

Mapping thematic knowledge about places

Ben Adams

176C April 18 2012

Place and GIS

- GISs are good at modeling space
- What about place?
- Place is difficult
 - Place is distinct from location
 - Lack of canonical definitions – “Where is downtown Santa Barbara?”
 - Place is subjective
 - Place is socially constructed, can be defined by activities

Place

- Human geography
 - Meaning attached to otherwise undifferentiated space
 - Place is experience-based [Tuan 1977]
 - First person lived experience
 - Or learned from a secondary source (e.g., reading)
 - Sense of place - building emotional attachments
 - Narratives provide unique syntheses of experiences
- How do we describe places in a GIS
 - Comparatively simple
 - E.g., digital gazetteer

Gazetteers in a Nutshell

- Gazetteers are **place name** (toponym) **directories** containing **names** (N), **spatial references**/footprints (F), **feature types** (T), and additional information for named geographic places.
- **Minimum functionality**
 - $N \rightarrow F$ (lookup)
 - $N \rightarrow T$ (type-lookup)
 - $F (\times T) \rightarrow N$ (reverse-lookup)
- **Further functionality**
 - Harvesting (spanning over multiple gazetteers)
 - **Geoparsing and geocoding**
 - Classification of geographic feature types (ontology)
- **Temporal dimension**: current and historical **names** and **types**.

Query Examples

- **Lookup:** State College \rightarrow 40.791389, -77.858611
- **Type-lookup:** State College \rightarrow Populated Place
- **Reverse-lookup:** 40.796450, -77.862750 \times Building \rightarrow {Old Main,...}
- **Harvesting:** Find all historical populated place (T) in PA (N) using the Gazetteers G_1, \dots, G_n .
- **Geoparsing and geocoding:** Extract all toponyms from the web page XYZ and return their spatial footprints.
- **Ontology:** Münster \times Waterbody_{sub} \rightarrow {Aasee, Werse,...}
- **Ontology:** Münster \times River_{sim} \rightarrow {Aa, Dortmund-Ems Canal,...}

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a

Search the TGN

Name

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Find Name:

Place Type:

Nation:

[Pop-up Search](#) [Browse the TGN hierarchies](#)

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Search Tips

For the Find Name field, you may use **AND** and **OR** [e.g., 1) san carlos, 2) carlos OR charles, 3) carl* OR charl*, 4) san AND carlos, 5) carlos AND (san OR saint), 6) (carlos OR

[Return to Search](#) [Create](#) [Cancel](#)

Browse: [A](#) [B](#) [C](#) [D](#) [E](#) [F](#) [G](#) [H](#) [I](#) [J](#) [K](#) [L](#) [M](#) [N](#) [O](#) [P](#) [Q](#) [R](#) [S](#) [T](#) [U](#) [V](#) [W](#) [X](#) [Y](#) [Z](#)

- buried settlement
- butte
- Byzantine center
- caliphate
- camp
- campus
- canal
- canton
- canyon
- cape
- capital
- castle
- catacombs
- cataract
- cathedral
- cave

b

Feature Types

- Top of the TGN hierarchy (hierarchy root)
- World (facet)
- Europe (continent)
- Germany (nation)
- North Rhine-Westphalia (state)
- [\[view physical features \]](#)
- Arnsberg (national district)
- Detmold (national district)
- Düsseldorf (national district)
- Kerspestausee (reservoir)
- Köln (national district)
- Lippe (general region)
- Münster (national district)
- Ravensberg (general region)
- Rhein-Herne-Kanal (canal)
- Remscheider-Stausee (reservoir)
- Ruhrgebiet (general region)

c

Topology

- Top of the AAT hierarchies
- Objects Facet
- Built Environment
- Single Built Works
- <single built works>
- <single built works by specific type>
- <single built works by function>
- hydraulic structures
- <hydraulic structures by form>
- canals
- interoceanic canals

