



# OSM Hausnummer Evaluation

on [regio-osm.de/hausnummernauswertung](http://regio-osm.de/hausnummernauswertung)

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13.06.2014

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# Why housenumber evaluation?

- Its frustrating to map a lot of addresss, but never get feedback, if i have found all. Therefore I want to get a benchmark to be able to say: my town has all addresses in osm!
- I want to give feedback to local government office, which addresses we didn't found and which one we have additionally found
- I want to be able to say at the end: hey, we have better and more complete addresses done with crowdsourcing than companies with its money power, that only seemed to be the best



# available Hausenumber Lists (1)

11.06.2014

| Germany State | Municipality | Subadmin-referenced | Geo-Coordinates | PLZ-codes |
|---------------|--------------|---------------------|-----------------|-----------|
| Bayern        | Aichach      | -                   | -               | -         |
|               | Augsburg     | -                   | -               | -         |
|               | Kaufbeuren   | -                   | ✓               | -         |
|               | Kühbach      | -                   | -               | -         |
|               | München      | -                   | -               | -         |
|               | Schiltberg   | -                   | -               | -         |
|               | Würzburg     | -                   | ✓               | -         |
| Berlin        | Berlin       | ✓                   | ✓               | ✓         |
| Bremen        | Bremen       | ✓                   | -               | -         |
| NRW           | Kirchlengern | -                   | -               | -         |
|               | Köln         | ✓                   | ✓               | ✓         |
|               | Münster      | -                   | -               | -         |
|               | Troisdorf    | -                   | -               | -         |
| Sachsen       | Dresden      | ✓                   | -               | ✓         |
|               | Flöha        | -                   | -               | -         |
|               | Freiberg     | -                   | -               | -         |



# available Hausenumber Lists (2)

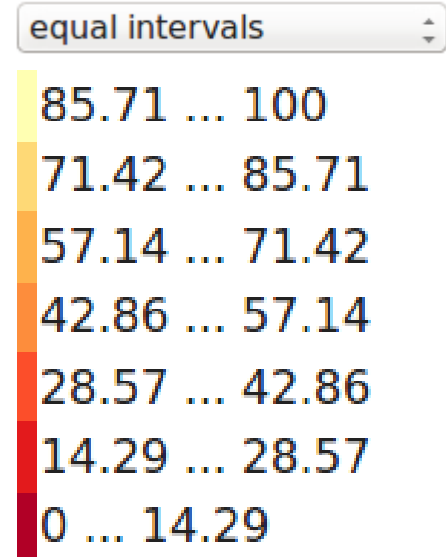
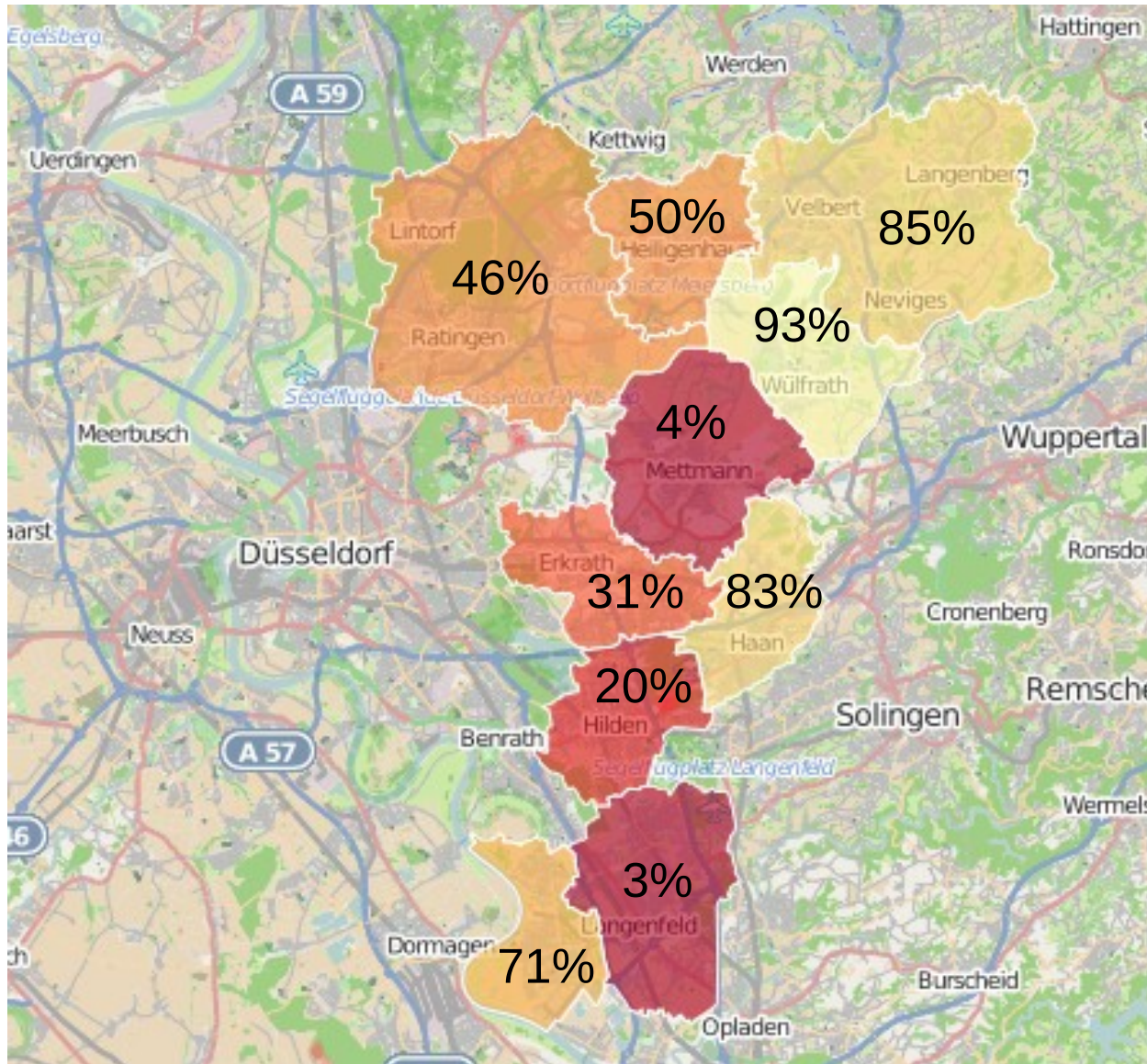
11.06.2014

| Germany/NRW     | Municipality           | Subadmin-referenced | Geo-Coordinates | PLZ-codes |
|-----------------|------------------------|---------------------|-----------------|-----------|
| County Mettmann | Erkrath                | -                   | -               | -         |
|                 | Haan                   | -                   | -               | -         |
|                 | Heiligenhaus           | -                   | -               | -         |
|                 | Hilden                 | -                   | -               | -         |
|                 | Langenfeld (Rheinland) | -                   | -               | -         |
|                 | Mettmann               | -                   | -               | -         |
|                 | Monheim am Rhein       | -                   | -               | -         |
|                 | Ratingen               | -                   | -               | -         |
|                 | Velbert                | -                   | -               | -         |
|                 | Wülfrath               | -                   | -               | -         |

| Austria/<br>Oberösterreich | Municipality | Subadmin-referenced | Geo-Coordinates | PLZ |
|----------------------------|--------------|---------------------|-----------------|-----|
| County Gmunden             | Altmünster   | -                   | -               | -   |



