between simplicity and meaning preservation according to automatic metrics. In this dataset, both baselines achieved the highest meaning preservation metric. This can be explained by the fact that the reference sentences are not very different from the input sentences, indicating a non-aggressive simplification process. This favors the baselines that make fewer changes to the input. This can be confirmed by their high value of the % of unchanged outputs metric (Appendix C).

Museum-PT On Scientific-style data, we realize a decrease in meaning preservation compared to the PorSimplesSent dataset. This can be explained by the very specific domain, with many words and phrases coming from the subject of physics. With respect to simplicity, GPT models outperform all LLMs and baselines by a reasonable margin. This superiority might indicate a higher and wider training data level than the other LLMs. Qwen2.5-7B-

Instruct and Sabiá models also achieved good results, with a good balance between content preservation and simplicity.

Gov-Lang-BR On Brazilian Government-style data, GPT4o-mini and Sabia-2-small achieved the highest values for both metrics, with very similar values. While Sabia-2-small achieved the highest value for content preservation, GPT4o-mini achieved the highest simplicity metric. The optimal result of the Brazilian language model is likely due to the fact that this dataset is the most specific to Brazilian Portuguese, containing many legal terms and terminology from the Brazilian public administration. Once again, for open-weight LLMs, only Qwen2.5-7B-Instruct is competitive, achieving the best balance between simplicity and meaning preservation according to automatic metrics, and having a SARI score next to GPT4o-mini and Sabia-2-small. Since the GPT4o-mini is cheaper and performs better than GPT3.5T, the latter was not evaluated on the government language dataset.

4.2 Morphosyntactic analysis of the Sentence Simplification task

We perform a large-scale linguistic analysis of the transformations performed during the simplification by the GPT3.5-Turbo and GPT-4o-mini. For the PorSimplesSent and Museum-PT datasets, we analyze the simplifications of GPT-3.5 Turbo LLM and not GPT-4o-mini, as the latter was not yet available at the time of the analysis. To interpret the simplification process carried out by LLMs and determine what they are doing or failing to do, we performed a morphosyntactic analysis of simplifications generated by both humans and LLMs. We used the Museum-PT, PorSimplesSent, and Gov-Lang-BR datasets.

As Section 3.4 explains, twelve simplifications are generated for each input sentence during inference. Two sets of simplified sentences were created to perform a linguistic analysis of the LLM's simplifications. One set always contains the best-generated sentence among the twelve, and the other contains the worst, both according to the SARI metric. For each dataset, we morphosyntactically annotated four sets of data: the original complex sentences, their respective human simplification references, the best simplifications generated by the LLM, and the worst ones. With this approach, we expect to measure the full spectrum of simplifications generated by the LLM. Initially, these sets were annotated morphosyntactically using the UDPipe model trained on a scientific treebank (Straka et al., 2016; de Souza et al., 2021). Then, we calculate the linguistic metrics that were most impacted simultaneously in PorSimplesSent and Museum-PT datasets (Section 3.5). Table 2 shows the results.

Dataset	Linguistic Metrics			
	LTR	P/A	AdvLeft	D/R
PorSimplesSent				
Complex	.224	.010	.49	.81
Simple	.198	.009	.26	1.03
BestGPT3.5T	.216	.012	.26	.99
WorstGPT3.5T	.227	.012	.26	.93
Museum-PT				
Complex	.147	.016	.33	.91
Simple	.128	.005	.54	2.56
BestGPT3.5T	.159	.012	.35	1.34
WorstGPT3.5T	.165	.018	.30	1.09
Gov-Lang-BR				
Complex	.041	.011	.079	.63
Simple	.051	.013	.053	.70
BestGPT4o-m	.043	.013	.066	1.38
WorstGPT4o-m	.043	.013	.071	1.28

Table 2: Linguistic Metrics for three datasets

Observing the results, we verify to what extent the language models followed or diverged from the simplification trends observed in human simplification. In the PorSimplesSent and Museum-PT datasets, we can see that the best simplification set metrics are always closer to the reference metrics than the worst simplification set. It indicates that our chosen linguistic metrics indeed correlate with the SARI metric.

It is also noticeable that, despite the high SARI metric obtained by the best set, there is still room for improvement in the simplifications when compared to the linguistic metrics of the reference set. In particular, the passive-to-active voice, the developed-to-reduced relative clauses, and the LTR metrics can be greatly improved in both the Museum-PT and PorSimplesSent automatic generations to achieve reference standards.

