

From Open Source to Action: A Volunteer-Led Health Surveillance Model for Humanitarian NGOs

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Background

- Open-source data platforms, such as the WHO Epidemic Intelligence from Open Source (EIOS) initiative, are increasingly utilized to augment disease and public health surveillance



- Humanitarian NGO's can use these platforms to continuously inform their healthcare delivery¹.
- Using language processing and machine learning, the EIOS initiative collects information regarding emerging health threats from general media, social networks, blogs, open-source data, and internal communication channels².

Methods

Training	Board Creation	Data Collection	Report Creation	Feedback
20 students trained with course and hands-on practice	Population & health topics selected on EIOS	Articles screened & saved every 3 days	Saved data reviewed & collated every 1-2 weeks	Met with regional team every 1-2 months

Example Report:

Board Revisions

1	2	3
Feb 2025 - April 2025	May 2025 - Sept 2025	Dec 2025 - Feb 2026
Mexico (Tabasco)	Colombia (Necoclí) & Mexico (Tamaulipas)	Colombia (Cúcuta + Medellín) & Ecuador (Santa Elena)

Screening Analysis

Figure 1: All Phases: Articles Screened, Time Commitment, and Article Yield
As search criteria were refined across phases, volunteer time and total articles screened decreased while the proportion of relevant articles increased.