# County Mettmann: start %fulfilled housenumbers (1)





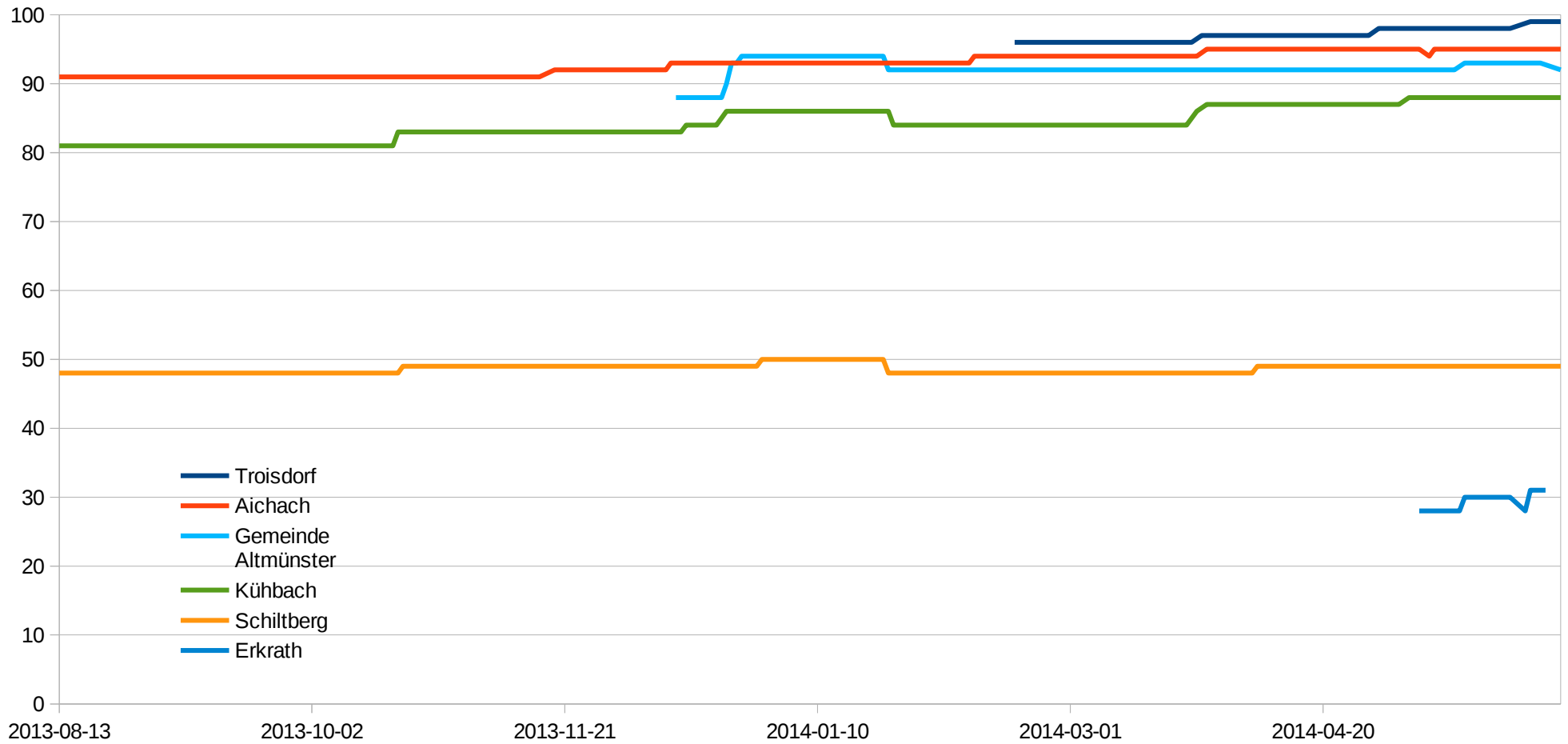
# County Mettmann: start %fulfilled housenumbers (2)

| Municipality                  | % fulfilled | OSM Addr 30.5. | official Addr |
|-------------------------------|-------------|----------------|---------------|
| Erkrath                       | 31%         | 2644           | 8488          |
| Haan                          | 83%         | 6202           | 7513          |
| Heiligenhaus                  | 50%         | 2905           | 5816          |
| Hilden                        | 20%         | 2066           | 10591         |
| <b>Langenfeld (Rheinland)</b> | <b>3%</b>   | <b>464</b>     | <b>14573</b>  |
| Mettmann                      | 4%          | 330            | 9040          |
| Monheim am Rhein              | 71%         | 5663           | 7950          |
| Ratingen                      | 46%         | 9097           | 19745         |
| <b>Velbert</b>                | <b>85%</b>  | <b>14384</b>   | <b>17011</b>  |
| Wülfrath                      | 93%         | 4523           | 4859          |



# timeline of housenumbers in OSM

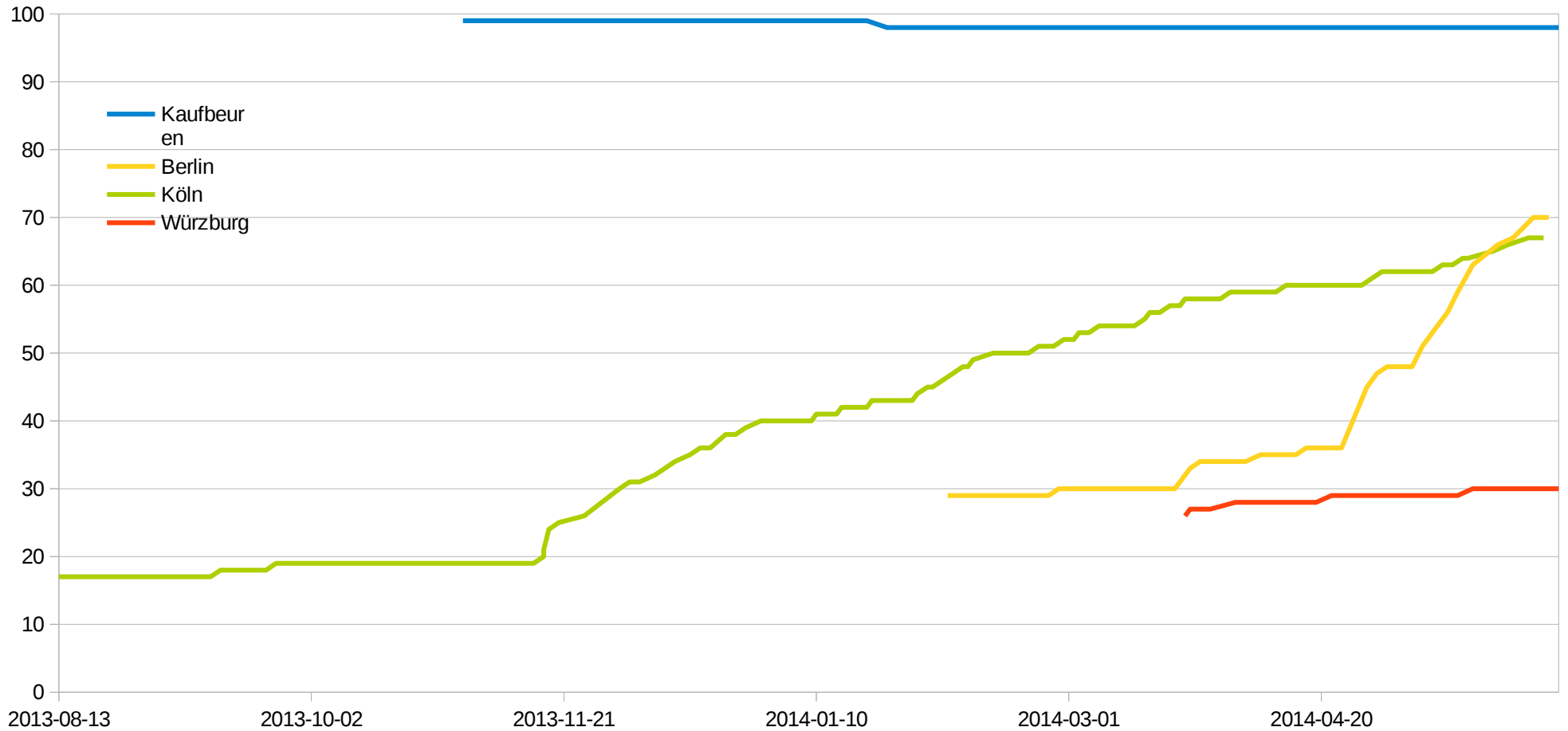
small and medium Municipalities ( < 100.000 citizens)





