

# Building Large-scale Crowdsourcing Communities with the Humanitarian OpenStreetMap Team

Martin Dittus · ICRI Cities, UCL · @dekstop

24<sup>th</sup> September 2016 · State of the Map 2016, Brussels



# My research: quantitative studies of contributor engagement in HOT

Large-scale observational studies: **what can we learn about HOT community engagement?**

Also spending much time with the community.  
**Domain knowledge** provides important context.

Much of my work is already online:

<http://www.openstreetmap.org/user/dekstop/diary>

# Ambitions for vast growth...

Missing Maps objective: to **map the world's most vulnerable places.**

*“To reach our goal, we need the Missing Maps Project to be **the biggest instance of digital volunteerism the world has ever seen.**”* <http://www.msf.org.uk/missing-maps-project>

How well does it currently work?

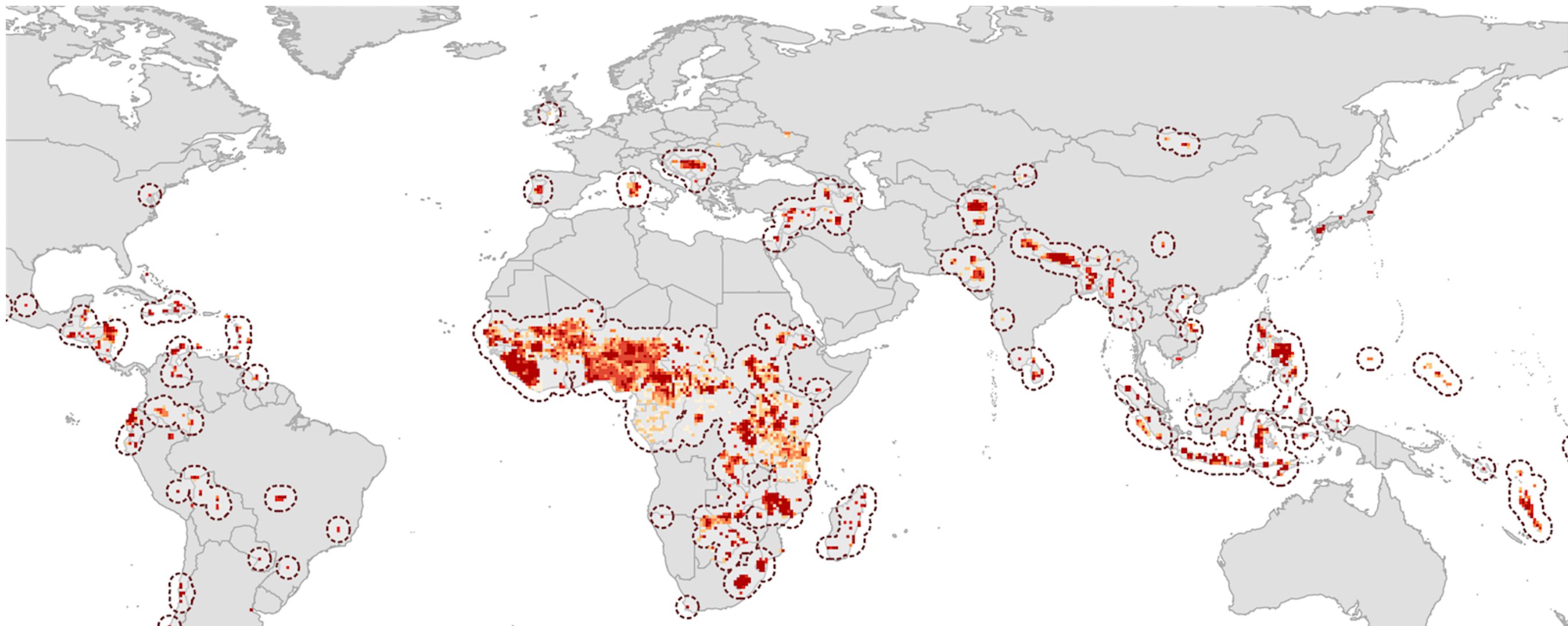
What kind of guidance is needed?

Are there barriers to entry we should address?

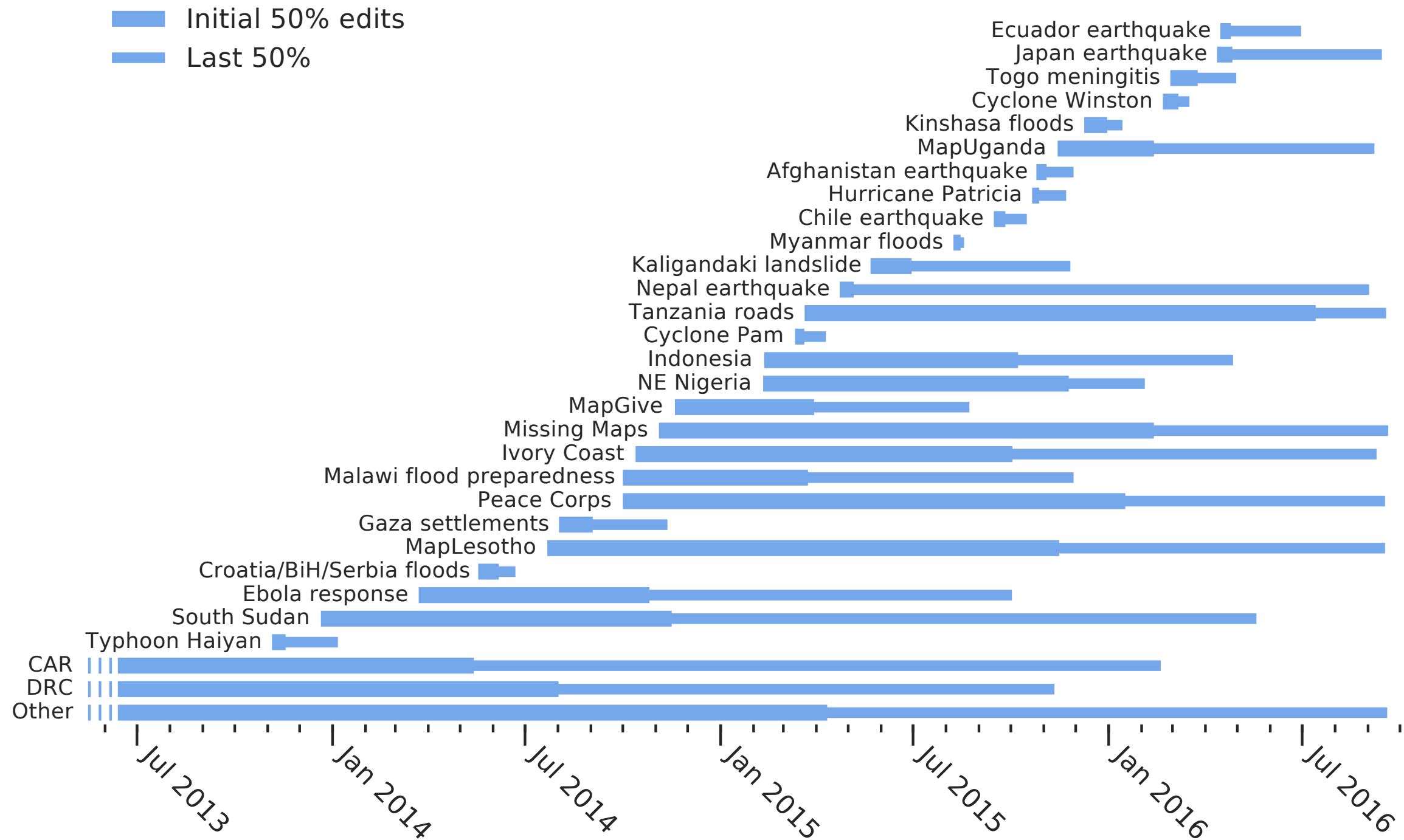
**A great newcomer experience is crucial!**

# HOT contributor activity (Sept 2016)

- >2000 projects,
- 32,000 contributors,
- 180M changes made to the map,
- involving an estimated 240,000 hours of volunteer work.

