

# A Local Knowledge Dilemma?

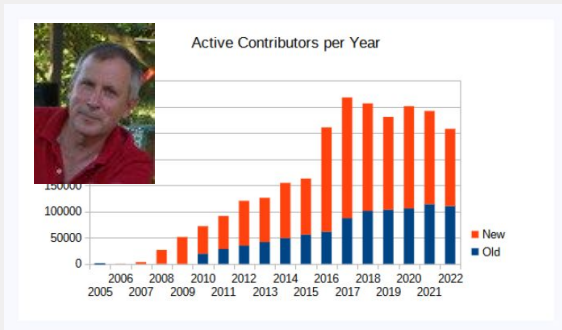
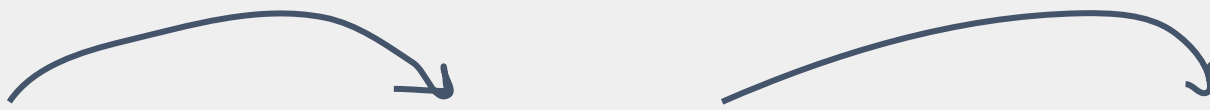
*A Data-Driven Alert for OSM*

*Pete Masters presenting on behalf of Rubén Martín*

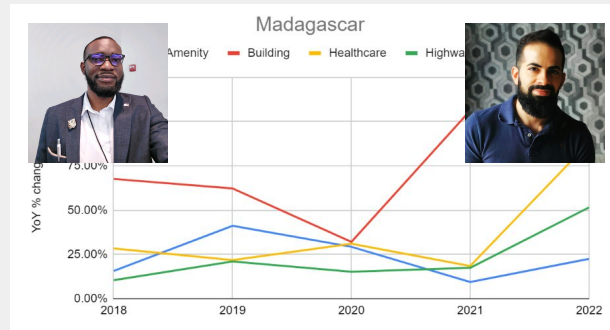
[pete.masters@hotosm.org](mailto:pete.masters@hotosm.org) | [ruben.martin@hotosm.org](mailto:ruben.martin@hotosm.org)



# The 'why': Simon Poole's 'catalytic' analysis



Simon Pool's 2022 analysis:  
20% decline in new OSM  
contributors



Caleb and Ruben's further exploration of contributor data for HOT



Providing actionable  
information for decision  
making in HOT.

# Caleb and Ruben's findings

1. Over the period 2018-2022, **there had been a decline in the number of contributors** in most countries analysed.
2. **The volume and pace of edits had consistently increased** in most countries analysed (covering buildings, roads, amenities, and health data).
3. **The number of contributors didn't show a significant correlation with the volume of elements mapped.**
4. There were unexplained peaks in mapped elements may be attributed to mass imports or corporate mapping