Regarding the Gov-Lang-BR dataset, we observe that its reference sentences do not follow two of the three trends observed in the other two datasets. We see an increase in the lexical diversity, indicated by the LTR metric, and in the passive-to-active voice ratio. This is likely due to the fact that there is no guarantee that linguists specialized in

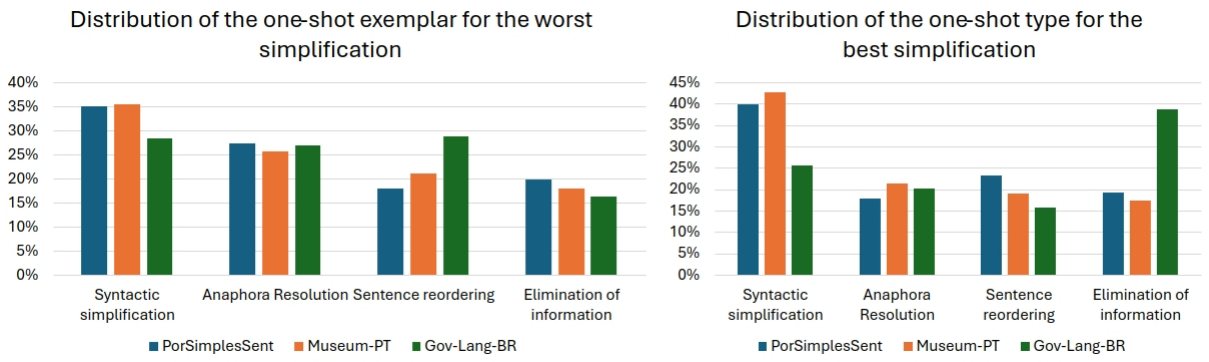

Figure 1: Distribution of the one-shot type for the worst and best simplifications generated by the GPT4o-mini.

Dataset	Worst SARI	Average SARI	Best SARI
PorSimplesSent	31.37	39.75	49.27
Museum-PT	40.62	48.92	57.47
Gov-Lang-BR	37.58	44.80	53.08

Table 3: Range of SARI values reached by GPT4o-mini LLM

plain language were involved in its creation. A fact that supports this hypothesis is that the developed-to-reduced relative clause metric obtained by the LLM, both for the best and worst sets, was higher than that of the reference set.

4.3 One-shot Exemplars Analysis

For each dataset, if we create two sets of sentence simplifications from the original sentences – one by consistently selecting the simplification with the lowest SARI score among the twelve generated by the LLM, and the other by selecting the one with the highest SARI score – we obtain the minimum and maximum extremes of the SARI metric for the LLM's performance. Looking at these values in Table 3 for the GPT4o-mini model, we can see that this range can vary significantly. This variance comes from the stochastic nature of the LLM and the type of one-shot exemplar provided to the LLM during inference. While making it deterministic would compromise its behavior, the one-shot example can be selected to optimize the results.

In this section, we aim to determine whether any of the exemplar types used is more suitable for the simplification task, or if the choice does not make a difference. To do this, we identify which exemplar type produces the best simplification and which produces the worst for each complex sentence in the datasets.

Figure 1 shows the distribution of the best and worst one-shot simplification types. As we can see, the anaphora resolution and sentence reordering examples are rarely the best simplification types in all datasets and are the worst with a higher frequency. Elimination of redundant information was the most successful exemplar in the Gov-Lang-BR dataset, being the best almost 40% of the time and the worst only about 15% of the time. In both PorSimplesSent and Museum-PT datasets, the syntactic simplification type produces the best simplifications more than 40% of the time and the worst about 30% of the time.

The overall results indicate that exemplars with syntax and lexical edits are more likely to impact the simplification process. Public language tends to be bureaucratic, with technical jargon, and often verbose, making using examples with lexical changes and eliminations sensible. On the other hand, examples that simplify the structure for journalistic and scientific styles seem to help the LLM more in the simplification process.

5 Qualitative Analysis

Automatic metrics are recognized for having limitations and are not always entirely reliable (He et al., 2023). To alleviate this issue, we perform a human qualitative analysis on a total of 180 system outputs. We take the three LLMs with the best results following the SARI metrics. Then, for each dataset, we randomly select 20 simplifications from each one of them for annotation[9]. Eight questions are answered: *Is the output a valid simplification?*, *Is the meaning preserved?*, *Was there a lexical change?*, *Was there a syntactic change?*, *Was there a deletion operation?*, *Was there a sentence splitting?*,

[9]Annotations were answered by one of the authors and reviewed by another.