# timeline of housenumbers in OSM

Municipalities, where Geocoordinates available





# houzenumber evaluations: components

- local RDBMS: Postgres 9.1, Postgis 1.5
- osm database (osm2pgsql: DACHL+ plus Brasil (60 GB+), updated with minutely diffs via osmosis)
- houzenumber database for lists and results
- backend evaluations programs in java
- frontend programs in nodejs with components express, swig, ...
- code on github in private repo



# houzenumber evaluations: how it works

For every municipality and for every subadmin area of it:

- get all osm objects with at least `addr:housenumber`
- if `addr:street` missing, try to add `addr:street` from possible associated `Street` relation
- if more than one address object, get „best“
- if `houzenumber` range, resolve to individual numbers
- compare osm addresses to `houzenumber` list => identical addresses, missing addresses, osm only addresses
- interpolate geocoordinates for missing addresses for gpx output



# select subadmin evaluation

(Augsburg)

regio-osm.de/hausnummernauswertung/auswertung\_auswa

## Hausnummernauswertung auf regio-osm.de

Statische Auswertungen für OpenStreetMap

### Auswahl Stadtteil - OSM-Hausnummernauswertung

- Augsburg
- Am Schäfflerbach
- Antonsviertel
- Bahnhofs- und Bismarckviertel
- Bärenkeller
- Bergheim
- Bleich und Pfärrle
- Firnhaberau
- Georgs- und Kreuzviertel
- Göggingen-Nordost
- Göggingen-Nordwest
- Göggingen-Ost

Optionale Einstellungen

- Hausnummernabdeckung farbig markieren
- OSM-Karte Links zur OSM-Karte ergänzen
- nein, Alle anzeigen Straßen ausblenden, wenn alle Hausnummern in OSM
- nein, Alle anzeigen Spalten ausblenden
- Hausnummern gerade/ungerade sortiert ausgeben
- nur Summen, keine Details je Straße



# evaluation table view

## (Augsburg)

regio-osm.de/hausnummernauswertung/auswertung\_anzeigen?jc



## Hausnummernauswertung auf regio-osm.de

Statische Auswertungen für OpenStreetMap

Gebiet: [Am Schöfflerbach](#) [grafische Anzeige](#)

[Straßen und Hausnummern editierbar machen](#)

in OSM noch fehlende Hausnummern für GPX-Datei: [Alle](#) [ohne nicht-existierende Hausnummern](#)

[zeitliche Entwicklung als Grafik](#)

Auswertungs-Startzeitpunkt: 09.06.2014 08:11:24

Auswertungs-Datenstand lokale DB: 08.06.2014 20:48:02

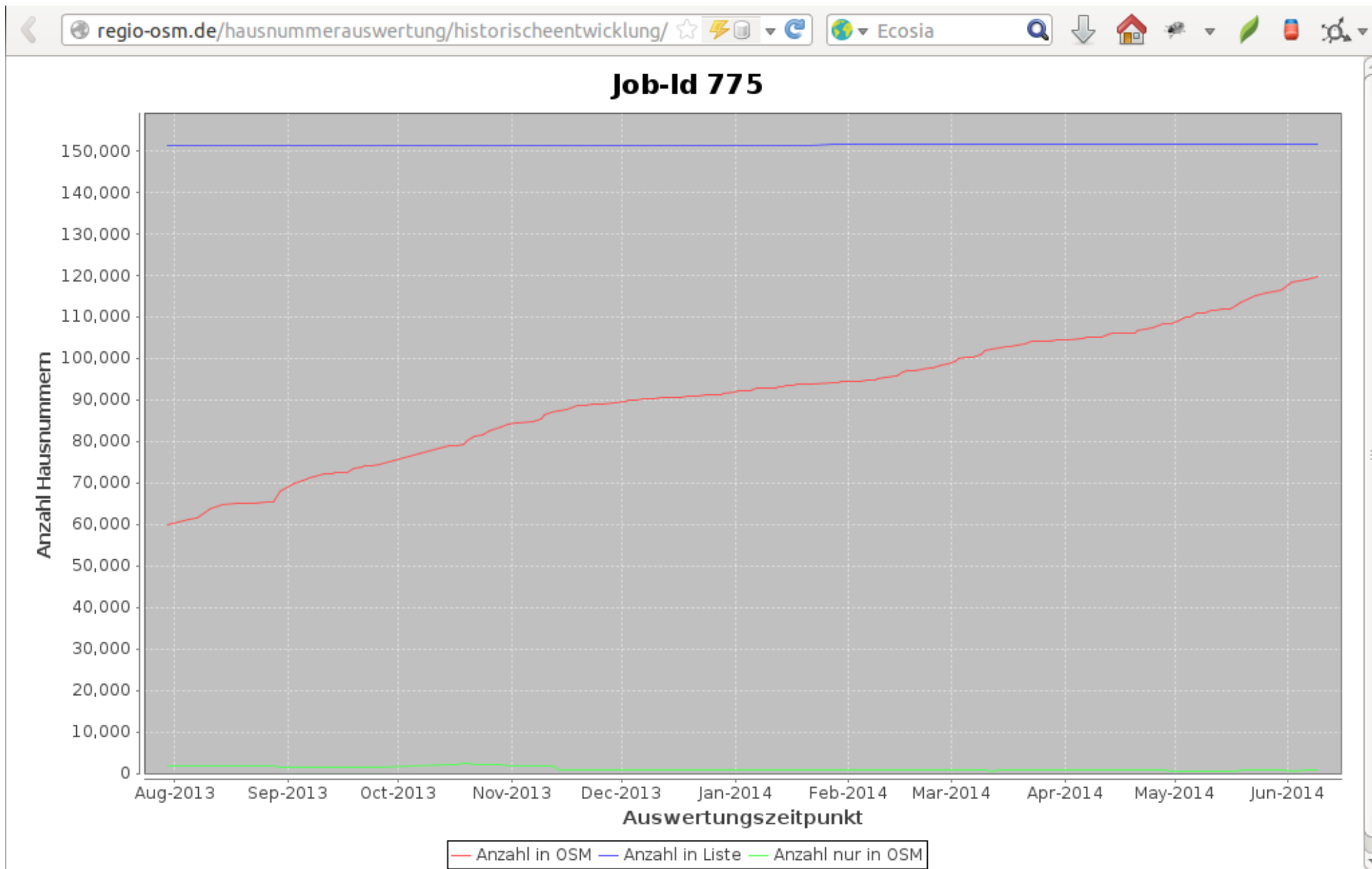
| Straße                           | % voll-ständig | Anz. ident+Stadt | Anz. ident | Anz. nur Stadt | Anz. nur OSM | Hausnummern identisch   | Hausnummern nur Stadt  | Hausnummern nur OSM                                   |
|----------------------------------|----------------|------------------|------------|----------------|--------------|---|--|---|
| <a href="#">Am Färberturm</a>    | 100            | 1                | 1          | 0              | 4            | <a href="#">12</a>  | Hnr: 8: Bearbeitung in <a href="#">josm</a>  |   |
| <a href="#">Am Provinopark</a>   | 100            | 10               | 10         | 0              | 1            | <a href="#">1</a> <a href="#">1a</a> <a href="#">1b</a> <a href="#">1c</a> <a href="#">1d</a> <a href="#">1e</a> <a href="#">1f</a> <a href="#">1g</a> <a href="#">5a</a> <a href="#">5b</a>  |  |   |
| <a href="#">Am Schöfflerbach</a> |                | 0                | 0          | 0              | 3            |   |  | <a href="#">4</a> <a href="#">6</a> <a href="#">8</a> |
| <a href="#">Argonstraße</a>      | 100            | 14               | 14         | 0              | 0            | <a href="#">2</a> <a href="#">2 1/2</a> <a href="#">3</a> <a href="#">3a</a> <a href="#">3b</a> <a href="#">4</a> <a href="#">5</a> <a href="#">6</a> <a href="#">7</a> <a href="#">9</a> <a href="#">16</a> <a href="#">16a</a> <a href="#">16b</a> <a href="#">20</a> | <a href="#">16c</a> <a href="#">18</a> <a href="#">18a</a> <a href="#">18b</a> <a href="#">18c</a> <a href="#">18d</a> |   |

