

CO-DESIGNING PARTICIPATORY DATA VISUALIZATIONS TO EVALUATE OPENSTREETMAP'S EQUITY:

THE GOOD, THE NEUTRAL AND THE UGLY

STS Italia | 11th June 2025 – Politecnico di Milano

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A STORY ABOUT MAPS AND EQUITY

STS ITALIA - MILANO, JUNE 2025

FEATURING **OPENSTREETMAP**

& **GEOCHICAS**



THE
GOOD



THE
NEUTRAL



THE
UGLY

A TALK BY **CARLOS CÁMARA-MENÓYO**
WITH **TIMOTHY MONTEATH, SELENE YANG,**
ALEJANDRA CANCLINI & SILVIA RIBERA ALFARO

The context

Maps: more than technical, objective artifacts

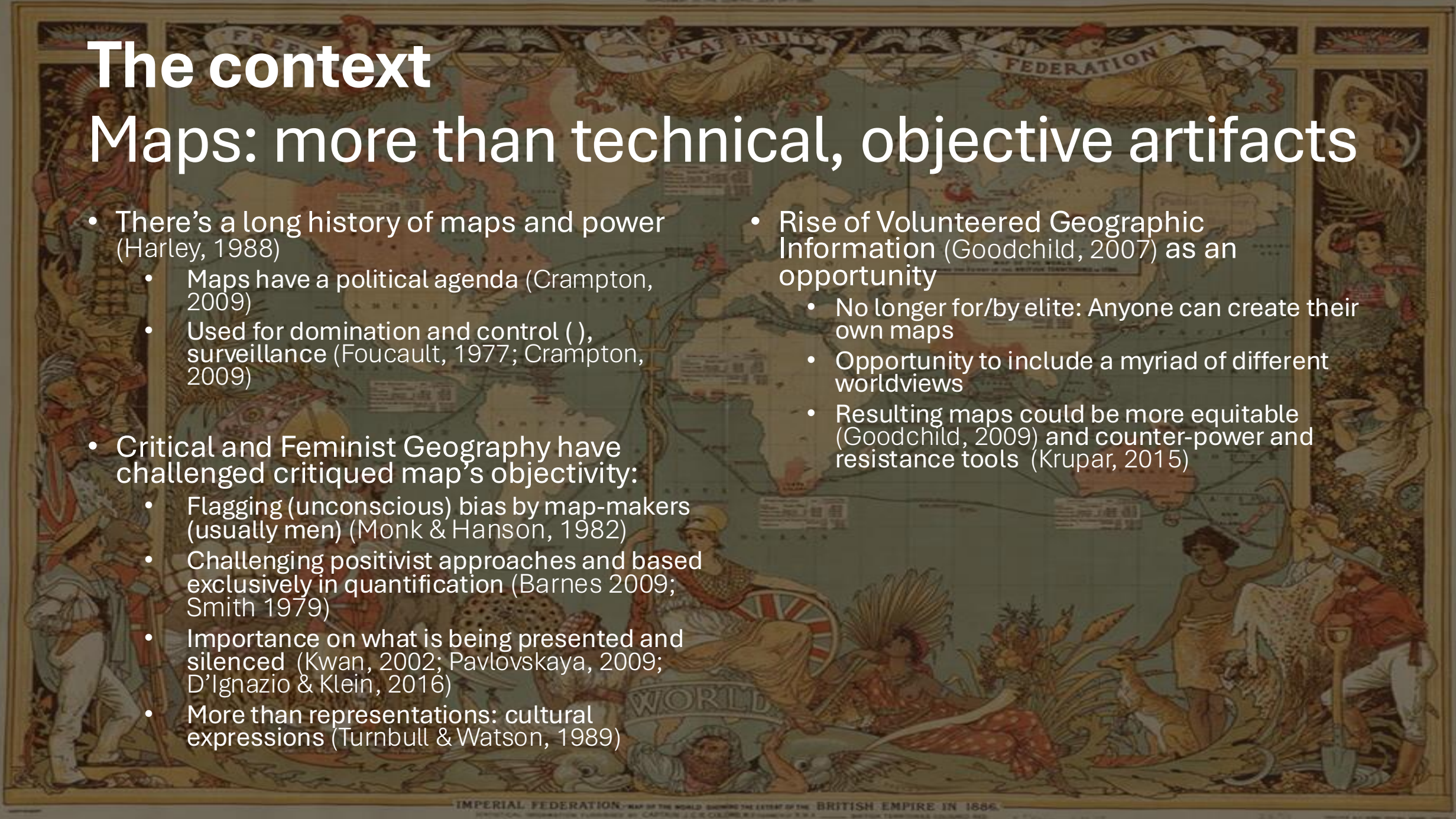
- There's a long history of maps and power (Harley, 1988)
 - Maps have a political agenda (Crampton, 2009)
 - Used for domination and control (), surveillance (Foucault, 1977; Crampton, 2009)
- Critical and Feminist Geography have challenged critiqued map's objectivity:
 - Flagging (unconscious) bias by map-makers (usually men) (Monk & Hanson, 1982)
 - Challenging positivist approaches and based exclusively in quantification (Barnes 2009; Smith 1979)
 - Importance on what is being presented and silenced (Kwan, 2002; Pavlovskaya, 2009; D'Ignazio & Klein, 2016)
 - More than representations: cultural expressions (Turnbull & Watson, 1989)