Model-Dataset	%S↑	%MP↑	%L	%S	%D	%Sp	%R	%H↓
Qwen2.5-7B-PorSimplesSent	75.0	65.0	80.0	60.0	55.0	0	25.0	0
Qwen2.5-7B-Museum-PT	85.0	80.0	70.0	65.0	45.0	0	25	0
Qwen2.5-7B-Gov-Lang-BR	65.0	65.0	85.0	60.0	75.0	5.0	10.0	5.0
Qwen2.5-7B	75.0	70.0	78.3	61.7	58.3	1.7	20.0	1.7
Sabia-2-S-PorSimplesSent	65.0	70.0	65.0	65.0	45.0	0	30.0	10.0
Sabia-2-S-Museum-PT	80.0	65.0	55.0	50.0	55.0	0	20.0	5.0
Sabia-2-S-Gov-Lang-BR	50.0	40.0	65.0	35.0	85.0	0	5.0	5.0
Sabia-2-S	65.0	58.3	61.7	50.0	61.7	0.0	18.3	6.7
GPT4o-m-PorSimplesSent	85.0	85.0	60.0	55.0	50.0	5.0	25.0	5.0
GPT4o-m-Museum-PT	100	85.0	85.0	65.0	60.0	0	25.0	0
GPT4o-m-Gov-Lang-BR	90.0	70.0	85.0	75.0	75.0	0	0	0
GPT4o-m	91.7	80.0	76.7	65.0	61.7	1.7	16.7	1.7

Table 4: Results of our qualitative analysis. The questions annotated are S↑: accepted simplification, MP↑: meaning preserved, L+: lexical edit, S+: syntactic edit, R+: reordering, D+: deletion, Sp+: sentence splitting, H↓: hallucination.

Was there a sentence reordering?, *Is the output a hallucination?*.

We followed the types of edit operations described in Heineman et al., 2023, but we assumed it was unnecessary to specifically annotate whether there was a lexical insertion. The question regarding content preservation already addresses the cases of added information, making further consideration redundant. We consider a simplification valid if it is simpler than the input, and has no inappropriate changes to the original text's meaning and ungrammatical outputs. The meaning is preserved if the general information remains in the simplified sentence. We annotate a simplification as a hallucination if the generation possesses information that was not in the input and cannot also be directly inferred. Table 4 shows results from this analysis.

Following the automatic results, GPT4o-mini stands as the best model, considering both simplification and meaning preservation capabilities. However, the superiority of Sabia-2-small compared with Qwen2.5-7B was not observed in terms of both simplicity and meaning preservation. This poor result came mainly from the negative analysis of the Gov-Lang-BR dataset, which contains many long sentences that make the simplification process quite difficult, and may mislead the automatic metrics. Since only 20 sentences from this model were evaluated in this dataset, randomness may also have contributed to this poor result. We also can realize that Qwen2.5-7B and GPT4o-m have very similar distributions of operations, with high values of lexical and syntactic operations. On the other hand, Sabia-2-small has fewer lexical and syntactic operations compared with them and much more hallucinations.

6 Conclusion

In this paper, we extensively evaluated how well recent LLMs perform on the task of Portuguese sentence simplification in the one-shot in-context learning scenario. We found that the best LLMs outperform baselines trained specifically to the task, while also producing a more diverse set of simplifications. We also established that closed-weight models perform better than open-weight ones. Nevertheless, the best open-weight LLM achieved very competitive results. Using modern quantization techniques, we demonstrated that 7B LLM models can achieve good results on a single 24GB GPU.

The linguistic metrics extracted from the best-performing LLMs have shown us that there is still a gap to be filled by LLMs when comparing their simplifications to those generated by humans. Our analyses of the one-shot exemplars revealed that syntactic and lexical simplification examples are more suitable for prompting the LLM. This benchmark has established a solid base to guide future Portuguese SS research. We have solely focused on sentence-level text simplification, using one-shot in-context learning. Future research could investigate alternative document-level simplification methods, as well as incorporating pre-trained LLMs in fine-tuning or retrieval-based scenarios.

Limitations

While our study provides valuable benchmark results for the sentence simplification task in Portuguese, there are some limitations that should be acknowledged. First, we cannot guarantee that the simplified sentences in Gov-Lang-BR were subjected to linguistic validation by experts. We could not acquire this information from the administrative sectors that make the sentences available on their web page. This way, although the data reflects real-world usage, the lack of formal validation may introduce noise, particularly in the case of regional and colloquial variations in Portuguese, or lack of a unified guide of simplification. Moreover, while we motivate our work by analyzing a language less explored than English, for example, our findings cannot generalize to other languages or even to other variations of Portuguese spoken in less represented countries like Mozambique.