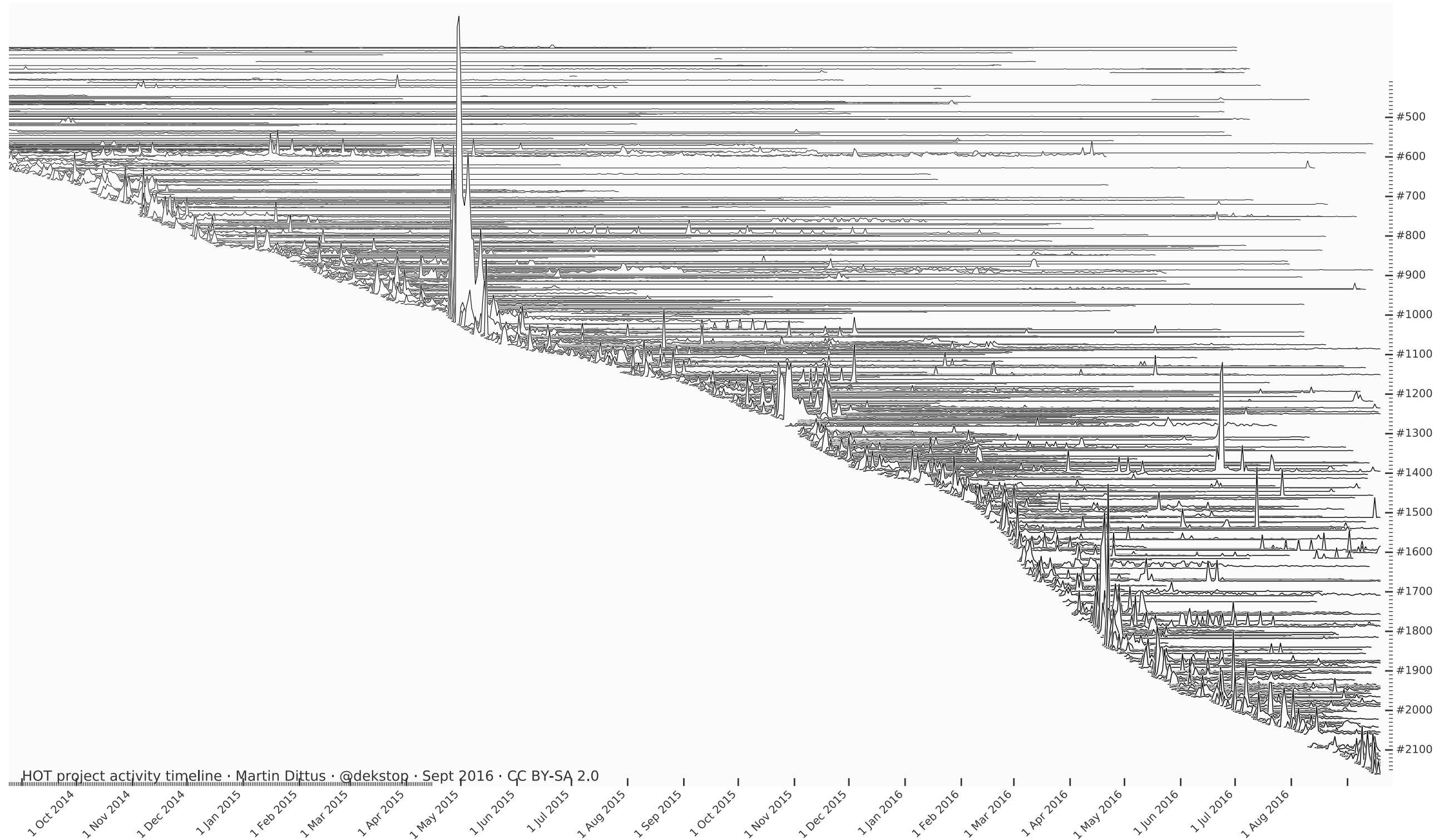


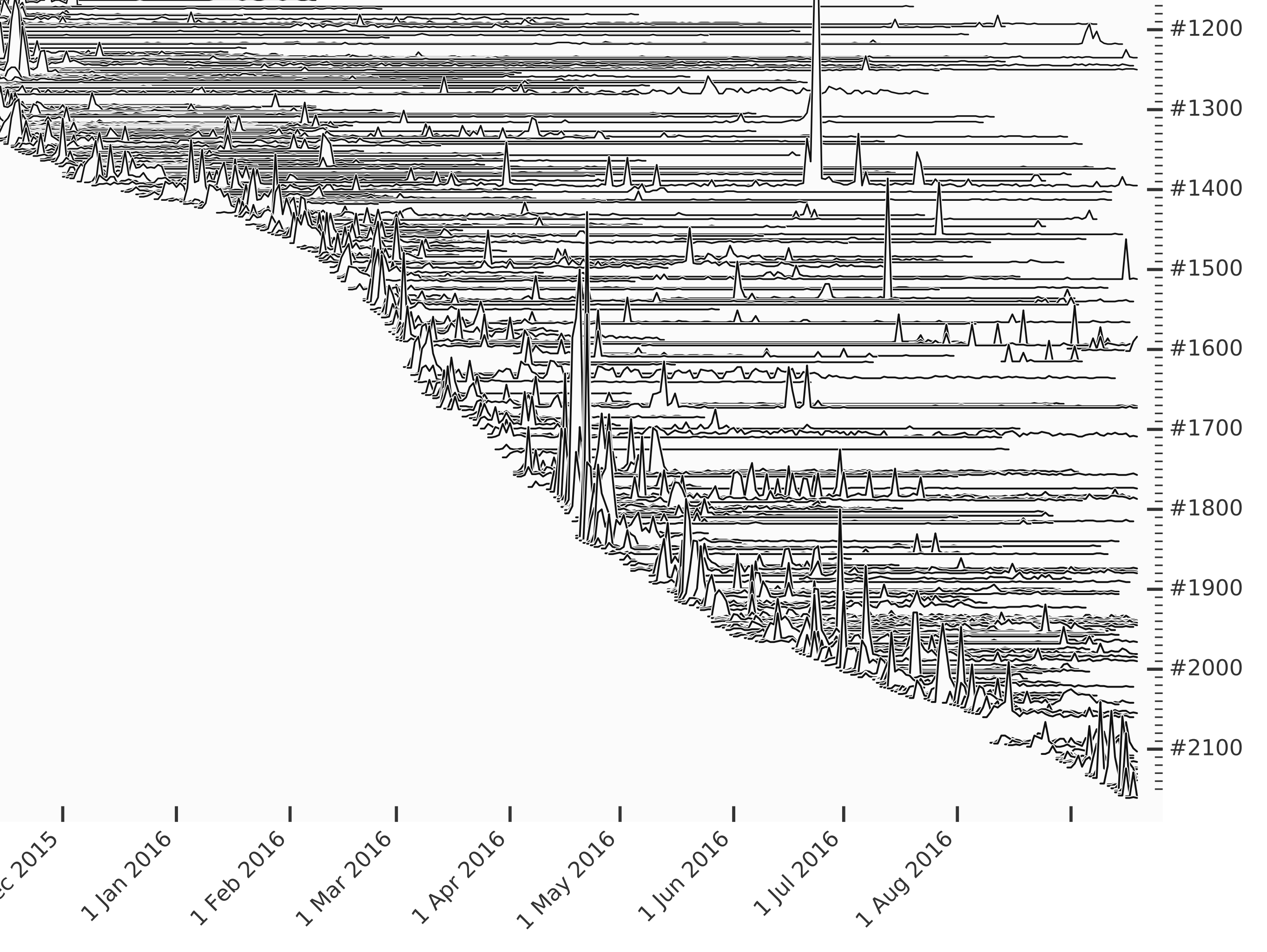
# A timeline of larger initiatives





# Project activity peaks





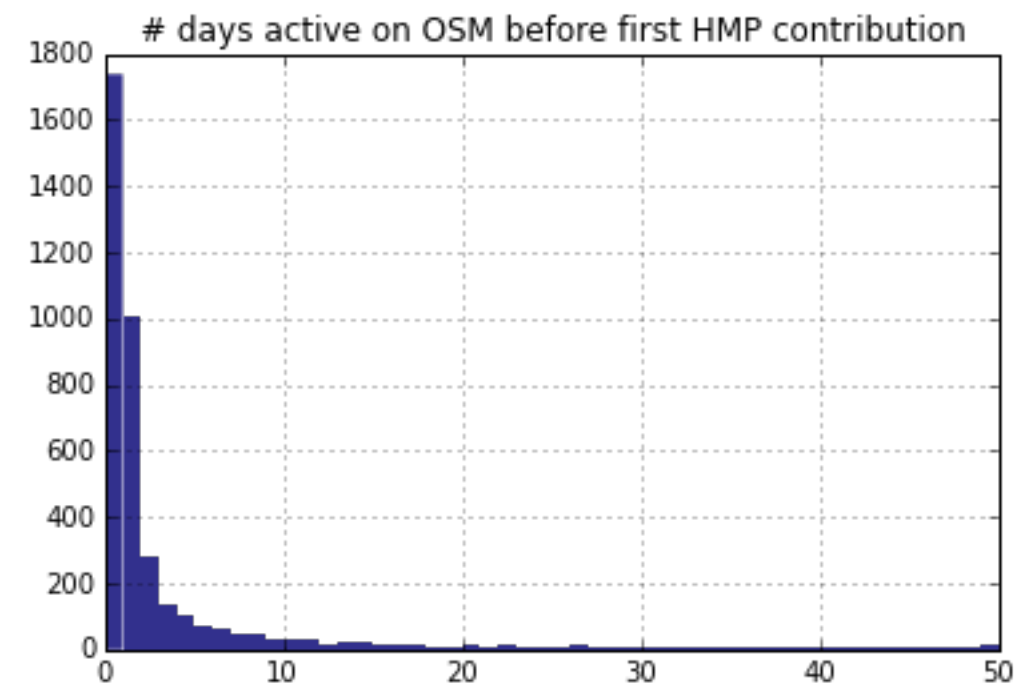
- I. Contributor statistics**
- II. Newcomer experiences
- III. An on-demand task force?



# How much prior experience do first-time HOT contributors tend to have?

Among all HOT contributors...

- 80% have no prior OSM experience!
- 90% have less than 5 days of prior OSM experience.



**Most contributors are newcomers to OSM!**

# How long do they remain active?

Across their entire activity period...

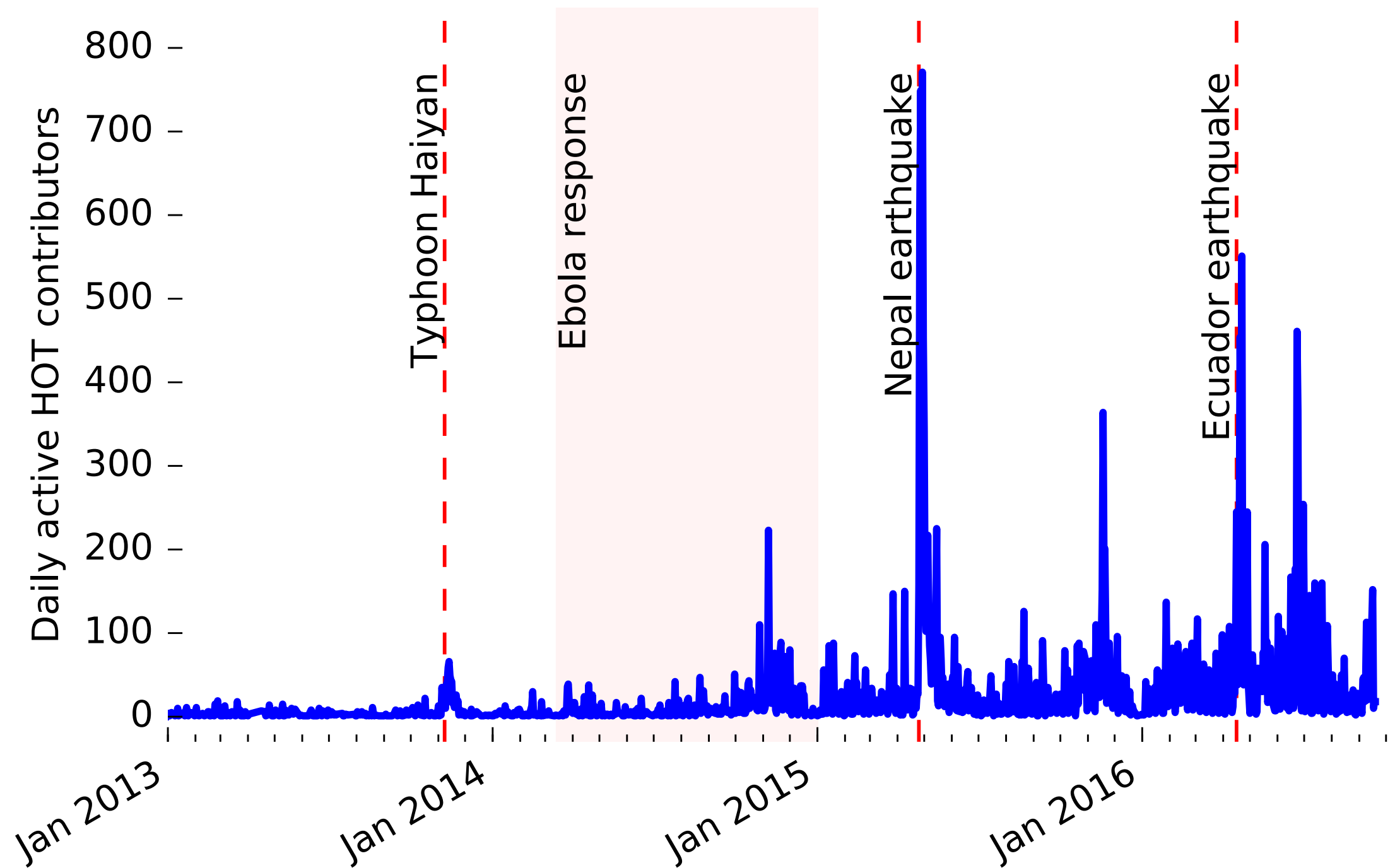
- **50% work for at least 65 minutes total**
- 20% work for at least 3 hours total
- The top 5% work for 18 hours or more!

May sound small for a volunteer org.  
For an online community it's massive!