# Was this actionable information?



Open  
Mapping  
Hub  
ASIA-PACIFIC



Open  
Mapping  
Hub  
EASTERN &  
SOUTHERN AFRICA



Open  
Mapping  
Hub  
WEST & NORTHERN  
AFRICA

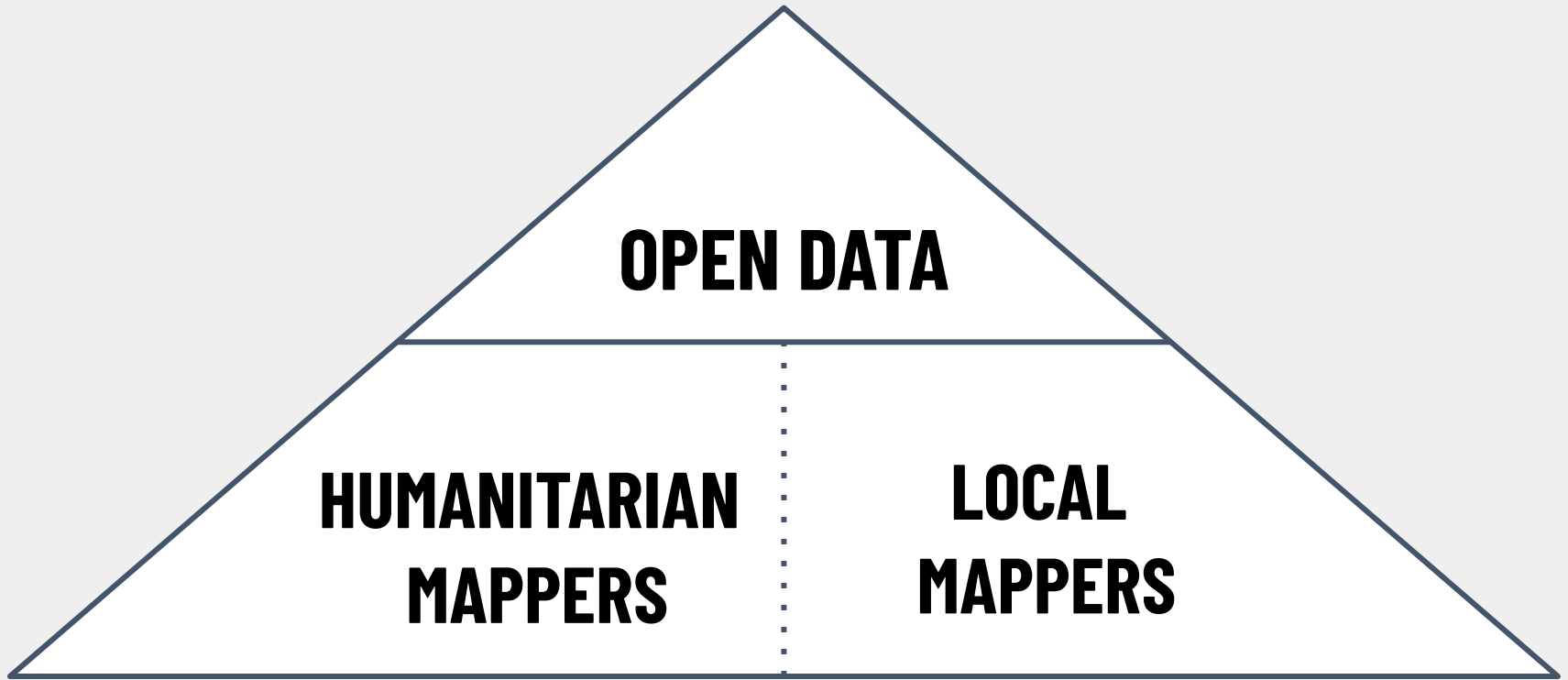


Hub de  
Mapeo  
Abierto  
AMÉRICA LATINA  
Y EL CARIBE

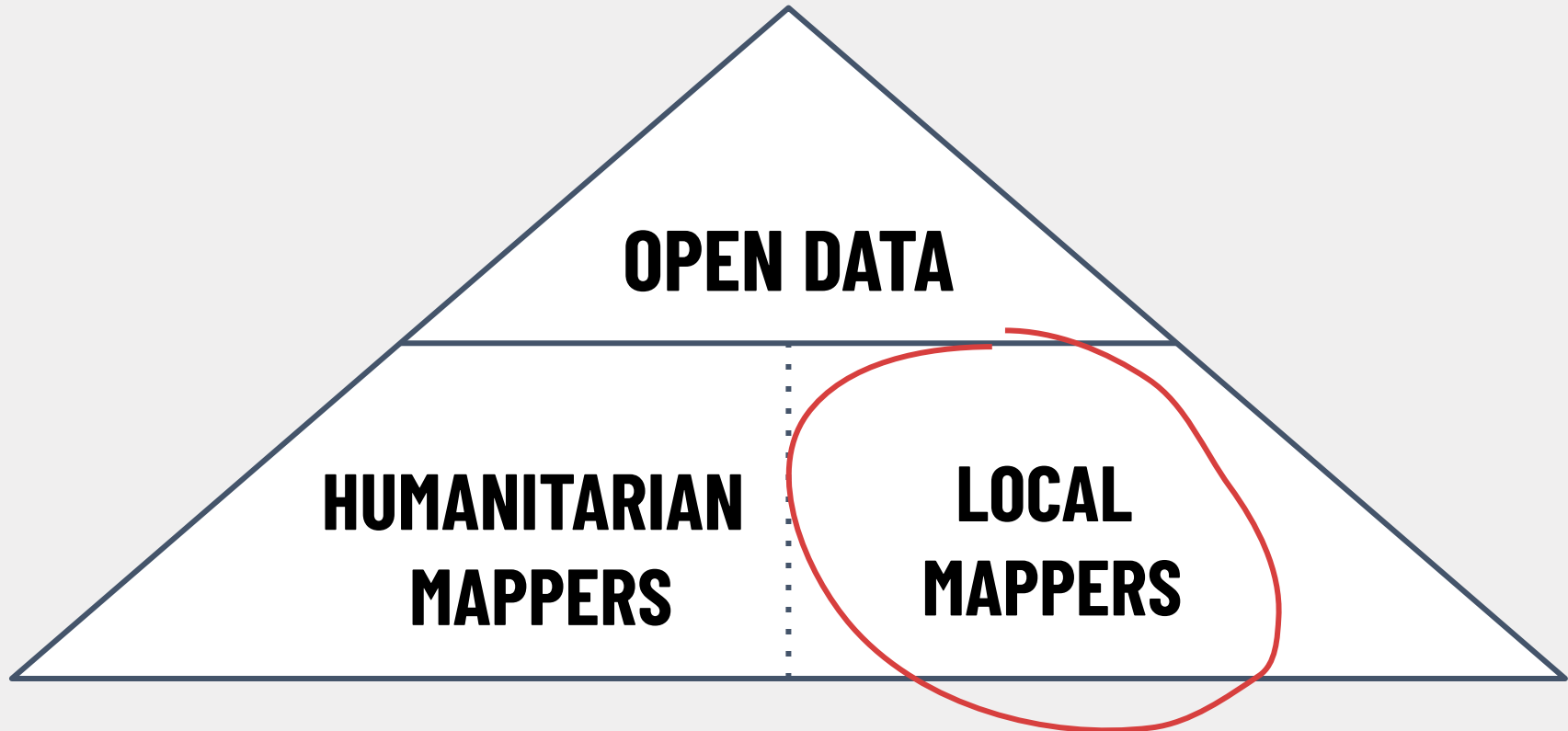
“Interesting, but.....”

