



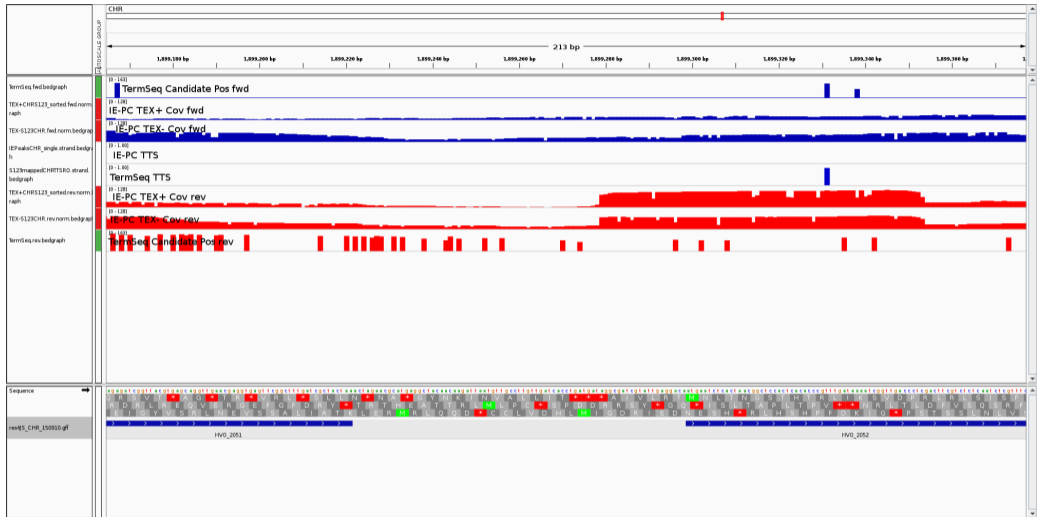
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Odonomics

Sarah J. Berkemer

Bioinformatics Leipzig & BSV Leipzig & ScaDS Leipzig





https://www.openstreetmap.org/#map=14/46.3685/14.1216

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OpenStreetMap (OSM)

- Free and open geographic data



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- Webbrowser and offline maps
- Annual conferences 'State of the Map'



Odonomics

Odonym + Omics

Street Name = Odonym \Rightarrow Odonomics

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Idea

Use free data to compare street names of different countries

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1. Download data (Sep 2019)

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Use free data to compare street names of different countries

Steps

1. Download data (Sep 2019)
2. Split street names into terms

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2. Split street names into terms
3. Street distribution as background

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1. Download data (Sep 2019)
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4. Detect enrichment of street names

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2. Split street names into terms
3. Street distribution as background
4. Detect enrichment of street names
5. Comparison of street names in regions

Download map data



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Extract street data

Welcome to osmcode.org
Open Source Software for Working with OpenStreetMap Data

The [OpenStreetMap project](#) has collected a huge amount of data about our planet. All this data is freely available to everybody. The tools on this site help you work with that data in many different ways. They are intended for developers and cartographers who want to use OSM data in their own projects.

- Osmium Tool**
A multipurpose command line tool based on the Osmium Library. With it you can easily convert OSM files from one format to another, merge and apply change files and much more.
- Osmium Library**
A fast and flexible C++ library for working with OSM data. It contains building blocks for many typical OSM data handling tasks, such as reading and writing OSM files, or assembling areas from multipolygon relations.
- Node Osmium**
The Node.js bindings to Osmium Library bring its power to the Javascript developer.
- PyOsmium**
With PyOsmium you can use the functionality of the Osmium Library from Python.
- OSM Area Tools**
Debugging and statistic tools for OSM areas (multipolygons).
- OSM Coastline**
Extracts coastline data from OpenStreetMap planet file.
- OSM GIS Export**
Export OSM data to GIS formats like Shapefiles, Spatialite, or PostGIS.
- Osmium Contrib**
Various programs showing what you can do with the Osmium Library.
- OSM Test Data**

Geographic Areas

European Region	Number	North American Region	Number
France	22	Canada	13
Germany	28	Mexico	1
Great Britain	49	US	51
Poland	15		
Netherlands	10		
Italy	5		
Others	21		
Regions total	152	States total	65
Countries total	27	Countries total	3

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(Meta) Data

(1) Street Names (2) Street Types (3) Street Length (4) Location

Street Terms

Split street names into terms:

- wiener straÙe → 'wiener' + 'straÙe'
- franz-schubert-straÙe → 'franz' + 'schubert' + 'straÙe'

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Check how often a term occurs within all street names as
(1) prefix (2) infix (3) suffix (4) complete term

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Example (Austria)

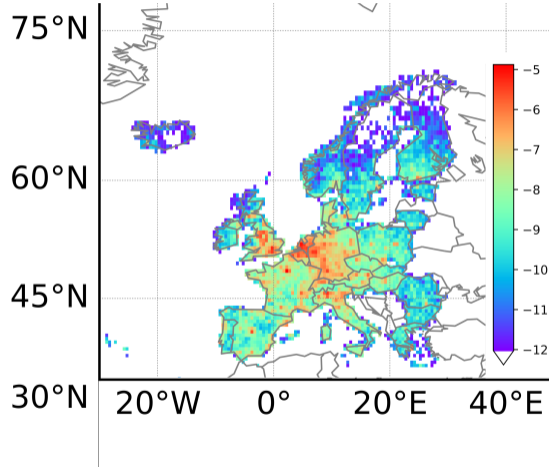
Term	prefix	infix	suffix	complete	type	type pred	av length	occurence
StraÙe	40	29	26480	11611	residential	0.88	0.36km	~4%
Garten	726	406	244	5	tertiary	1.0	0.25km	~0.2%
Franz	64	6	1	824	primary	1.0	0.22km	~0.1%

Streets in Europe

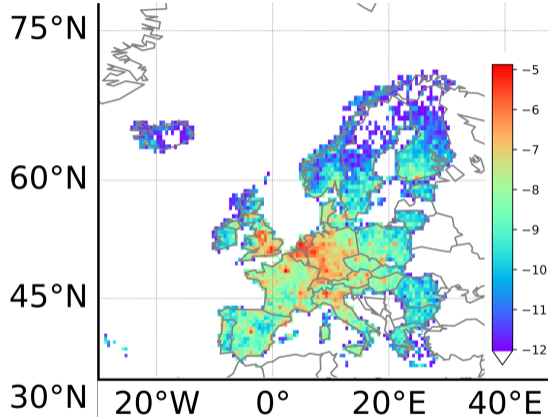
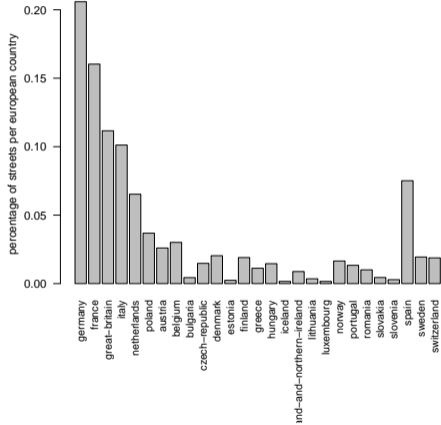
Europe

Street Occurrences

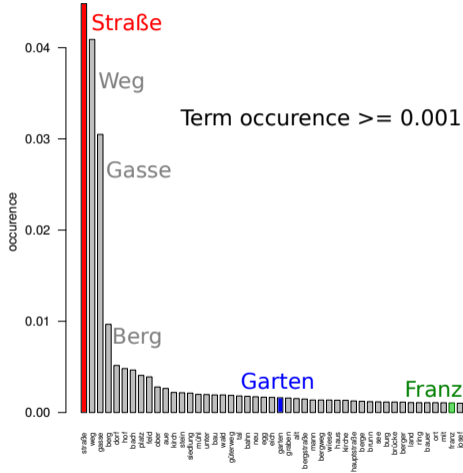
1. Create grid based on coordinates
2. Count number of street entries per cell
3. Normalize by total number of streets
4. Calculate log values



