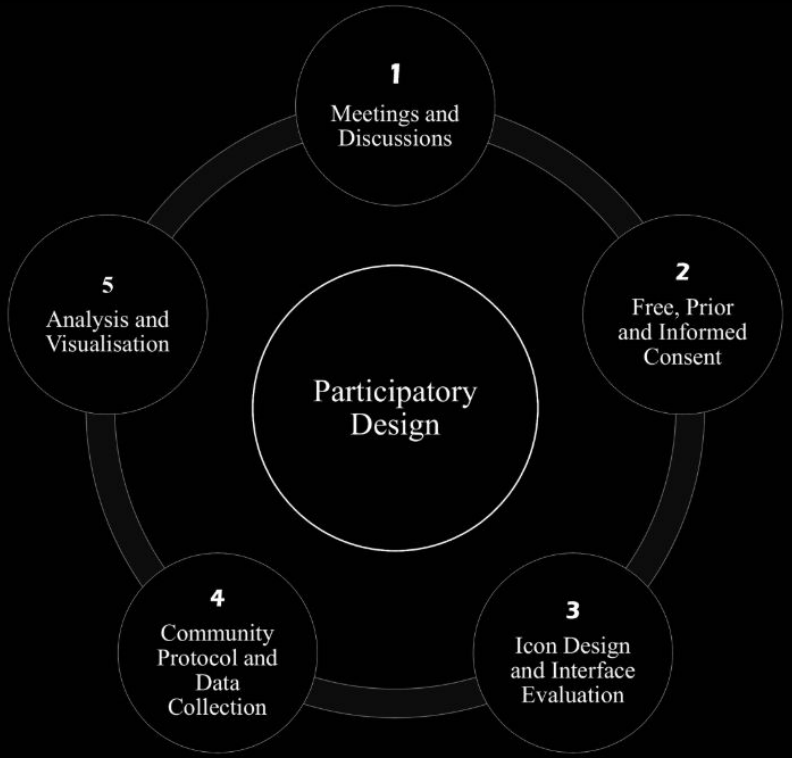
Participatory projects organization



Participation cycle of co-production of urban/rural issues contains several iterations:

Co-production of issues,
Data collection,
Methodology discussions
Analysis,
Participatory modeling (*)
Knowledge transfer (*)...

(Eitzel et al. 2017, Tupikina et al. 2022)

New kind of science: citizen science

NEWS FEATURE | 23 October 2018

No PhDs needed: how citizen science is transforming research

Projects that recruit the public are getting more ambitious and diverse, but the field faces some growing pains.

Aisling Irwin

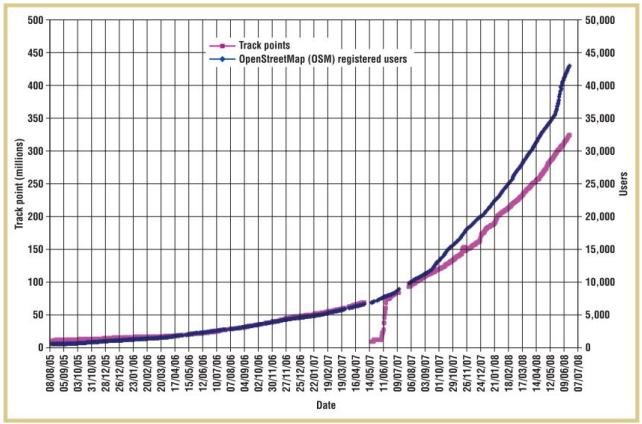


Figure 1. Graph of user and contributions growth to OSM on a monthly basis. The graph shows the accelerating growth in number of users and the rapid increase in data entry measured in track points (source: http://wiki.openstreetmap.org).

ZOOniverse - 1 mln users, 2014
OSM (2004) - 8 mln users, 2021

Citizen science projects

ZOOniverse - 1 mln users, 2014
OSM (2004) - 8 mln users, 2021

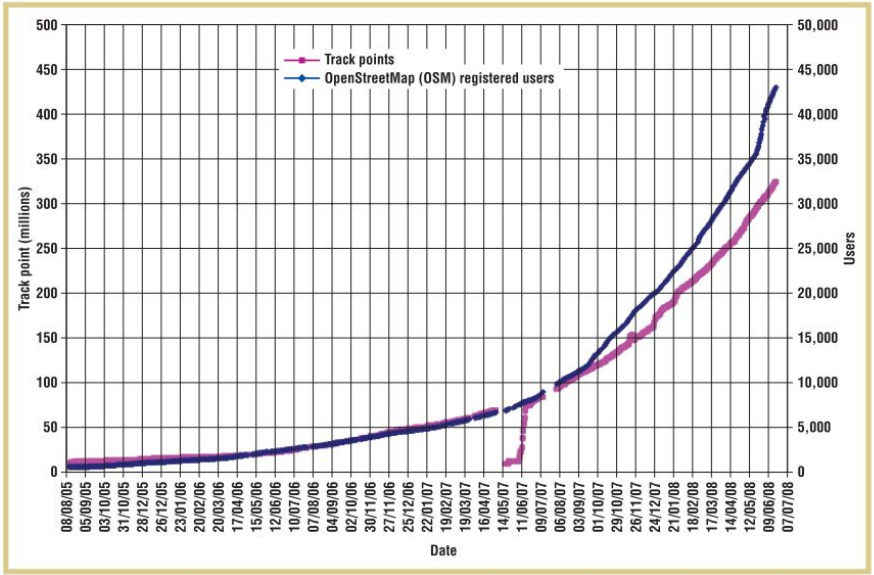
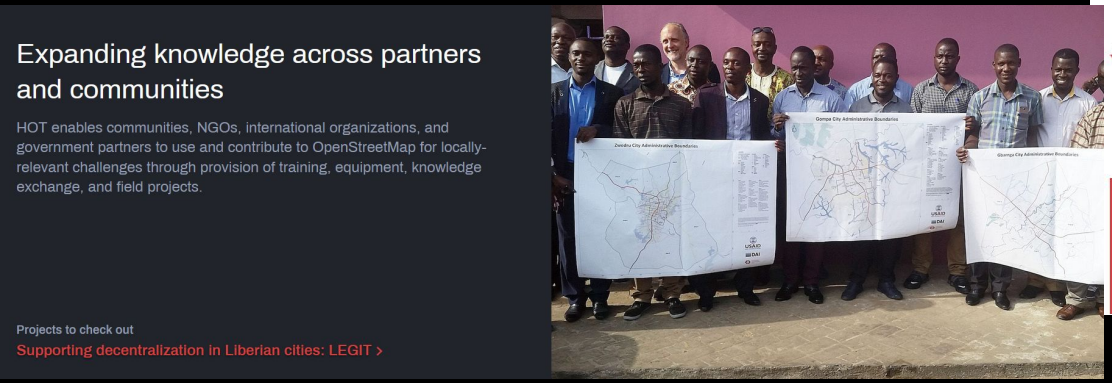