The context

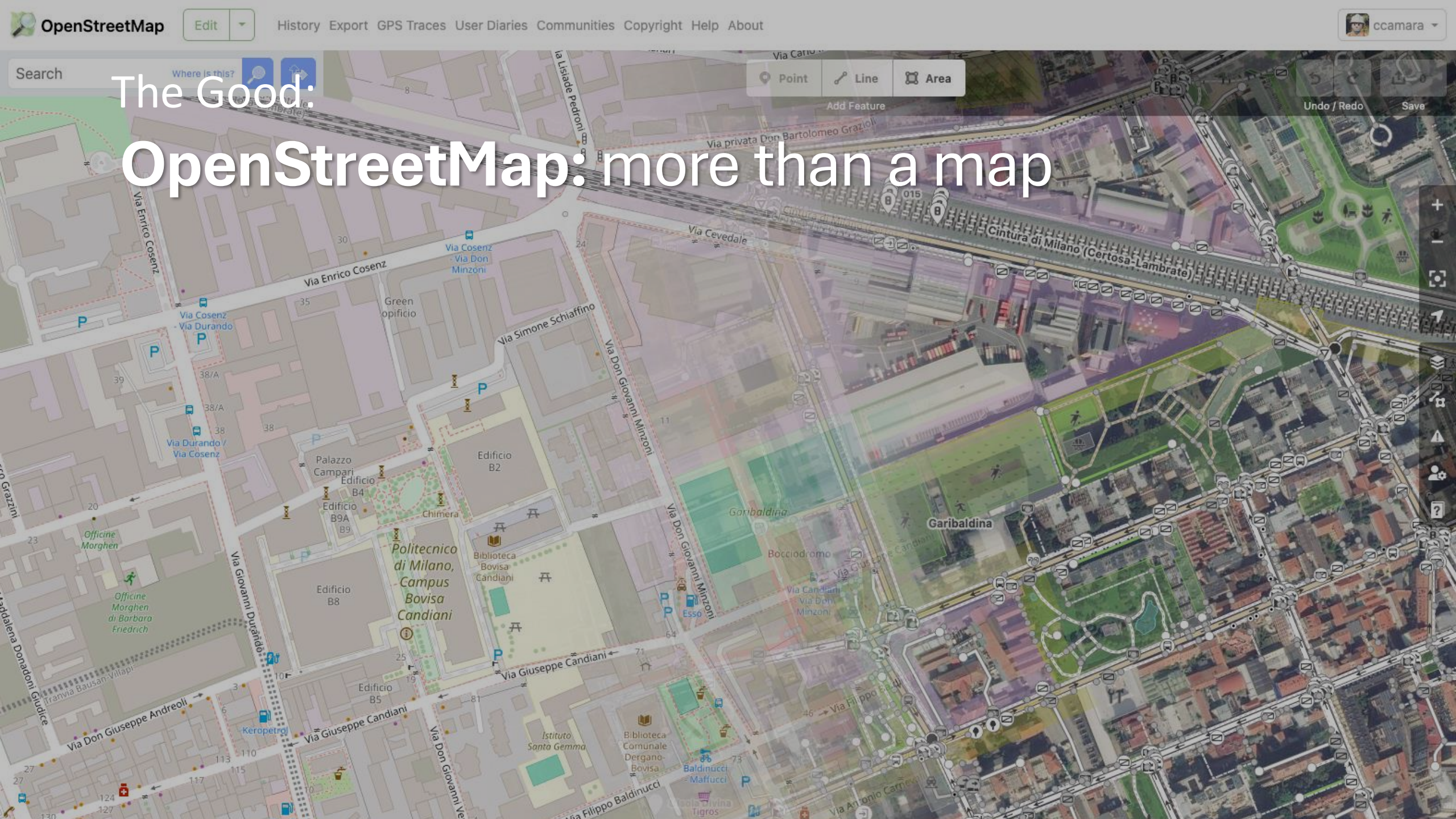
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 - More than representations: cultural expressions (Turnbull & Watson, 1989)
- Rise of Volunteered Geographic Information (Goodchild, 2007) as an opportunity
 - No longer for/by elite: Anyone can create their own maps
 - Opportunity to include a myriad of different worldviews
 - Resulting maps could be more equitable (Goodchild, 2009) and counter-power and resistance tools (Krupar, 2015)

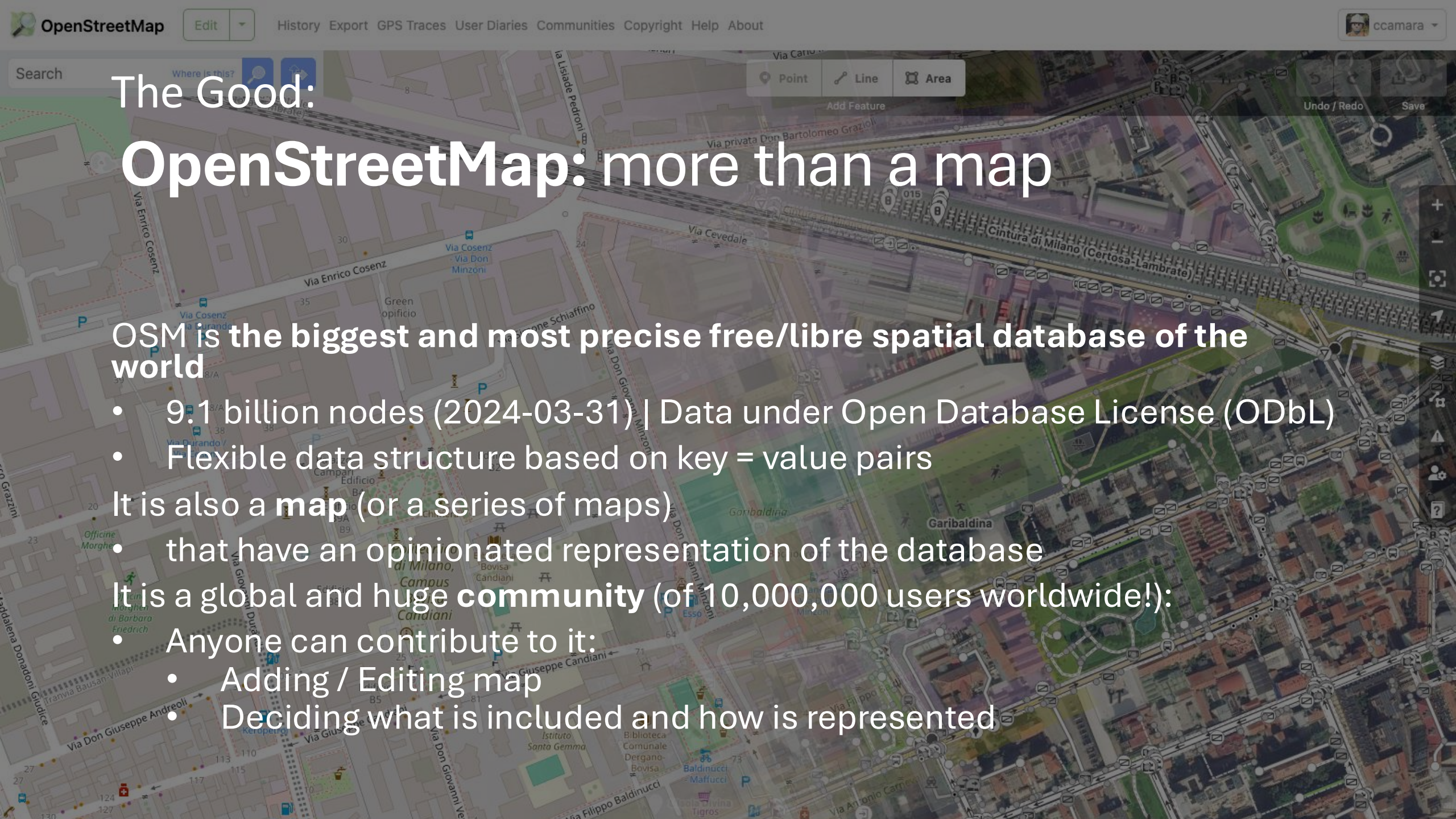


The 3 characters

The Good, the Neutral and the Ugly



The Good: OpenStreetMap: more than a map



The Good:

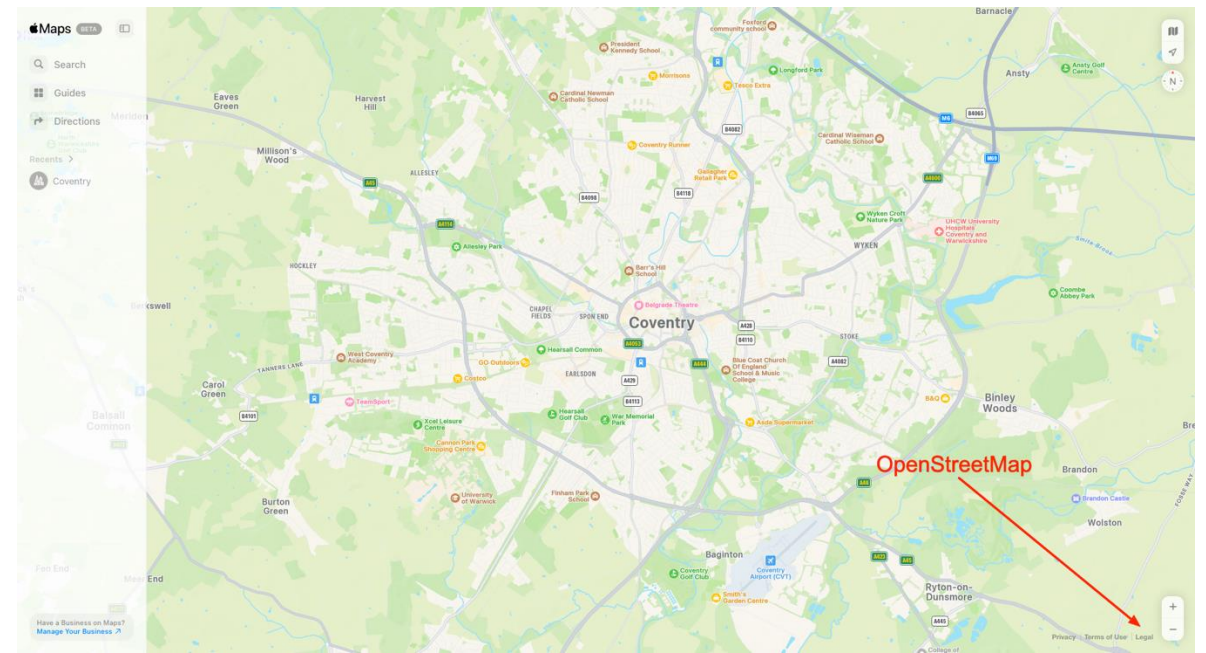
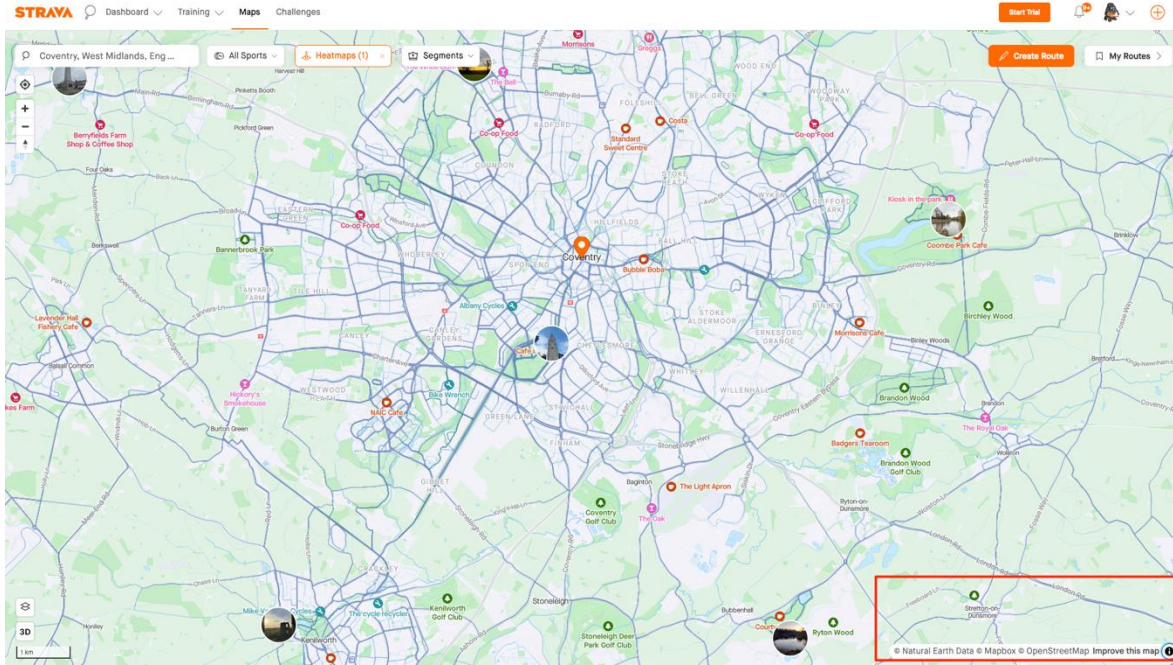
OpenStreetMap: more than a map

OSM is the biggest and most precise free/libre spatial database of the world

- 9.1 billion nodes (2024-03-31) | Data under Open Database License (ODbL)
- Flexible data structure based on key = value pairs

It is also a **map** (or a series of maps)

- that have an opinionated representation of the database
- It is a global and huge **community** (of 10,000,000 users worldwide!):
 - Anyone can contribute to it:
 - Adding / Editing map
 - Deciding what is included and how is represented



Its data, contributed by 10 million of volunteers, complements official data sources, and **populates thousands of tools and services**.

Major Sites: Amazon, Apple, Baidu Maps, Facebook, Microsoft, Wikipedia and Wikimedia

Transport: Air France, Alaska Airlines, Deutsche Bahn, Grab, SNCF (French rail agency), Uber

Geodata Software and Services: CARTO, Digital Globe, ESRI, Garmin, Mapbox, Telenav

Government: Agence Française de Développement, Government of Brazil, Government of Italy: President's Office, Police Scotland, US National Park Service, US State Department, USAID, Peace Corps....

The neutral:

Like Wikipedia, **OSM is based on principles of openness and neutrality.**

“OpenStreetMap maps world as it exists, and includes mapping borders and countries according to actual current situation and **not a preferred or ideal situation**” ([OSM Wiki](#))

The Ugly:

As well intentional as this aspiration may be, **is this neutral standpoint inadvertently producing and reproducing new types of oppression and colonialism?**

About the project

Our research enquires about how **neutrality** is operationalised to favour or hinder **equity**.

- One of the 9 funded projects by the **ESRC Digital Good Network** (Research Fund 2024)
- Call aimed at **evaluating a Digital Good**
- **10 Months** to implement it (4 months remaining!)

