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ohsome

STATE OF THE MAP
Milan, Italy 2018

Comprehensive OpenStreetMap History Data Analyses - for and with the OSM community

Michael Auer, Melanie Eckle, Sascha Fendrich, Fabian Kowatsch, Sabrina Marx, Martin Raifer, Moritz Schott, Rafael Troilo, Alexander Zipf

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ohsome ?

1. OhSoMe: OpenStreetMap
2. OHsome: OpenStreetMap History (something)
3. Ohsome: sounds just „awesome“

Workshop NEXT SESSION!

Exploring OSM's history using the "ohsome" data analysis platform

14:00h S.1.5

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ohsome

openroute service

Big Spatial Data Analytics

Disaster and humanitarian management

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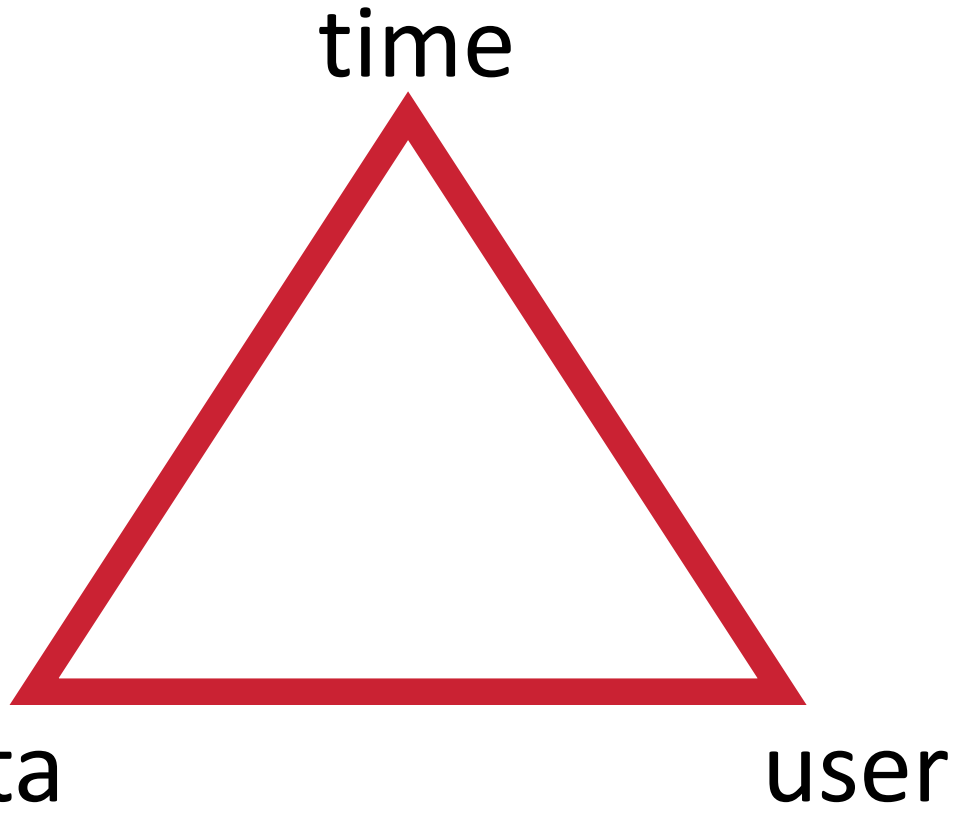
OSM History Data Analysis

- What can we learn from the History?
  - Development of the data
    → **DATA QUALITY**
  - Development of the users
  - Development of spatial/thematic (sub-)communities
    → **COMMUNITY DYNAMICS**



OSM History Data Analysis

- The Challenge?
  - Make the whole data treasure available to the public
    - Queries of arbitrary temporal and spatial resolution
    - No pre-filtering / no clean-up
  - BIG DATA
  - High performance (parallel and distributed)
  - Flexible (run it on local PC or on computing cluster)
  - Usability (Easy to use for different target groups)
    - Different API Levels

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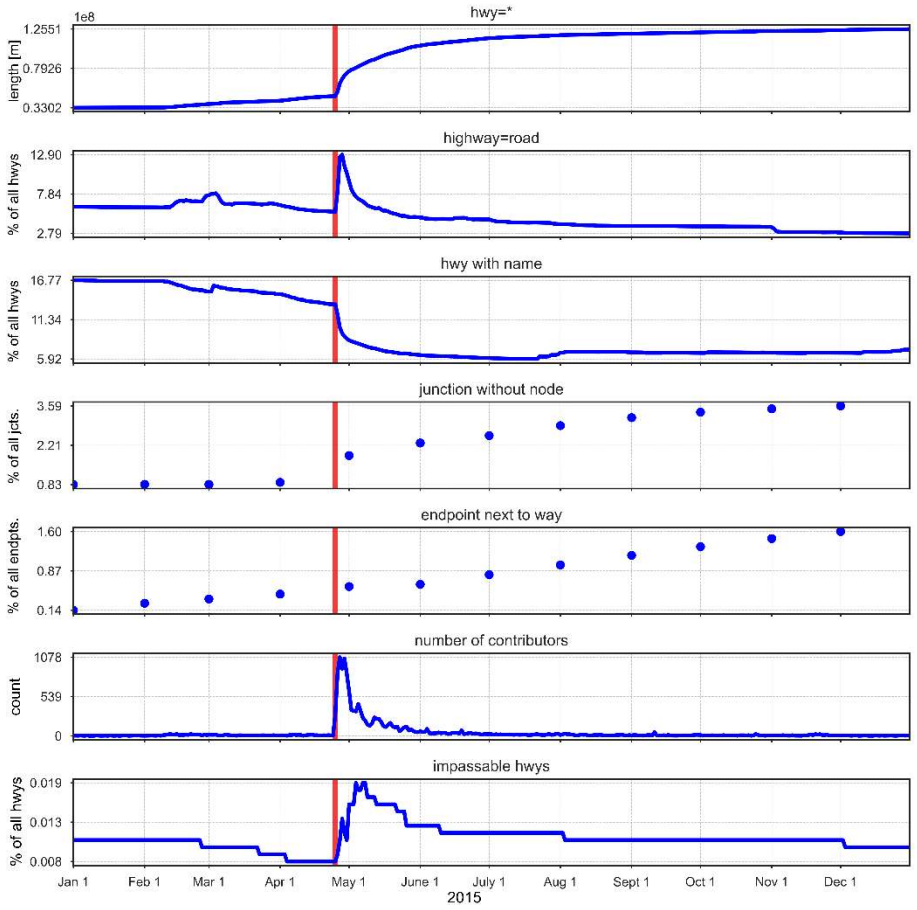
Examples: Data Quality



