

Updating OpenStreetMap addresses in Latvia

Dāvis Kļaviņš | davisklavins@gmail.com

How it started

Since the beginning of 2022, State Land Services started publishing most of their data, incl. addresses, as open data on the Latvian Open Data Portal. CC BY 4.0 licensed, thus also waiver to use in OSM.

Need for an automated way to use some of these data in OSM was expressed and accepted on the Latvian Talk-lv mailing list in January 2022.

Personal work experience with address data in Latvia for more than 10 years (Central Statistical Bureau of Latvia, inventory of addresses in Riga).

OSM rules for automated edits relying also on imports affecting only one country

Follow automated edits code of conduct:

- Discuss with local community.
- Follow Import/Guidelines requirements (discuss on Imports mailing list and add info to Import/Catalogue) – not stated at the beginning due to poor OSM documentation.
- Dedicated user account (latvia-bot).
- Wiki page containing documentation named “Automated edits/username” (**Automated edits/Latvia-bot**) and added to Category:Automated edits log.

latvia-bot

First bot ever to work on OSM data specifically in Latvia.

Collection of scripts published on GitHub to update and maintain:

- **Addresses,**
- NUTS 3 regions, LAU 2 (administrative territories), territorial units (towns and rural territories) and villages (not implemented yet).

Geographical scope defined by cadastral parcels.

Run approximately every month since June 2022.

latvia-bot

Name: [latvia-bot](#)
Registered: 2022-02-03
Active contributor: [Yes](#) & [Yes](#)
Mapping days: 46
Map changes: 1,046,338 (219)
Reverted changes: 0 (0.0%)
Discussed changesets: [5](#) (1)



Type? Casual Mapper (Active)

Recent changesets ([details](#)): Latvia (3)

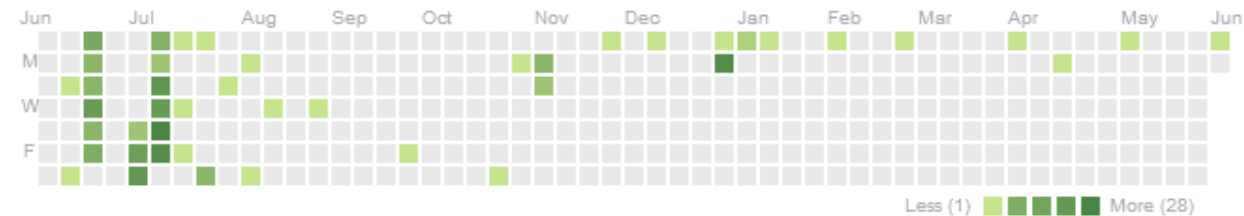
Recent ranks: Latvia #15

Changeset discussions: Participated in 3 and [created 4](#) comments

Rollbacks performed: Reverted 78 changesets w/ 1,287 changes of 121 contributors

Quality assurance: [OSMI issues](#) ([details](#)): routing=1, tagging=364
[Osmose issues](#): [Level 1](#)=0, [Level 2](#)=5, [Level 3](#)=0

44 mapping days with 216 changesets in the last year



	Last modifier	Created	Modified	Deleted
Nodes	323,023	297,183 (48%)	283,311 (46%)	36,740 (6%)
Ways	258,135	0 (0%)	428,178 (100%)	5 (0%)
Relations	591	0 (0%)	921 (100%)	0 (0%)

<https://hdyc.neis-one.org/?latvia-bot>

latvia-bot

Compares OSM and State Land Services data in PostgreSQL and uploads OsmChange files to OSM. Osmosis and Upload.py are used.

Uses OSM data from Geofabrik's internal daily extract of Latvia, updated with osmupdate. Because importing into PostgreSQL database, data processing and change retrieval takes some time, elements might be modified meanwhile leading to version mismatch during upload. Thus, conflicting elements due to version mismatch are skipped while uploading.

Addressing in Latvia

Defined by the Regulation of the Cabinet of Ministers No. 455 of June 29, 2021.

Addresses are set by municipalities, but data managed in a centralized information system (State Address Register) by the State Land Service.

Open data published by the State Land Service are authoritative, thus almost all existing OSM address data that differed was replaced/removed.