Second, our approach relied on one-shot and in-context learning, rather than fine-tuning LLMs. While this choice was made to test the general adaptability of LLMs without additional training, it limits the depth of model optimization that could have been achieved through more focused fine-tuning. In practice, fine-tuning a specific Portuguese dataset could yield better performance and more precise handling of linguistic nuances.

Finally, due to resource constraints, we could not conduct as many experiments as would have been ideal for a thorough exploration of the model's capabilities. Given infinite resources, additional experiments—including hyperparameter tuning and fine-tuning large and small language models could have provided more comprehensive insights.

Ethics Statement

In the context of sentence simplification, it is essential to acknowledge the ethical considerations related to simplifying texts without taking into account the specific needs or abilities of the individuals receiving the simplified content. Simplification without understanding the unique challenges of the target audience – whether related to cognitive disabilities, language proficiency, or educational background – risks reducing the accessibility of the text. This one-size-fits-all approach may oversimplify content, stripping it of important nuance, context, or meaning. Moreover, by not regarding the level of simplification to the individual's needs, we may unintentionally disempower users who require different levels of complexity in the text. Some users might benefit from simplified language, while others might need different types of assistance, such as more detailed explanations or visual aids, to better understand complex ideas. Failing to account for these factors could perpetuate inequities in access to information, particularly for marginalized groups or individuals with specific learning or language challenges. In light of these concerns, future work on sentence simplification should consider a more inclusive approach that accounts for individual differences in language processing and comprehension.

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A Model Details

Here, we briefly describe some information related to each LLM considered in this paper.

1. GPT (Generative Pre-trained Transformer) (Brown et al., 2020) is one of the most widely recognized large language models. We considered the 3.5 and 4o-mini versions of GPT, all of them were trained by OpenAI along the years with increasing data and larger architecture. They are pre-trained on vast amounts of text data from the internet. These models excel at a wide range of tasks, including text generation, translation, summarization, and code completion (Basyal and Sanghvi, 2023; Wu and Hu, 2023; Li et al., 2024; Izadi et al., 2024). GPT models are known for their general-purpose capabilities. However, GPT is a closed-weight model in the sense that it is only possible to run it through API or downloadable software, and its architectural and training details are not available to the public.

2. Qwen (Bai et al., 2023b)[10], created by Alibaba, is an advanced LLM stably pretrained for up to 3 trillion tokens of multilingual data (with a focus on Chinese and English) with a wide coverage of domains (Bai et al., 2023b). It includes models designed for various tasks such as text creation, translation, dialogue simulation, and even multimodal tasks involving audio, vision, and structured data. The Qwen series offers a range of model sizes, including 7 billion, 14 billion, and even up to 72 billion parameters, with instruction-tuned versions for better alignment with user needs. A notable feature of Qwen is its use of a technique called Group Query Attention (Ainslie et al., 2023), which optimizes performance by improving both speed and memory efficiency during inference. Qwen models are available for open-source use.

3. LLaMA (Touvron et al., 2023a), developed by Meta AI, is a family of open-source LLMs that has evolved through several iterations, with the latest being Llama 3, is an open-source model under Meta's licensing designed for efficiency and accessibility. The models are

[10] https://github.com/QwenLM/Qwen2.5

pre-trained on an extensive dataset of approximately 15 trillion tokens, providing them with a broad knowledge base for tasks such as text generation, multilingual translation, and more. LLama 3 includes a more efficient tokenizer, group Query Attention, extended context window, and multimodal capabilities. Llama 3 is designed to be a competitive open-source alternative to proprietary models like GPT-4, with a strong focus on multilingual capabilities and computational efficiency.

4. Command-R [11] is part of Cohere's series of enterprise-grade language models designed specifically for retrieval-augmented generation (RAG) and tool use at a production scale. This model has a 128K token context limit, which allows it to handle long, complex conversations and detailed queries with accuracy. Command-R also integrates with other Cohere tools, such as Embed and Rerank, which further enhance its ability to retrieve and optimize relevant information for end-users. The latest version, Command-R+ (released in 2024), offers efficiency, latency, and performance improvements while maintaining a lower computational cost compared to models like GPT-4. It is well-optimized for multilingual tasks, handling over 10 languages (including Portuguese). Aya-23 (Aryabumi et al., 2024), also developed by Cohere, is an open weights research release of an instruction fine-tuned model with highly advanced multilingual capabilities. It covers 23 languages, including Portuguese.