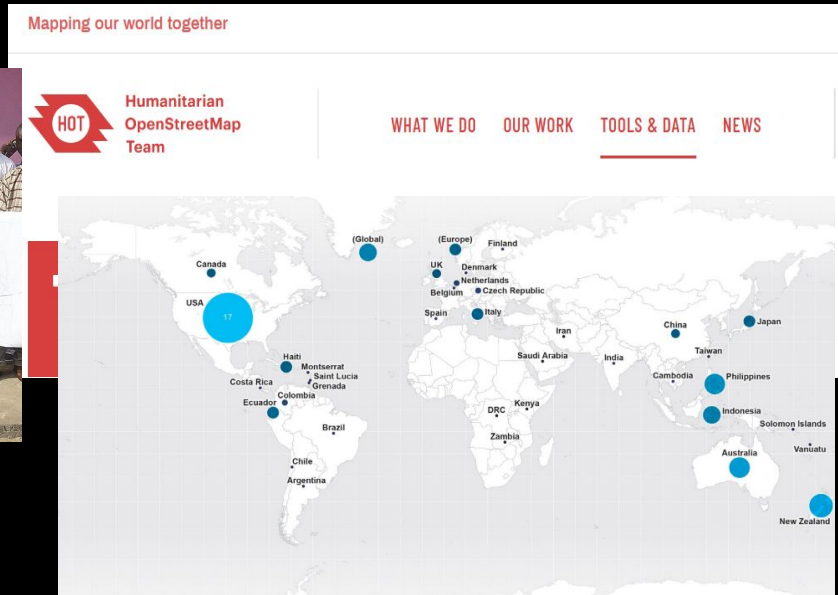
Figure 1. Graph of user and contributions growth to OSM on a monthly basis. The graph shows the accelerating growth in number of users and the rapid increase in data entry measured in track points (source: http://wiki.openstreetmap.org).

M.Haklay et al. “OpenStreet map: User-generated street maps” (2008)

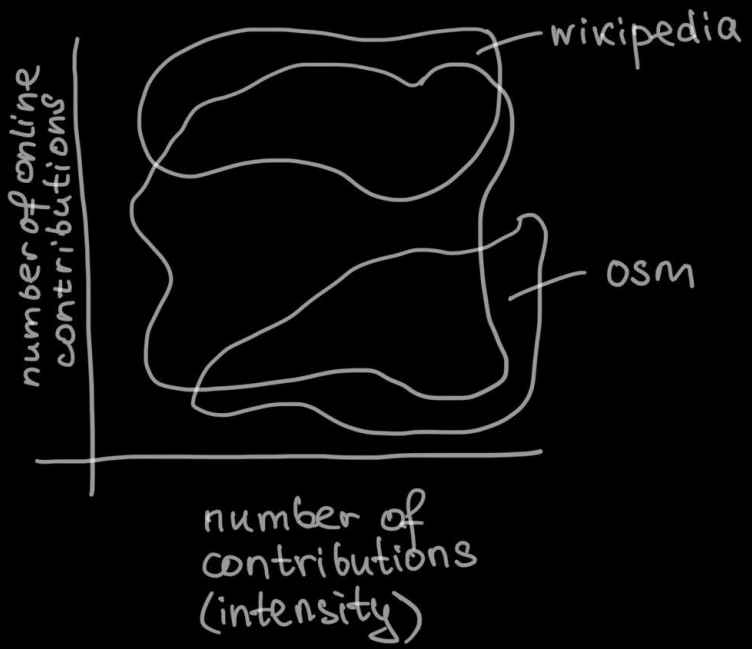
Another question: how small/large scale projects are organised?