How we are working

Methods

Co-designing data visualizations with Geochicas

- Teaming up with **Geochicas**:
 - Grassroots of women mappers working in closing the gender gap in OSM
 - Founded in 2016
 - Started in Latin America, now worldwide
 - Experts in feminist mapping
 - Members of OSM -> Lived experiences
- Creating Data visualisations
 - As a method to **communicate findings**
 - As a method to **activate transformation**
- Codesign:
 - As a method to **surface how minoritised demographics are involved, recognised, or excluded from data production and decision-making in OSM**
 - As a method to **work with/for underrepresented communities**

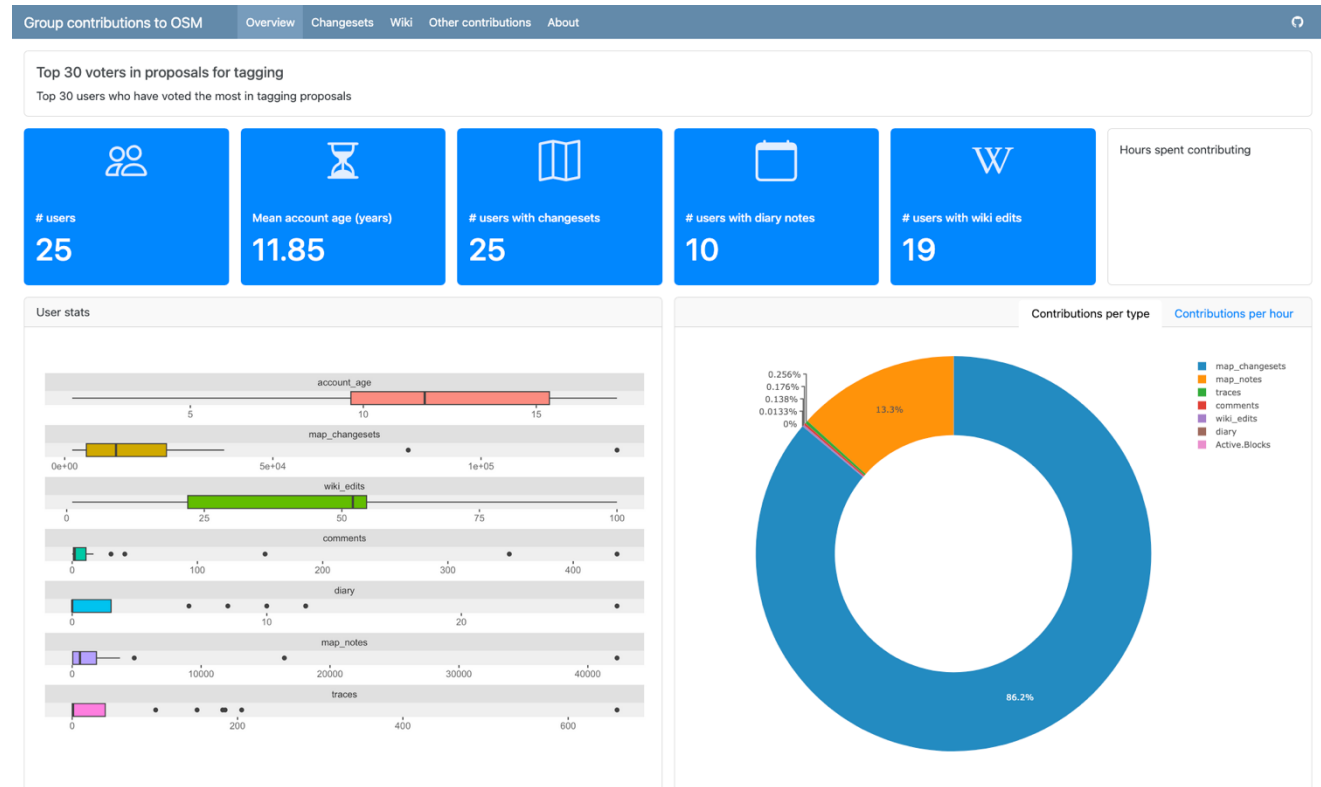


What we are doing

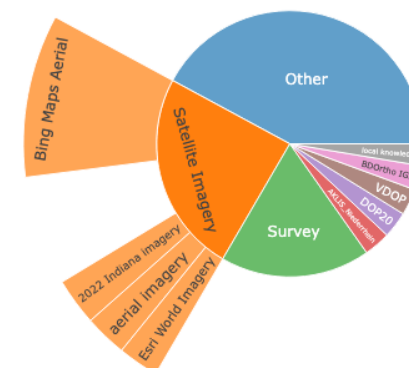
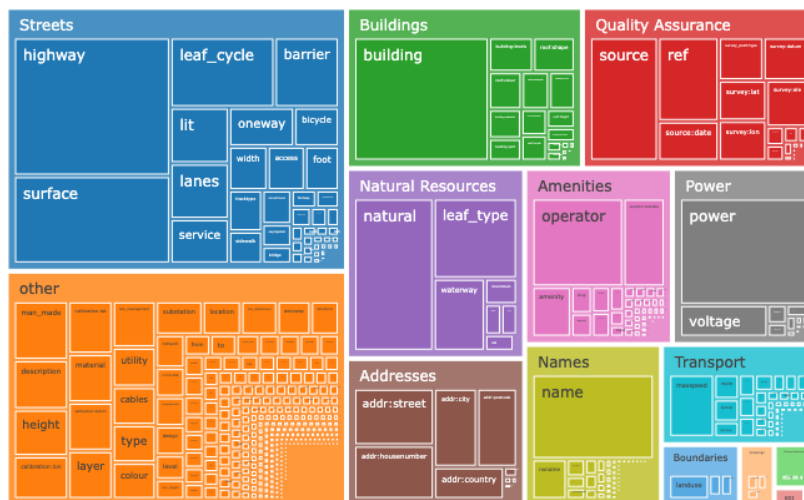
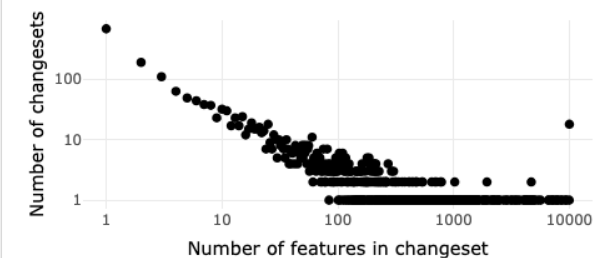
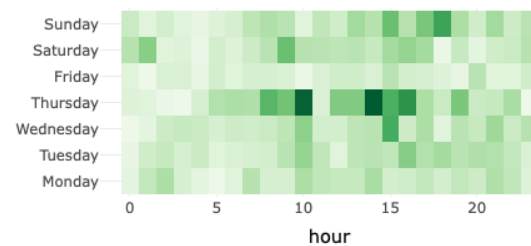
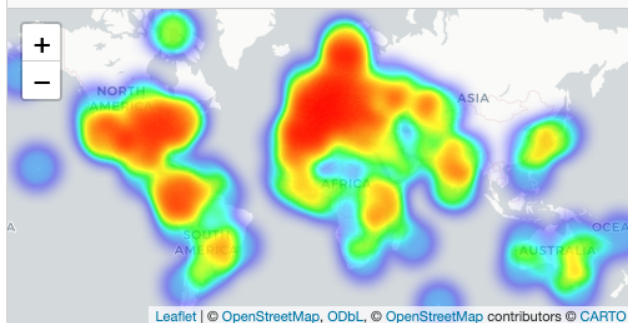
Streams of work