5. Mistral 7b[12], trained by the AI French startup of the same name, is an open-weight LLM released in September 2023. Mistral uses Grouped-query attention for faster inference and Sliding Window Attention to handle longer sequences at smaller cost. It supports multiple languages, including Portuguese, along with 80+ coding languages. The model is accessible under both non-commercial and commercial licenses.

6. OLMo (Groeneveld et al., 2024b) developed by AI2, is designed to accelerate research and development in language modeling by providing a fully transparent framework. Unlike most language models that only release weights and inference code, OLMo offers open access to training data, training code, evaluation code, and intermediate checkpoints, allowing researchers to fully study the impact of pretraining and architecture decisions. This transparency aims at supporting a deeper understanding of large language models' behavior, biases, and performance. OLMo has been trained on the Dolma dataset, which is composed of 3 trillion tokens from various data sources, including web content, books, code repositories, and academic publications. This open dataset is structured to allow researchers to experiment with and reproduce the effects of different data curation and filtering techniques on model performance. OLMo currently comes in models with 1B and 7B parameters, and it has demonstrated competitive performance across a range of NLP benchmarks.

7. The Phi (Li et al., 2023; Abdin et al., 2024b) family of models, developed by Microsoft, represents a series of small language models (SLMs) designed to offer impressive performance with fewer parameters. The Phi-3 series, introduced in 2024, includes models ranging from 3.8 billion to 14 billion parameters, and despite their smaller size, these models achieve results comparable to much larger models like GPT-3.5. Phi-3-mini is a 3.8 billion parameter model capable of handling up to 128K tokens. Phi-3-medium has 14 billion parameters and was trained on 4.8 trillion tokens. Microsoft's focus on optimizing datasets—using high-quality, filtered web data and synthetic data. Phi models are also available for use and further development on models hub platforms.

8. Gemma[13] (Team et al., 2024a,c) is a family of lightweight, open-source language models developed by Google DeepMind, based on the technology behind the Gemini models. It includes models with 2 billion and 7 billion parameters, optimized for processing up to 8192 tokens at once. Gemma's key architectural features include GeGLU activation

[11] https://docs.cohere.com/docs/command-r

[12] https://mistral.ai/news/announcing-mistral-7b/

[13] https://developers.googleblog.com/en/gemma-explained-overview-gemma-model-family-architectures/

functions and multi-query attention for the 2B model, which helps with efficiency, while the 7B model uses multi-head attention for richer representations. Additionally, Gemma's large vocabulary size (256,000 tokens) allows it to handle diverse inputs, including multilingual text.

9. Sabiá (Pires et al., 2023) is a family of LLMs specifically designed for the Portuguese language, developed by Maritaca AI. These models were built upon popular architectures like LLaMA and GPT-J but are fine-tuned on a vast corpus of Portuguese text. This specialization allows Sabiá to outperform many English-centric or multilingual models on tasks involving the Portuguese language. The models were evaluated using the Poeta benchmark, which consists of 14 Portuguese datasets spanning different NLP tasks such as text classification, natural language inference, and others. Results show that by focusing solely on Portuguese allows Sabiá models to better capture linguistic nuances specific to the language, giving them an edge in understanding and generating Portuguese text. The model is open-source and available for further experimentation via platforms like Hugging Face. Since its first version, Sabiá has evolved to models trained with larger architecture and corpora.

B Linguistic Metrics Selection

18 morphosyntactic characteristics have been considered to compare the original sentences, references simplified by humans, and simplified texts by GPT3.5-Turbo. We selected only four of them to compose the model's simplifications comparison because, in only four of them, the human simplifications were consistent across datasets. Here, we explain each of the tested metrics:

Number of tokens per sentence: higher numbers indicate longer sentences.

Type/Token Ratio (TTR): higher numbers indicate greater lexical diversity (considering the form of words). The calculation is made by dividing the number of unique tokens by the total number of tokens in the corpus.

Lemma/Token Ratio (LTR): higher numbers indicate greater lexical diversity (considering the uninflected form – the lemma – of words). The calculation is made by dividing the number of unique lemmas by the total number of tokens in the corpus.

Comma to token ratio: a higher number of commas may indicate a greater number of syntactic shifts.

Clause to sentence ratio: a higher number of clauses indicates a greater number of verb heads.

Sentence to entry ratio: higher numbers indicate more segmentation of original texts into multiple sentences.

In the example below, the simplified entry (2) consists of 3 sentences, while the original entry (1) consists of only one sentence. In this case, the sentence-to-entry ratio is 1:1 for the original corpus and 3:1 for the simplified one.