Disaster mapping, humanitarian openstreetmaps response, flooding

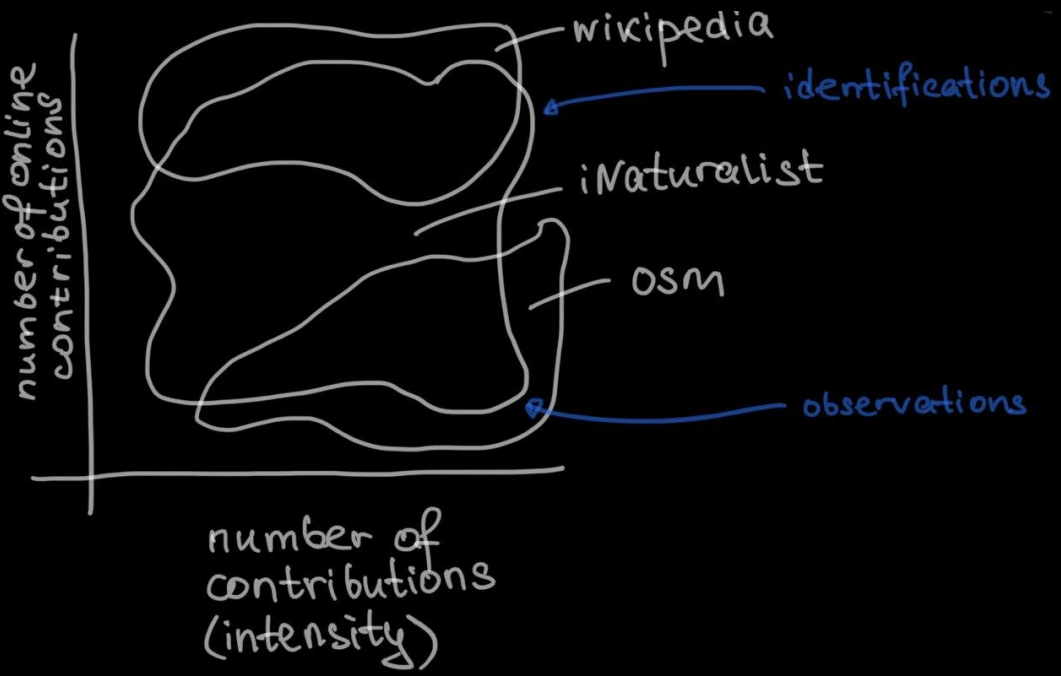




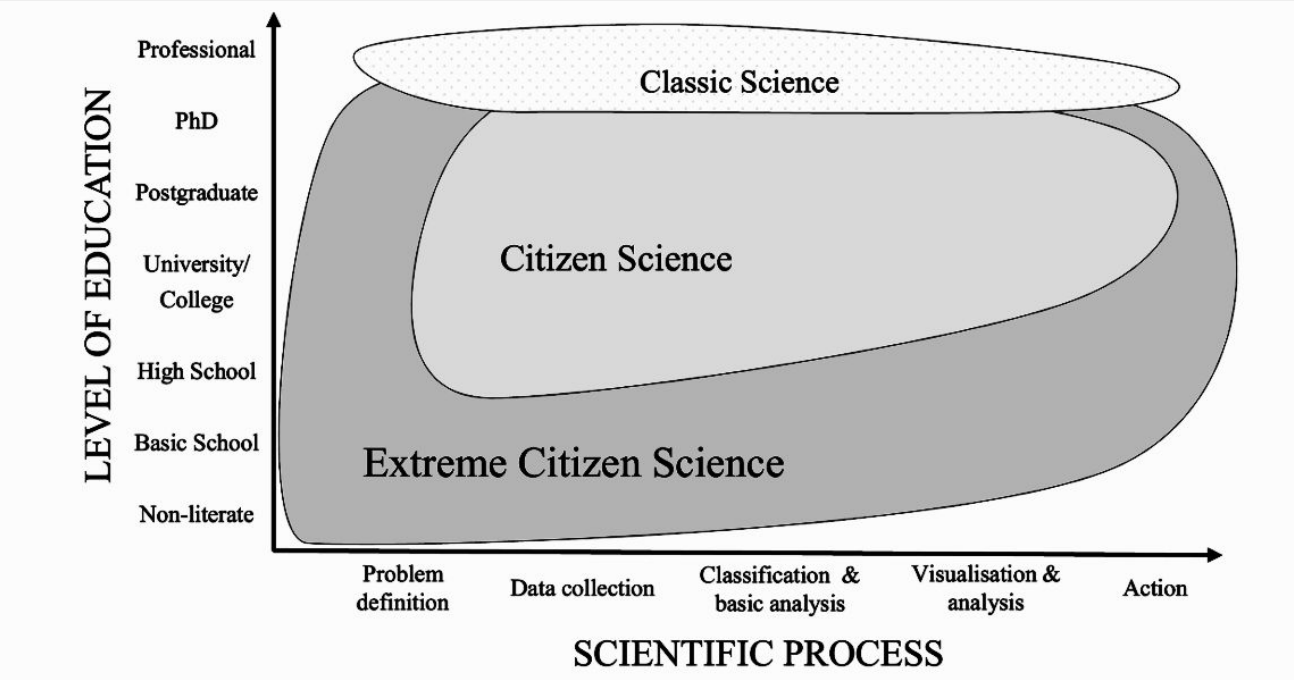
Another question: how small/large scale projects are organised?



Another question: how small/large scale projects are organised?



Another question: how small/large scale projects are organised?



[M.Haklay, Sapelli citizen science app]

What are the types of citizen science contributions?

Lightweight vs. Heavyweight

Individual contribution

Collective contribution, community management

What are the types of contributions?

Lightweight	vs.	Heavyweight
Individual contribution		Collective contribution, community management

Crowd-type contributors are needed to provide data through a mechanism that supports independent contribution. At the same time other type of contributions are needed:
for development of the project in long term and for organisational management. This is the case for OSM as well as other similar mixed types communities. According to theory crowdsourcing application acts as a latent tie structure (Haythornthwaite, 2002, 2005),
a common ground on which ties may develop.

(Bruckman & Jensen, 2002): community organisation is needed to turn latent ties into weak and stronger ties with a critical mass of persistent, internal strong ties.