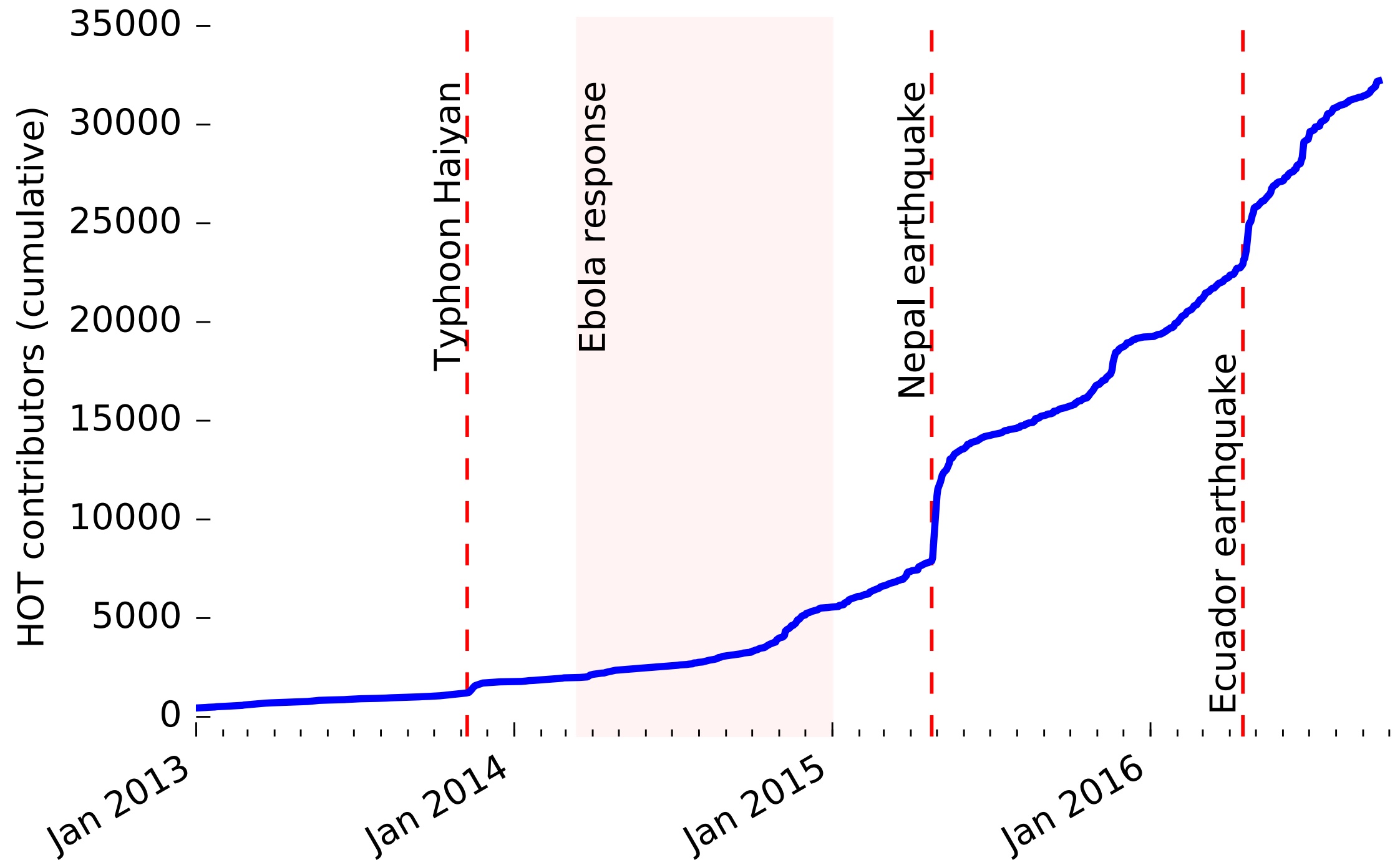
And...

- **30% contribute to a second project**
- The top 5% contribute to 6 projects or more

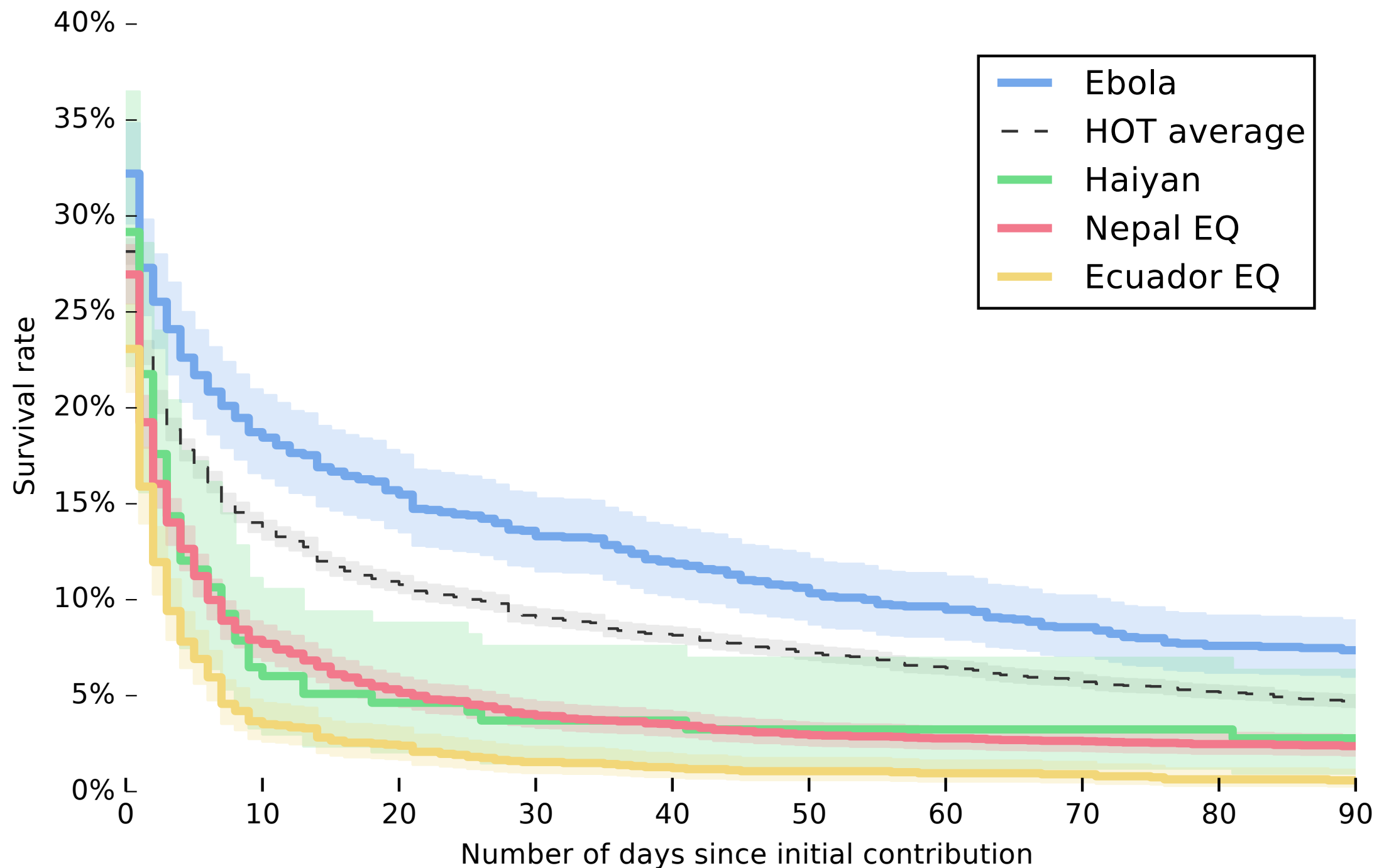
# Daily active contributors



# Highly publicised events can be key *recruiting* moments.



... but they typically have lower  
newcomer retention



- I. Contributor statistics
- II. Newcomer experiences**
- III. An on-demand task force?



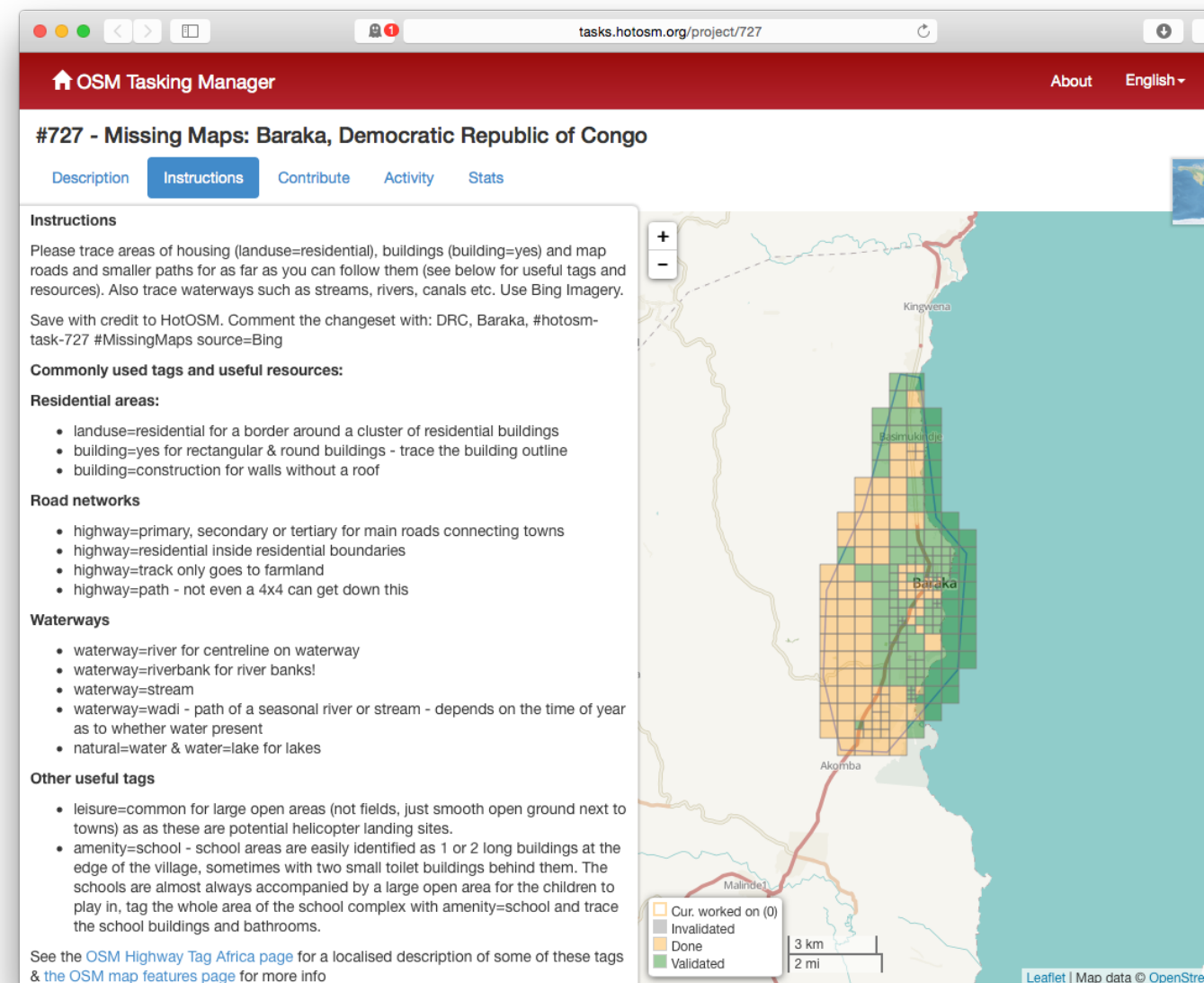
# Are task designs a newcomer barrier?

## What kind of guidance is needed?

**Don't overwhelm first-time contributors with complex task requirements.**

First-time mappers spend more time on tasks that involve the mapping of less than three distinct map features.

*Dittus, Quattrone, Capra (2016): "Analysing Volunteer Engagement in Humanitarian Mapping: Building Contributor Communities at Large Scale", CSCW 2016.*



Aspect	Variable	Description
Motivation	<i>has_context</i>	Does the project description state an explicit purpose?
Visual complexity	<i>urban_density</i>	Is the mapped region rural (simple), mixed, or urban (complex)?
Task complexity	<i>num_concepts</i>	How many different types of map objects are to be mapped?
Task complexity	<i>building_trace</i>	Are buildings to be mapped as points (simple) or polygons (complex)?
Guidance	<i>num_cues</i>	Number of information cues provided in the documentation?
Guidance	<i>num_tag_ex</i>	Number of tag examples listed?

Table 3. Task design feature vector produced by our task analysis.

# Lots of great work by others

E.g. Melanie Eckle: what local features do remote mappers tend to get wrong? Can we help them with visual examples?