[www.openstreetmap.org/?way=196750600](http://www.openstreetmap.org/?way=196750600)



# evaluation timeline view

## (München)





# evaluation map view

## (München)

regio-osm.de/hausnummernauswertung/grafikdarstellung/anzeige

### Hausnummernauswertung auf regio-osm.de

Grafische Darstellung

Auswertung: Mon Jun 09 2014 15:42: GMT+0200 (CEST)  
OSM DB-Stand: Mon Jun 09 2014 13:24:02 GMT+0200 (CEST)  
Farbpalette rot nach blau  
Straßensuche bitte auswählen

OpenStreetMap contributors  
Permalink

| Legende Farbe                | Legende Linienbreite                              |
|------------------------------|---|
| 100 % Abdeckung              |   |
| 95 bis unter 100 % Abdeckung | 2 pt dick max. 25 fehlende Hnm.                   |
| 85 bis unter 95 % Abdeckung  | 4 pt dick mehr als 25 und max. 50 fehlende Hnm.   |
| 75 bis unter 85 % Abdeckung  | 6 pt dick mehr als 50 und max. 100 fehlende Hnm.  |
| 50 bis unter 75 % Abdeckung  | 8 pt dick mehr als 100 und max. 200 fehlende Hnm. |
| 25 bis unter 50 % Abdeckung  | 10 pt dick mehr als 200 fehlende Hnm.             |



# Open Issues, enhancements

- integrate official address geocoordinates
- better support for edited housenumbers and streets (list, deactivate, integrated in map, ...)
- map enhancement (low resources, more settings)
- yet no support for identical streets with housenumbers, sorry
- ???



# How can you request a housenumber list?

- ask your local municipality government for a housenumber list
  - the list should contain at least streetnumber and housenumber
  - in bigger cities, ask for Subadministration assignment, even/especially, if no subadmin Relations in OSM
  - ask, if the city can also support geocoordinates. But emphasize, that it is only optionally
  - ask, if the city can add plz codes for every housenumber
  - ask for use of term to compare with osm data. Optionally also for direct use of geocoordinates and plz codes, if available
- send the housenumber list together with government term of use for OSM to [strassenliste@regio-osm.de](mailto:strassenliste@regio-osm.de)
- the list will be imported by myself and after first evaluation it will be integrated in evaluation rhythm



# Thank you to Contributors

- Eckhart Wörner (OSM-User Eckhart Wörner):  
Server Admin and Coder
- Johannes (OSM-User: jotpe): coded timeline  
chart, Hints for coding optimization



# if time, Extention?

- Extention 1: examine number of all addresses in Germany
- Extention 2: add/realign subadmin or postal boundaries



# Thank you!

Contact:

- [strassenliste@diesei.de](mailto:strassenliste@diesei.de)
- OSM-PM: okilimu



13.06.2014

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## Extention 1

examine number of all addresses in  
Germany



## Extention 1

examine number of all addresses in  
Germany

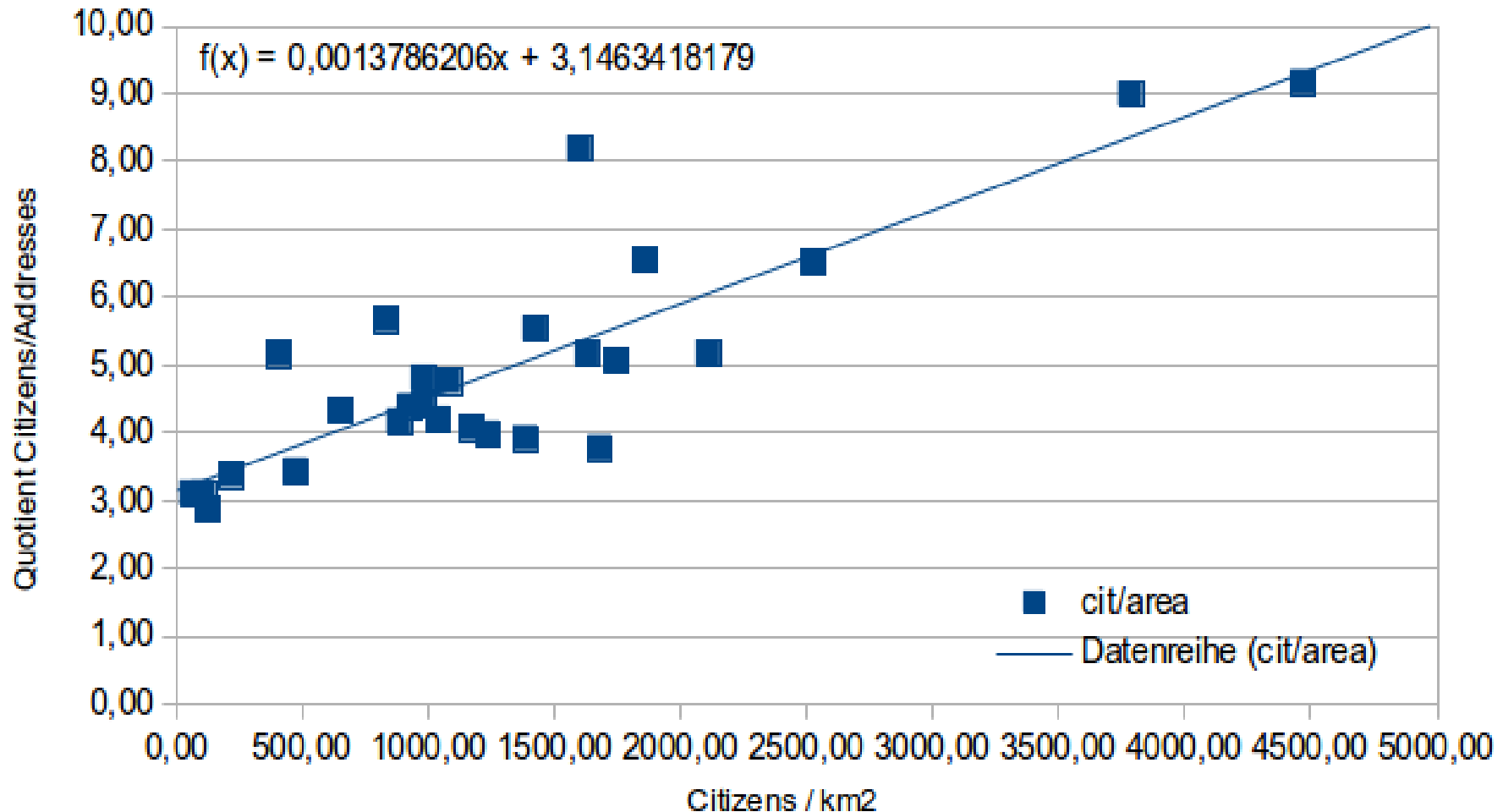


# examine number of all addresses in Germany: Method

- given 26 housenumber lists with the number of addresses in each municipality
- from „Destatis Gemeindeverzeichnis“ (statistical info about all german municipalities):  
number of citizens, area [km<sup>2</sup>] => Citizens/[km<sup>2</sup>]
- calculate factor Citizens/Addresses



# examine number of all addresses in Germany: Formular





# examine number of all addresses in Germany: Result

| German State           | OSM addresses | Citizens   | theor. Addresses | theor. % fulfilled |
|------------------------|---------------|------------|------------------|--------------------|
| Baden-Württemberg      | 862.187       | 10.569.111 | 2.619.399        | 33%                |
| Bayern                 | 932.631       | 12.519.571 | 3.105.051        | 30%                |
| Berlin                 | 287.767       | 3.375.222  | 403.511          | (70,4) 71%         |
| Brandenburg            | 426.248       | 2.449.511  | 691.688          | 62%                |
| Bremen                 | 65.368        | 654.774    | 122.920          | (41,3) 53%         |
| Hamburg                | 158.102       | 1.734.272  | 274.765          | 58%                |
| Hessen                 | 427.631       | 6.016.481  | 1.454.833        | 29%                |
| Mecklenburg-Vorpommern | 107.673       | 1.600.327  | 444.567          | 24%                |
| Niedersachsen          | 603.599       | 7.778.995  | 2.091.203        | 29%                |
| Nordrhein-Westfalen    | 1.696.120     | 17.554.329 | 3.846.597        | 44%                |
| Rheinland-Pfalz        | 190.579       | 3.990.278  | 1.050.978        | 18%                |
| Saarland               | 43.902        | 994.287    | 254.096          | 17%                |
| Sachsen                | 296.650       | 4.050.204  | 1.014.361        | 29%                |
| Sachsen-Anhalt         | 115.322       | 2.259.393  | 624.576          | 18%                |
| Schleswig-Holstein     | 245.024       | 2.806.531  | 695.232          | 35%                |
| Thüringen              | 111.706       | 2.170.460  | 608.150          | 18%                |
| Germany sum            | 6.570.509     | 80.523.746 | 19.301.925       | 34%                |



# examine number of all addresses in Germany: startpoint

Spezialauswertung zur theoretischen Abdeckung Adressen in OSM

regio-osm.de/hausnummernauswertung/index.html

Meistbesucht | Straßen in Adelsried ... | OSM-Hausnummern... | Synology DiskStation ... | WHODIDIT: OpenStre... | Stolpersteir

## Hausnummernauswertung auf regio-osm.de

Statische Auswertungen für OpenStreetMap

### Auswertungsarten und -zyklus

Die Ergebnisse sind in

[tabellarischer Form](#) zur Analyse von Details und Hilfsmittel zur Erfassung der noch fehlenden Hausnummern und in [grafischer Darstellung](#) auf OSM-Kartenhintergrund verfügbar.

[Sonderauswertung theoretische Hausnummernabdeckung in Deutschland](#)

### Auswertungszyklus der einzelnen Städte/Gemeinden

Die Städte und Gemeinden werden täglich ausgewertet. Die Zeitangabe gibt das vorauss. Ende der neuesten Auswertung an angegeben.

Die lokale OSM DB-Kopie ist morgens bis 10h max 5h hinter dem OSM-Datenstand, nachmittags sollte die Differenz max 1h

### Deutschland

#### Bayern

| Gemeinde | Wochentag | Ende Auswert. |
|----------|-----------|---------------|
| Aichach  | Mo, Fr    | 09:45h        |



# theoretical % fulfilled housenumber in Rheinland-Pfalz Nord

regio-osm.de/hausnummernauswertung/grafikdarstellung/hausnum



## Hausnummernauswertung auf regio-osm.de

Grafische Darstellung





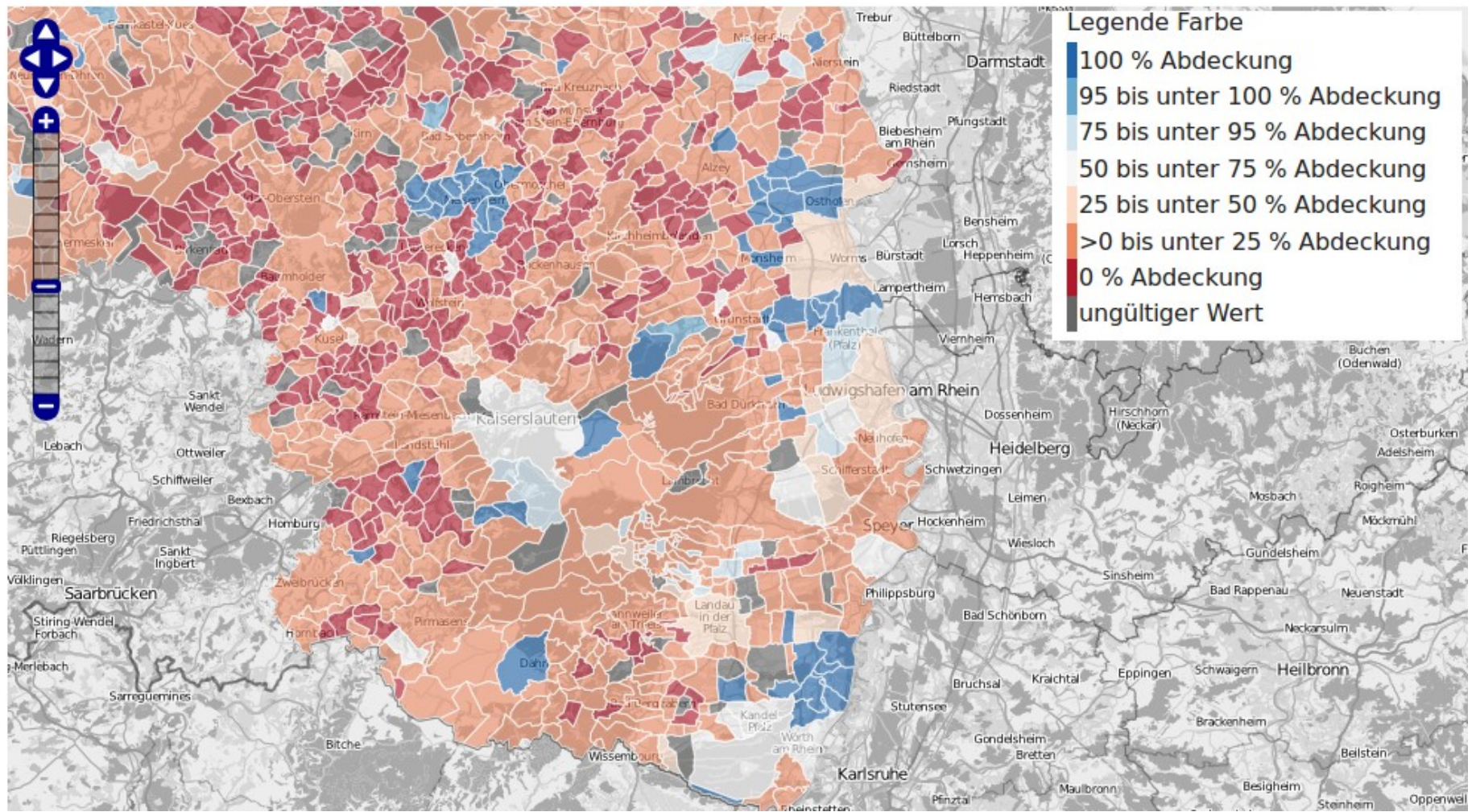
# theoretical % fulfilled housenumber in Rheinland-Pfalz Nord