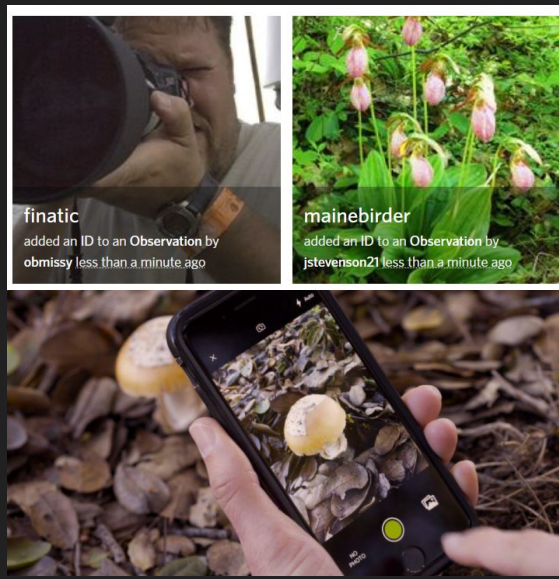
Citizen science Communities of volunteers

Bird watching communities

iNaturalist citizen science platform

Users contribute voluntarily on a platform.

1. Why users leave?
2. How do users interact?
3. What are spatial patterns?



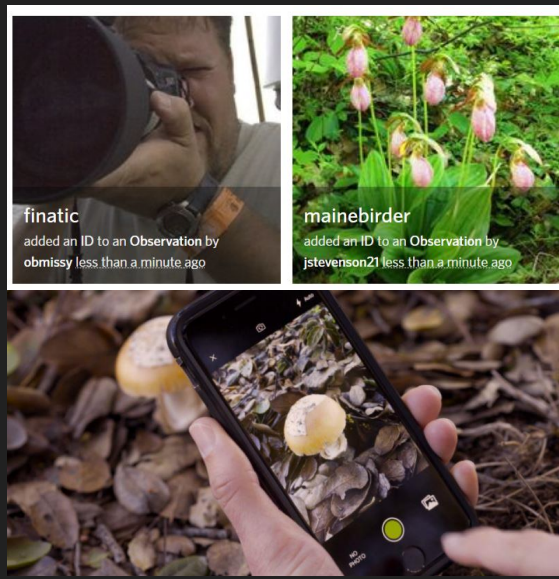
Our results:
Project with CorrelAid data volunteers
www.correlaid.org
https://github.com/correlaid-paris/

CitSciVirtual
LOCAL, GLOBAL, CONNECTED
CORRELAID
GOOD CAUSES. BETTER EFFECTS.
Für Nonprofits
Für Volunteers

iNaturalist citizen science platform

Users contribute voluntarily on a platform.

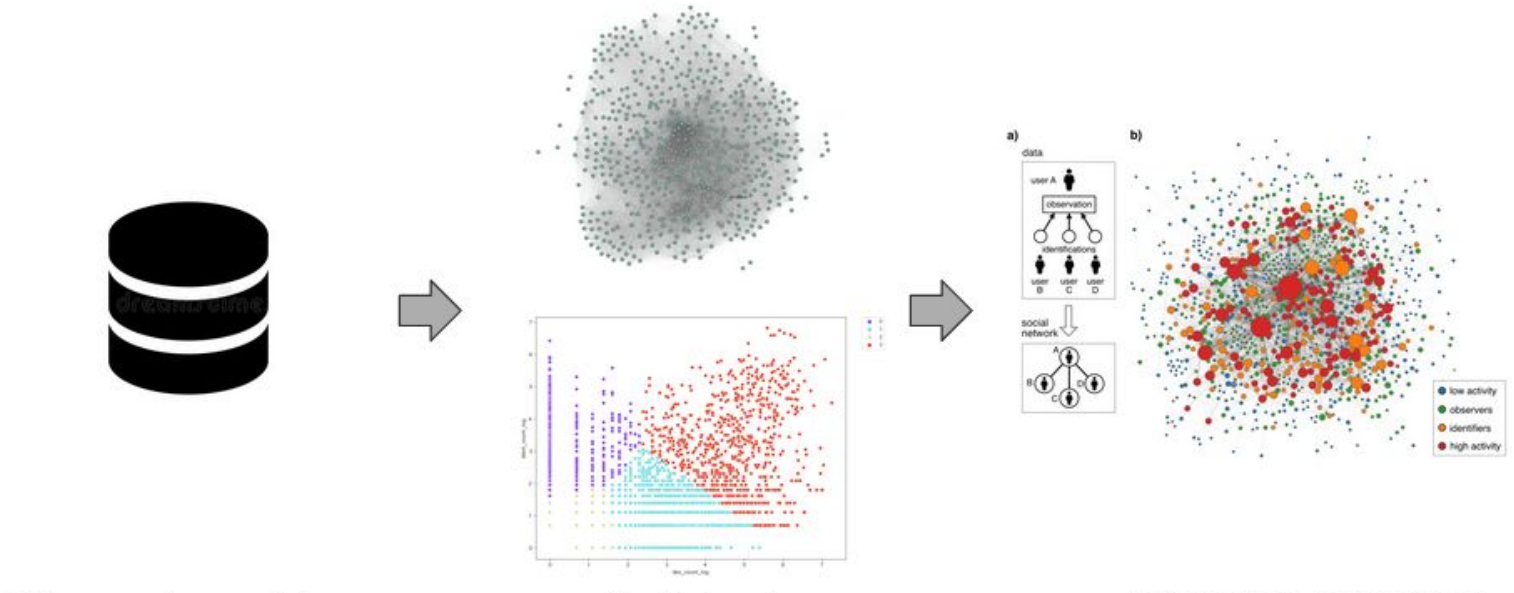
	id	observed_on_string	observed_on	time_observed_at	time_zone	user_id	user_login	created_at
0	11479007	2018-04-27 7:52:34 am BST	2018-04-27	2018-04-27 07:52:34 UTC	UTC	159021	muki	2018-04-27 07:06:17 UTC
1	11480212	2018-04-27 8:39:41 am BST	2018-04-27	2018-04-27 07:39:41 UTC	London	664459	lucyrobinsonnhm	2018-04-27 08:02:52 UTC
2	11480902	Fri Apr 27 2018 08:34:31 GMT+0100 (GMT+1)	2018-04-27	2018-04-27 06:34:31 UTC	Amsterdam	908315	tess26	2018-04-27 08:42:01 UTC
3	11481097	Fri Apr 27 2018 09:54:35 GMT+0100 (GMT+1)	2018-04-27	2018-04-27 07:54:35 UTC	Amsterdam	796473	bryonycross	2018-04-27 08:54:45 UTC
4	11482247	2018-04-27 8:42:21 am BST	2018-04-27	2018-04-27 07:42:21 UTC	London	664459	lucyrobinsonnhm	2018-04-27 10:09:55 UTC