Auer, M., Eckle, M, Fendrich, S., Griesbaum, L., Kowatsch, F., Marx, S., Raifer, M., Schott, M., Troilo,R. & Zipf, A. (2018):

Towards Using the Potential of OpenStreetMap History for Disaster Activation Monitoring

Proceedings of the 15th ISCRAM Conference – Rochester, NY, USA May 2018

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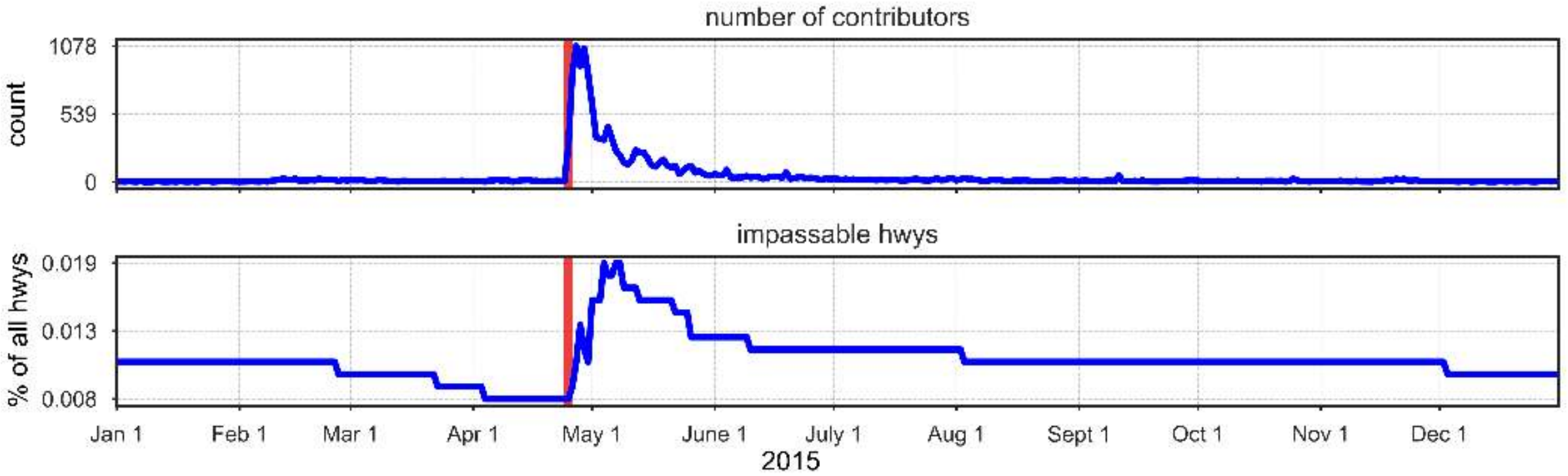

Auer et al. 2018

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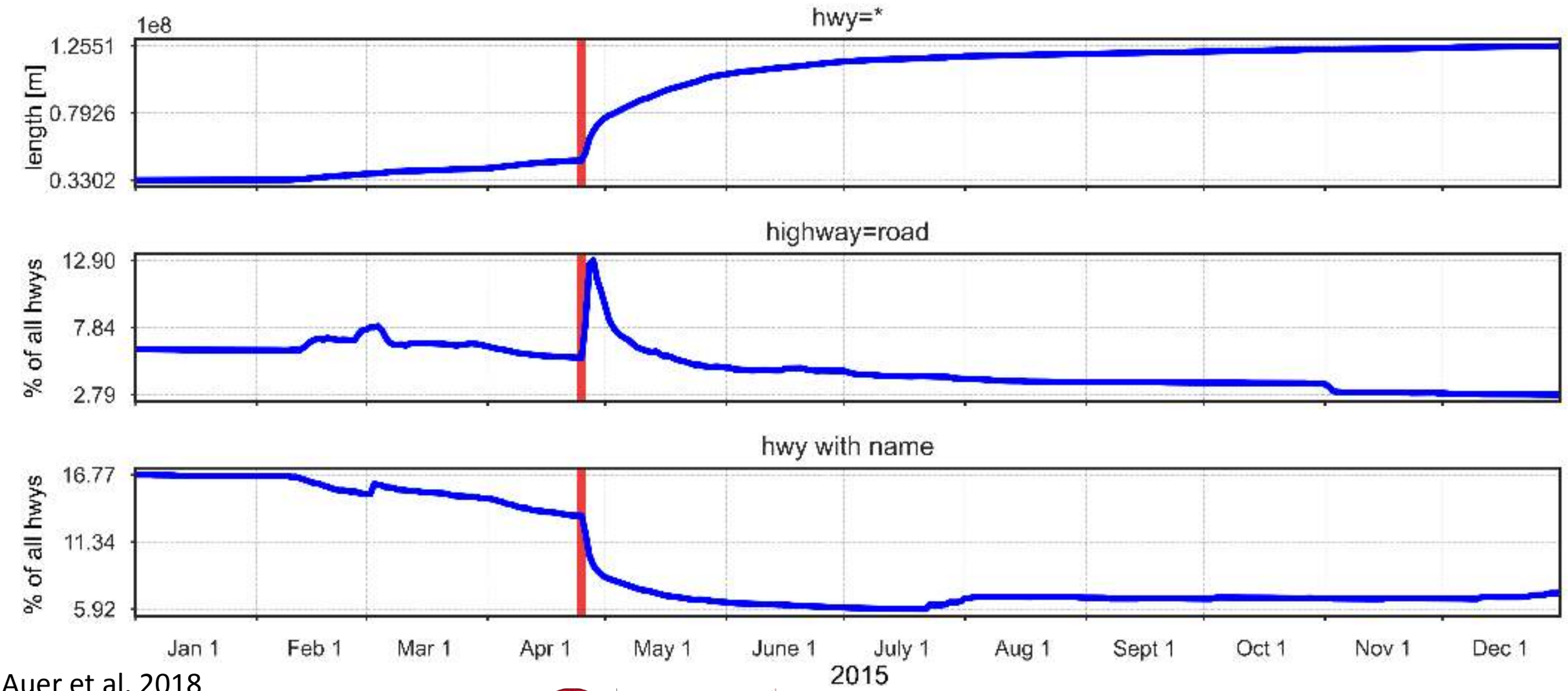