d

New York

10.  **New York** (state)
(World, North and Central America, United States) [7007568]
New York state
11.  **New York** (inhabited place)
(World, North and Central America, United States, Florida, Santa Rosa county) [2020513]
12.  **New York** (inhabited place)
(World, North and Central America, United States, Georgia, Lee county) [2539851]
13.  **New York** (inhabited place)
(World, North and Central America, United States, Iowa, Wayne county) [2539852]
14.  **New York** (inhabited place)
(World, North and Central America, United States, Kentucky, Ballard county) [2539853]
15.  **New York** (inhabited place)
(World, North and Central America, United States, Mississippi, Chickasaw county) [2539854]
16.  **New York** (inhabited place)
(World, North and Central America, United States, Missouri, Caldwell county) [2059883]
17.  **New York** (inhabited place)
(World, North and Central America, United States, Missouri, Scott county) [2539855]
18.  **New York** (area)
(World, North and Central America, United States, Missouri, Shelby county) [2539856]
19.  **New York** (inhabited place)
(World, North and Central America, United States, New Mexico, Cibola county) [2067263]
20.  **New York** (county)
(World, North and Central America, United States, New York state) [1002715]
New York county
21.  **New York** (inhabited place)
(World, North and Central America, United States, New York state) [7007567]
City of New York
Greater New York
New York City
22.  **New York** (deserted settlement)
(World, North and Central America, United States, Ohio, Champaign county) [2539857]

New York City

Click the  icon to view the hierarchy.

▪ Representative Images: [1](#) [2](#) [3](#) [4](#) [5](#)

ID: 7007567

Record Type: **administrative**

 New York **(inhabited place)**

← Feature type

Coordinates:

Lat: 40 42 00 N *degrees minutes* Lat: 40.7000 *decimal degrees*
Long: 074 00 00 W *degrees minutes* Long: -74.0000 *decimal degrees*

← Spatial footprint



Note: Located at mouth of Hudson River; visited by Europeans 16th-17th century. Settled by the Dutch; seized by the British in 1664. Was a cosmopolitan center and the nation's largest city by the 18th century. Today is a huge metropolis composed of five boroughs corresponding to five counties.

Names:

New York (**preferred,C,V**) renamed for the Duke of York by British in 1664
New York City (**C,V,display**)
City of New York (**C,V**)
Greater New York (**C,V**) unofficial name
Big Apple (**C,V**) nickname for New York City
Gotham (**C,V**) a colloquial name for the city
New Orange (**H,V**)
New Amsterdam (**H,V**)

← Current and historical names

Hierarchical Position:

 [World](#) (facet)
 [North and Central America](#) (continent) (P)
 [United States](#) (nation) (P)
 [New York](#) (state) (P)
 [New York](#) (inhabited place) (P)

← Topological containment relation
(e.g., New York 'inside' United States)

Additional Parents:

United States

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Click the  icon to view the hierarchy.

ID: 7012149

Record Type: **administrative**

United States (nation)

Coordinates:

Lat: 38 00 00 N *degrees minutes* Lat: 38.0000 *decimal degrees*
Long: 098 00 00 W *degrees minutes* Long: -98.0000 *decimal degrees*

Note: Settled 40,000 years ago by ancestors of Amerindians; diverse cultures developed; Spanish, French, British and others settled here from 16th cen., native cultures were largely destroyed; nation expanded westward through 19th cen.; had Civil War in 1860s; official language is English, though a sizable minority speaks Spanish, and various other languages are also spoken.

Names:

United States ([preferred](#),[C](#),[V](#),[English-P](#),[U](#),[N](#)) commonly used short form of the official name
United States of America ([C](#),[V](#),[English](#),[U](#),[N](#))
America ([C](#),[V](#)) term is most commonly used to refer to the USA, though occasionally refers to continents of N & S America

Estados Unidos de América ([C](#),[O](#),[Spanish-P](#),[U](#),[N](#))
États-Unis d'Amérique ([C](#),[O](#),[French-P](#),[U](#),[N](#))
Verenigde Staten ([C](#),[O](#))
Vereinigten Staaten von Amerika ([C](#),[O](#))
USA ([C](#),[O](#),[ISO3L](#))

Gazetteers and Volunteered Geographic Information

OpenStreetMap



Die freie Wiki-Weltkarte

OpenStreetMap ist eine freie, editierbare Karte der gesamten Welt, die von Menschen wie dir erstellt wird.

OpenStreetMap ermöglicht es geographische Daten gemeinschaftlich von überall auf der Welt anzuschauen und zu bearbeiten.