CitSciVirtual
LOCAL, GLOBAL, CONNECTED

CORRELAID
GOOD CAUSES. BETTER EFFECTS.
Für Nonprofits
Für Volunteers

Participatory projects organization



[Y. Asgari, J.Bara, E.Bokanyi, (...) M.Mazzamurro, L.Tupikina
“The effect of infrastructure on social connectivity” (CSS 2022)]
[Singh, Santolini, Tupikina et al.]
Analysis of human mobility: virtual and physical
[Tupikina, Kloppenberg, (...), Haklay et al.] CS und.rev. 2021, ECSA 2022

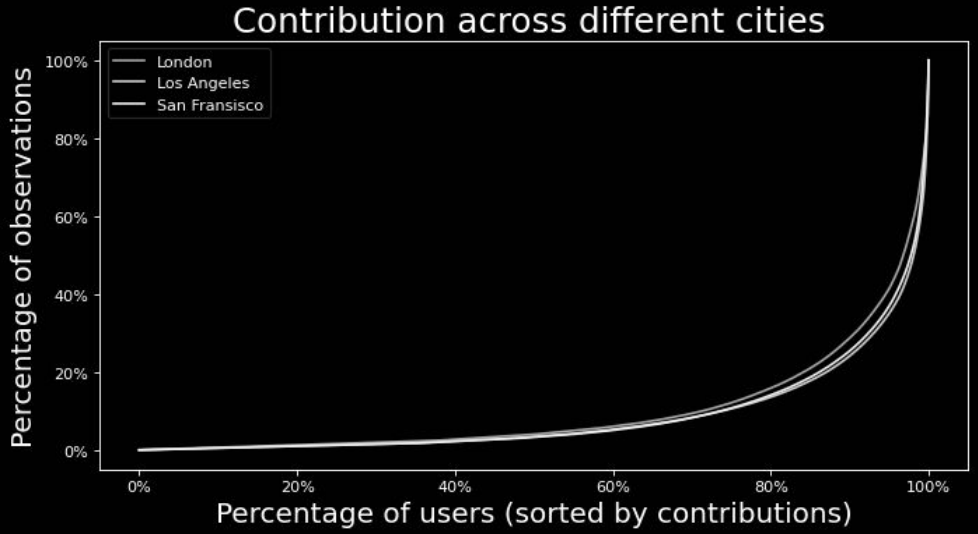
[Dekker, A. N. Medvedev, J. Rombouts, G. Siudem, L. Tupikina]
“Modelling railway delay propagation as diffusion-like spreading”, EPJ 2022
[Tupikina et al.] “Structural and temporal network heterogeneity” Netw. Sci. (2018)

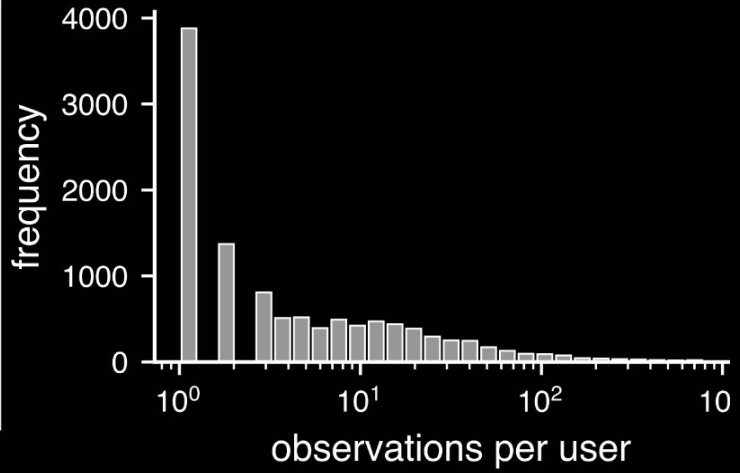
Participation types

First rule: Nielsen rule Often online platforms, including citizen science platforms, tend to follow the so-called Nielsen 90-9-1 rule for ratio of activity types (Bégin, Devillers and Roche 2018; Gasparini et al. 2020). The 90-9-1 rule states that 90% of users are ‘lurkers’ who almost never contribute to generate content, 9% of users provide only minor contributions, and 1% of users, referred to as superusers, account for almost all the contributions.

Second rule: Pareto rule Similarly, the Pareto rule (also called 80/20 rule) is present in some open-source communities, which observes that most contributions (80%) tend to be produced by a small subset of the developers (20%), known as the core team (Bégin, Devillers and Roche 2018). This is the case in iNaturalist platform as well, where 80% of the observations - are made by around 20% of users measured for all cities in aggregate manner.
The frequency distribution of participation forms a skewed distribution towards contributions from a minority of very active participants.

