Mapping Inconsistencies: Applying an Interdisciplinary Framework to Evaluate Gender-based Violence Data Collection and Visualization

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INTRODUCTION

BACKGROUND

- Gender-based violence (GBV) is a critical human rights issue impacting women worldwide
- Data visualizations have the potential to raise awareness of this issue and inform policy decisions
- Data gaps and inconsistencies due to underreporting, inadequate infrastructure, and different definitions across societies and cultures, posing challenges for accurate visualizations

INSPIRATIONS

Feminist and critical data scholars have developed key concepts such as:
- Data biography (contextualizing data, outlining its biases and limitations)
- Feminist data visualization (integrating diverse stakeholders and knowledge systems into the design process)

These concepts are be helpful for understanding and addressing the outlined challenges for GBV visualizations.
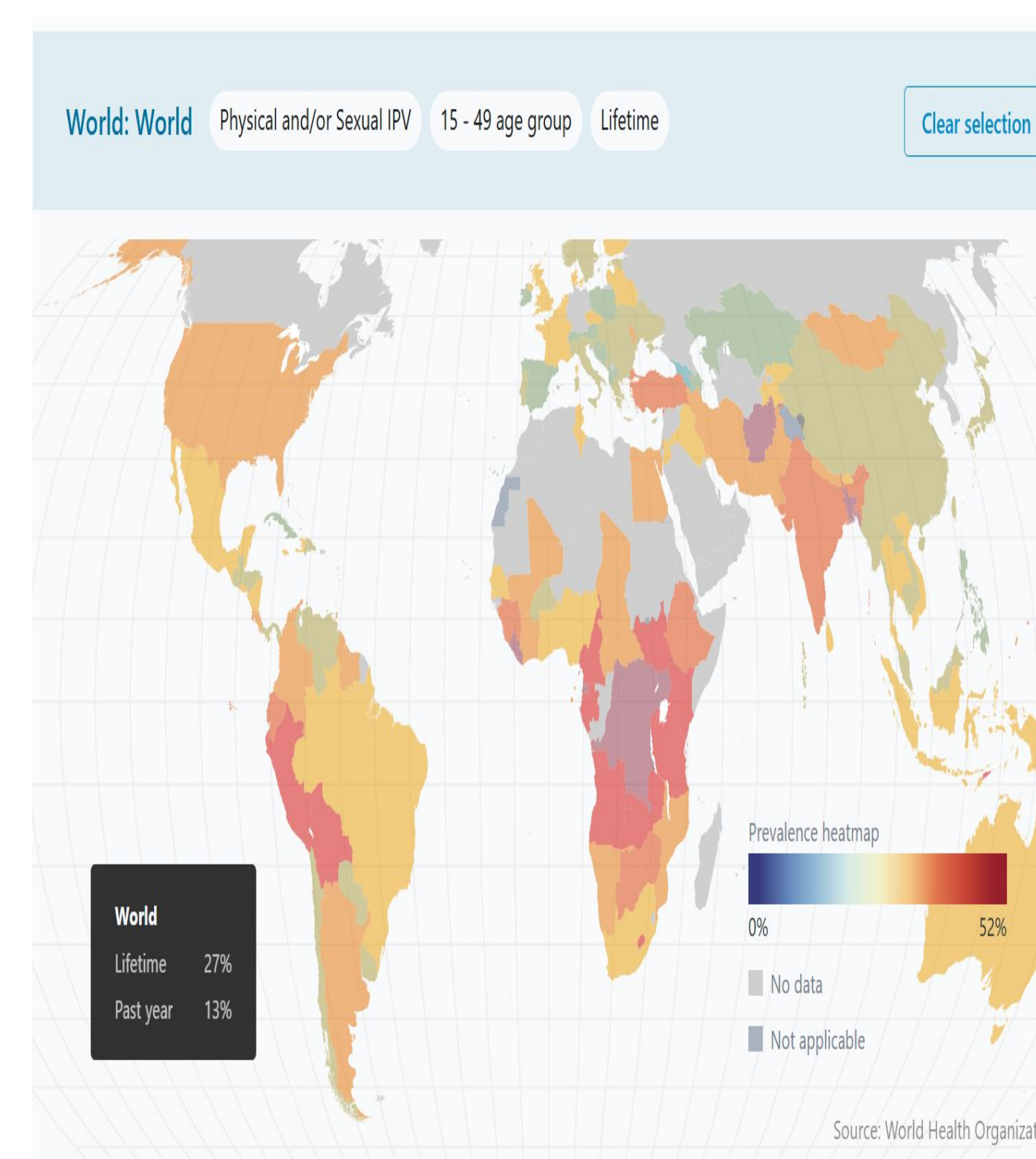
QUESTIONS