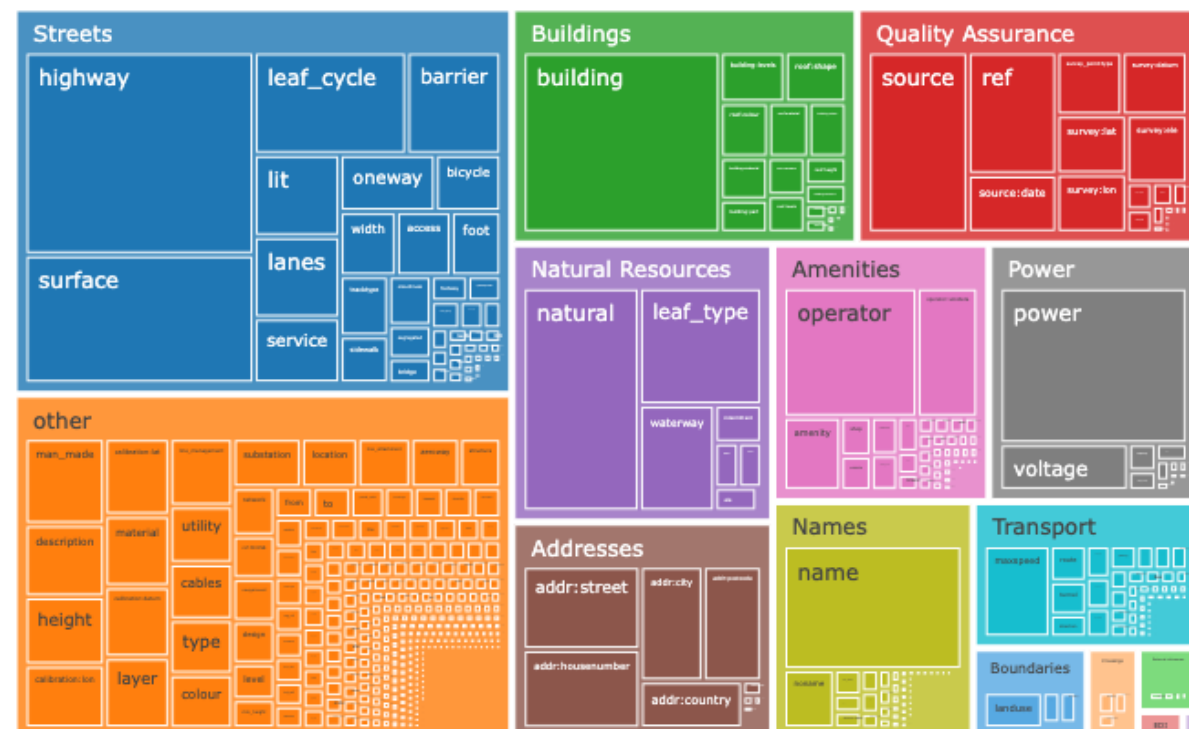
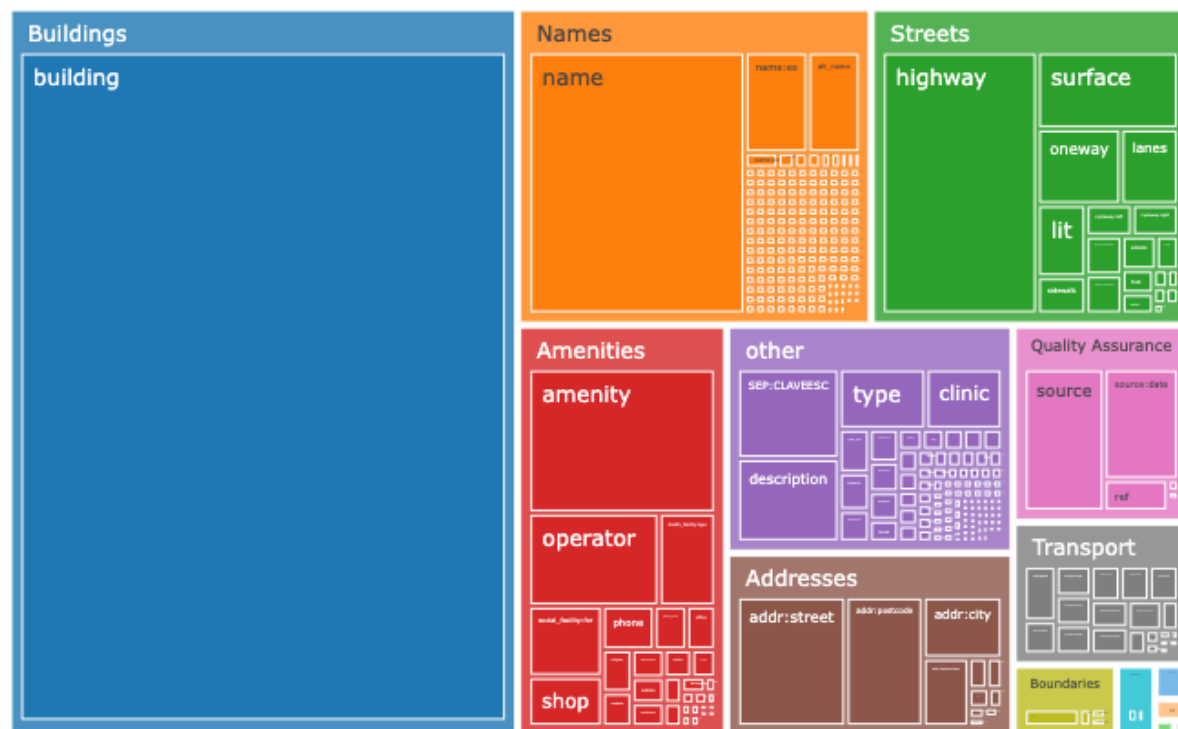
Group Contributions' dashboard

- Anonymised information about how groups of users contribute to OSM
- Recognises different types contributions:
 - Changesets (map features)
 - Wiki
 - Diaries
 - Proposals
- Inspired by Data Feminism (d'Ignazio & Klein, 2016) design principles