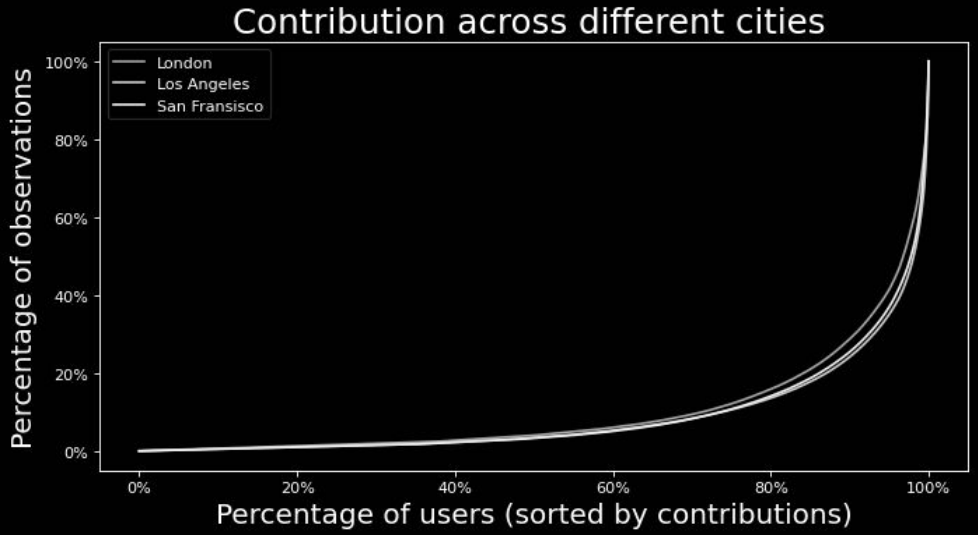
Inequality of participation





Is inequality of participation important?
Participation Inequality and the 90-9-1 Principle in Open Source
(Gasparini et al. 2020, Haklay et al. 2016, Tupikina et al. 2021)

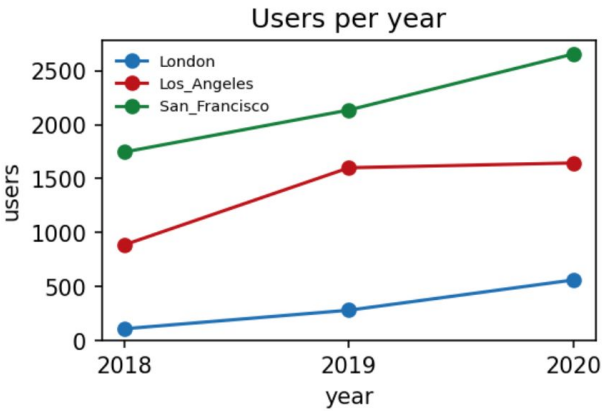
Inequality of participation

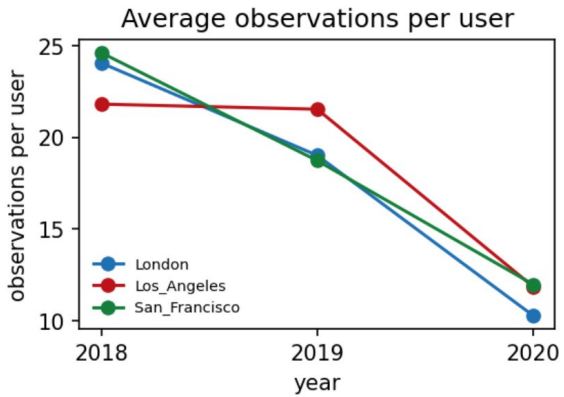


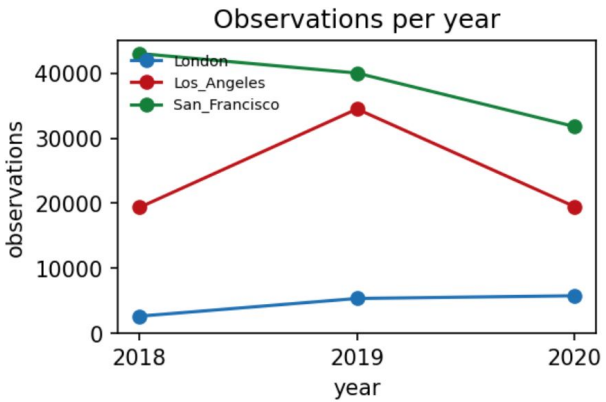
90% of users are lurkers who never contribute to generate content, 9% of users provide only minor contributions, and 1% are super-users

(Gasparini et al. 2020, Haklay et al. 2016, Tupikina et al. 2021)