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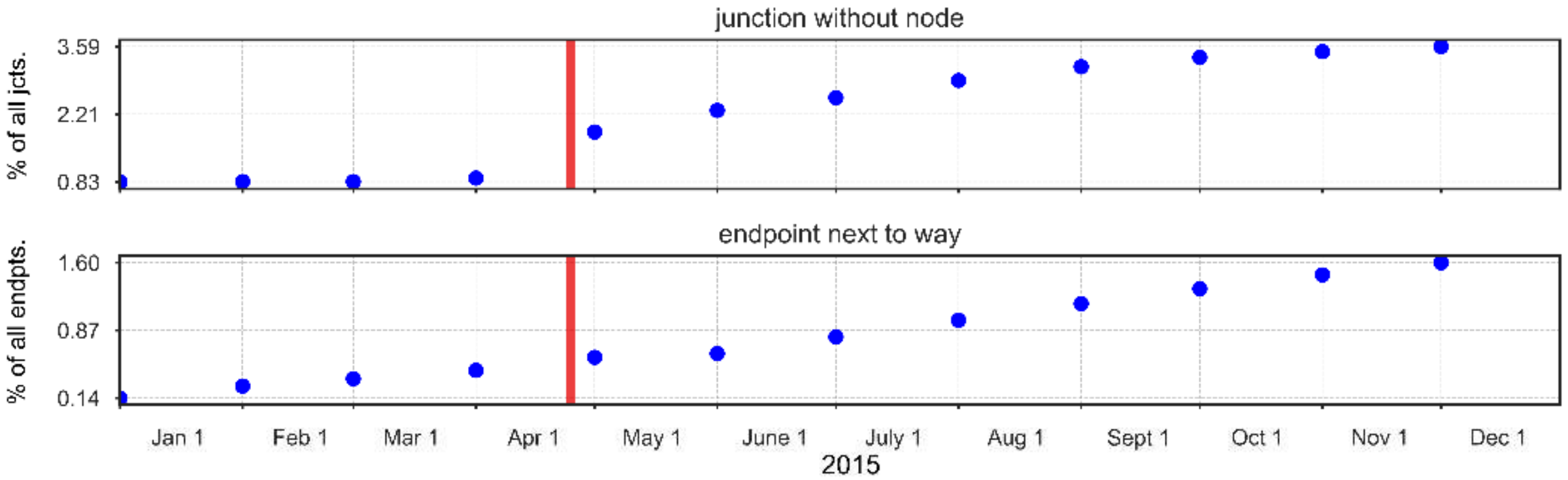

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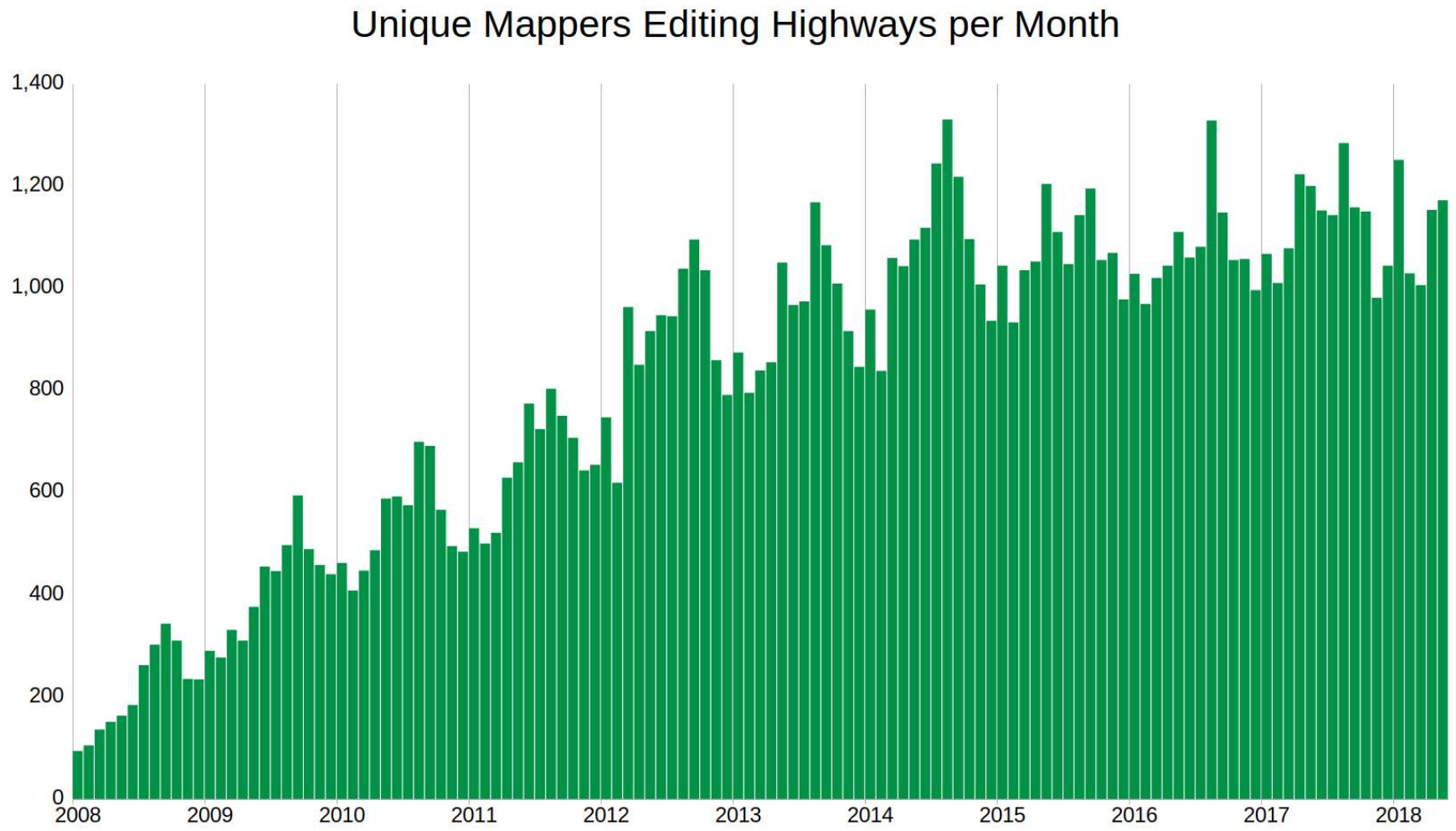
Commnunity Dynamics