Opensource R-package: <https://github.com/WarwickCIM/OSMdashboards/>

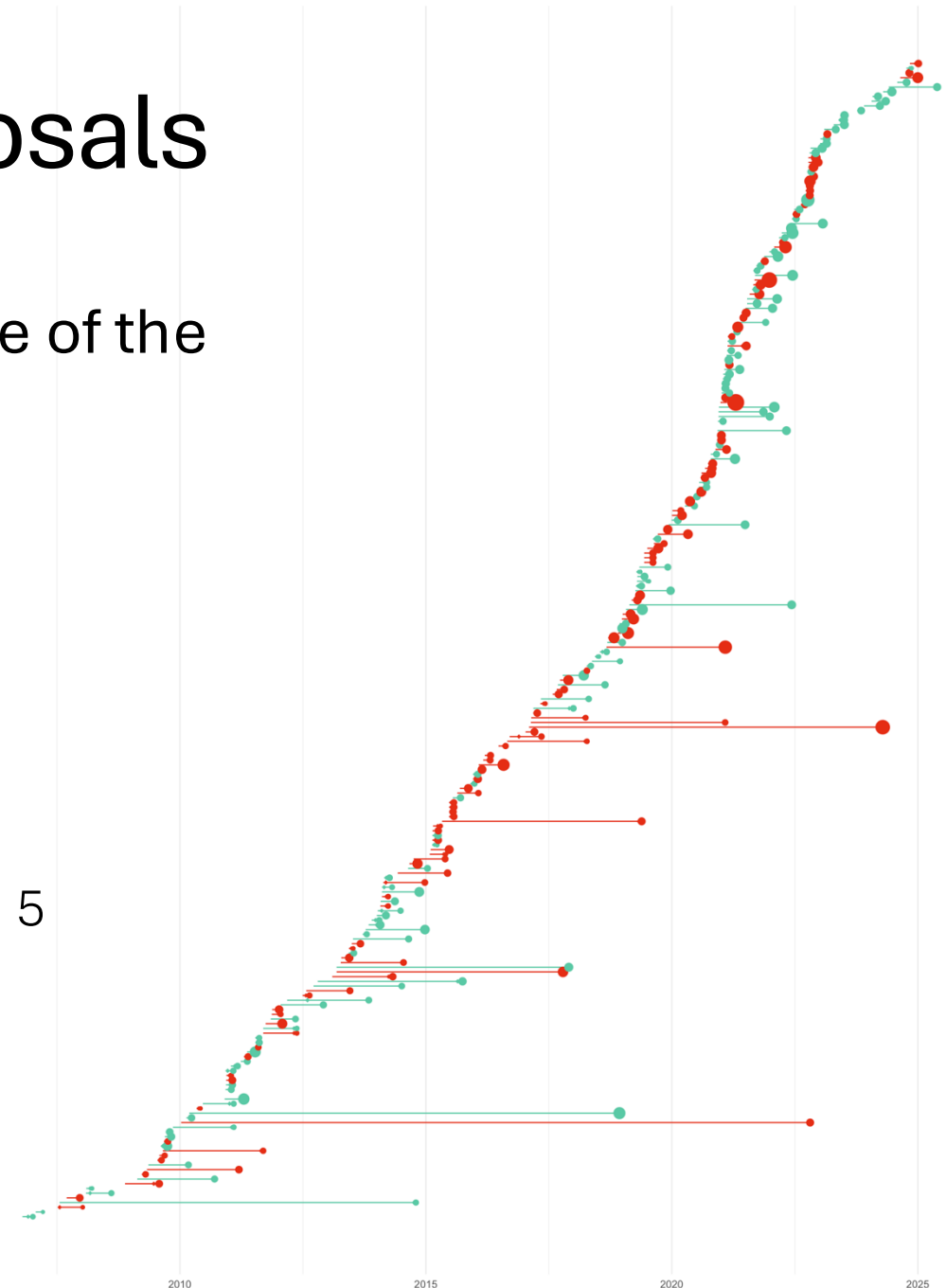


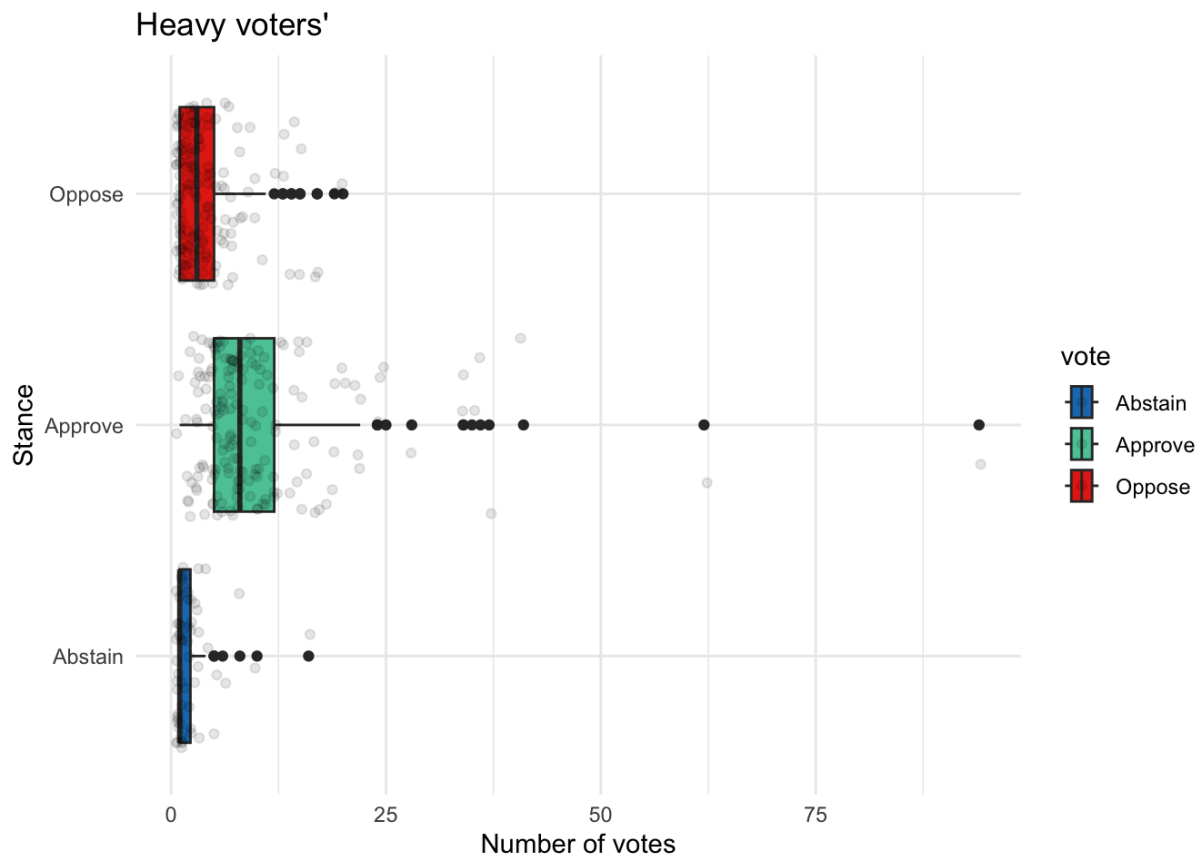
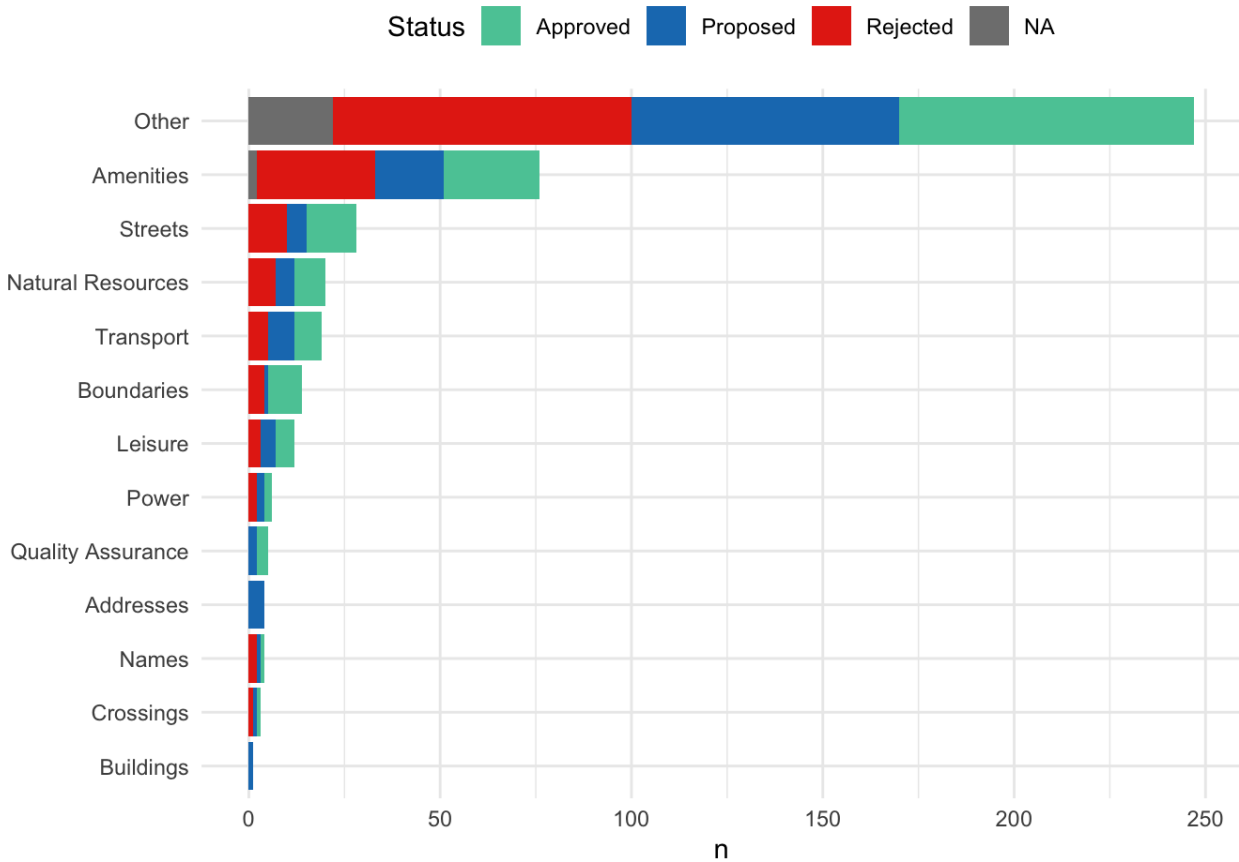