regio-osm.de/hausnummernauswertung/grafikdarstellung/hausnum



## Hausnummernauswertung auf regio-osm.de

Grafische Darstellung





## Extention 2

add/realign subadmin or postcal  
boundaries

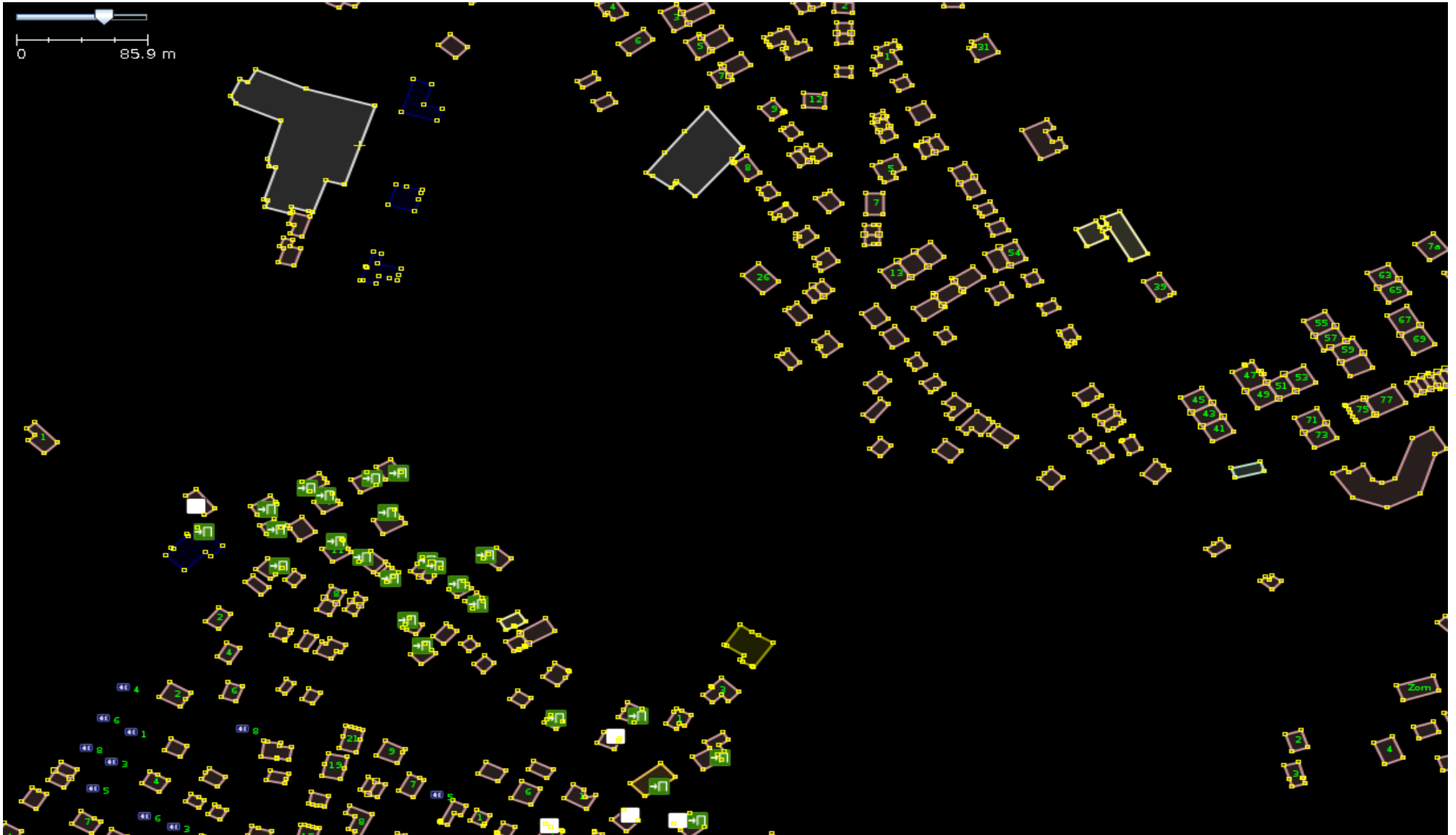


# add/realign subadmin or postal boundaries: Method

- given a housenumber list with subadmin ID or plz codes
- already high % fulfilled addresses in OSM
- => (re)calculate boundaries with Voronoi Code