Original Museum-PT: (1) *Aperte o botão para ligar o equipamento e gire o disco óptico.*[14]

Simplified Museum-PT: (2) *Aperte o botão para ligar o equipamento. Depois, gire o disco óptico. Você conseguirá produzir alguns feixes de luz, ou seja, pequenos raios.*[15]

Verb to noun ratio: the higher the number, the greater the number of verbs, possibly indicative of actions, as opposed to nouns, possibly indicative of concepts and abstractions.

Adjective to noun ratio: higher numbers indicate a more detailed description, as more adjectives are applied to the relevant nouns.

Adverb to verb ratio: higher numbers indicate a more detailed description of verbal actions (which can occur, for example, "quickly" or "slowly").

Postverbal to preverbal subject ratio: higher numbers indicate a greater number of subjects following the verb they refer to, which characterizes an inversion of the standard syntactic order of Portuguese.

In the example below, the original entry (3) has a postverbal subject (*caverns/cavernas* to the right of the verb *evolve/evolvem*). In the simplified entry (4), the structure is changed so that *caverns/cavernas* is the object of the verb *have/temos*, where it is expected that the object appears to the right of the verb, as the subject of *have/temos* is elliptical (we/nós).

Original Museum-PT: (3) *De sua ampliação e interligação evoluem as cavernas propriamente ditas.*[16]

[14] Press the button to turn on the equipment and rotate the optical disc.

[15] Press the button to turn on the equipment. Then, rotate the optical disc. You will be able to produce some light beams, i.e., small rays.

[16] From their expansion and interconnection, the caverns themselves evolve.

Simplified Museum-PT: (4) *Quando os espaços por onde a água passa aumentam de tamanho e se ligam a outros espaços, temos as cavernas propriamente ditas.*[17]

Passive to active voice ratio: higher numbers indicate a greater amount of passive voice, when the position of the object and the subject are inverted.

In the example below, the original sentence (5) has the verb in the passive voice, where *equipment/equipamento* functions as the patient subject of a passive clause. In the simplified sentence (6), the structure of the sentence is in the active voice, where the subject is simple, *you/você*, and the verb *will need/precisará* is in the active voice.

Original Museum-PT: (5) *Esse equipamento deve ser utilizado por duas pessoas.*[18]

Simplified Museum-PT: (6) *Para utilizar este equipamento, você precisará de outra pessoa.*[19]

Proportion of verbal periphrases: higher numbers indicate a greater number of complex verb heads composed of more than one verb.

Still using examples (5) and (6), we see that in the original sentence there is a verbal periphrasis (*should be used/deve ser utilizado*), while in the simplified sentence there is only one simple verb, *will need/precisará*.

Proportion of adverbial subordinate clauses: higher numbers indicate a greater number of adverbial clauses.

In sentence (6), we can see the use of an adverbial clause that did not exist in the original sentence: *to use this equipment/para utilizar este equipamento*, indicating the purpose of the main clause verb *will need/precisará*.

Proportion of adverbial subordinate clauses to the left of the head: higher numbers indicate a greater number of adverbial clauses to the left of the main clause, an inversion of the standard syntactic order.

Still, in sentence (6), we can see that the adverbial clause is to the left of the main clause, thus requiring a comma to mark the syntactic shift since, in the natural syntactic order of the Portuguese language, adverbial adjuncts come to the right of the verb they modify.

Proportion of developed to reduced relative clauses: higher numbers indicate a greater amount of noun modification by means of relative clauses.

In the example below, we see that a simplification solution (8) was to transform what originally (7) were nouns, *production/produção* and *confinement/confinamento*, into reduced relative clauses, *to produce/produzir* and *to isolate/isolar*. Another option could have been the use of developed relative clauses, where the verb is in a finite form and the subordinating conjunction is explicit, for example: *developed a powerful machine that produces and isolates plasma/desenvolveram uma máquina poderosa que produz e isola plasma*.

Original Museum-PT: (7) *Na Rússia foi desenvolvida uma potente máquina para produção e confinamento de plasma, o Tokamak, em 1960, com a finalidade de gerar energia elétrica.*[20]

Simplified Museum-PT: (8) *Em 1960, na Rússia, os cientistas desenvolveram uma potente máquina para produzir e isolar plasma: o Tokamak. Essa máquina serviria para gerar energia elétrica.*[21]

Proportion of objective noun clauses: higher numbers indicate a greater number of objects (verbal complements) in the form of clauses.