Understanding tagging proposals

Tagging proposals define scope and structure of the database

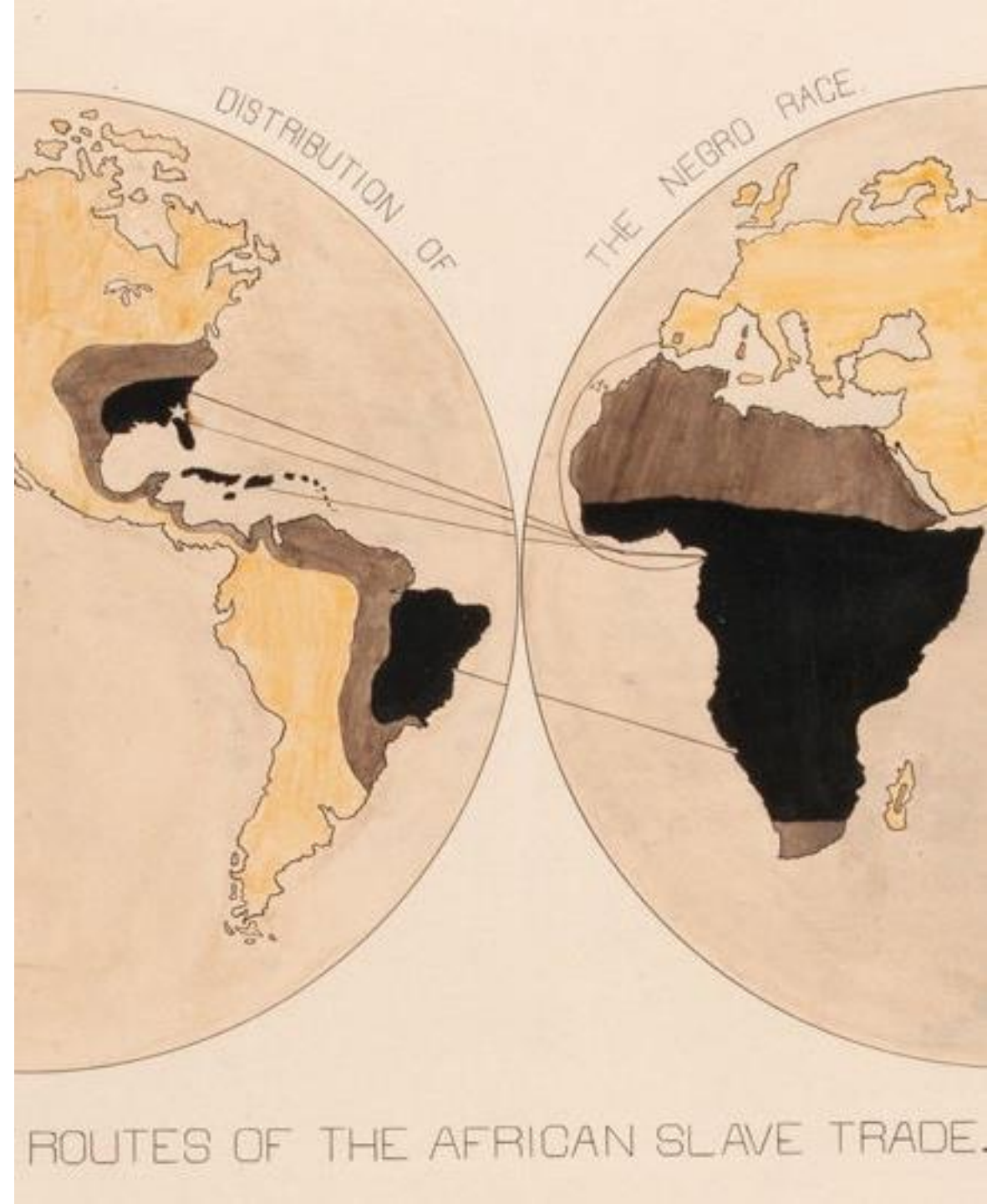
- **699 tagging proposals:**
 - Statuses: 60.2% Approved, 21% Rejected
 - Mean length: 11 pages
 - Mean time: 176 days to write a proposal
- **Contributed by 373 users**
 - Most users only create one proposal
 - 27% of them created by 20 users with more than 5 proposals
- **Voting users:**
 - 7,772 votes by 1,458 unique users