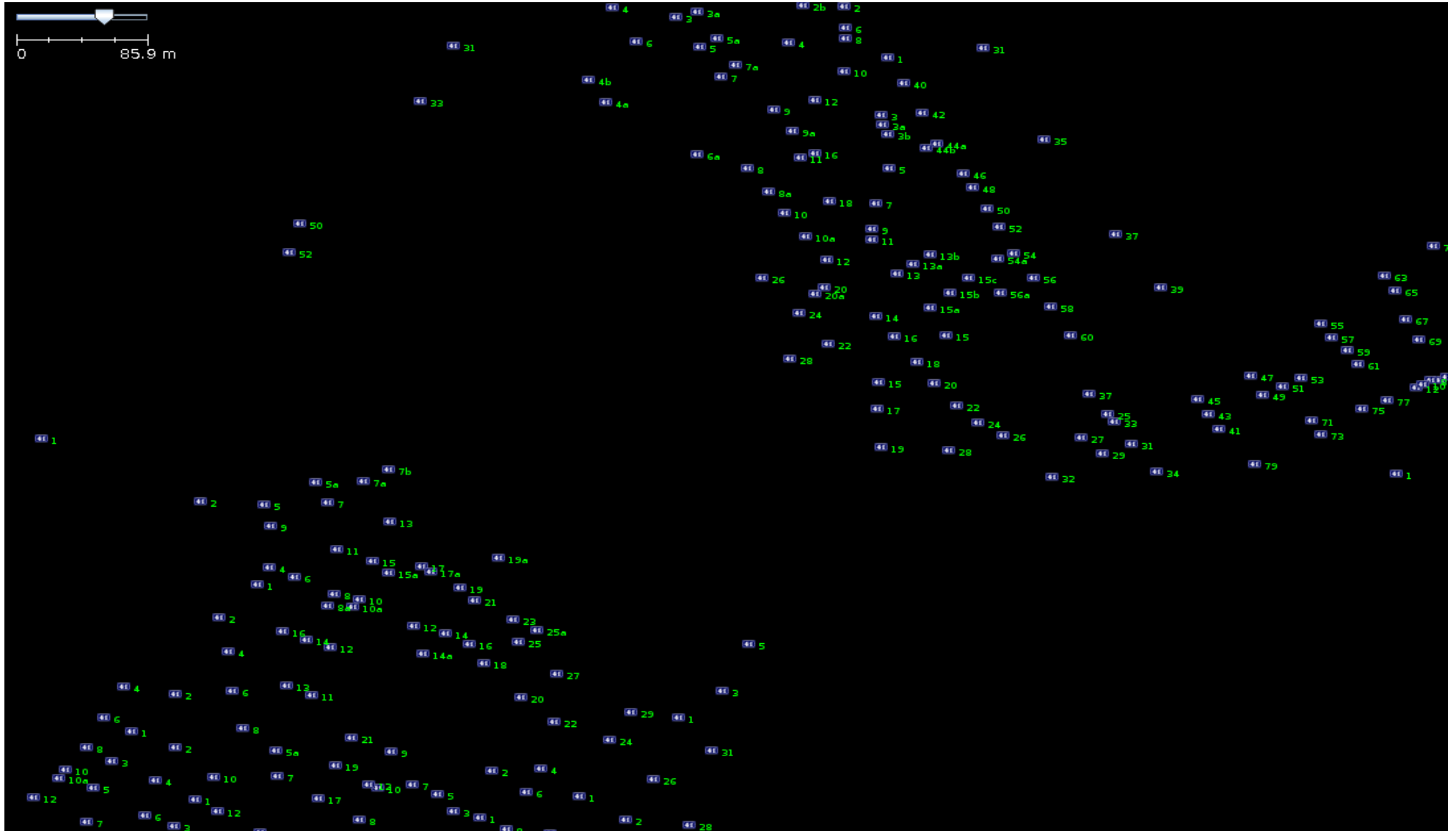
# Building subadmin boundaries

## 1: Buildings from OSM



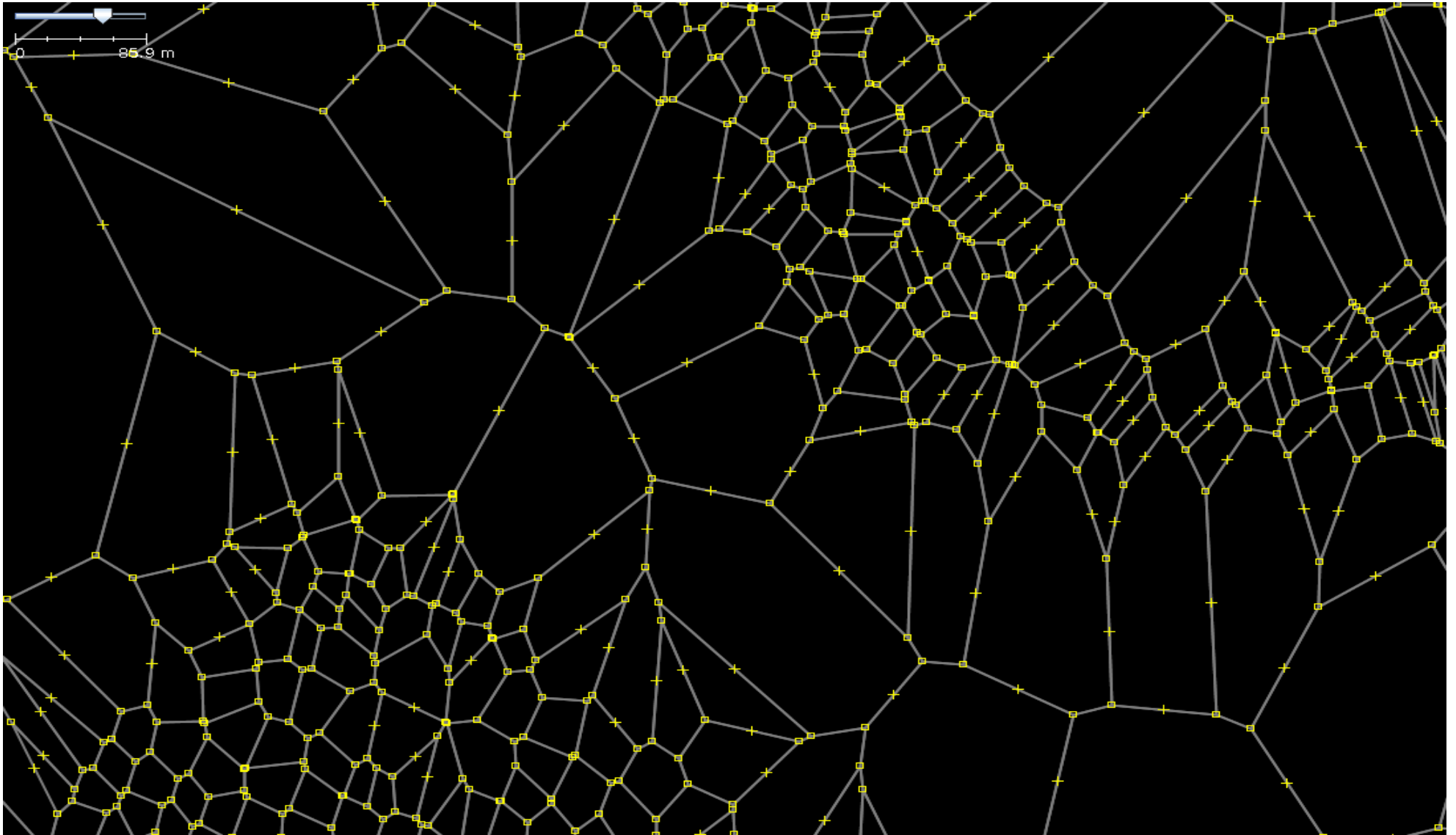
# Building subadmin boundaries

## 2: Address nodes from Buildings



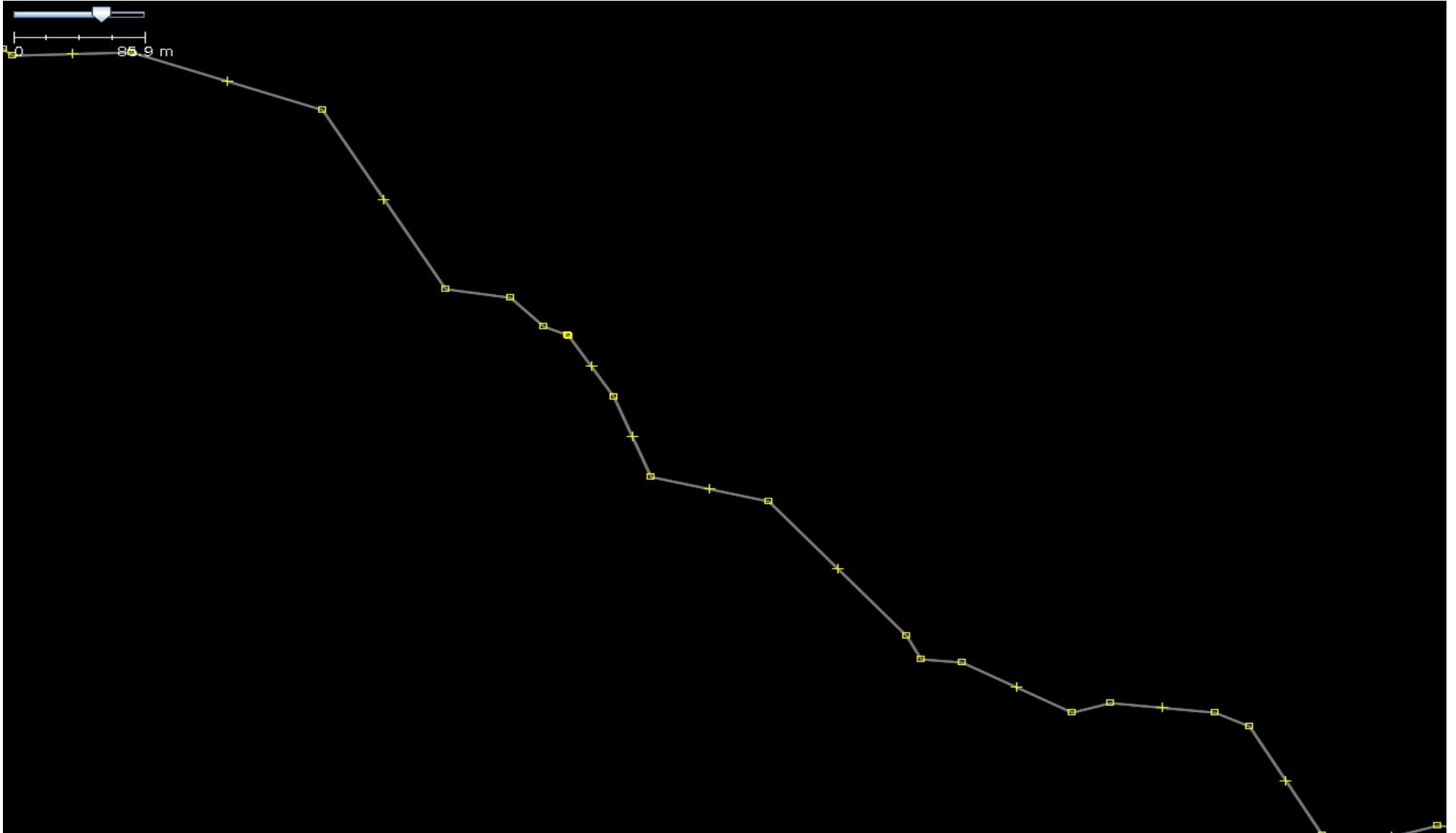