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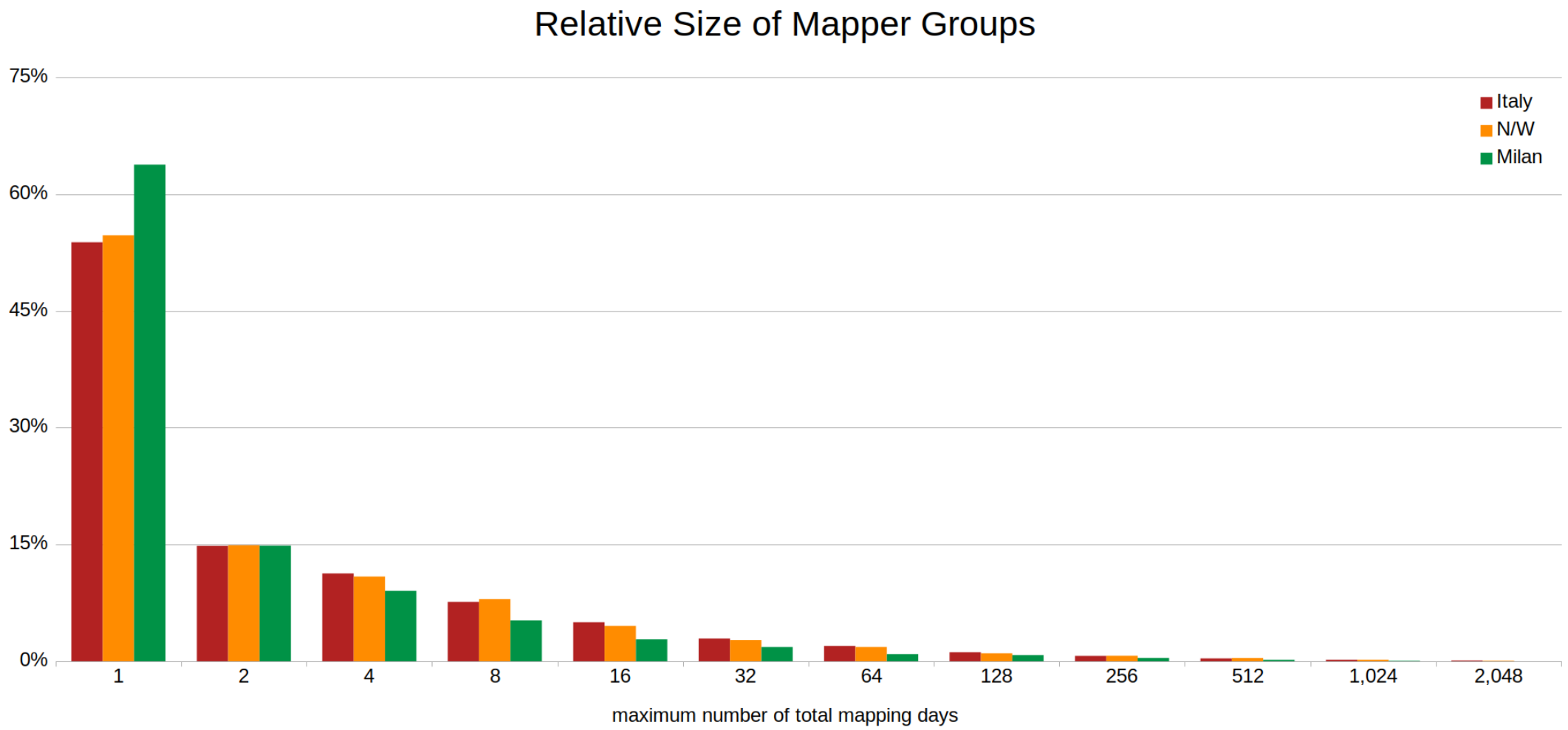
Examples: Community Dynamics