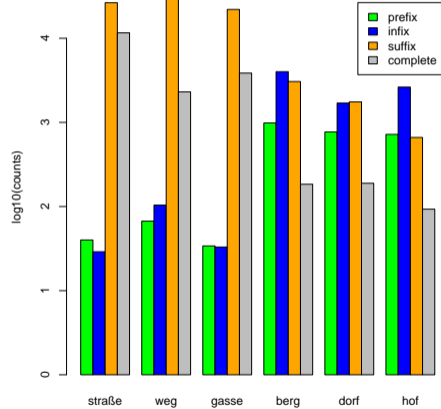
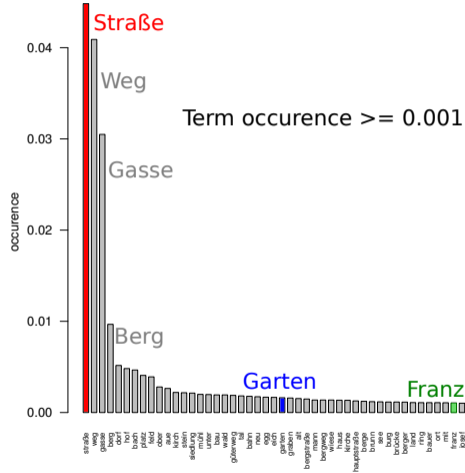
Europe



Austria

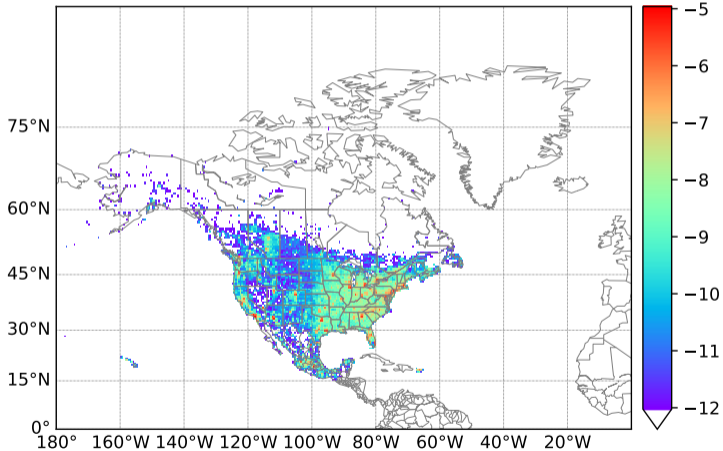


Austria

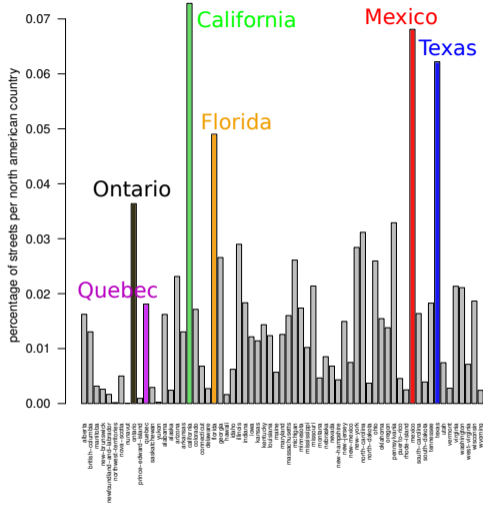


Streets in North America

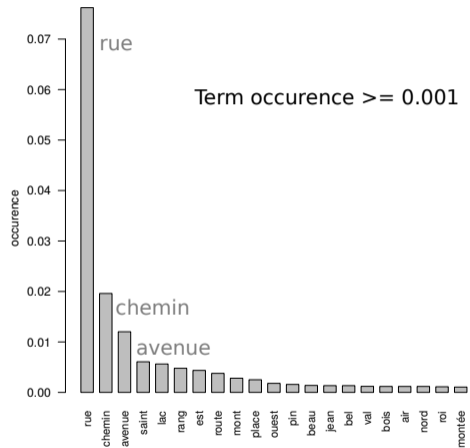
North America



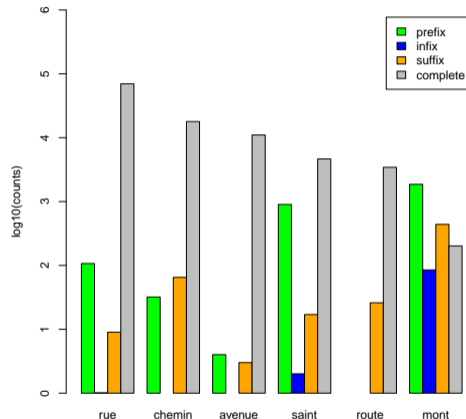
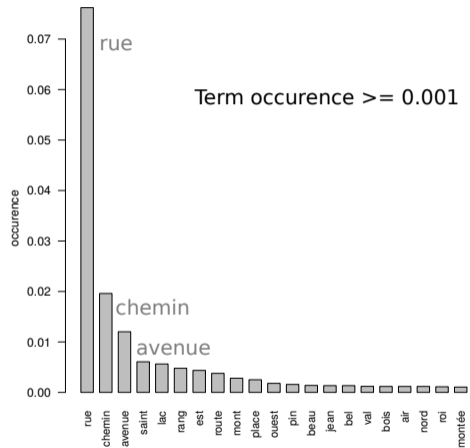
North America