Ground «truth» doesn't matter

Ground



<https://github.com/Davis-Klavins/osm-latvia-bot/issues/3>

State Address Register (no address point on the building)



<https://www.kadastrs.lv/>

Addressing in Latvia

From the State Address Register, only address data on buildings and land parcels intended for building are used to comply with existing global OSM principles (e.g. not adding address tags to places).

Within the State Address Register, location of addresses of buildings and land parcels are defined by point coordinates. One coordinate pair exists per address even if it applies to multiple buildings.

Addressing in Latvia

Addresses of all buildings and land parcels are defined in the State Immovable Property Cadastre Information System also managed by the State Land Service.

Currently, only point based data from the State Address Register is used, although at a later stage it might be possible to set addresses for all buildings of certain type that imply an address (e.g., residential) by using open data of the State Immovable Property Cadastre Information System.

Address tags left untouched

- addr:unit – in general, used for ways if building contains no more than one flat and address is assigned to more than one building or building part. Used also for row houses as nodes if building parts are not clearly distinguishable. Matches addresses of flats in the State Address Register but there is no information where flats are located within building.

Address tags left untouched (nodes only)

- addr:door – used for numbers of flats. Used for businesses etc., thus depend on the address information given by them or survey.
- addr:flats – used for the range of numbers of flats. Although in the State Address Register, data on addresses of flats is given, there is no information through which door each flat is accessible and where doors are located.
- addr:floor – not part of the official addressing in Latvia. Keep because some businesses etc. use it.

Address tags used when adding data from the State Address Register

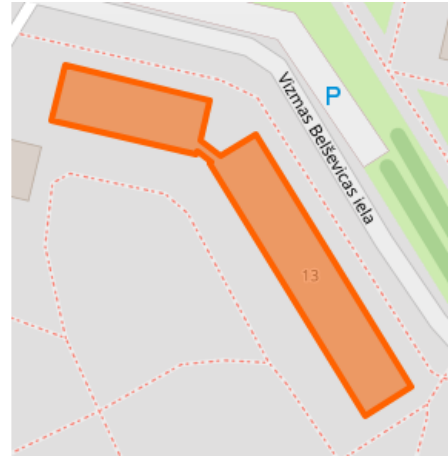
- addr:city – towns, cities and villages.
- addr:country – country.
- addr:district – municipalities.
- addr:housename – house names.
- addr:housenumber – house numbers.
- addr:postcode – postal codes.
- addr:street – street names.

Address tags used when adding data from the State Address Register

- addr:subdistrict – rural territories.
- ref:LV:addr – address code (unique ID (classifier code) in the State Address Register).
- old addr:housename – house name of the previous address where house name, house number or street name has been changed.
- old addr:housenumber – house number of the previous address where house name, house number or street name has been changed.
- old addr:street – street name of the previous address where house name, house number or street name has been changed.

Use of old_addr:* tags in OSM

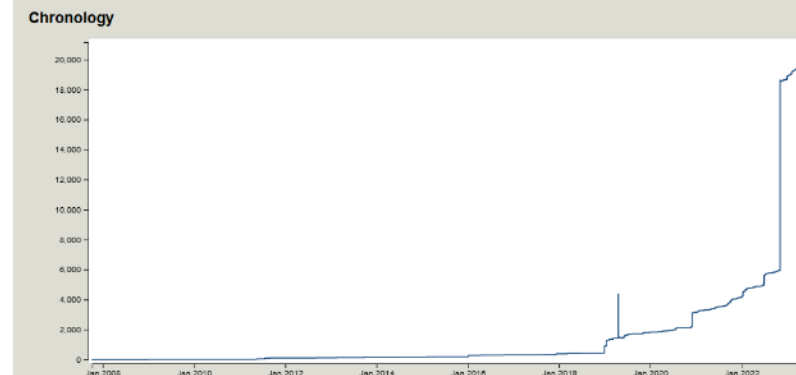
addr:city	Rīga
addr:country	LV
addr:housenumber	13
addr:postcode	LV-1082
addr:street	Vizmas Beļševicas iela
building	apartments
old_addr:street	Detlava Brantkalna iela
ref:LV:addr	102646962



old_addr:street

Street name of the previous address.