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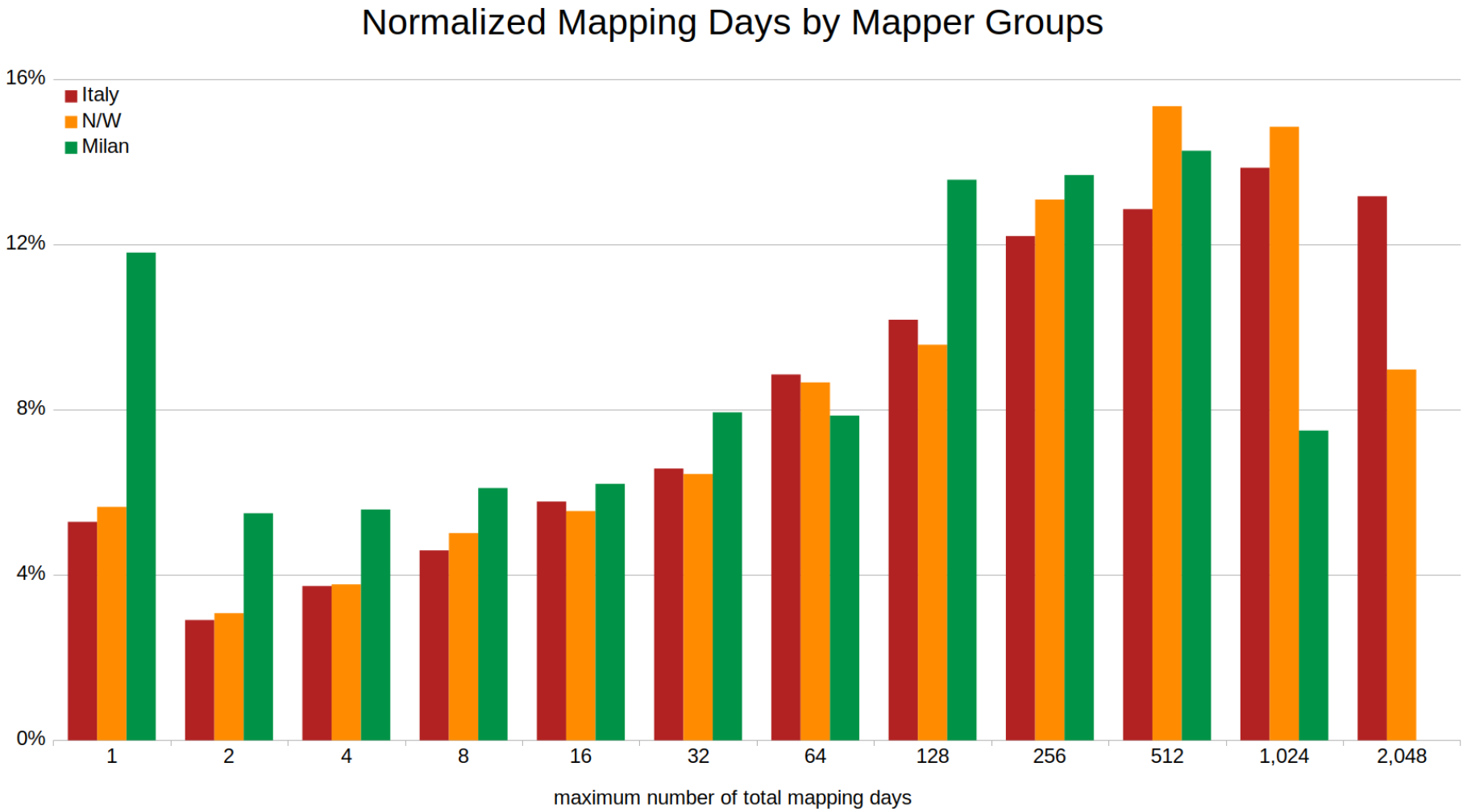
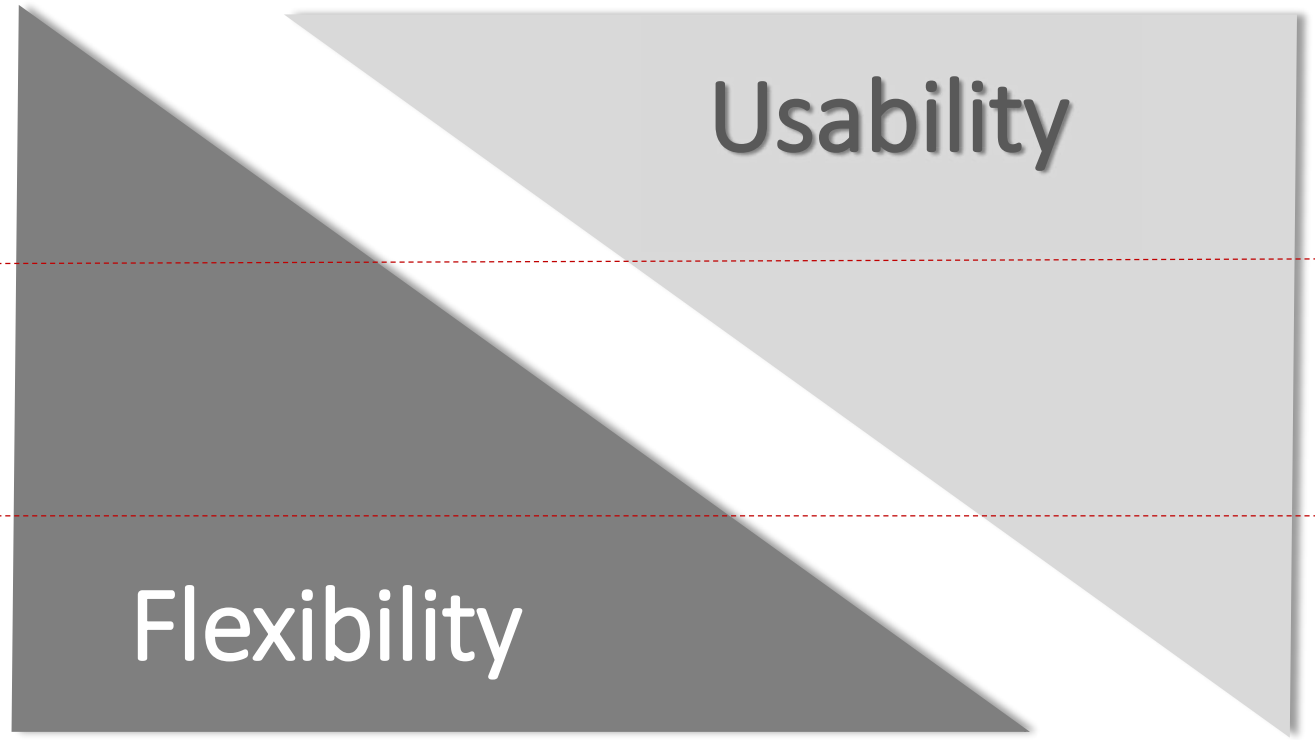


Can I use it?



ohsome API

OSHDB API

OSHDB*

* OSHDB = OpenStreetmap History Database

Can I use it?

- OSHDB API: Current version 0.4 available on Github
  https://github.com/giscience/oshdb

- ohsome API: https://api.ohsome.org
  (global coverage coming soon!)

- KLL Nepal Dashboard

Workshop NOW!
14:00h S.1.5

OSHDB API

```
OSHDBH2 db = new OSHDBH2("./data/oshdb/italy.oshdb");

SortedMap<OSHDBTimestamp, Number> result = OSMEntitySnapshotView.on(db)
    .timestamps("2008-01-01", "2018-01-01", Interval.MONTHLY)
    .areaOfInterest(new OSHDBBoundingBox(9.1308,45.4239,9.263,45.5022))
    .osmTag("highway")
    .osmType(OSMType.WAY)
    .aggregateByTimestamp()
    .map(snapshot -> Geo.lengthOf(snapshot.getGeometry()))
    .sum();

result.forEach((timestamp, value) ->
  System.out.println(timestamp + "\t" + value)
);
```