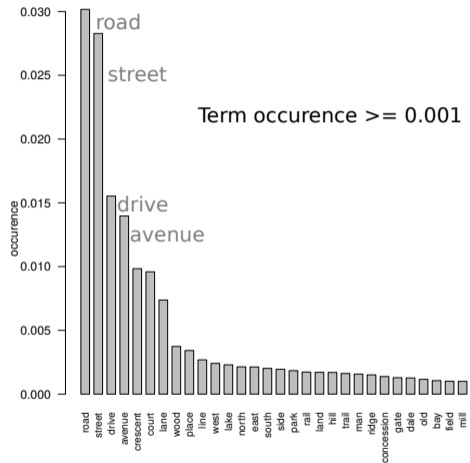
Quebec



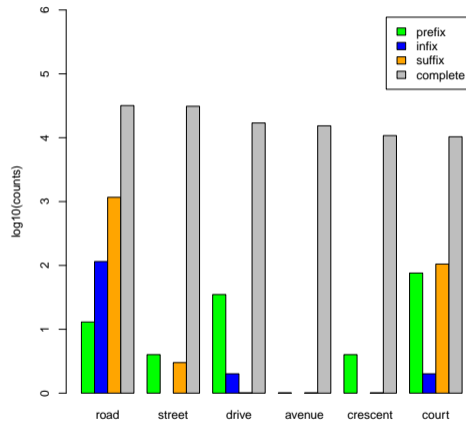
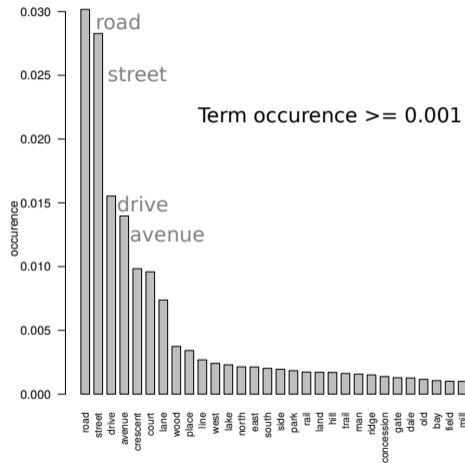
Quebec



Ontario

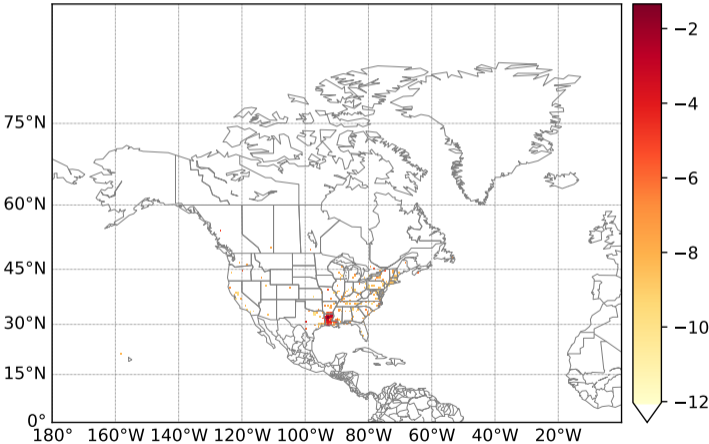


Ontario



What Street Names tell about History (not yet)

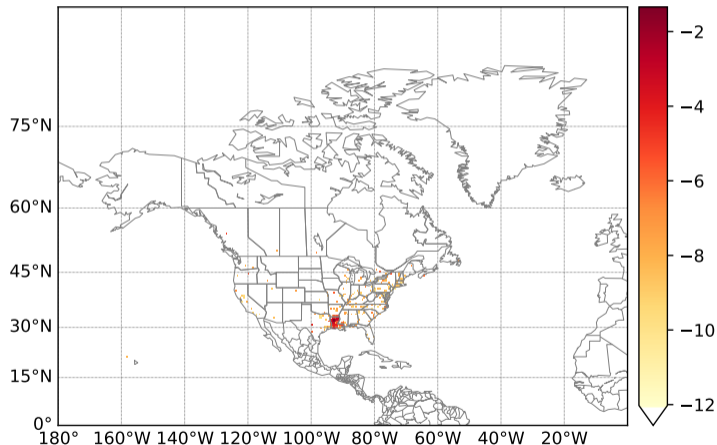
Where are the 'Paris' Streets?