In the example below, the original sentence (9) has a direct objective subordinate noun clause, whose head is *have/têm* and whose main clause is *observe*. In the human simplification (10), the two clauses gave way to only one sentence, whose head is *have/têm*.

Original Museum-PT: (9) *Observe que os dois objetos têm a mesma massa, pois a balança encontra-se em equilíbrio.*[22]

Simplified Museum-PT: (10) *Os dois objetos têm a mesma massa, pois a balança está equilibrada.*[23]

Proportion of coordinated clauses: higher numbers indicate a greater number of coordinated clauses (verbs).

Proportion of coordinated nominals: higher numbers indicate a greater number of coordinated nominals (nouns, adjectives, pronouns, etc.).

C Additional Results

Tables 5, 6, and 7 show full simplification results on PorSimplesSent, Museum-PT and Gov-Lang-BR,

[17] When the spaces through which the water passes expand and connect to other spaces, we have the caverns themselves.

[18] This equipment should be used by two people.

[19] To use this equipment, you will need another person.

[20] In Russia, a powerful machine for the production and confinement of plasma, the Tokamak, was developed in 1960, with the purpose of generating electricity.

[21] In 1960, in Russia, scientists developed a powerful machine to produce and isolate plasma: the Tokamak. This machine would serve to generate electricity.

[22] Observe that the two objects have the same mass, as the scale is in balance.

[23] The two objects have the same mass, as the scale is balanced.

respectively.

Model	SARI	BertS	Bleu	% U
Baselines				
MUSS	38.30	.8976	51.38	3.46
Enh-PT-SS	39.64	.9024	48.2	3.79
LLMs				
Aya23-8B	33.87	.8534	26.54	1.66
Command-R	32.60	.8329	21.97	0
Gemma2-27B	30.83	.8352	17.08	0
Gpt-3.5-T	39.18	.8805	38.01	0.26
Gpt-4o-m	**39.75**	.8838	35.17	0
Llama2-7B	27.25	.7993	16.48	2.54
Llama3-8B	31.60	.7658	21.77	5.69
Llama3.1-8B	30.17	.8289	16.31	0.11
Llama3.1-8B-q8	29.55	.8257	15.12	0.07
Llama3.2-3B	30.24	.8104	19.53	3.95
Mistral-7B	33.08	.8465	24.46	0.03
OLMo-7B	27.96	.7864	15.54	0.37
Phi-3-medium	29.06	.8230	15.18	0
Phi3.5-mini	28.97	.7442	13.30	1.24
Qwen2-7B	35.75	.8661	28.84	0.25
Qwen2-72B	34.69	.8576	24.67	0
Qwen2.5-7B	36.61	.8701	31.19	0.77
Qwen2.5-7B-Q8	36.30	.8694	29.92	0.11
Qwen2.5-14B	33.96	.8534	23.86	0.04
Sabia-2-S	38.16	.8732	35.46	0.85
Sabia-3	35.12	.8546	26.33	0.26

Table 5: Simplification Results on PorSimplesSent

D Prompts and Demonstration Examples

We followed recent Portuguese sentence simplification work (Scalercio et al., 2024) that also employed in-context learning for preparing our prompt and selecting demonstration examples. As there, the instruction follows Feng et al. (2023): 0.5cm *"Substitua a frase complexa por uma frase simples. Mantenha o mesmo significado, mas torne-a mais simples.*
Frase complexa: {original}
Frase Simples: "[24].

[24] In English: *"Replace the complex sentence with a simple sentence. Keep the same meaning but make it simpler.*
Complex sentence: {original}
Simple Sentence: "

Model	SARI	BertS	Bleu	% U
Baselines				
MUSS	39.31	.8534	32.12	3.99
Enh-PT-SS	41.62	.8550	32.36	5.46
LLMs				
Aya23-8B	43.61	.8269	19.82	1.59
Command-r	42.79	.8110	16.88	0
Gemma2-27B	41.12	.8130	12.55	0.05
Gpt-3.5-T	47.23	.8468	26.27	0.63
Gpt-4o-m	**48.92**	.8508	25.84	0.14
Llama2-7B	34.52	.7577	9.72	3.12
Llama3-8B	35.45	.7428	14.50	8.54
Llama3.1-8B	40.28	.8101	12.39	0.14
Llama3.1-8B-q8	39.65	.8070	11.45	0.03
Llama3.2-3B	38.56	.7897	13.18	4.35
Mistral-7B	41.32	.8154	16.20	0.04
OLMo-7B	34.81	.7592	8.31	0.68
Phi-3-medium	38.56	.8002	10.48	0
Phi3.5-mini	35.24	.7279	8.36	1.61
Qwen2-7B	44.54	.8319	20.18	0.17
Qwen2-72B	43.94	.8296	17.22	0.07
Qwen2.5-7B	44.20	.8347	21.43	0.50
Qwen2.5-7B-Q8	44.51	.8354	21.37	0.25
Qwen2.5-14B	43.42	.8183	17.86	0.17
Sabia-2-S	44.44	.8353	23.70	0.71
Sabia-3	44.72	.8270	19.17	0.16

Table 6: Simplification Results on Museum-PT

And the exemplars are disposed in Table 8. Here, we add the simplification category that guided the selection of exemplars.