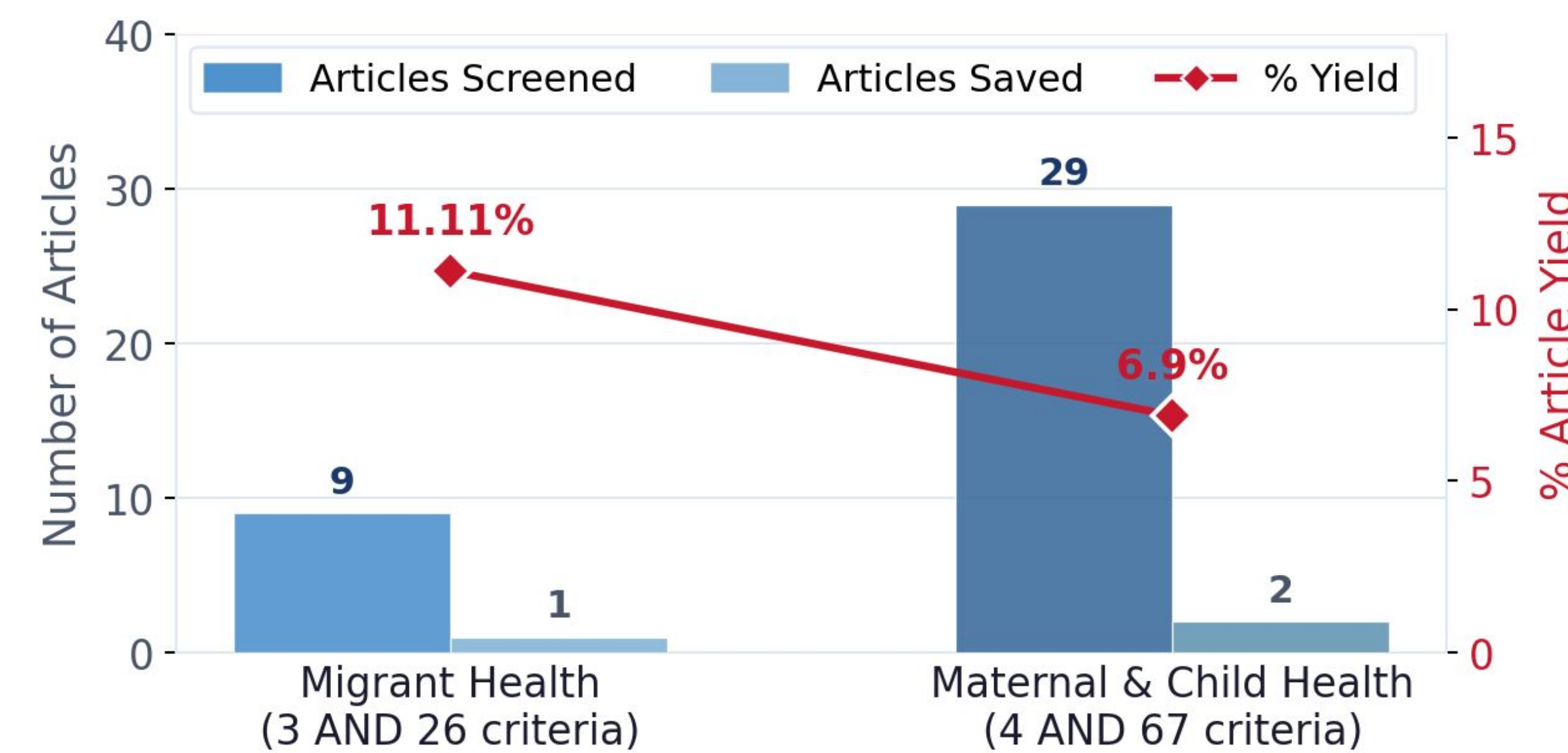
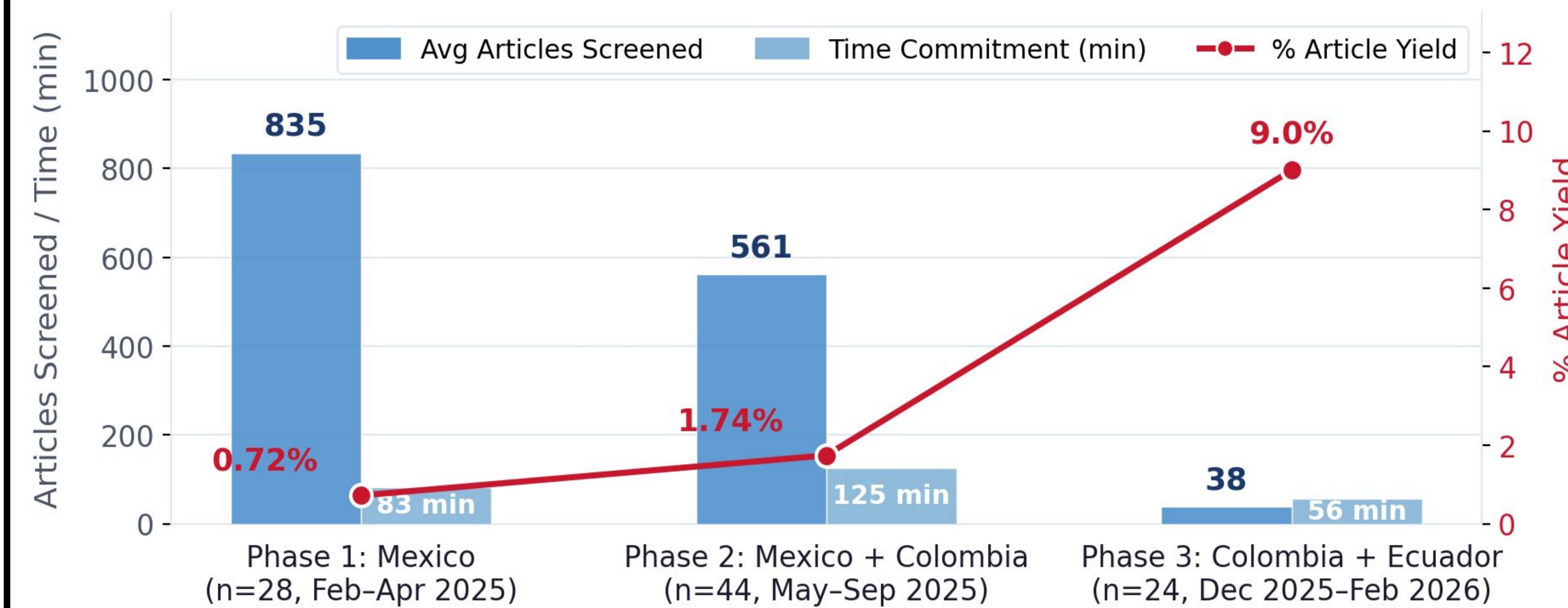


Figure 2: Phase 3 Spotlight - Colombia and Ecuador: Detailed Sub-Topic Analysis
AND/OR search logic was introduced across two distinct topics. More specific criteria reduced article volume but raised the proportion of relevant articles. The new criteria demonstrated a higher signal-to-noise ratio compared to earlier phases. This shows the efficiency gains of targeted search refinement.

Challenges

- Search criteria optimization-** iterating across 3 geographic variations to improve article relevance and reduce manual screening burden.
- Personnel training & bandwidth-** maintaining volunteer consistency and capacity across virtual shifts over the course of a year.
- Report development & implementation-** translating surveillance findings into timely, actionable outputs for NGO stakeholders.

Conclusion & Future Works

This year-long study establishes a novel, replicable proof-of-concept for volunteer-led open-source surveillance within humanitarian NGOs, demonstrating utility in informing interventions and bolstering funding opportunities despite operational challenges.