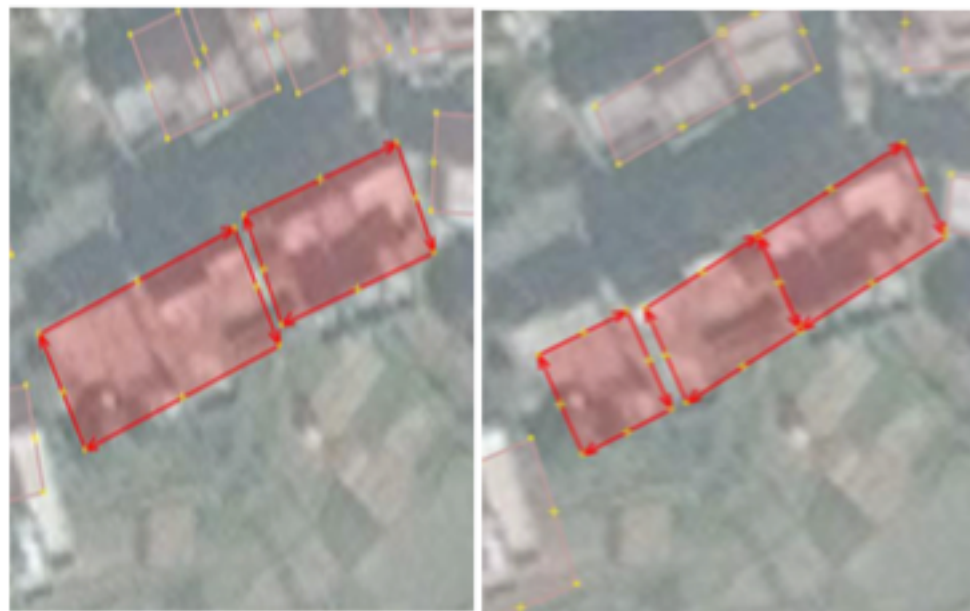
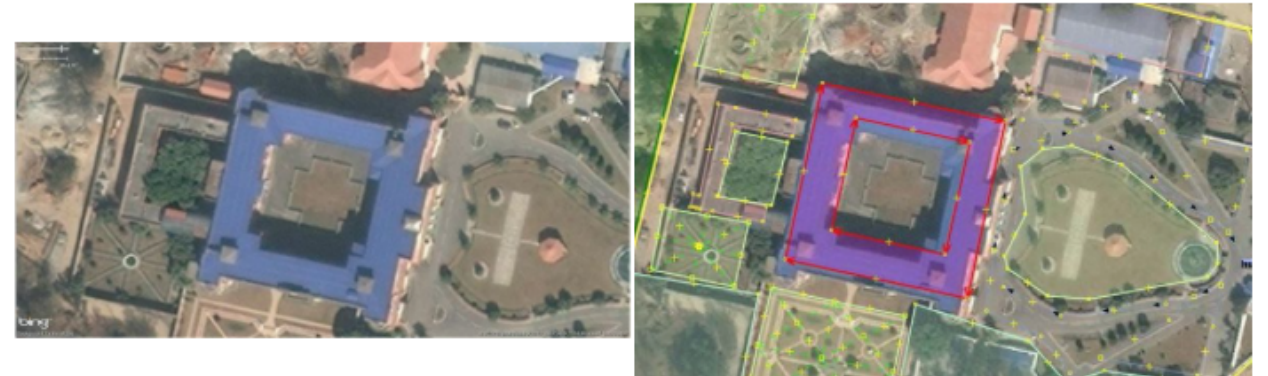


Figure 3: Digitization of Buildings by Local Mapper (left) and Remote Mapper (right)

## 3. Complex building structures

To trace a building which has an open space in the middle (which may look like a roof) you need to create a "Multi-Polygon":

"Create multipolygon": Initially make 2 polygons (outer and inner) then select both polygons, go to "Tools" and select "Create multipolygon"



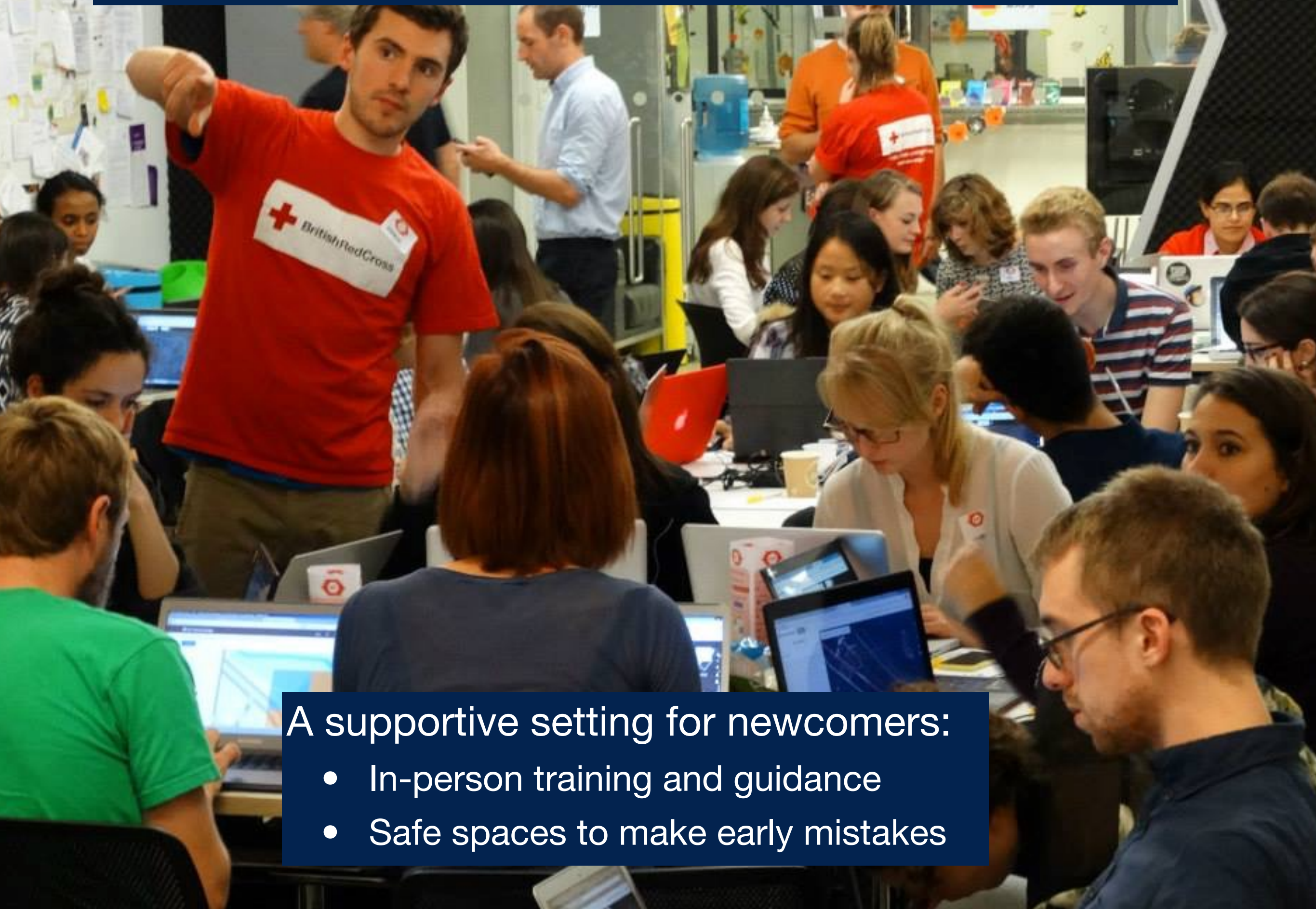
You can also create more complicated buildings by using the merge option. Create your building outline, select all of the polygons (press SHIFT to highlight them all) and then hit SHIFT + J to merge the objects.



*Eckle, de Albuquerque (2015), Quality assessment of remote mapping in OpenStreetMap for disaster management purposes, ISCRAM 2015*



# Mapathons as social contribution environments

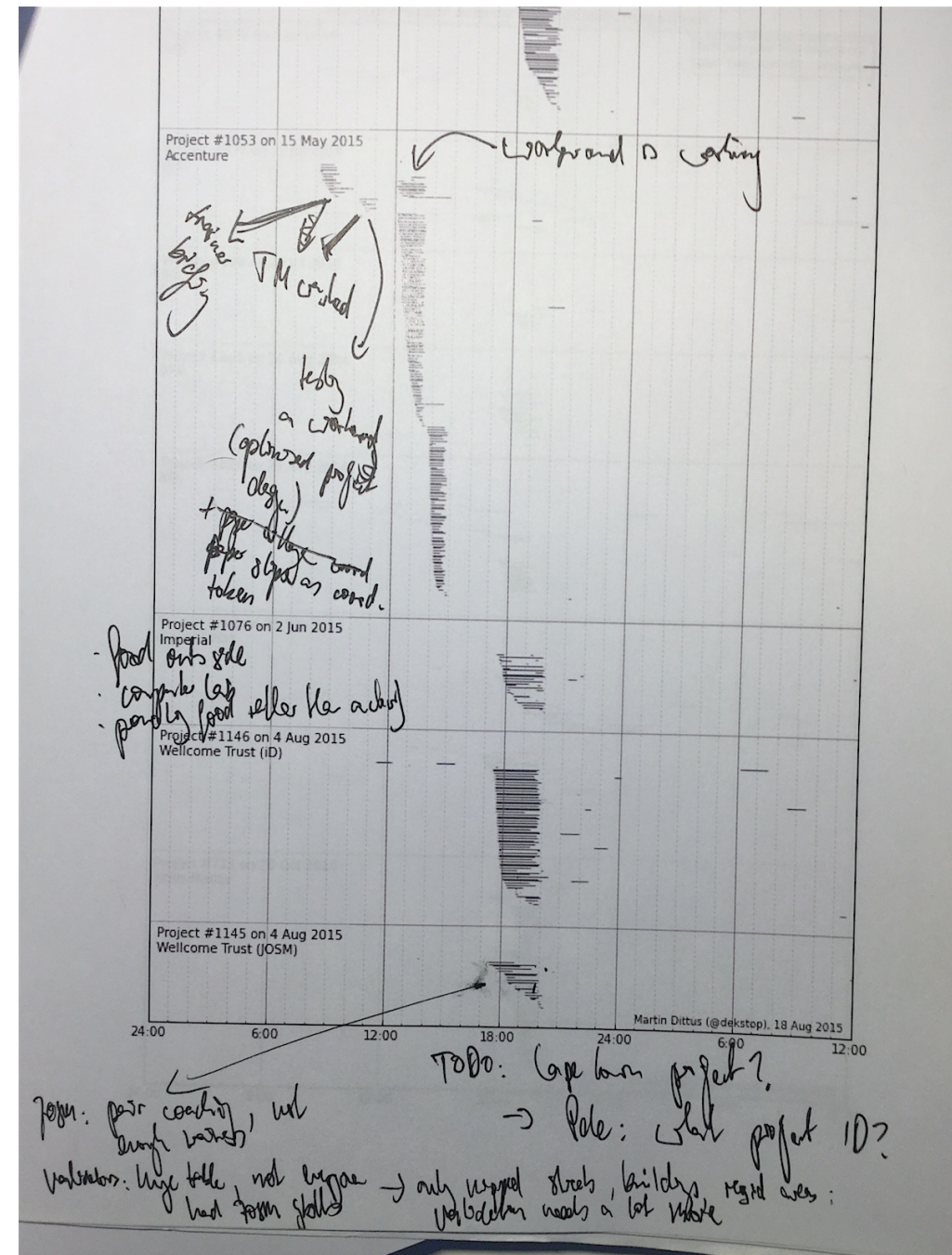
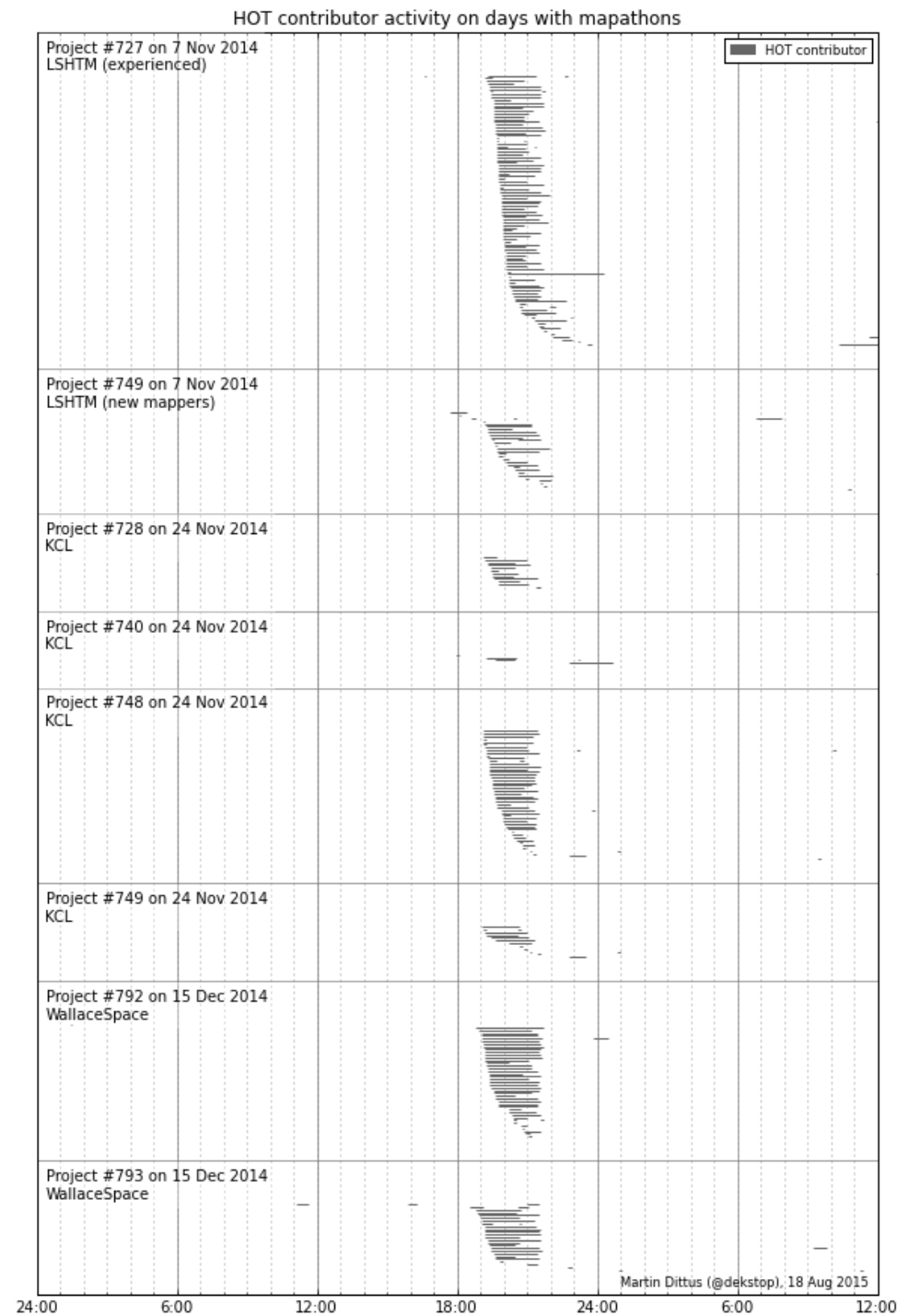