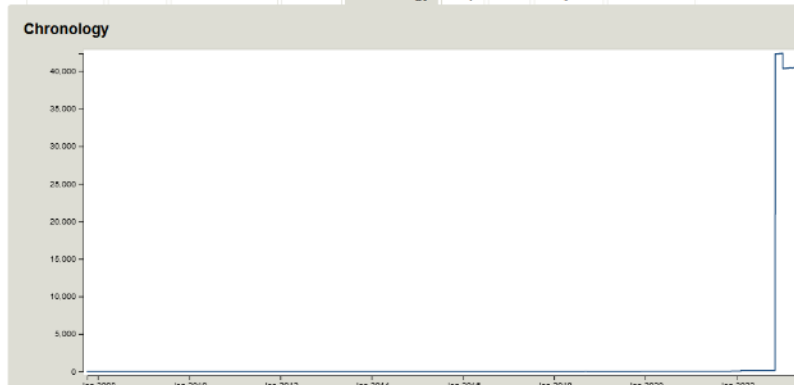
Overview Values Combinations Similar Chronology Map Wiki Projects Characters



old_addr:housename

House name of the previous address.

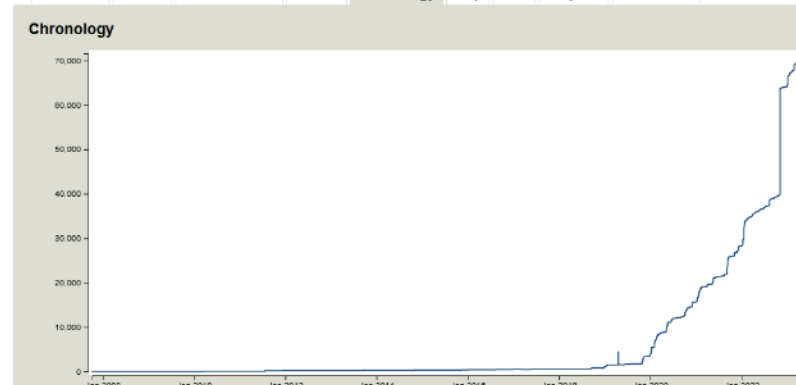
Overview Values Combinations Similar Chronology Map Wiki Projects Characters



old_addr:housenumber

Obsoleted addr:housenumber, often because street names were assigned

Overview Values Combinations Similar Chronology Map Wiki Projects Characters



<https://www.openstreetmap.org/way/100290023> and <https://taginfo.openstreetmap.org/>

Address tags used

Use of any other address tags or tags that resemble addresses is not accepted (such tags are removed by the bot), including noaddress and nohouse number (all addresses have been added by the bot, thus it's irrelevant to tag buildings not having one).

Name tags from buildings are also removed if they match house number or street + house number.

PostgreSQL procedure to split historical addresses of buildings

https://github.com/Davis-Klavins/osm-latvia-bot/blob/main/adreses_his_ekas_split.sql

std text		nosaukums text	nr text	ielā text	ciems text	pilsēta text	pagasts text	novads text	rajons text
Liepu aleja Sarmas, Bārbele, Bārbeles pag., Vecumnieku nov., LV-39...		Sarmas	[null]	Liepu aleja	Bārbele	[null]	Bārbeles pag.	Vecumnieku nov.	[null]
Ezera 1, Skaista, Skaistas pag., Krāslavas raj., LV-5671	→	[null]	1	Ezera	Skaista	[null]	Skaistas pag.	[null]	Krāslavas raj.
Čiekurkalna 2. līnija 15a k-2, Rīga, LV-1026		[null]	15a k-2	Čiekurkalna 2. līnija	[null]	Rīga	[null]	[null]	[null]
"Aronija 124", Būtnāri, Zirņu pag., Saldus nov., LV-3801		Aronija 124	[null]	[null]	Būtnāri	[null]	Zirņu pag.	Saldus nov.	[null]

Can be useful also outside OSM when switching from locally maintained address register to the State Address Register.

Order of assignment of address to elements

Addresses assigned in previous steps are not assigned in the next ones anymore.

1. Adding address for the closest isolated dwelling whose name matches and is located no more than 25 m from the address point. While data quality of isolated dwellings is being improved, assigning only to nodes that list the Place Names Database as source.
2. Adding addresses for building polygons (both ways and relations). Polygon contains only one address point.

Order of assignment of address to elements

3. Adding addresses for building polygons (both ways and relations). Polygon covers more than half of building polygon in cadastre containing address point from which the address is taken. To assign addresses for significantly misaligned polygons (e.g., digitized from satellite imagery).