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Parish vs Paris

No real prefix! \Rightarrow
detection of
Louisiana's
parishes



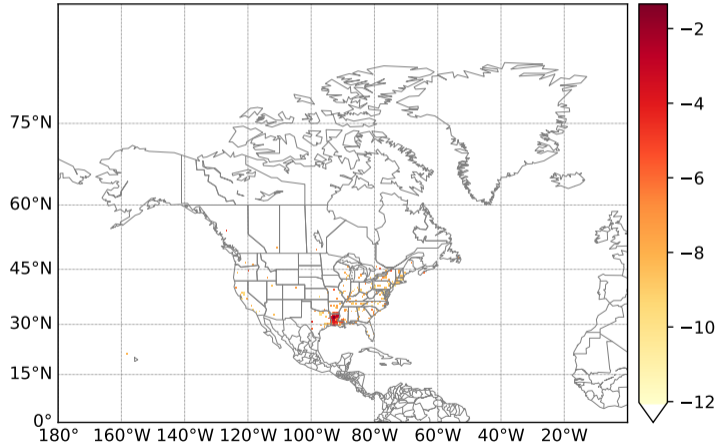
Where are the 'Paris' Streets?

Parish vs Paris

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Parish (Wikipedia)

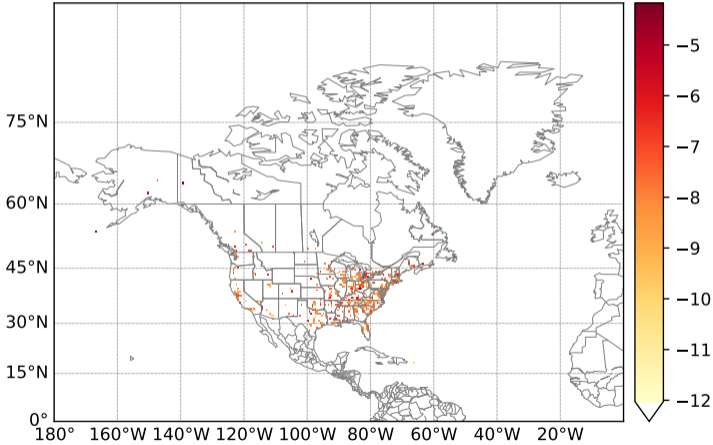
A parish is a
territorial entity in
many Christian
denominations
(German: Pfarrei).



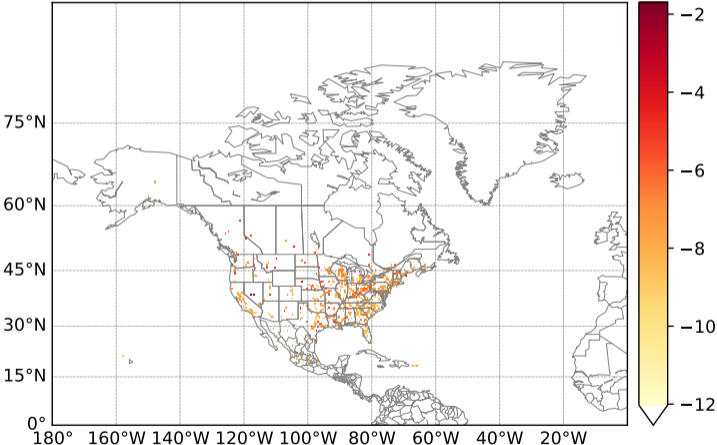
American Londons

Geographic Naming

Streets indicate direction to cities/landmarks.



American German City Names

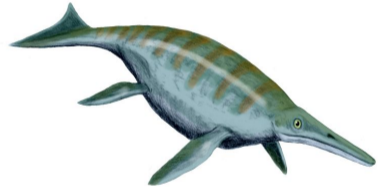


Berlin-Ichthyosaur State Park, Nevada

Ghost Town Berlin



Ichthyosaur Shonisaurus



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Outlook:

- better selection of typical cultural terms



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- better thresholds

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- more ideas?

Thank you for your attention!