A supportive setting for newcomers:

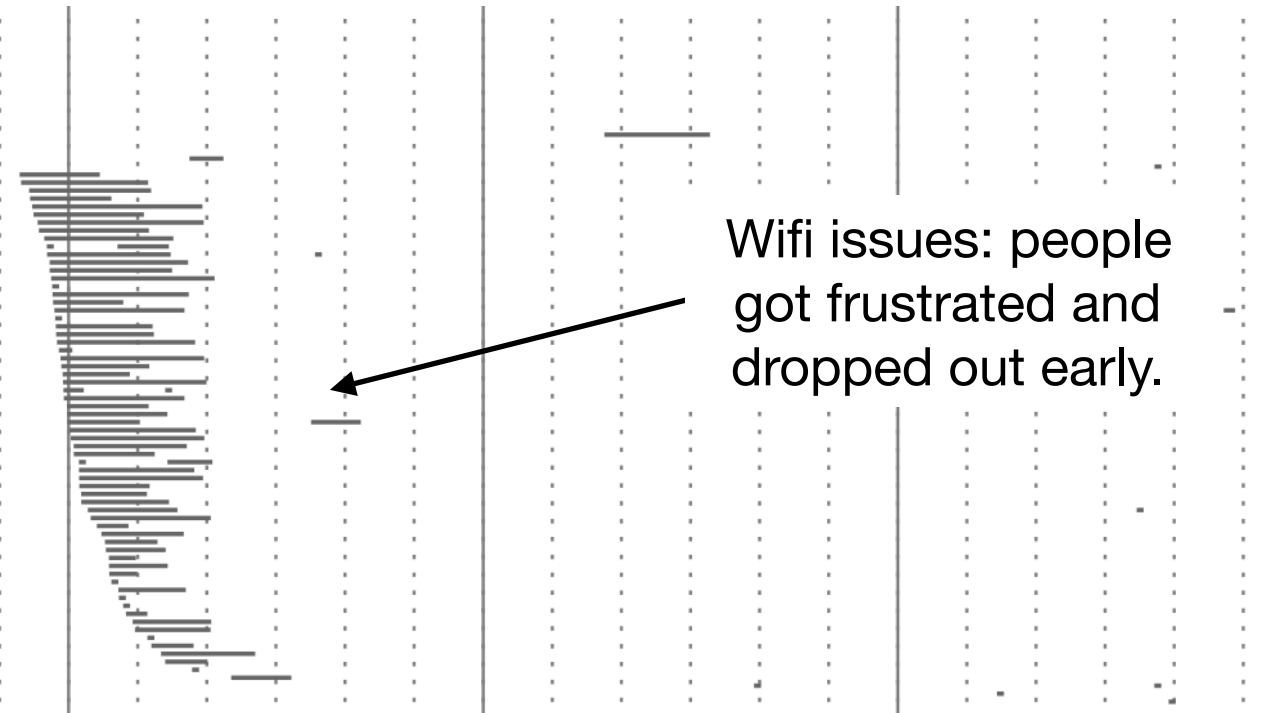
- In-person training and guidance
- Safe spaces to make early mistakes



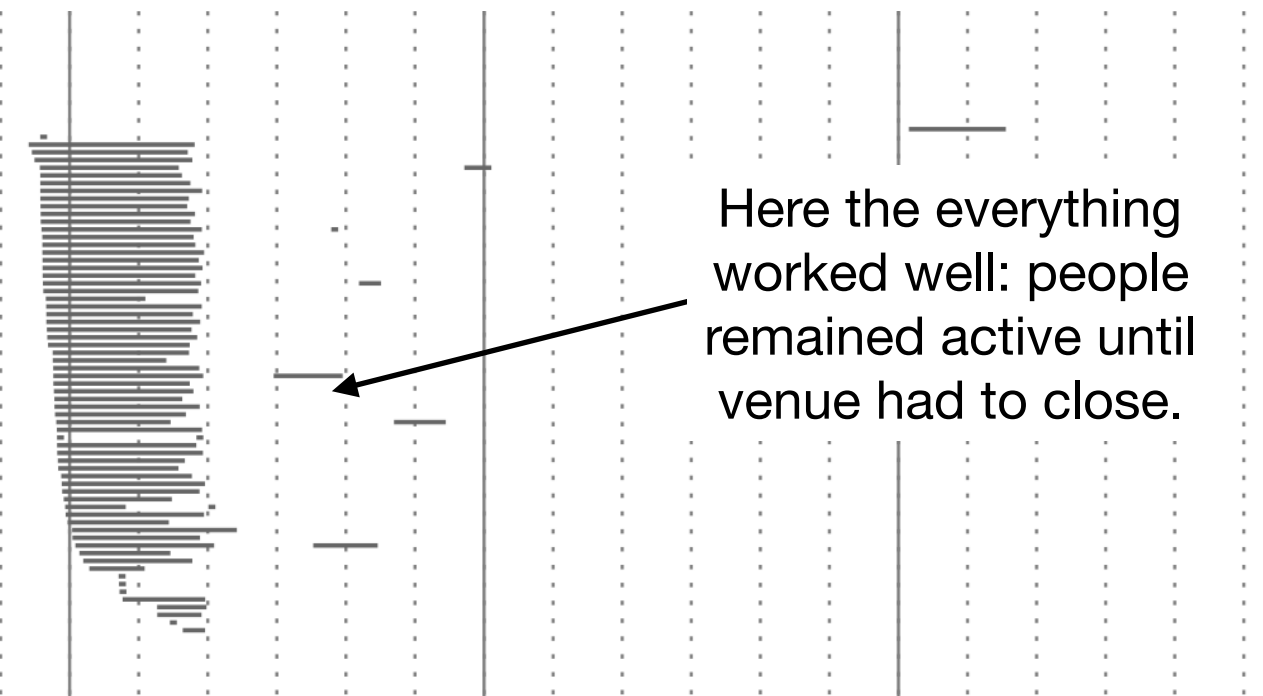
# Annotating mapathon activity traces...



Project #955 on 31 Mar 2015  
KCL



Project #1146 on 4 Aug 2015  
Wellcome Trust (iD)



# Many potential sources for disruptions...

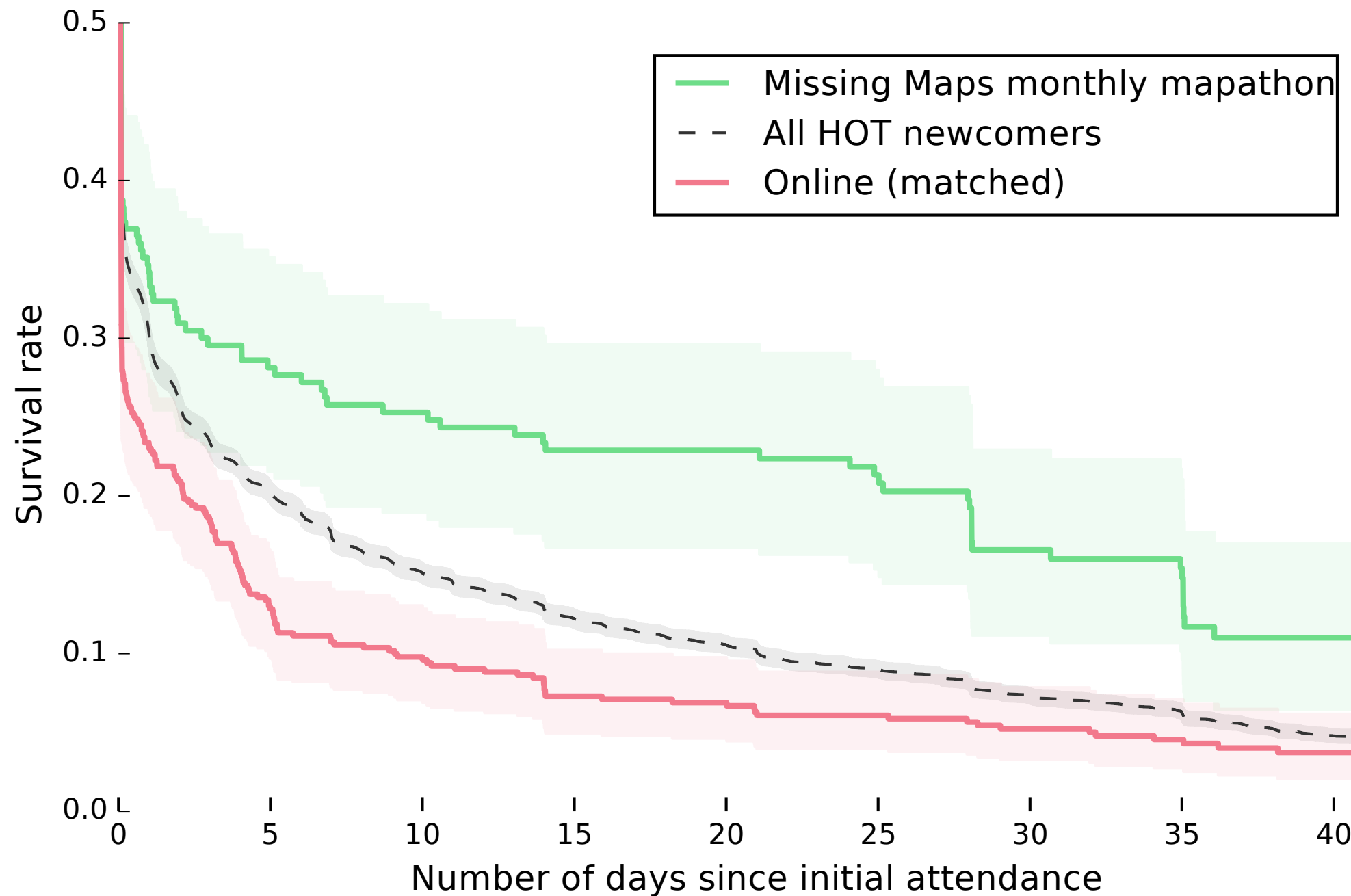
## Larger events come with many technical pitfalls