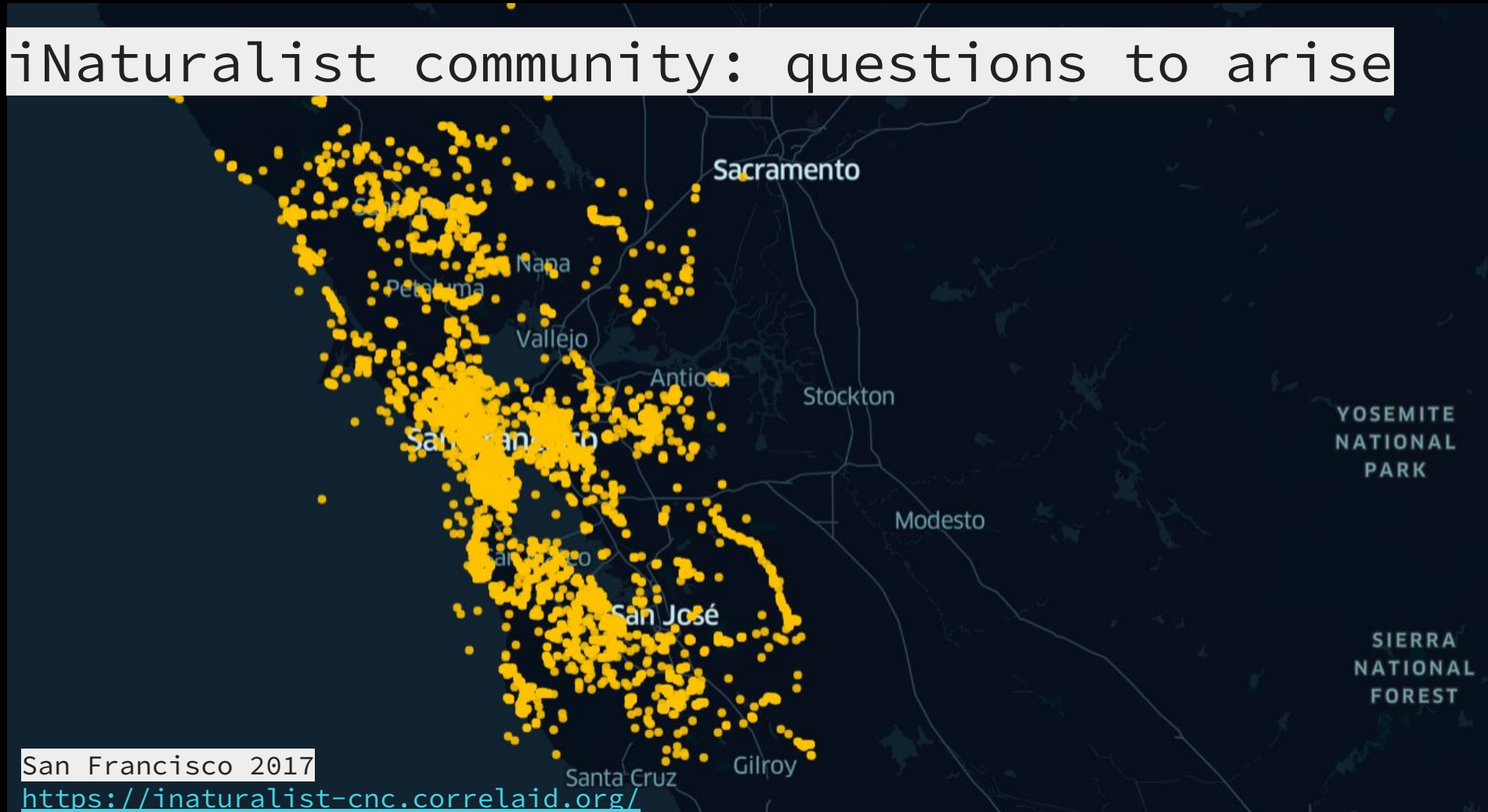
Participation in time





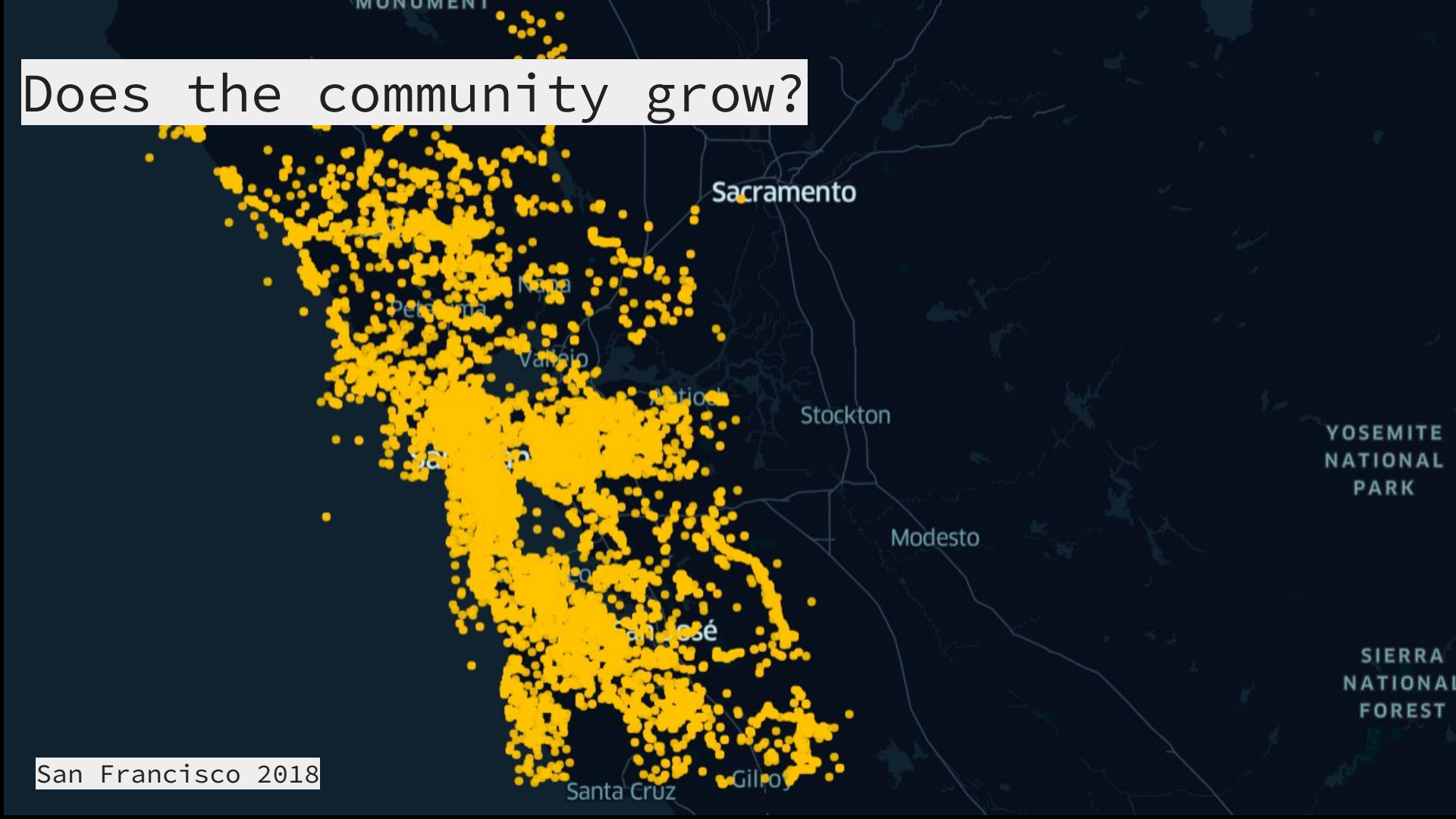


iNaturalist community: questions to arise

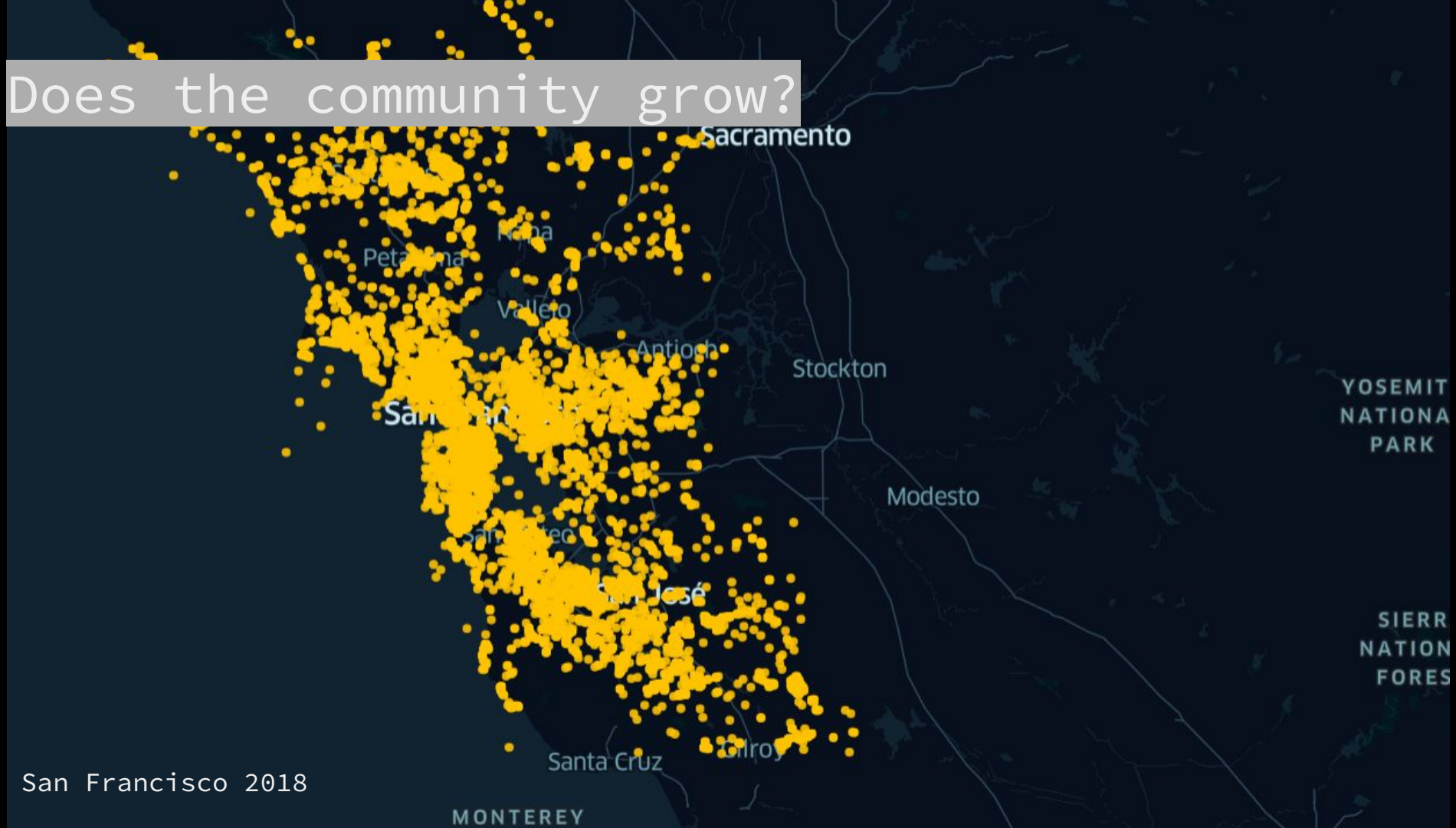


San Francisco 2017

https://inaturalist-cnc.correlaid.org/


Does the community grow?
Sacramento
Stockton
Modesto
YOSEMITE
NATIONAL
PARK
SIERRA
NATIONAL
FOREST
Santa Cruz
San Francisco 2018

Does the community grow?



San Francisco 2018

Does the community grow?

Methods for CS analysis:
- how to analyse users' attrition
- how to visualise users' participation
- how to match together problem and users and design citizen science project
- data driven approaches in CS

Kepler.gl visualisation

San Francisco 2018