ohsome API

https://api.ohsome.org

Web API documentation with example requests

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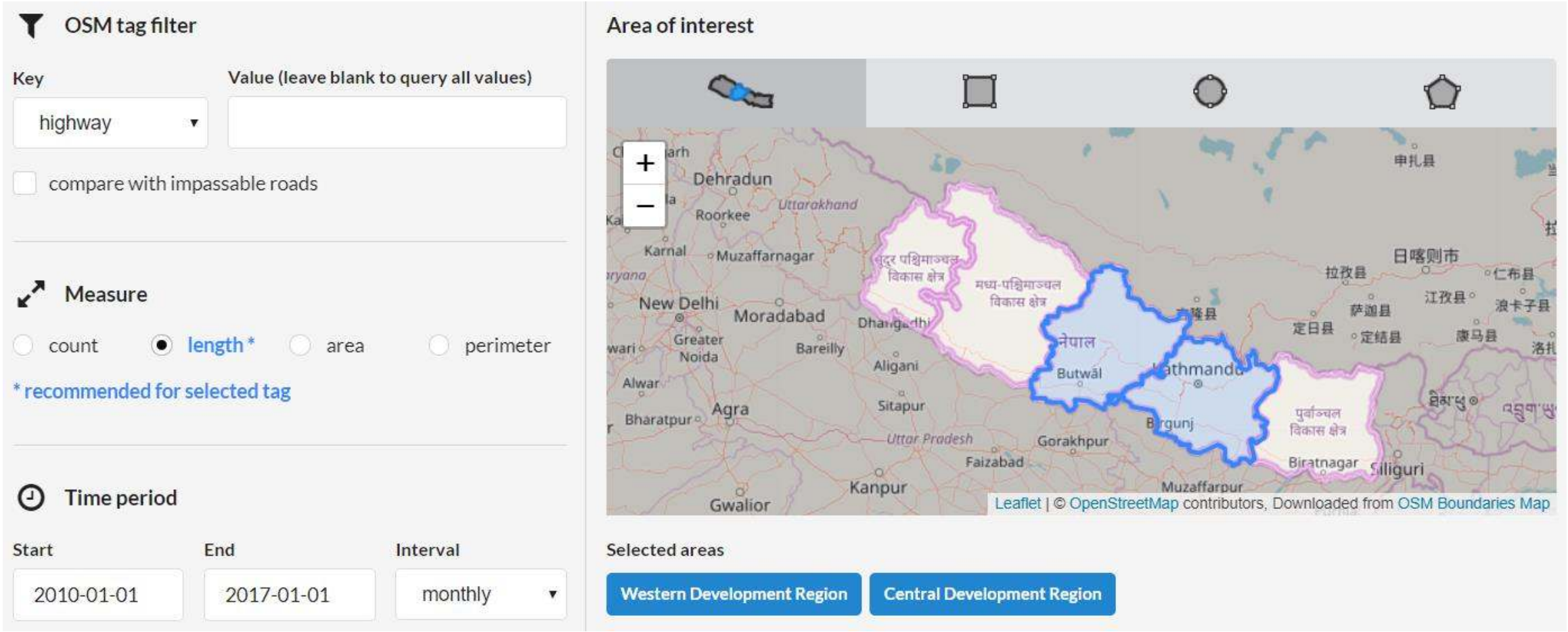
Webapp using ohsome API: Nepal-Dashboard



https://ohsome.org/apps/kll-dashboard-preview/

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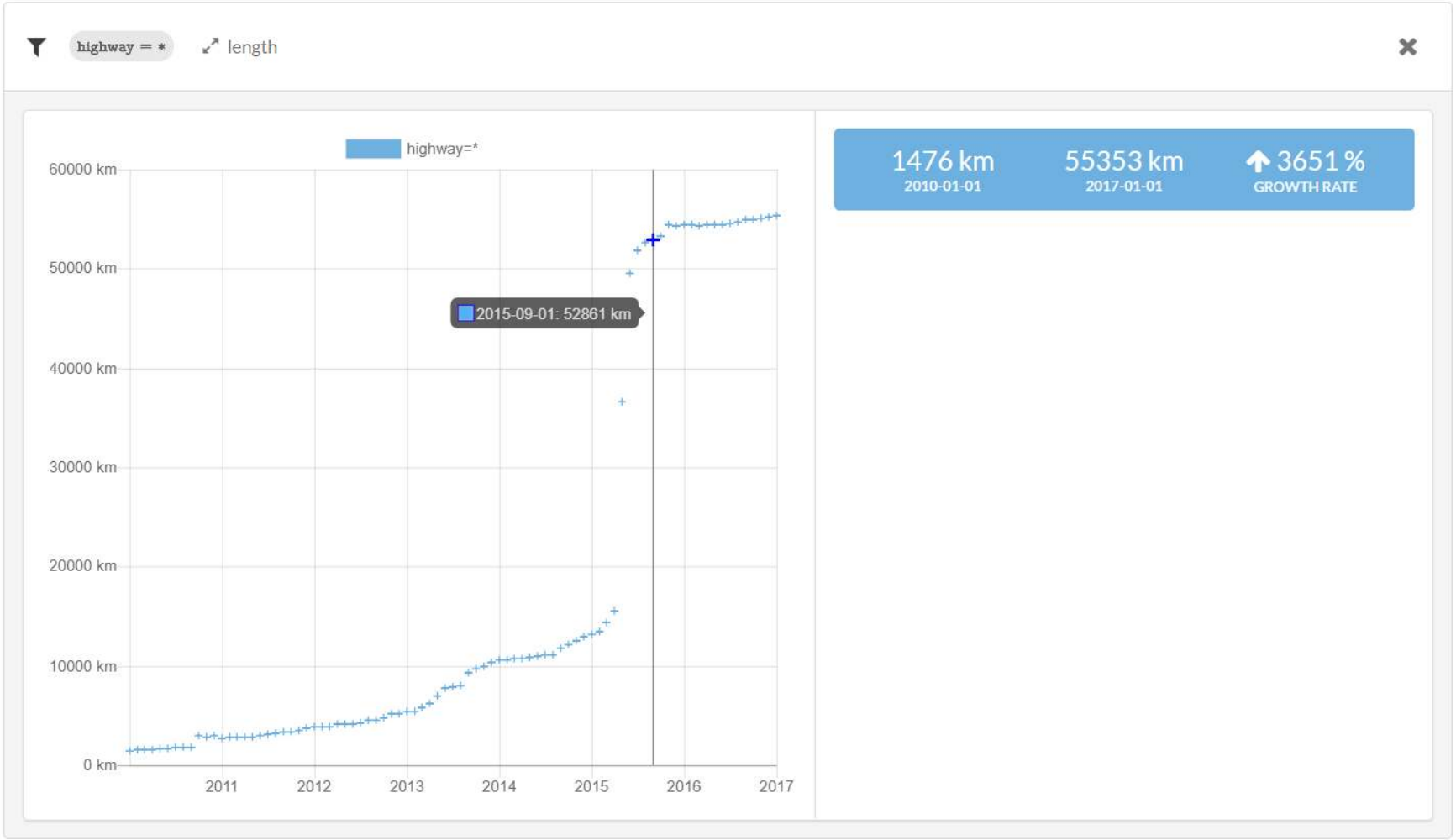

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The end

info@heigit.org

Thank you for your attention!