Workshops: Creating Inclusive Cartographies with OpenStreetMap

- Aimed at **creating maps that address particular needs of underrepresented minorities using data that is available in OpenStreetMap**
- Prompts:
 - Aim: what would you want the map to help you with?
 - Data: what do you want to be displayed/hidden?
 - Representation: How would you like it to be represented?
- Audience:
 - **People from non-hegemonic demographics** (women, racialized, LGBTQ+) who feel that current maps do not sufficiently address their needs.
 - **Map enthusiasts**, Data visualization enthusiasts and OpenStreetMap users with a keen interest in EDI issues.
 - **Activists**, Researchers, or people sensitive to EDI issues and inequalities (we will particularly welcome people interested in issues related to gender, race or queer topics).



Preliminary findings

For discussion with you

About data

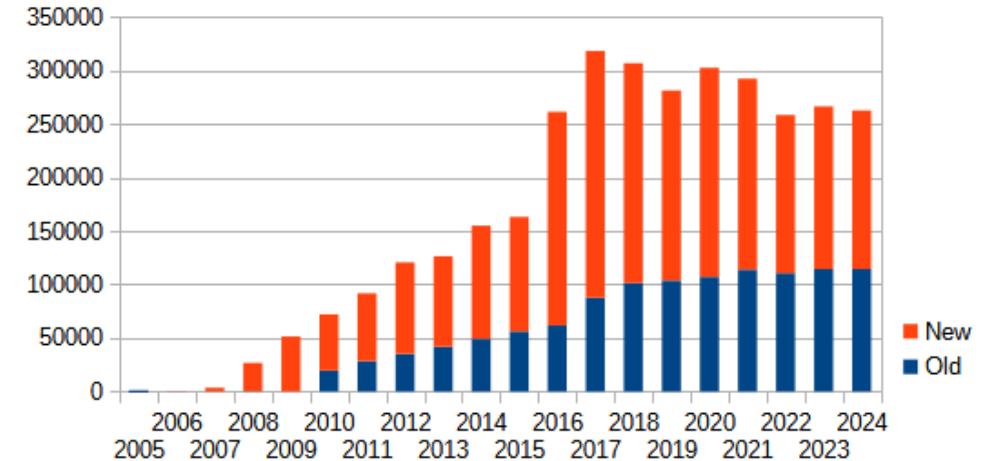
OSM takes pride in numbers and data:

- Number of users
- Number of changesets
- Database' size
- ...

But...

- No data about users' demographics (less than 1% of users reported some)
 - Few people (23) disclosed their gender
 - Nobody has disclosed ethnicity or sexual orientation using categories
- Not always structured & often difficult to extract

Active Contributors per Year



⚠ Results are not statistically relevant/representative:

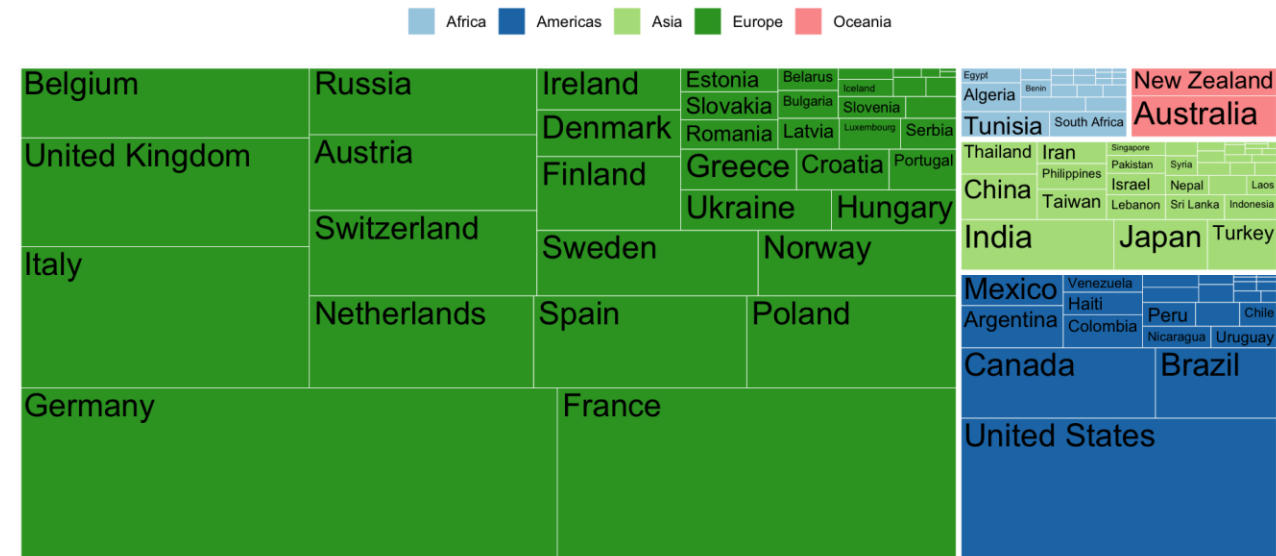
- According to the wiki, there are a **total of 157,810 wiki users**, this represents a tiny 2% of total OSM users (9,965,235 OSM users).
- Not all wiki users have added that information to their profiles
 - Out of the wiki users, only a fraction have disclosed that information (eg. only 6,003 have information about their countries a 3.8% out of the 2%)

About Contributions by demographics

Initial findings seem to confirm:

- Over-representation of hegemonic users
- Differences in contributions by demographics (in line with Das et al., 2019)
 - Interests (e.g. names)
 - Types of contributions
 - Men dominate decision-making processes vs underrepresented not engaging in those areas

Proportion of users by country



Only showing users who have reported their location. Source: wiki.openstreetmap.org

About **Neutrality**

- Neutrality in OSM: reduced to be politically neutral or being "apolitical",
 - Usually operationalised invoking the “Ground truth” rule: for something to be considered, it needs to be observable
 - Nothing seems to point to any relationship to equity
- Used to define scope and mitigate disputes (e.g. boundaries and names).
 - OSM’s “universalist” approach and creates a tension with feminist approaches
 - Universalist: based on positivism, favour lingua franca, aims for homogeneisation, framed as neutrality
 - Feminism: favours context, subjectivity, affects

Grazie!

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We'd love to hear from you...

- Experience/Examples on
 - successful/unsuccessful participatory approaches
 - visualising or surfacing what is not visible
 - Maps and gender
- And of course... Any feedback and ideas you'd like to share!