- Wifi issues! Guest logins, captive portals, too many laptops, ...
- On a shared IP? Ask OSM admins to increase bandwidth limits.
- TM2 falls over under load. (Rare, but happens.)
- OSM DB replication lag... iD copes badly
- (Used to have lots of edit conflicts... iD#1053 helped a lot!)
- Etc...

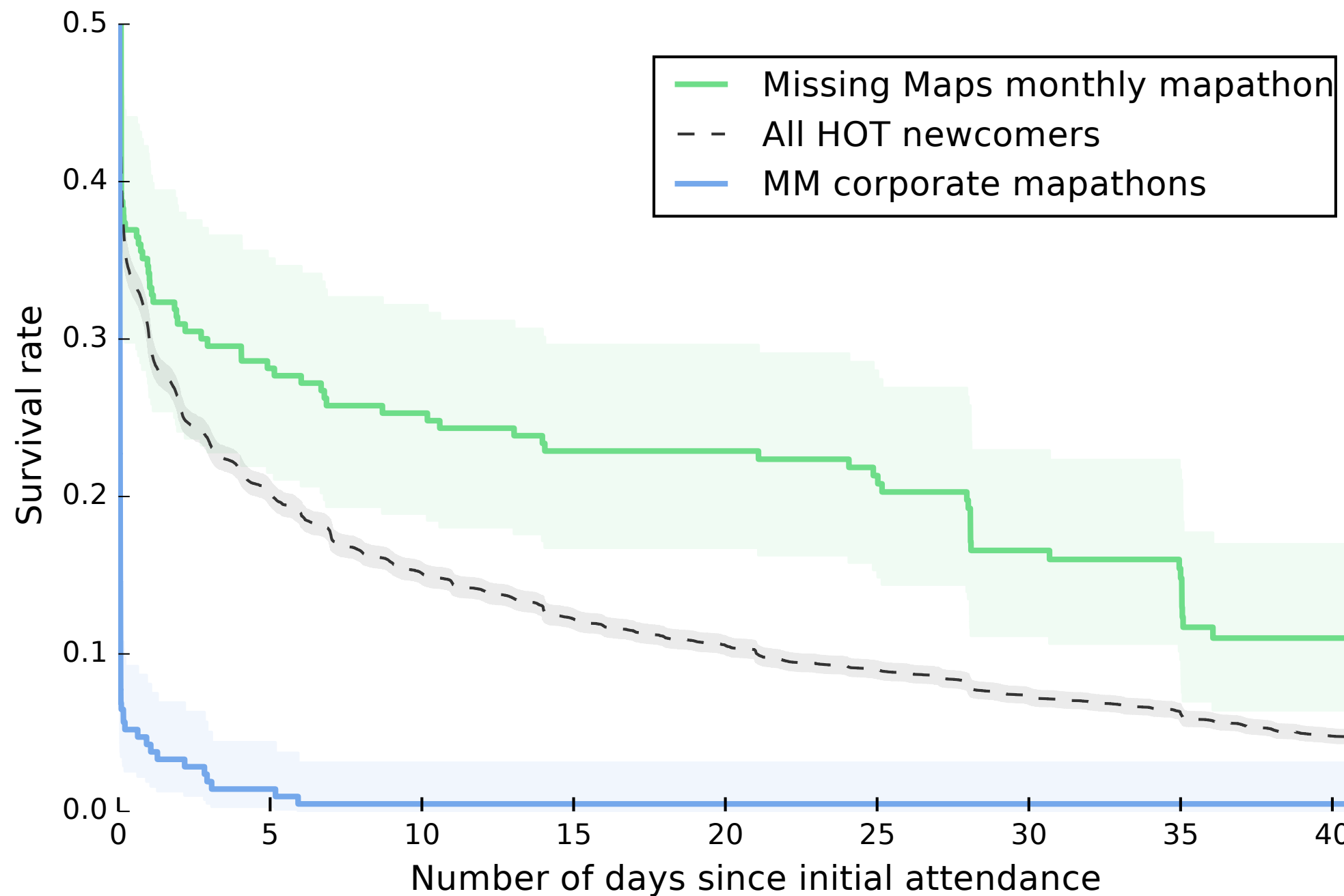
**No food allowed in the computer lab?** Food arrives early, people stop mapping and socialise instead. (This might actually be fine. Ivan says: it is not clear what mapathons are actually for — to produce maps, or to build community?)



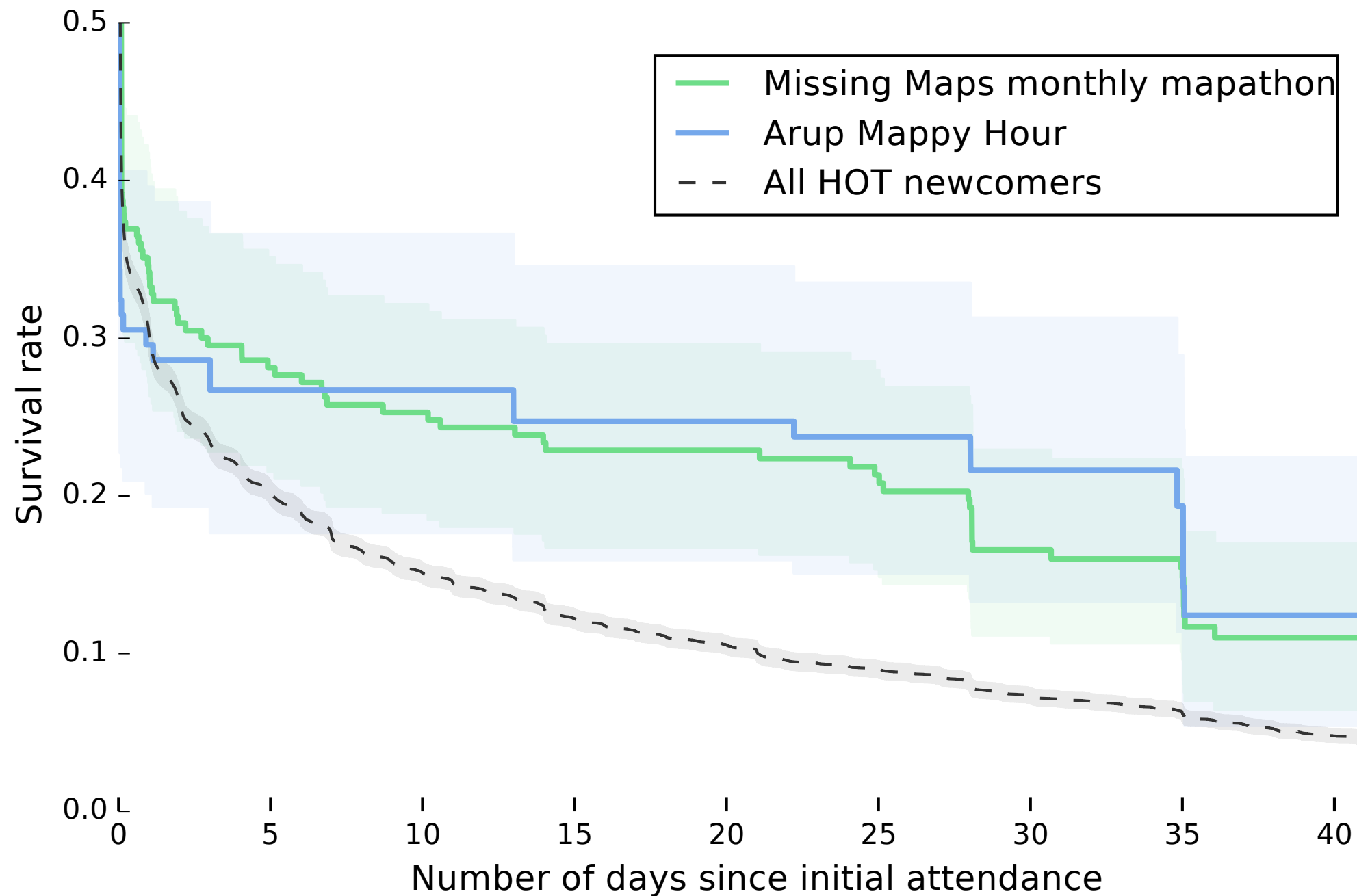
# High newcomer retention at our mapathons!



# ... but not for all groups.



# Arup Mappy Hour is also doing very well.



... **however the reasons aren't quite clear.**

My running assumption: **mapathons are attractors for people who are already prepared** to become engaged.

“An aspect in my life where I get to experience community”

“Better than wasting my time in front of the TV”

“I know GIS and didn't realise I can use it to help others”

... people tell us loads of such stories.

**Regular events** likely help: creating a social habit.  
Likely also important: voluntary (not incentivised) attendance.

An opportunity for an **ethnographic** study?

*Dittus, Quattrone, Capra (2016): “Social Contribution Settings and Newcomer Retention in Humanitarian Crowd Mapping”, SocInfo 2016*

In my personal experience, an important motivator:

**People want to know that their work has a real impact.**

It is important to show what their work has made possible.

But: there is not always an institutional habit to report back when a map was used in the field.

Important to tell stories about the operational impact of past activations — this changes people's attitudes.