# Building subadmin boundaries

## 3: created Voronio network



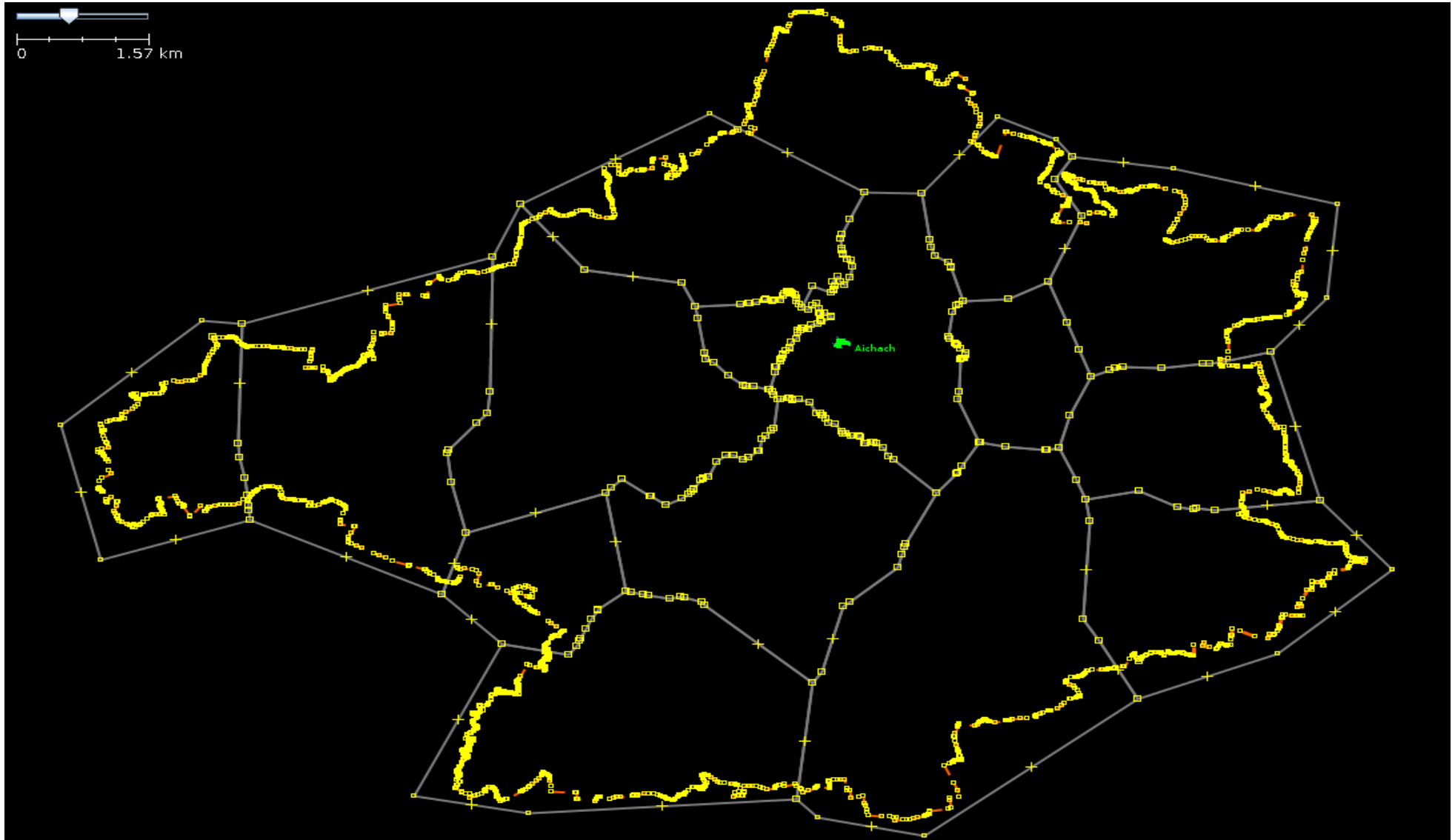
# Building subadmin boundaries

## 4: result boundary part



# Building subadmin boundaries

## 5: result complete subadmin boundaries





more Slides



# timeline of housenumbers in OSM

great Municipalities ( > 100.000 citizens)