Model	SARI	BertS	Bleu	% U
Baselines				
MUSS	27.90	.8211	19.06	6.38
Enh-PT-SS	31.72	.8125	17.14	3.80
LLMs				
Aya23-8B	41.42	.7790	12.16	0.09
Command-r	44.25	.7913	11.29	0
Gemma2-27B	41.27	.7809	9.32	0
Gpt-4o-m	**44.80**	.8133	16.54	0.02
Llama2-7B	36.33	.7266	8.46	3.27
Llama3-8B	33.84	.6979	7.78	5.36
Llama3.1-8B	41.21	.7788	10.25	0.01
Llama3.1-8B-q8	40.64	.7758	8.77	0.01
Llama3.2-3B	37.79	.7504	7.71	0.77
Mistral-7B	39.92	.7875	12.05	0.01
OLMo-7B	38.59	.7610	10.98	1.23
Phi-3-medium	39.26	.7687	8.17	0
Phi3.5-mini	37.24	.7129	4.47	0.37
Qwen2-7B	41.68	.7954	13.12	0.02
Qwen2-72B	41.12	.7808	8.86	0
Qwen2.5-7B	43.18	.7961	15.38	0.18
Qwen2.5-7B-Q8	43.22	.7979	15.06	0.12
Qwen2.5-14B	42.70	.7830	12.99	0
Sabia-2-S	44.10	.8157	16.67	0.31
Sabia-3	42.44	.7875	11.42	0.01

Table 7: Simplification Results on Gov-Lang-BR

Category	Style	Simplification
Syntactic	Original	Conforme moradores do bairro, a expressão identificaria um grupo de pichadores.
	Simplified	Os moradores do bairro dizem que a frase identificaria um grupo de pichadores.
	Original	According to neighborhood residents, the expression would identify a group of graffiti taggers.
	Simplified	The neighborhood residents say that the phrase would identify a group of graffiti taggers.
Order	Original	Entre os motivos da liderança gaúcha, estão a tradição no cultivo da soja, que hoje representa a maior parte da matéria-prima do biodiesel, e a predominância da agricultura familiar, condição para concessão do selo social.
	Simplified	A tradição na cultura da soja, que hoje representa a maior parte da matéria-prima do biodiesel, e o predomínio da agricultura familiar, condição para conceder o selo social, estão entre os motivos da posição gaúcha de líder.
	Original	Among the reasons for the leadership of Rio Grande do Sul are the tradition in soybean cultivation, which today represents the majority of the raw material for biodiesel, and the predominance of family agriculture, a condition for obtaining the social seal.
	Simplified	The tradition in soybean cultivation, which today represents the majority of the raw material for biodiesel, and the predominance of family agriculture, a condition for granting the social seal, are among the reasons for Rio Grande do Sul's leadership position.
Anaphora	Original	E com eles amarrados a coleiras, do alto de uma duna a cerca de 50 metros do mar, tomava chimarrão às 19h de ontem.
	Simplified	Pandolfo tomava chimarrão às 19h de ontem, no alto de um monte de areia, com os poodles amarrados a coleiras.
	Original	And with them tied to leashes, from the top of a dune about 50 meters from the sea, he drank mate at 7 p.m. yesterday.
	Simplified	Pandolfo was drinking mate at 7 p.m. yesterday, atop a sand dune, with the poodles tied to leashes.
Lexical redundancy	Original	Numa entrevista coletiva conduzida ontem à noite, os gerentes da Nasa deram o veredicto.
	Simplified	Numa entrevista coletiva ontem à noite, os gerentes da Nasa decidiram.
	Original	In a press conference conducted last night, NASA managers delivered the verdict.
	Simplified	In a press conference last night, NASA managers made a decision.

Table 8: Selected simplifications used as exemplars, one for each one-shot demonstration, together with their English versions. Note that the translations might not fully express the simplification if they were done in the original translated sentence.