How might we better understand *local* OSM mappers, communities and contributions in the regions HOT focuses on?

# Zoom out: Why does this matter?



# Zoom out: Why does this matter?



# Can 'local knowledge edits' identify local mappers?

	Prior to mapping	1. Mapping from satellite imagery		2. Adding local knowledge		
	Level 0	Level 1	Level 2	Level 3	Level 4	
Example map						
Data provided	No data or minimal features (e.g., single main road)	Buildings & roads	Village, city, & neighbourhood names	Facilities (e.g., schools, clinics, water points, bridges, tunnels, airports)	Micro-data on every service, building & road (e.g., hours, building material, road condition, road names, shops)	
What can be done with data	N/A – Could indicate a populated place but insufficient data to use	Rapid population estimates Rapid disaster analysis Basic navigation	Infectious disease response (e.g., cholera, Ebola) Vaccination campaigns Logistics	Public health campaigns Water & sanitation planning	Good navigation Malaria spray campaigns Detailed disaster vulnerability analysis Accurate population estimates	

# Can 'local knowledge edits' identify local mappers?

	Prior to mapping	1. Mapping from satellite imagery	2. Adding local knowledge		
	Level 0	Level 1	Level 2	Level 3	Level 4
Example map					
Data provided	No data or minimal features (e.g., single main road)	Buildings & roads	Village, city, & neighbourhood names	Facilities (e.g., schools, clinics, water points, bridges, tunnels, airports)	Micro-data on every service, building & road (e.g., hours, building material, road condition, road names, shops)
What can be done with data	N/A – Could indicate a populated place but insufficient data to use	Rapid population estimates Rapid disaster analysis Basic navigation	Infectious disease response (e.g., cholera, Ebola) Vaccination campaigns Logistics	Public health campaigns Water & sanitation planning	Good navigation Malaria spray campaigns Detailed disaster vulnerability analysis Accurate population estimates