Das Hosting der OpenStreetMap-Server wird freundlicherweise von UCL VR Centre und bytemark unterstützt. Weitere Unterstützer sind im Wiki aufgelistet.

Hilfezentrale
Dokumentation
Urheberrecht + Lizenz
Blogs
Stiftung
Legende

Suchen [Wo bin ich?](#)

Washington

Beispiele: „München“, „Heinestraße“, „10110“

Karte Bearbeiten Chronik Export GPS-Tracks Blogs

Suchergebnisse

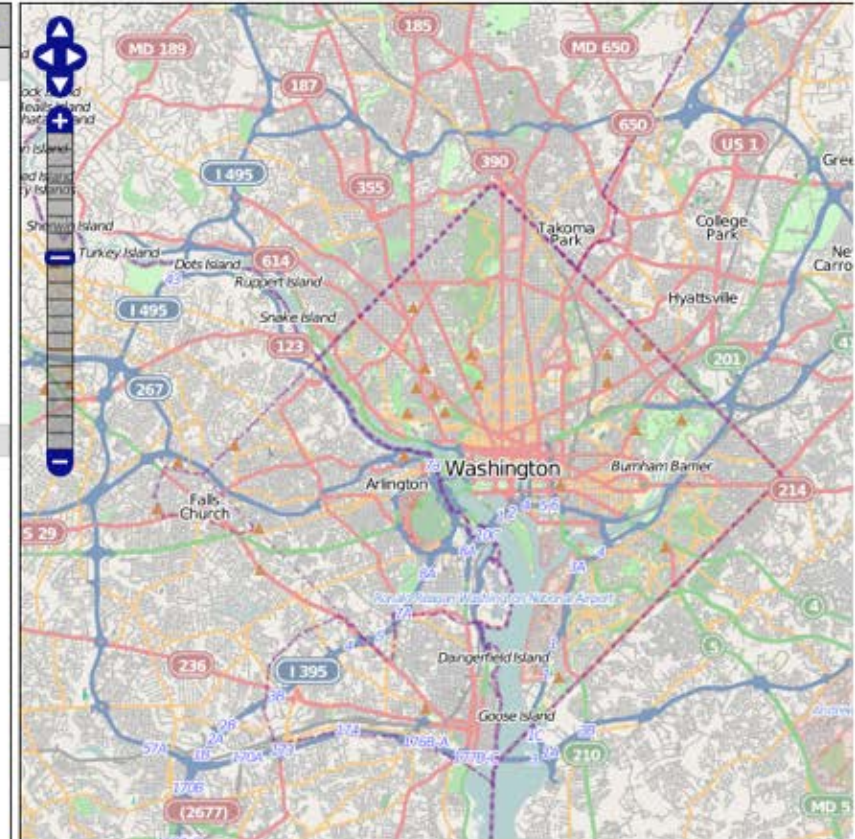
Schließen

Ergebnisse von [OpenStreetMap Nominatim](#)

- Bezirk Washington, Rhode Island, Vereinigte Staaten von Amerika
 - Verwaltungsgrenze Washington, Northampton, New Jersey, Vereinigte Staaten von Amerika
 - Dorf Washington, Rensselaer, Massachusetts, Vereinigte Staaten von Amerika
 - Dorf Washington, Burlington County, New Jersey, Vereinigte Staaten von Amerika
 - Dorf Washington, Litchfield, Connecticut, Vereinigte Staaten von Amerika
 - Dorf Washington, Warren, New Jersey, Vereinigte Staaten von Amerika
 - Weiler Washington, Kent, Rhode Island, Vereinigte Staaten von Amerika
 - Ortsgebiet Washington, Belleplain, Cape May, New Jersey, Vereinigte Staaten von Amerika
 - Ortsgebiet Washington, West Milford, Passaic, New Jersey, 07480, Vereinigte Staaten von Amerika
- [Mehr Treffer](#)

Suchergebnisse von [GeoNames](#)

- Washington, United States
- Washington-Arlington-Alexandria, United States
- Washington, United States
- City of Washington, United States
- Lake Washington, United States
- Lake Washington, United States
- City of Washington, United States
- Lake Washington, United States
- Village of Washington, United States
- City of Washington, United States
- Estate Mount Washington and Washington Hill, U.S. Virgin Islands
- Seattle-Tacoma-Bellevue, United States
- Washington, United Kingdom
- Washington Township, United States