1. How do we design a framework, rooted in feminist and critical data principles, to assess the reliability of existing GBV visualizations?
2. Based on the findings, what design guidelines can we develop to improve existing and future GBV visualizations?
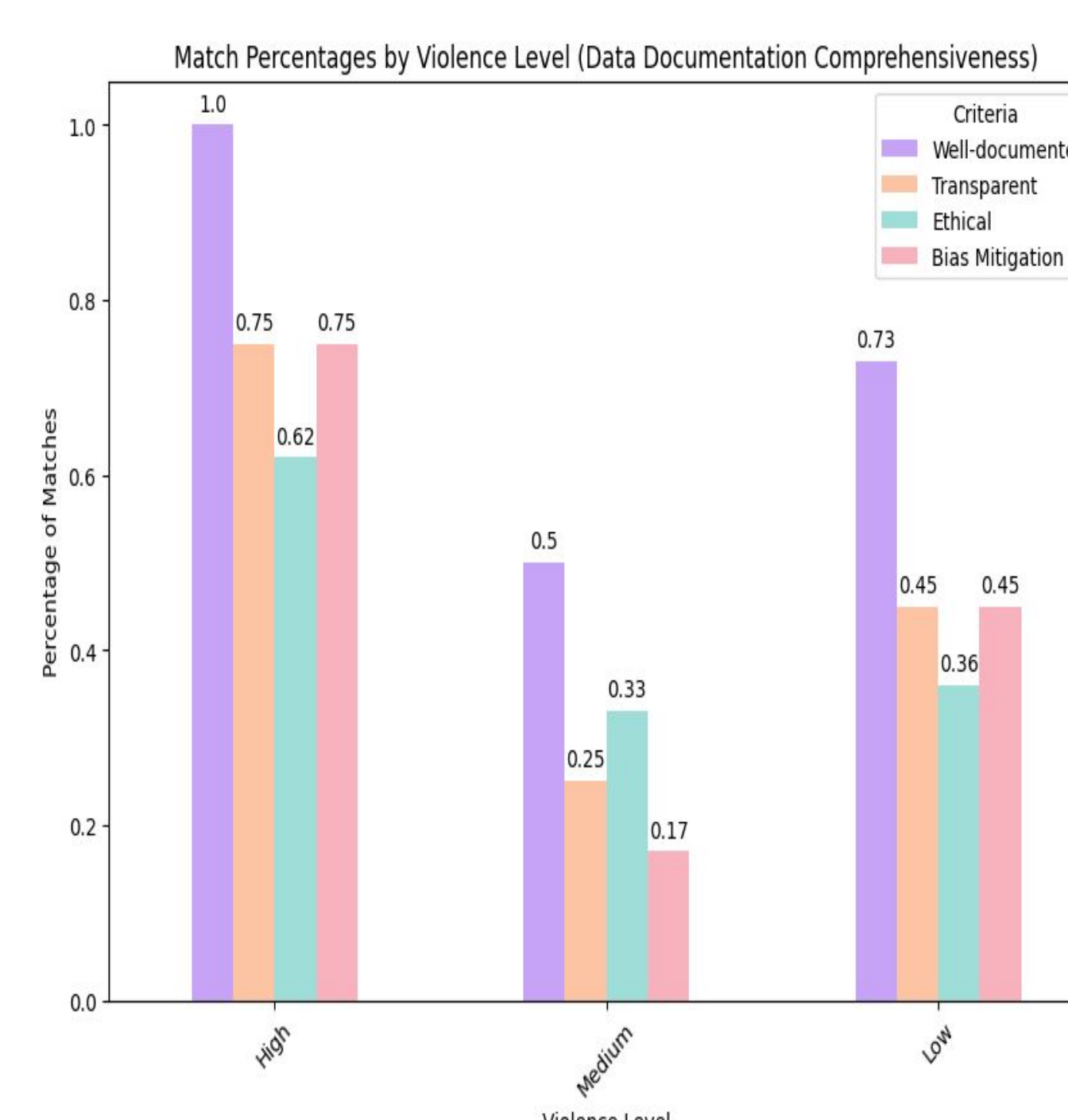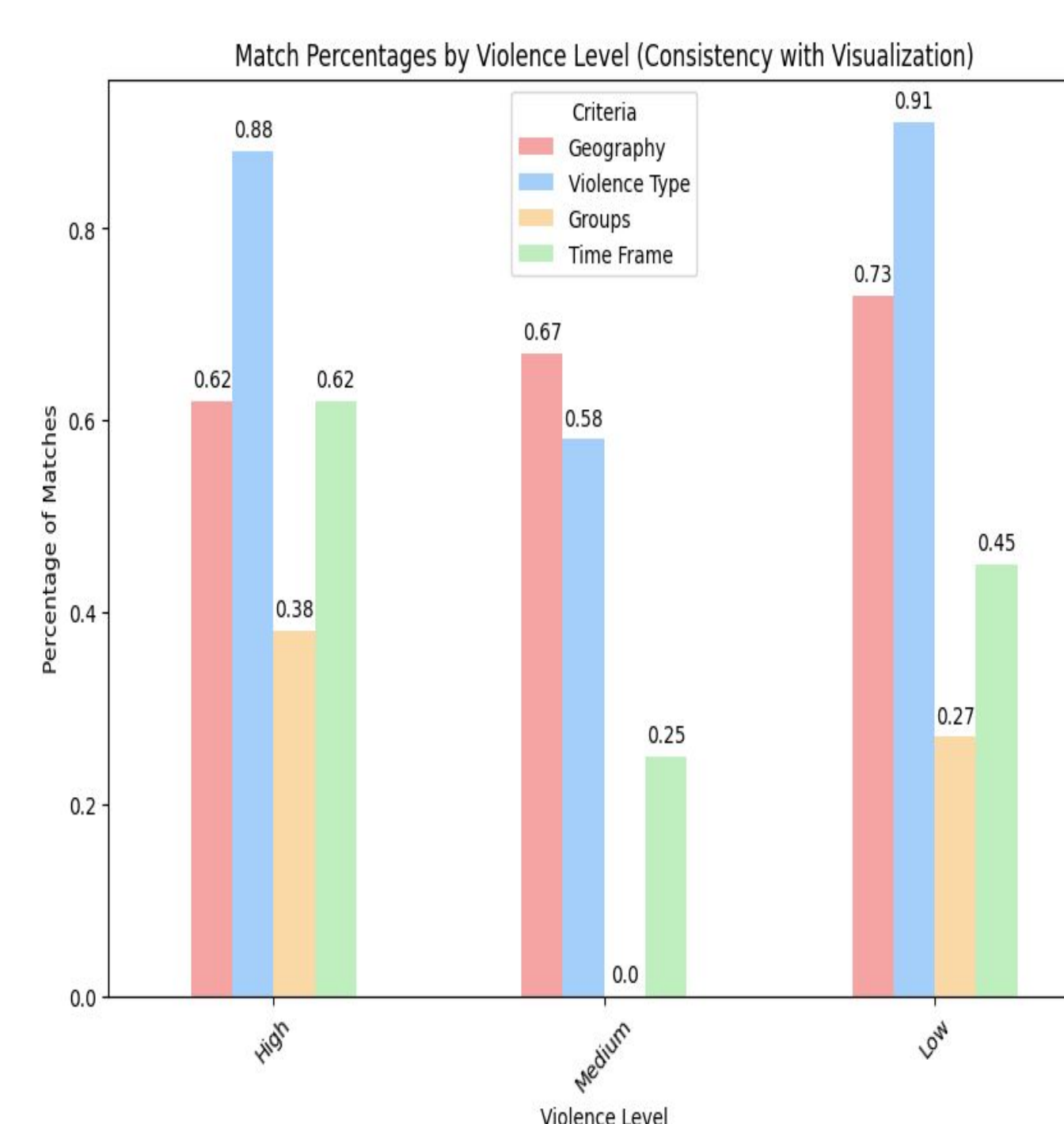
RESEARCH