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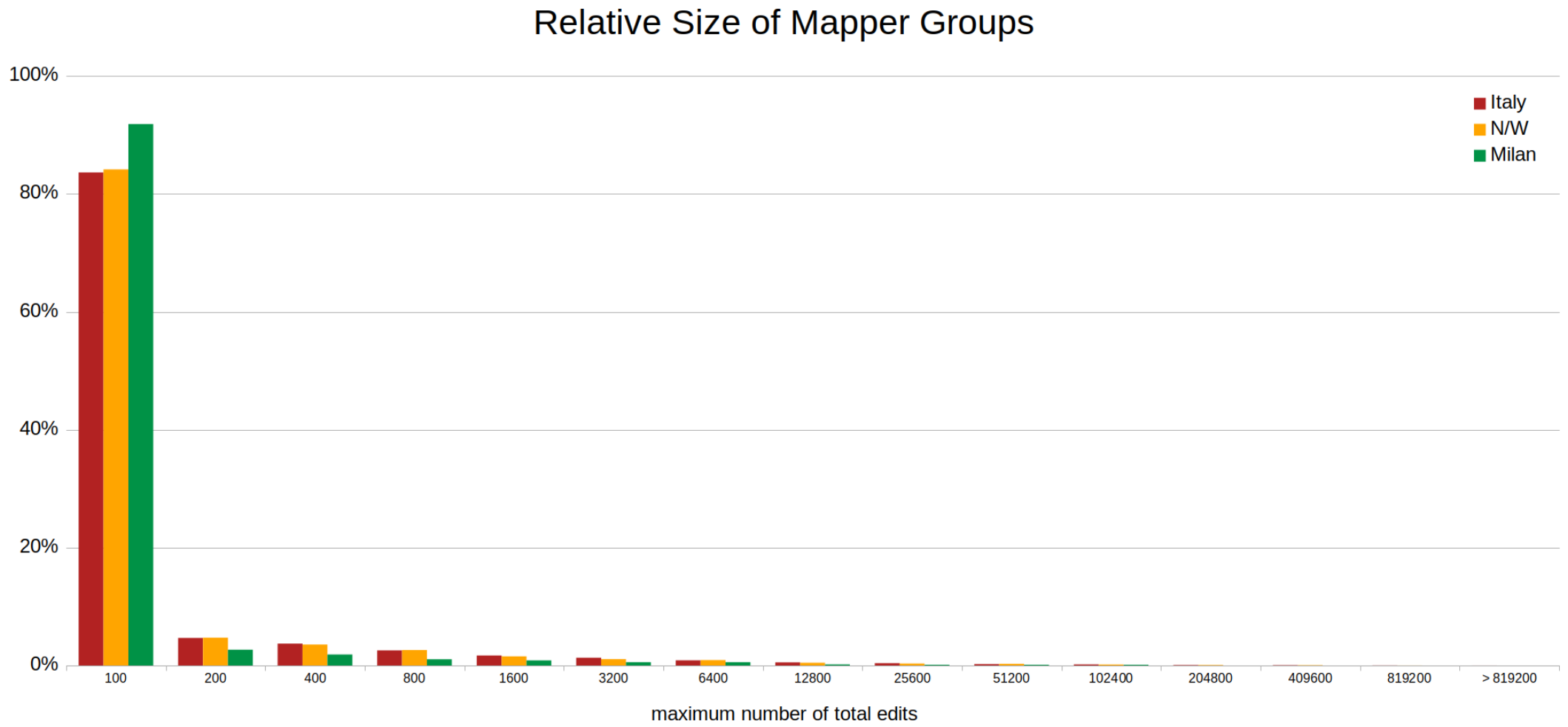

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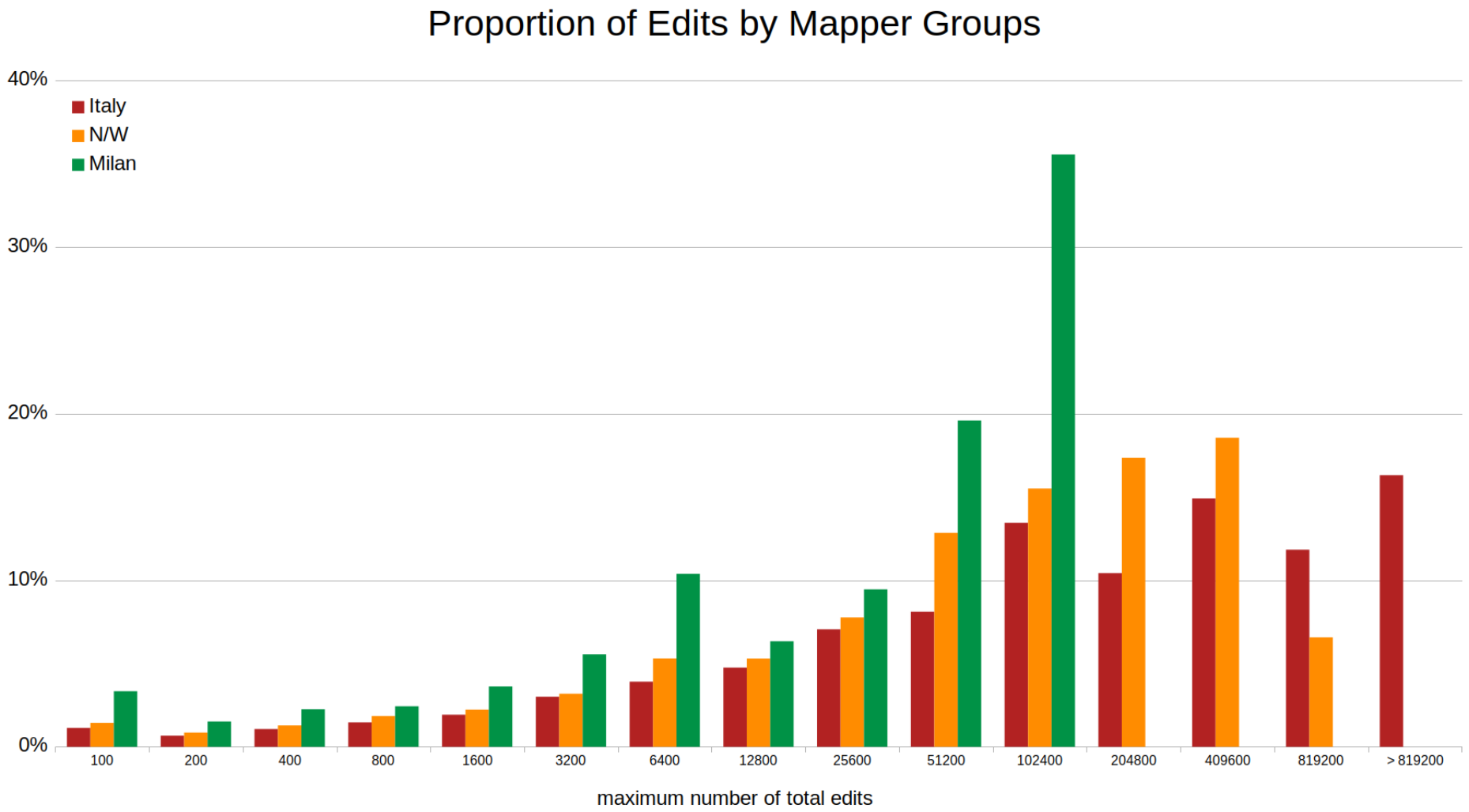