Where's downtown? [Montello, Goodchild, Gottsegen, Fohl 2003]

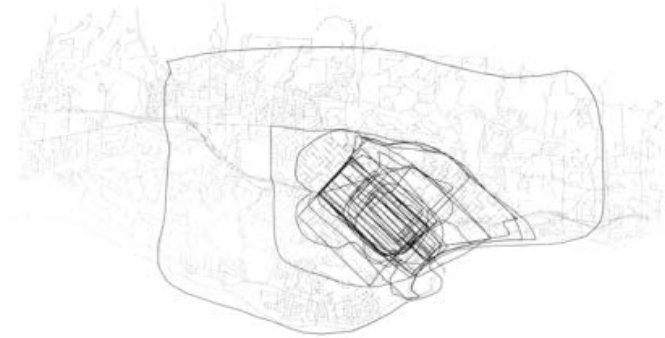


Figure 2. Raw-data polygons for each participant's default concept of downtown Santa Barbara.

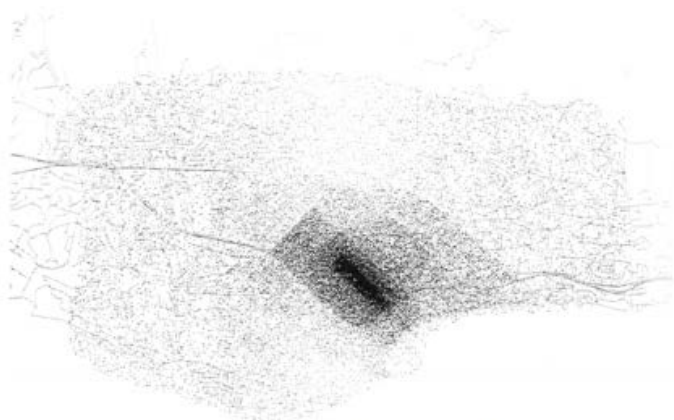


Figure 3. Default downtown region displayed with dot-density shading

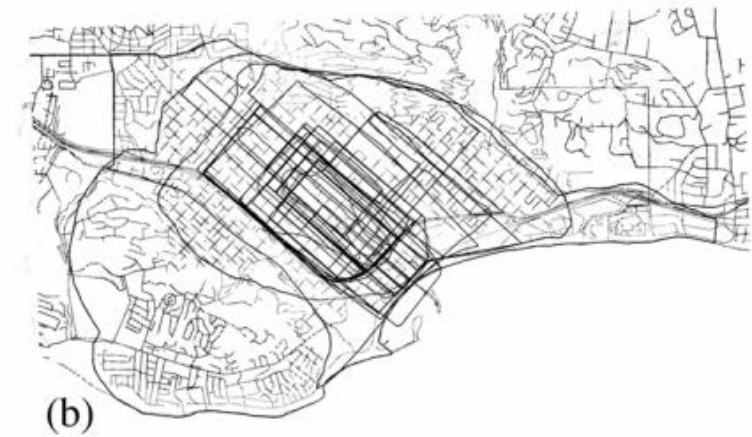
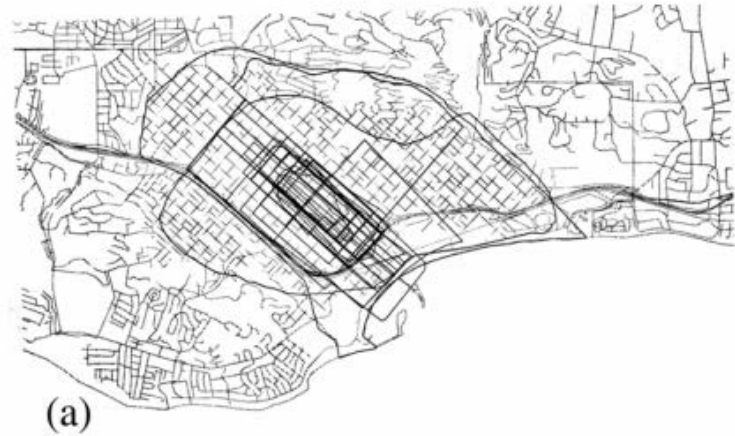


Figure 4. Raw-data polygons for each participant's a) 100% and b) 50% confidence downtowns.