Order of assignment of address to elements

4. Adding addresses for address points (nodes containing only address tags):
 1. Address code matches (address points added previously).
 2. House names matches, distance up to 0.01 decimal degree (~1.1 km). To use already existing element in case address points were not added by the bot.
 3. House number and street matches, distance up to 0.01 decimal degree (~1.1 km). To use already existing element in case address points were not added by the bot.
 4. Insert missing addresses.

Order of assignment of address to elements

5. Assign address tags to objects listed in tags 4 addresses.csv (amenities, shops, offices etc.):
 1. Ways. Polygon contains only one address point.
 2. Relations containing ways. Polygon contains only one address point.
 3. Nodes:
 1. Address taken from the OSM building polygon (way or relation) where node is located. Node contained by only one polygon.
 2. Address taken from the address of the building from the State Immovable Property Cadastre Information System where node is located.
 3. Address taken from the address of the land parcel from the State Immovable Property Cadastre Information System where node is located.

Data quality issues: poor accuracy of the geometry of buildings

In OSM



https://wiki.openstreetmap.org/wiki/File:Kraslava_misaligned_buildings.png

In cadastre



https://wiki.openstreetmap.org/wiki/File:Dumbrāja_24a.png

Data quality issues: multiple address points within one OSM building

Most common cause – multiple buildings or building parts digitized as one building in OSM.

See more in the [wiki](#).