# Methodology in brief

Prior to mapping

1. Mapping from satellite imagery

2. Adding local knowledge

One unit of contribution  
to local knowledge  
mapping

=

One addition or change  
to OSM within L2-4 of  
the framework

What can  
be done with

OSM – could indicate a  
populated place but  
insufficient data to use

Rapid disaster analysis  
Basic navigation

Ebola)  
Vaccination campaigns  
Logistics

Water & sanitation  
planning

Detailed disaster  
vulnerability analysis  
Accurate population  
estimates

# Methodology in brief

Prior to mapping

1. Mapping from satellite imagery

2. Adding local knowledge

One unit of contribution to local knowledge mapping

=

One addition or change to OSM within L2-4 of the framework

*(We'll call these 'changes' now)*

What can be done with

OSM - could indicate a populated place but insufficient data to use

Rapid disaster analysis  
Basic navigation

Ebola)  
Vaccination campaigns  
Logistics

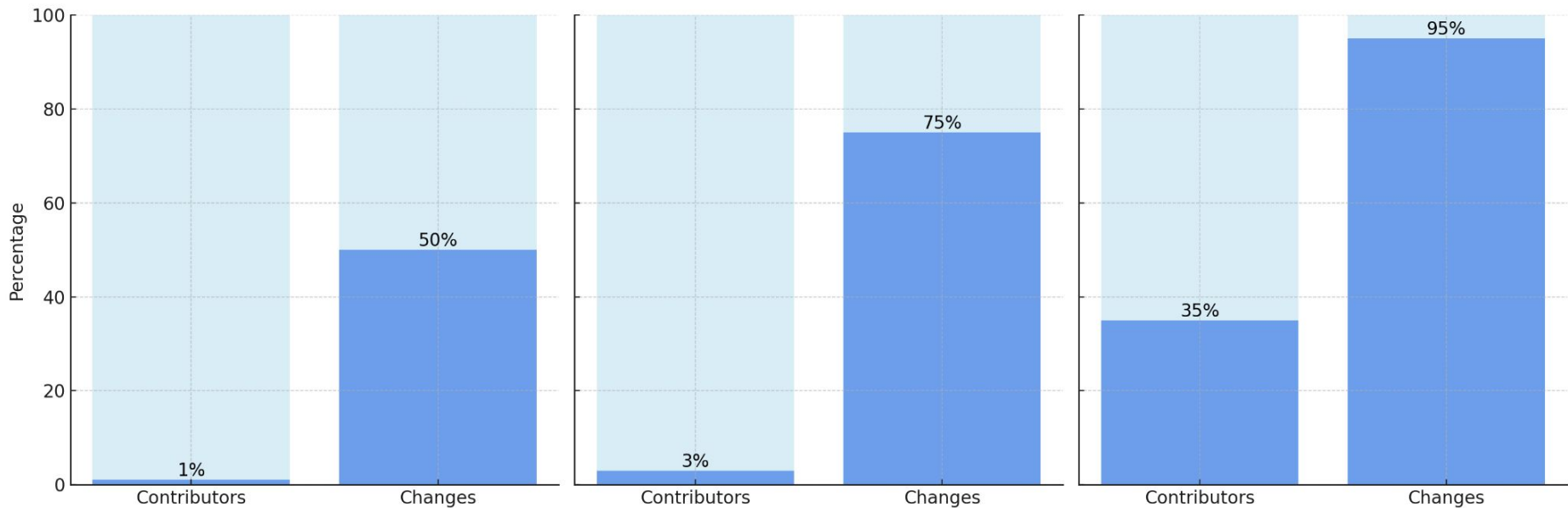
Public health campaigns  
Water & sanitation planning

Detailed disaster vulnerability analysis  
Accurate population estimates

# The 'what?': Results

Country	Total changes to elements (2022)	# contributors who made these changes	% (#) of contributors responsible for 50% of the changes	% (#) of contributors responsible for 75% of the changes	% (#) of contributors responsible for 95% of the changes
Nepal	<b>50239</b>	<b>713</b>	0,4% (3)	1,8% (13)	12% (86)
Senegal	<b>2338</b>	<b>172</b>	1,7% (3)	7% (12)	43,6% (75)
Kenya	<b>7415</b>	<b>313</b>	1% (3)	2,6% (8)	28% (87)
Mexico	<b>38556</b>	<b>1078</b>	0,5% (5)	2,6% (28)	21,1% (227)

# The 'what?': Super high level analysis



Average: Percentage of contributors and changes they made

# The 'what?': Results - zooming in on examples

Country	Total changes to elements (2022)	# contributors who made these changes	% (#) of contributors responsible for 50% of the changes	% (#) of contributors responsible for 75% of the changes	% (#) of contributors responsible for 95% of the changes
Nepal	50239	713	0,4% (3)	1,8% (13)	12% (86)
Senegal	2338	172	1,7% (3)	7% (12)	43,6% (75)
Kenya	7415	313	1% (3)	2,6% (8)	28% (87)
Mexico	38556	1078	0,5% (5)	2,6% (28)	21,1% (227)

# The 'what?': Results - zooming in on examples

Country	Total changes to elements (2022)	# contributors who made these changes	% (#) of contributors responsible for 50%	% (#) of contributors responsible for 75% of the changes	% (#) of contributors responsible for 95% of the changes
Nepal					
Senegal					
Kenya					
<b>Mexico</b>	<b>38556</b>	<b>1078</b>	<b>0,46% (5)</b>	<b>2,60% (28)</b>	<b>0,5% (5)</b>

In Mexico...