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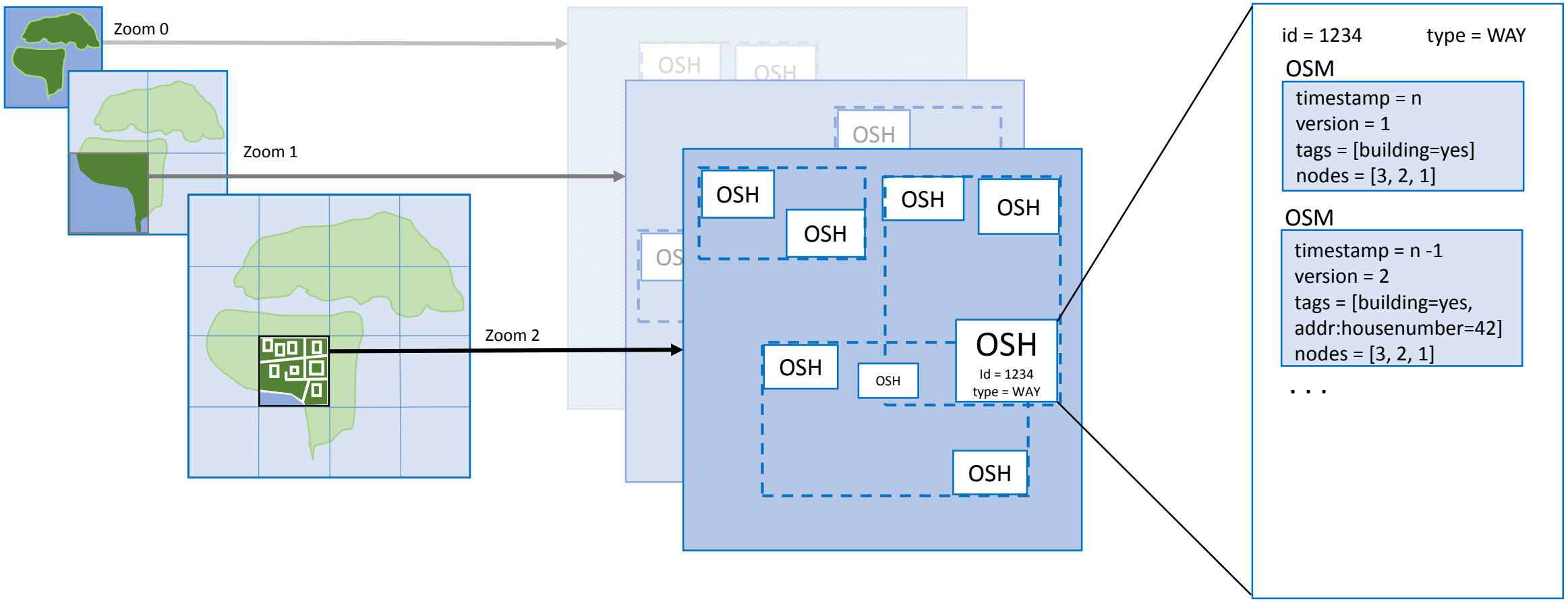
Grid-Partitionierung der Welt
in gleich große Zellen

OSHWayGridCell enthält
OSHEntity Objekte in einem räumlichen Index

OSHEntity enthält
OSMEntity Objekte



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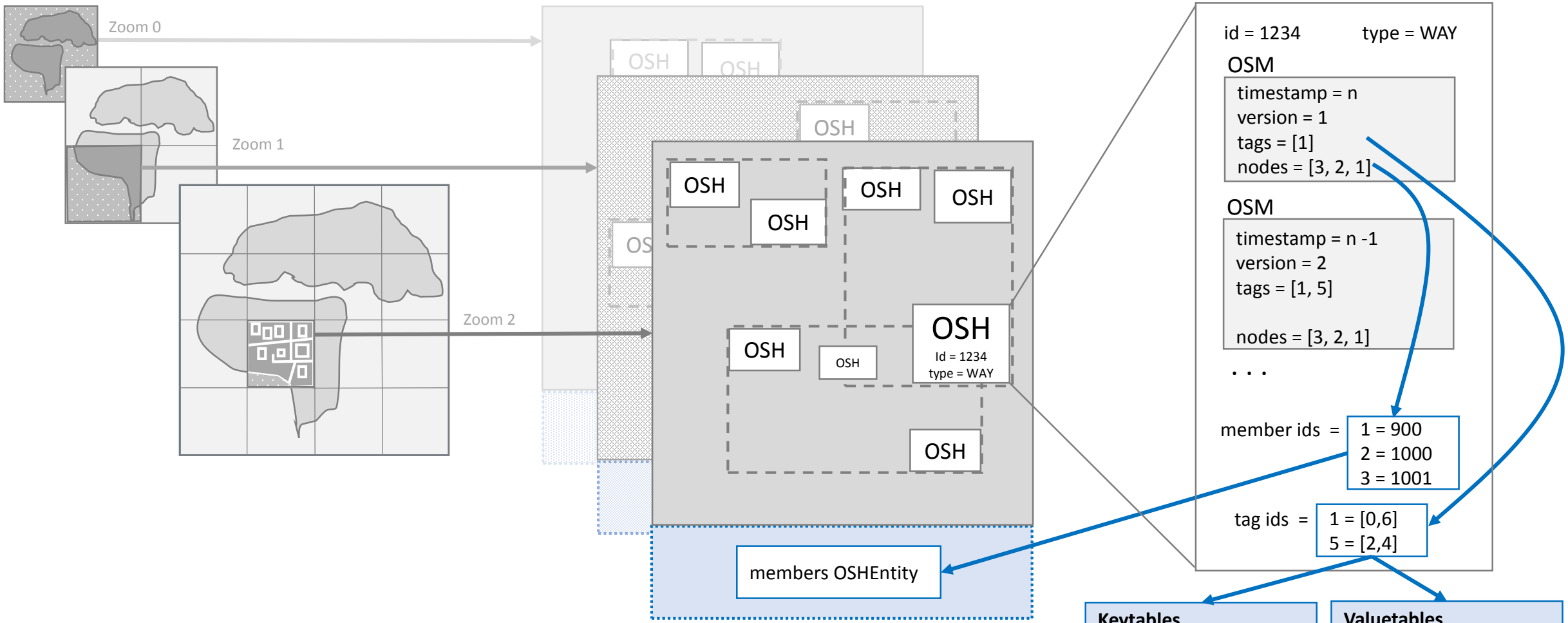

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