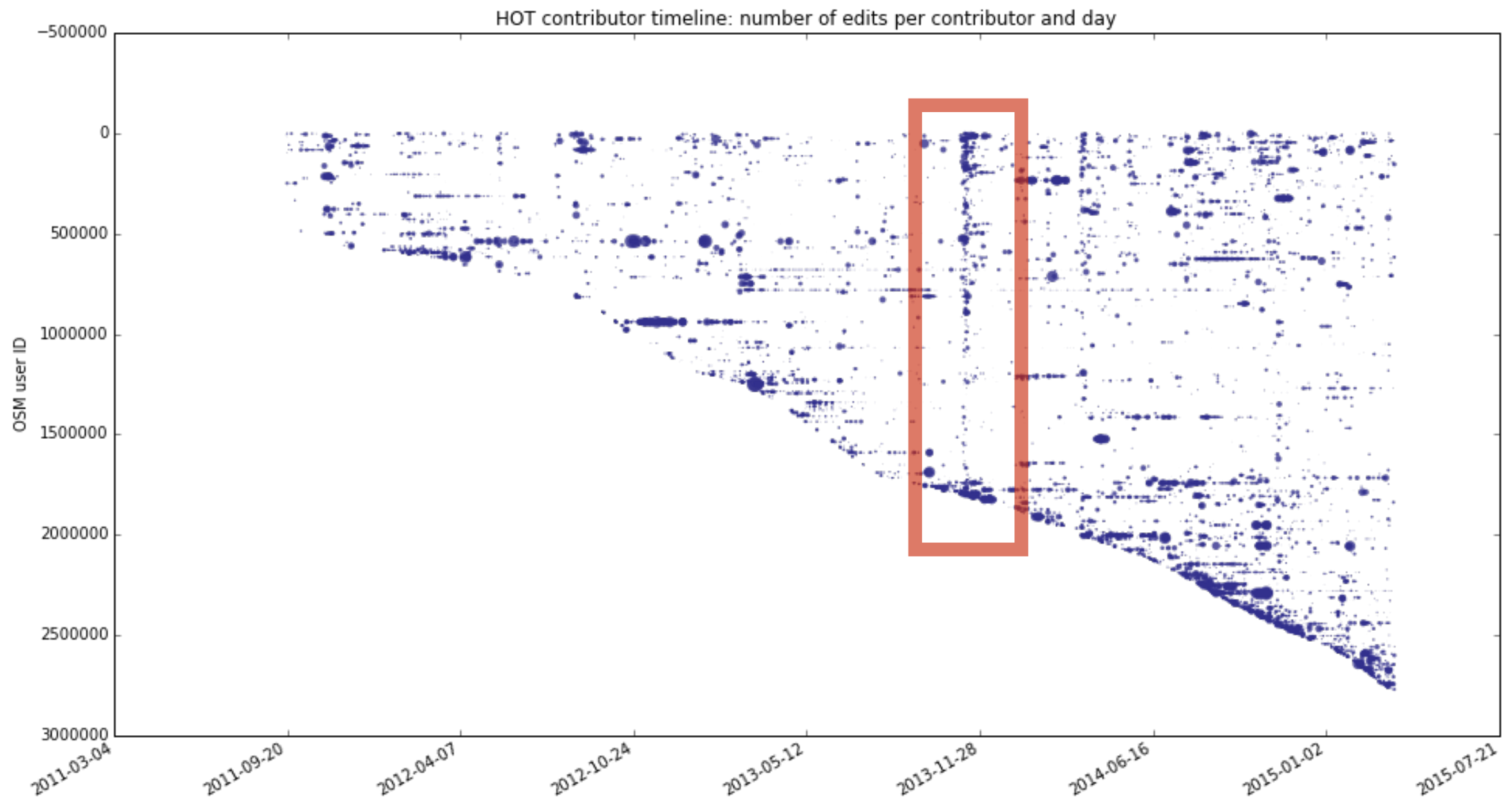
**Collect specific field stories, take photos of the places and the people. Share them widely.**

- I. Contributor statistics
- II. Newcomer experiences
- III. An on-demand task force?**



# Reactivation moments: many contributors return from inactivity

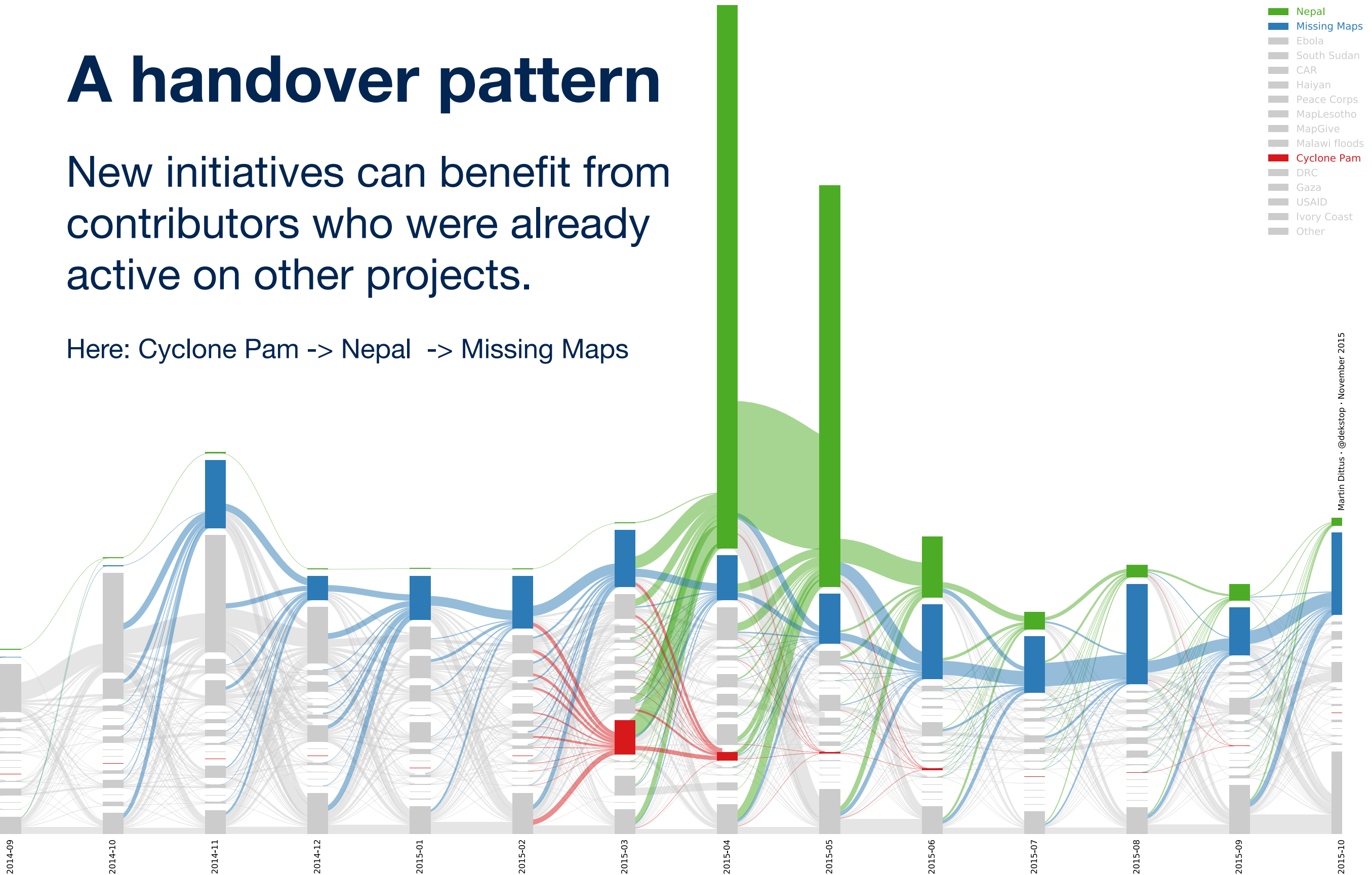
The HOT community as an on-demand task force?



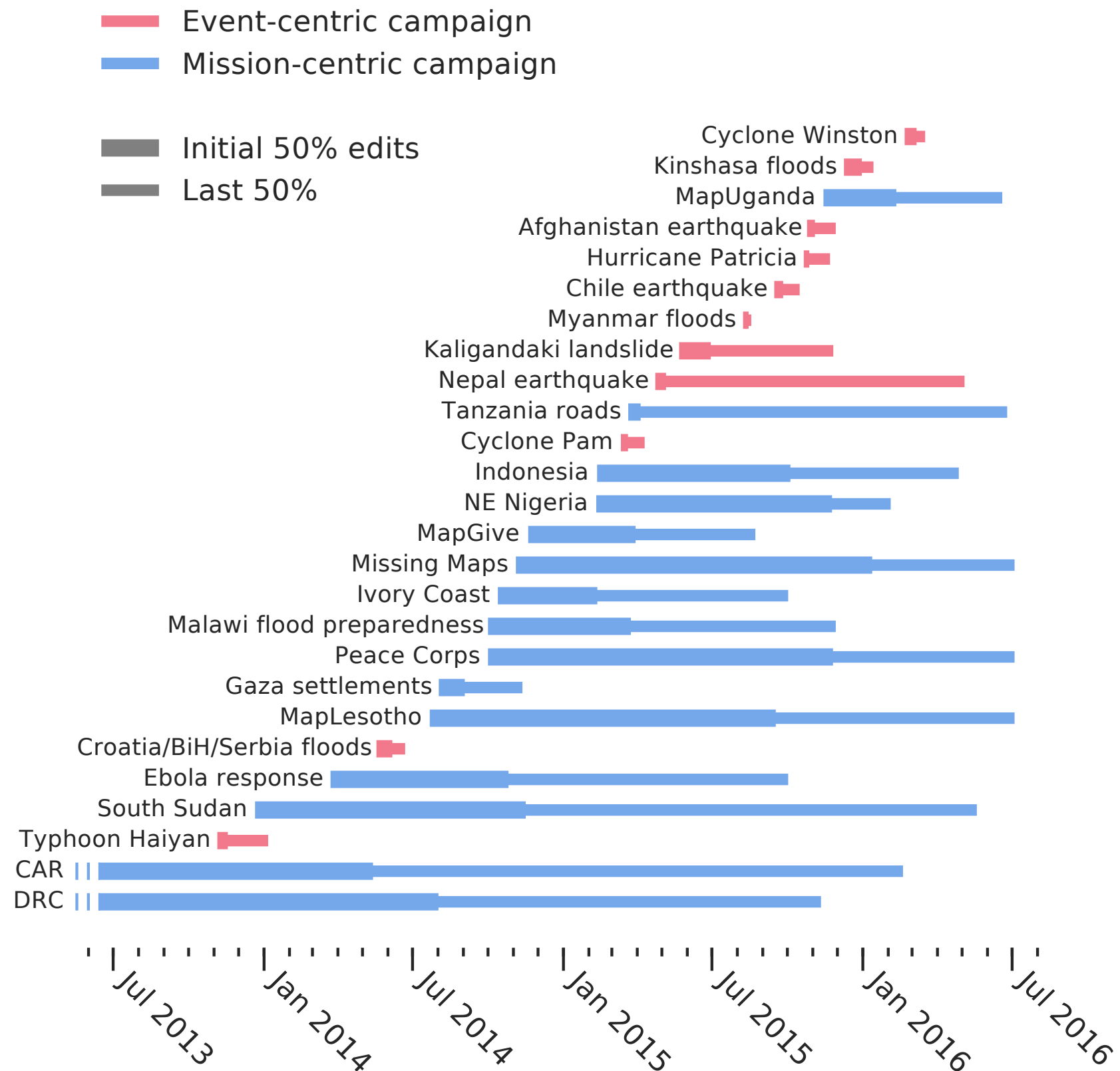
# A handover pattern

New initiatives can benefit from contributors who were already active on other projects.