METHODOLOGY

We developed a framework with 33 questions to evaluate the data collection and design of GBV visualization projects. Questions are organized into 4 interconnected sections: Source-Visualization Consistency, Source Quality, Source Contextualization, and Visualization Design. We applied a subset of questions to assess the visualizations for 15 countries in the World Health Organization Violence Against Women (VAW) Database, the largest current visualization project on GBV. We created a summary dataset based on the evaluation results and "meta-visualizations" that reveal limitations of the visualization design and data collection.

FINDINGS

1. Misleading Color Schemes
   - Definitive rainbow color scheme that risks suggesting non-existence of violence in countries where data is under-collected and a correlation between violence rates and effectiveness of addressing violence
2. Insufficient Representation of Data Context and Quality
   - No visual or textual features explaining context such as different violence definitions and data collection infrastructure across regions
   - Visualization title does not communicate the age of data (average 5.55 year delay in collection and publication; no data representing 2018)
3. Lack of Diverse Voices in Data Collection
   - Mainly sources from government agencies and international nonprofits (48.39% and 22.58%)
   - Absence of input from local nonprofits and activists, a narrow violence definition, and the lack of participation may have resulted in data gaps

CONCLUSION

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We hope this work can inspire new guidelines on improving GBV data visualizations:
- In terms of data collection :
  - Use crowdsourcing and participatory data collection techniques and integrate them into the visualization design
  - Use more culturally-aware definitions of violence to ensure comprehensiveness of collected data
- In terms of design :
  - Use techniques that emphasize context and the human aspect of data (e.g., spatially-embedded, temporally-situated graphs)
  - Provide clear annotations to the visualization regarding data gaps, limitations, and inconsistencies
  - Rely less on definitive coloring that can be simplifying and misleading

NEXT STEPS

1. Expanding analysis to more datasets and other smaller-scale visualizations
2. Refining the evaluation framework based on the analysis and feedback from scholars and practitioners
3. Using the framework to continuously develop and update design guidelines for GBV visualizations