2.6% (**28 people**) of contributors were responsible for 75% of changes  
 0.5% (**5 people**) of contributors were responsible for 50% of changes

# The 'what?': Results - zooming in on examples

Country	Total changes to elements (2022)	# contributors who made these changes	% (#) of contributors responsible for 50% of the changes	% (#) of contributors responsible for 75% of the changes	% (#) of contributors responsible for 95% of the changes
<b>Nepal</b>	<b>50239</b>	<b>713</b>	<b>0,4% (3)</b>	<b>1,8% (13)</b>	<b>12% (86)</b>

In Nepal...

1.8% (**13 people**) of contributors were responsible for 75% of changes

0.4% (**3 people**) of contributors were responsible for 50% of changes

# The 'what?': Results - zooming in on examples

Country	Total changes to elements (2022)	# contributors who made these changes	% (#) of contributors responsible for 50% of the changes	% (#) of contributors responsible for 75% of the changes	% (#) of contributors responsible for 95% of the changes
Nepal	50239	713	0,4% (3)	1,8% (13)	12% (86)
Senegal	2338	172	1,7% (3)	7% (12)	43,6% (75)
<b>Kenya</b>	<b>7415</b>	<b>313</b>	<b>1% (3)</b>	<b>2,6% (8)</b>	<b>28% (87)</b>
Mexico					

In Kenya...

2.6% (**8 people**) of contributors were responsible for 75% of changes

1% (**3 people**) of contributors were responsible for 50% of changes



# The 'what?': Results - zooming in on examples

Country	Total changes to elements (2022)	# contributors who made these changes	% (#) of contributors responsible for 50% of the changes	% (#) of contributors responsible for 75% of the changes	% (#) of contributors responsible for 95% of the changes
Nepal	50239	713	0,4% (3)	1,8% (13)	12% (86)
<b>Senegal</b>	<b>2338</b>	<b>172</b>	<b>1,7% (3)</b>	<b>7% (12)</b>	<b>43,6% (75)</b>
Kenya					
Mexico					

## In Senegal

7% (**12 people**) of contributors were responsible for 75% of changes

1.7% (**3 people**) of contributors were responsible for 50% of changes

# The 'so what?': Insights

1. Wow! There are some seriously **amazing local OSM champions** pretty much wherever we looked!
2. **High dependency on 'champions'** in terms of the development and maintenance of local knowledge in OSM
3. Local knowledge sustainability and **community resilience look low** in some countries.
4. Augmenting the numbers of very active 'local knowledge contributors' would have a **large impact on the map**

# The 'then what'? Research perspective

**We would love to see** this research improved, improved upon or augmented!

1. Methods for **better understanding the strength and depth of local OSM communities?**
2. **Deeper analysis on sustainability and dependence** per country from and for local communities. For example, spatial or temporal analysis
3. **Making data accessible and insights usable.** Community leaders in OSM Kenya fed back that the analysis was surprising but welcome and useful
4. **Qualitative, social science, anthropological explorations** would be very useful!

# The 'then what'? Practical action...?

If this does show a low level of local contributor, or local knowledge contribution, sustainability in some OSM communities, is there a case for **broader community engagement?**

HOT is focusing on

1. **Peer-peer support** to individuals and communities
2. Supporting **collective and collaborative action**
3. **Resources and skills**
4. **Tech** that enables local knowledge edits

# Limitations (for reference)

1. A local mapper who only does remote mapping is still a part of the contributor community and this method excludes them
2. Mappers can add local knowledge remotely (eg MapRoulette, street level imagery) but this method doesn't account for them.
3. This is only a snapshot in time and doesn't show trends

# Acknowledgements

Kudos to **Caleb and Ruben** for devising and implementing this analysis

Thanks to the **HOT community team and Open Mapping Hub staff** providing direction and feedback.

Thanks to **Simon Poole** for sending us down this path.

Thanks to **Laura and Walter** from OSM Kenya for providing critical perspectives.

**Thank you for listening and engaging!**

**Questions? Discussion?**

**What do you think?**

<https://matrix.to/#/#openmapping-research:matrix.org>

<https://community.openstreetmap.org/tag/research>