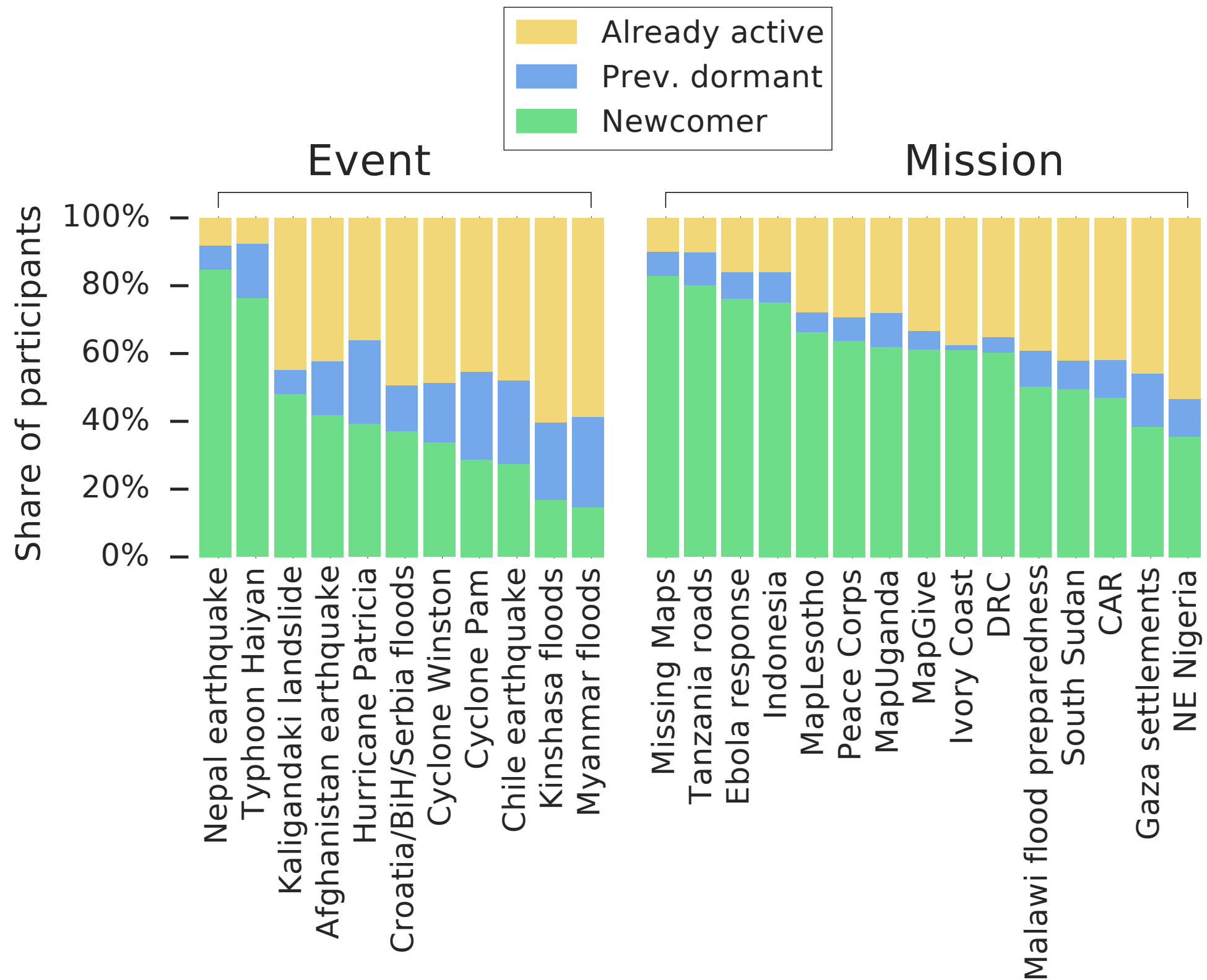
Here: Cyclone Pam -> Nepal -> Missing Maps



# Disaster events, long-term missions



# Contributors during disaster events and long-term initiatives



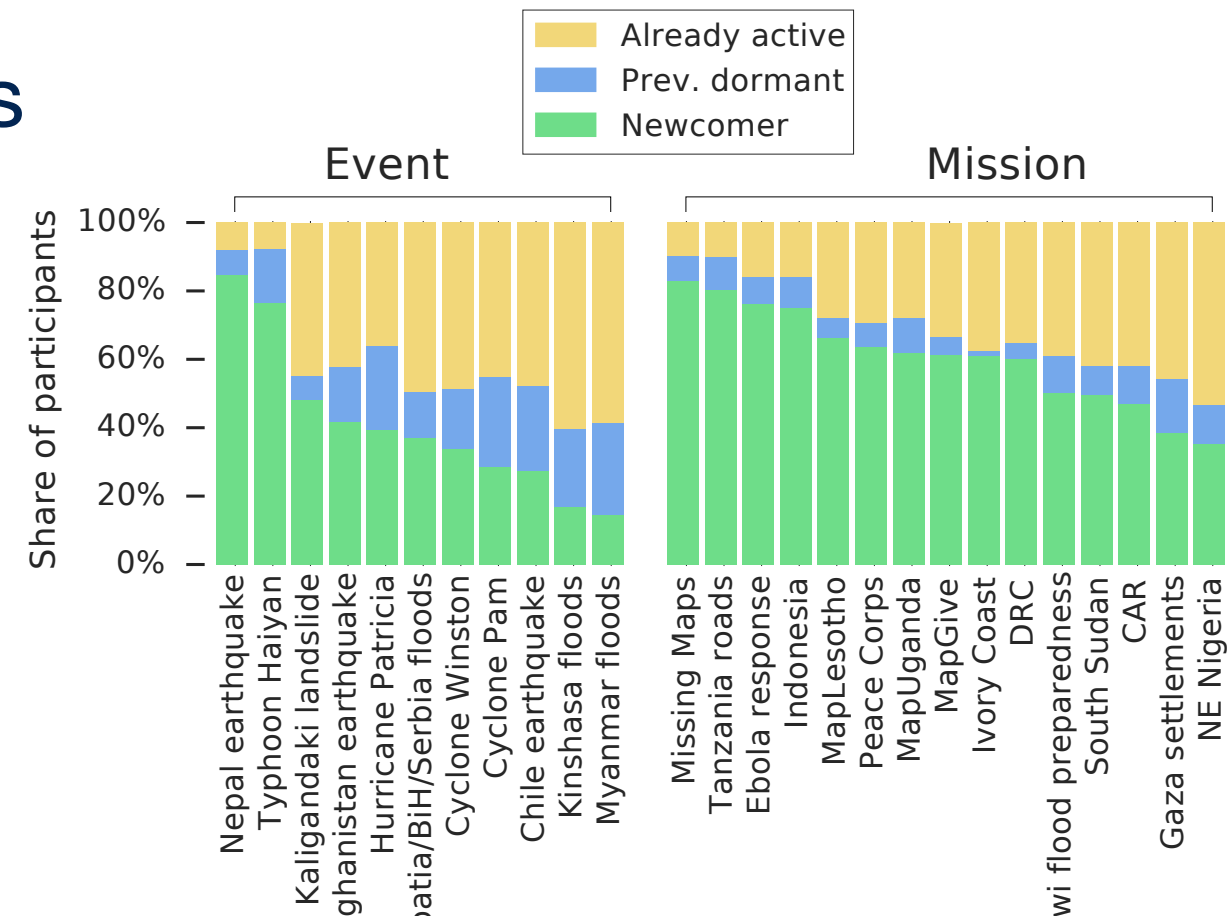
# HOT as an on-demand task force...

**Not all disaster events are equal — some drew their own crowds. Here: Haiyan, Nepal.**

**Surprisingly few contributors were “reactivations” — people who were inactive for 60+ days, but came back to help out.**

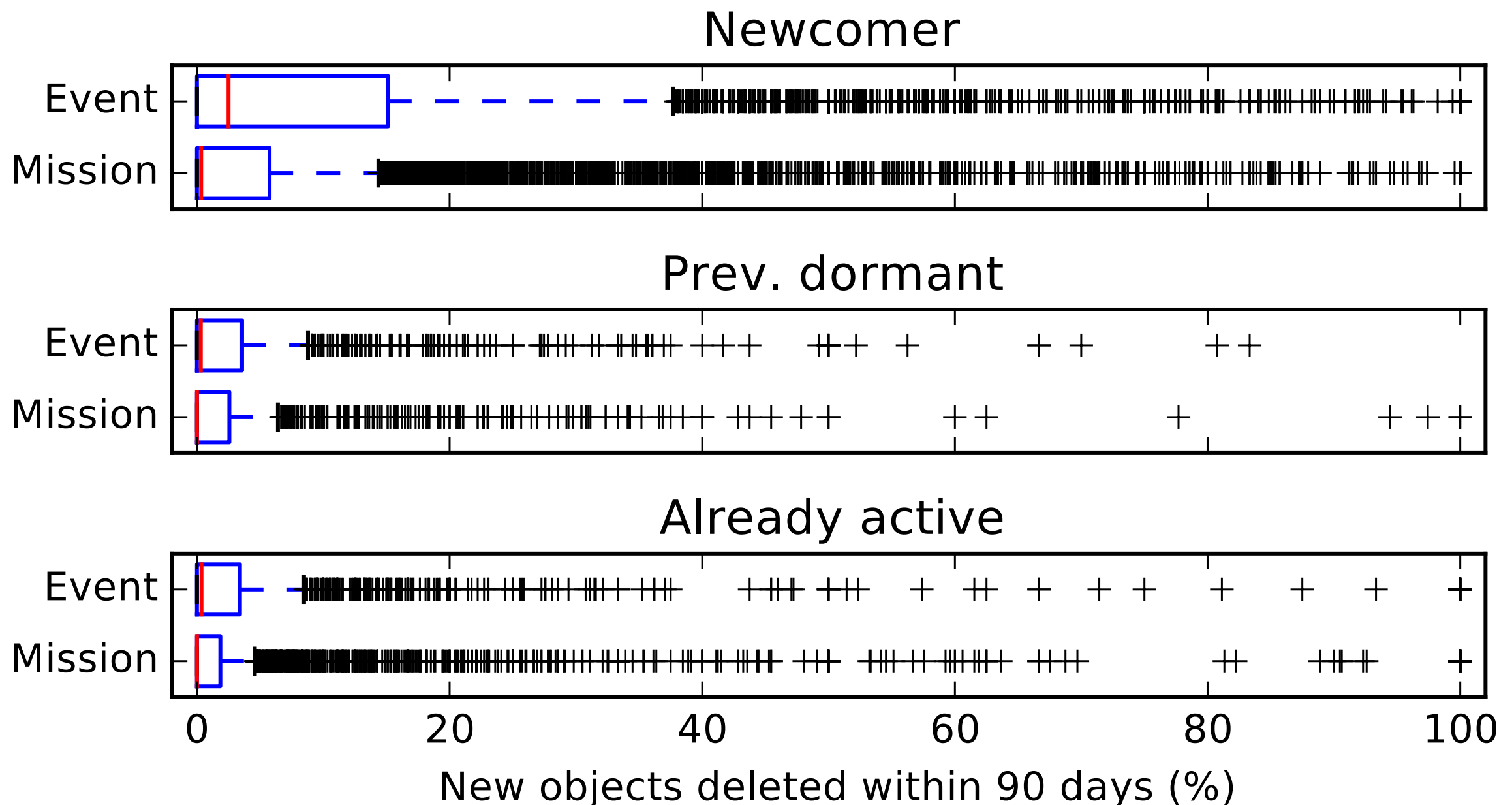
**Some high-profile disaster events were important for recruiting — but they’re the exception.**

**Much recruiting happened in longer-term initiatives.**



# High newcomer share during large events: likely affected contribution quality

After Nepal/Haiyan, many newcomer contributions were eventually deleted.





# Recruiting during large events

When a high-profile event takes place...

## **How can we better support first-time contributors?**

What's the online equivalent of a mapathon? Social space, peer guidance, tutorials, a place to ask questions, ...

## **How can we best make use of their limited time?**

Many won't stay long enough to get better.

## **Where can they best contribute?**

Carefully consider tasking manager listing: I expect many new contributors choose from the top-listed projects.

# A community activation mechanism?

Currently, major events are promoted on social media, the HOT mailing lists, some regional communities.

Not everyone has time to follow daily community chatter.

**How can we better inform experienced mappers when their help is needed?**

How can we better engage our “volunteer task force”?

Promote key projects in the HOT newsletter?

Provide an opt-in notification mechanism for activations?

*Dittus, Quattrone, Capra (2017): “Mass participation during emergency response: event-centric crowdsourcing in humanitarian mapping”, CSCW 2017*

# Thank you.

Martin Dittus · @dekstop

<https://openstreetmap.org/user/dekstop/diary>