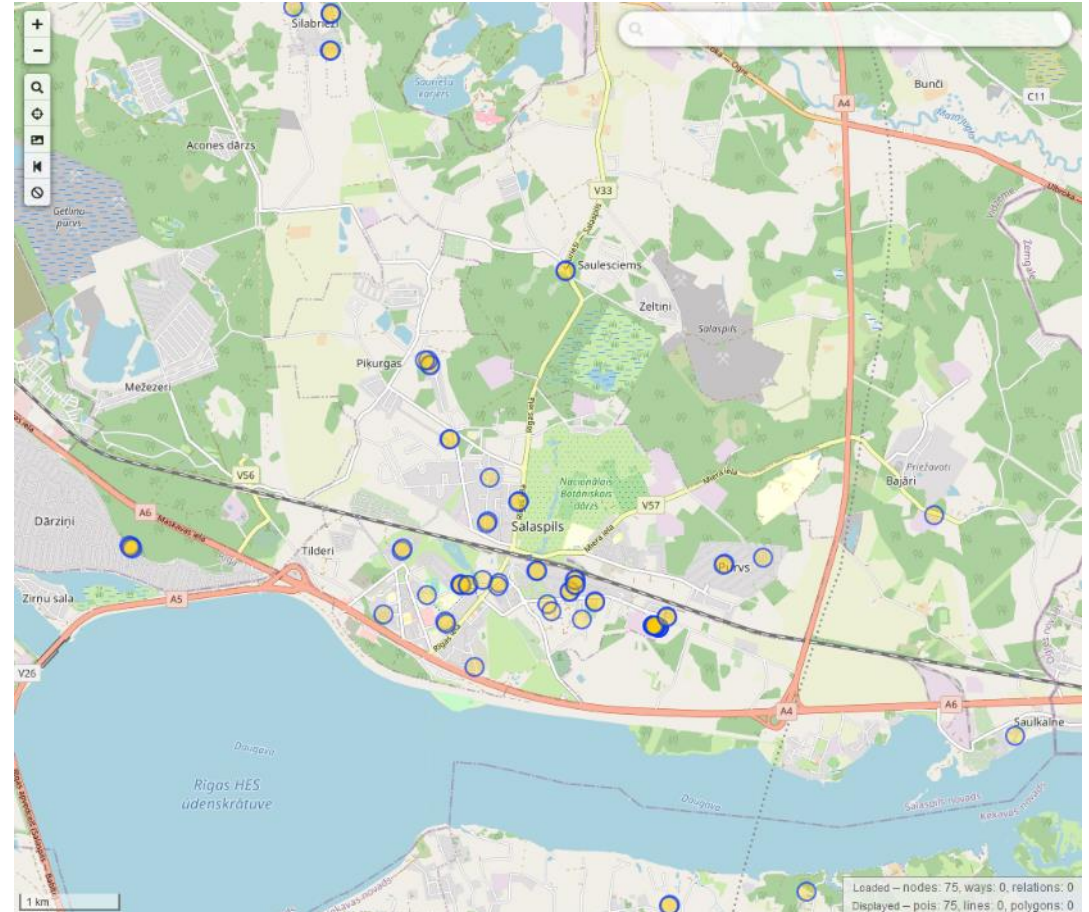


https://wiki.openstreetmap.org/wiki/File:Row_houses_Salaspils.png

Data quality issues: multiple address points within one OSM building

Overpass query by i-ky:

```
[timeout:25][bbox:{{bbox}}];
area["building"];
map_to_area->.buildings;
node(area.buildings)["ref:LV:addr"][! "amenity"][! "craft"][! "emergency"][! "information"][! "leisure"][! "man_made"][! "office"][! "recycling_type"][! "shop"][! "tourism"];
out;
```



<https://overpass-turbo.eu/>

Latest activity as of June 5, 2023

The screenshot displays the OSMCha interface. On the left, a list of changesets for the user 'latvia-bot' is shown, sorted by date. The most recent changeset (136932127) is highlighted. The details panel on the right shows the title 'Updated addresses in Latvia. Part 1/1.' and the editor 'osm-bulk-upload/upload.py v. 1'. The map on the right shows Latvia with numerous colored markers (red, yellow, green) indicating the locations of the address updates. The markers are densely clustered in the central and eastern parts of the country, particularly around Riga and other major cities. The map also shows the Gulf of Riga to the north and Lithuania to the south.

Changeset ID	Time Ago	Label	Value	Users
136932127	about 20 hours ago	Updated addresses in Latvia. Part 1/1.	225 1425 709	
135810527	29 days ago	Updated addresses in Latvia. Part 1/1.	229 968 537	
135022550	about 2 months ago	Updated addresses in Latvia. Part 1/1. Invalid key value combination	148 1243 742	
134426656	2 months ago	Updated addresses in Latvia. Part 1/1. mass deletion Invalid key value combination	654 2765 1310	
133045775	3 months ago	Updated addresses in Latvia. Part 1/1.	350 1142 570	
132127864	4 months ago	Updated addresses in Latvia. Part 1/1. Invalid key value combination	374 1456 668	

https://osmcha.org/changesets/136932127?filters=%7B%22date_gte%22%3A%5B%7B%22label%22%3A%22%22%2C%22value%22%3A%22%22%7D%5D%2C%22users%22%3A%5B%7B%22label%22%3A%22latvia-bot%22%2C%22value%22%3A%22latvia-bot%22%7D%5D%7D

Afterthoughts

If local community likes, don't expect it to happen globally:

I strongly recommend that you describe the exact changes you want to do before you do any further uploads to the database. The public database is not a playground for you to toy around with until you get it right.

Sarah Hoffmann, maintainer of Nominatim

Global community has no understanding of addressing in Latvia, insisting on nonsense suggestions, e.g., splitting housename “Salenieki 48” into `addr:housenumber=48` and `addr:place=Salenieki`.

Afterthoughts: usage of addr:place

When asked to clarify OSM wiki (usage of addr:place), disappear. Full conversation on Imports mailing list.

No answers within six months on the talk page of Key:addr:place either.

As of now, addr:place not used at all in Latvia, the same is in Estonia.

Nominatim needs to be improved. Basic text parsing if compared to, e.g., BalticMaps.eu.

Afterthoughts

Automated updates in OSM are more complicated than in majority if not any of internal databases of institutions/enterprises.

OSM in Latvia lacks active users to significantly boost up data coverage and quality. E.g., many roads and buildings are still missing, especially in rural areas. Mapping project created by richlv to map buildings in Rēzekne Municipality (see also discussion).

Possible extensions

- Update and maintain NUTS 3 regions, LAU 2 (administrative territories), territorial units (towns and rural territories) and villages.
- Extend data sources, e.g., specially protected nature territories.
- Correct tags (e.g., typos).

- Use dedicated server and perform fully automated updates every day. Likely provision and configure using Ansible (currently only step-by-step guide exists on GitHub).

Get in touch

- GitHub: <https://github.com/Davis-Klavins/osm-latvia-bot>
- OSM Latvija Zulip chat: <https://osmlatvija.zulipchat.com/>. Publicly accessible stream related to addresses:
<https://osmlatvija.github.io/zulip-archive/stream/360959-adreses/index.html>