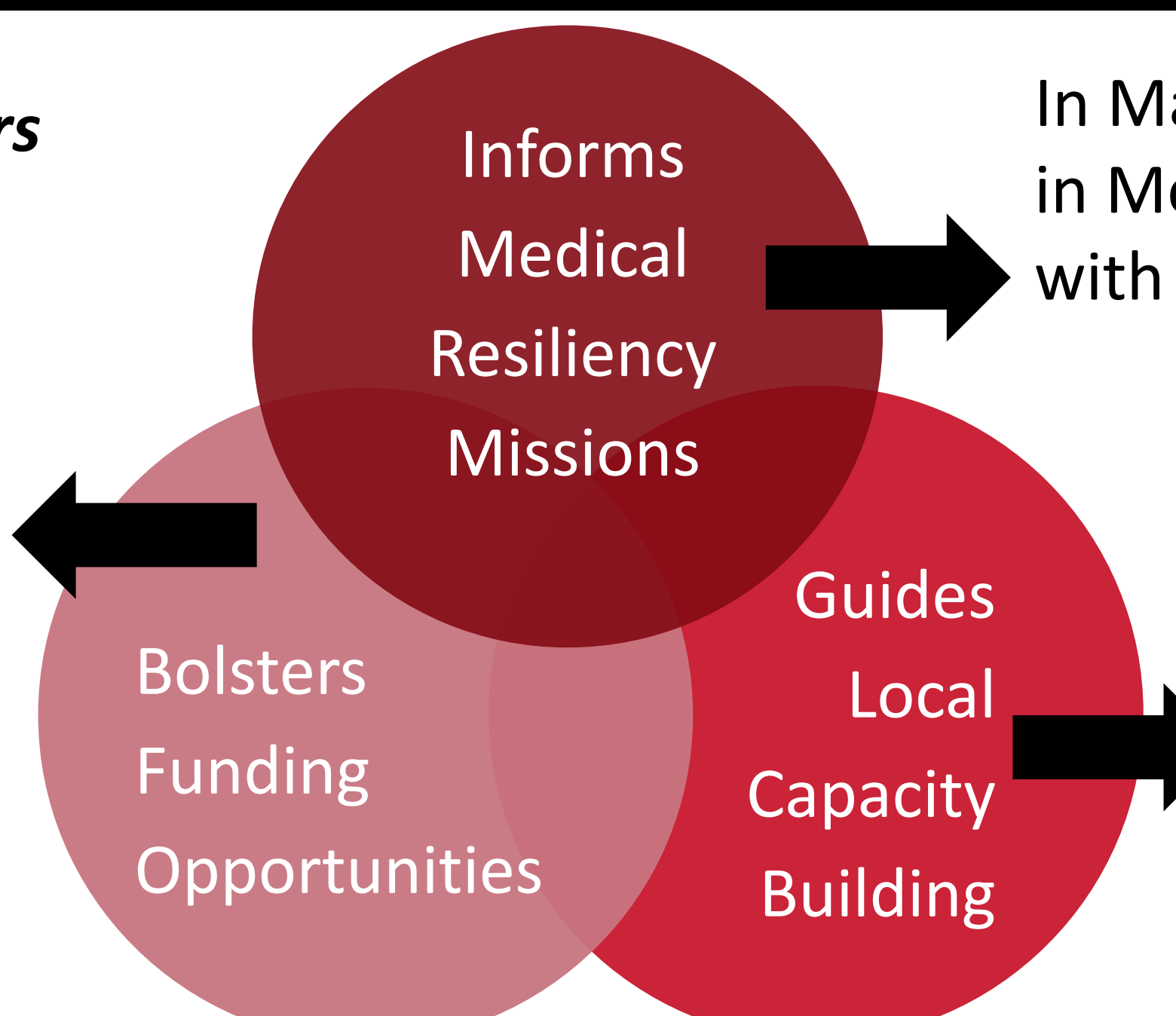
Future endeavors will include:

- Strengthening regional networks** by partnering with local Colombian epidemiologists to integrate on-the-ground expertise and expand data quality.
- Leveraging advanced EIOS features** (anomalies board) to refine search aggregation and improve pattern detection and screening efficiency.

Organizational Utility

20 volunteers provided 152 hours of surveillance over 1 year

Ongoing surveillance strengthens grant applications by providing articles to validate ongoing and future interventions. Youth pregnancy and gender-based violence have risen in prevalence, prompting increased applications for funding in these areas.



In May of 2025, Monkeypox cases were increasing in Mexico. Visiting physicians provided local staff with a training on recognizing symptoms.

Reports of poor access to care for migrants at the Venezuelan border led staff to discuss other NGO's capacity in Cúcuta. They identified guerilla violence as a deterrent to providing medical aid. They discovered that Project Hope and MedGlobal were the only direct care organizations.

Acknowledgements

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References

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