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Search Travel Blog:

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Travel Blog » Europe » Norway » Blogs » Their Sun is like Our Moon that Ran Out

Their Sun is like Our Moon that Ran Out of Batteries

August 18th 2009

Europe » Norway

Published: August 28th 2009

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[2009 - Norway](#)

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There are no straight roads in Norway.

They all go meandering around some fjord, twisting around a lake or powerfully zigzagging up a pass. The roads are almost never level. They keep bobbing up and down. At one moment you are at sea-level and a few minutes later you are at a snowy mountain. Enter a tunnel and some moments later you are down at a low river delta. Up and down. A manic-depressive topography.

It's been a while since our vacation was so time-limited - less than 2 weeks is what we got. Norway was not our first destination alternative for our very short break. We like being

thorough and wanted a place we can "cover" in the limited time-frame. At first we thought about North-Greece but the expected crowds discouraged us. Then we thought about one of the "Stans" of Central-Asia but we could not find a rent-a-car in any of them and one of them has recently cooled off relations with the West due to extremism. We thought it better not to go this year. For a long time we were sure we would go to Georgia until 2 weeks before departure when the mother-in-law of one of Yaron's colleagues (who is *from* Georgia) told us we should not go now due to a awful combination of bad politics, dreadful neighbors and coup in the air.

So we decided on Norway with its geography-challenged roads. We always *did* want to see



Norway Lake

near Hovet



Aurlandsfjord



Baby makes four



yaron and hagit

2011 - 2 and a half weeks in the Caribbean. not relaxing considering the children are 1 and 4. but very enjoyable
2010 - Ariel was born and all four of us took Hagit's maternity leave for 2 months of travel in Europe 2009 - 3 of

Wikipedia

Santa Barbara, California

From Wikipedia, the free encyclopedia
(Redirected from *Santa barbara, ca*)

Coordinates: 34°25′33″N 119°42′51″W﻿ / ﻿﻿ / ﻿

For the island, see [Santa Barbara Island](#).

Santa Barbara (/ˈsæntə ˈbɑːrbərə/, Spanish: [ˈsanta ˈbarβaɾa]) is the **county seat** of **Santa Barbara County, California, United States**. Situated on an east-west trending section of coastline, the longest such section on the West Coast of the United States, the city lies between the steeply-rising **Santa Ynez Mountains** and the **Pacific Ocean**. Santa Barbara's climate is often described as **Mediterranean**, and the city is widely known as the "American Riviera."^[2] As of the census of 2010, the city had a population of 88,410, a loss of 1,190 from the previous census, making it the second largest city in the county after **Santa Maria**^[3] while the contiguous urban area, which includes the cities of **Goleta** and **Carpinteria**, along with the unincorporated regions of **Isla Vista**, **Montecito**, **Mission Canyon**, **Hope Ranch**, **Summerland**, and others, has an approximate current population of 220,000. The population of the entire county in 2010 was 423,895.^[4]

In addition to being a popular tourist and resort destination, the city economy includes a large service sector, education, technology, health care, finance, agriculture, manufacturing, and local government. In 2004, the service sector accounted for fully 35% of local employment.^[5] Education in particular is well-represented, with five institutions of higher learning on the south coast (the **University of California, Santa Barbara**, **Santa Barbara City College**, **Westmont College**, **Antioch University**, and the **Brooks Institute of Photography**). The **Santa Barbara Airport** serves the city, as does **Amtrak**. **U.S. Highway 101** connects the Santa Barbara area with **Los Angeles** to the south and **San Francisco** to the north. Behind the city, in and beyond the Santa Ynez Mountains, is the **Los Padres National Forest**, which contains several remote wilderness areas.

History

[[edit](#)]

Main article: [History of Santa Barbara, California](#)

The history of the city begins at least 13,000 years ago with the ancestors of the present-day **Chumash**. Evidence for a Paleindian presence includes a fluted Clovis-like point found in the 1980s along the western Santa Barbara County coast, as well as the remains of **Arlington Springs Man**, found on Santa Rosa Island in the 1960s. Approximately 8,000 to 10,000 Chumash lived on the south coast of Santa Barbara County when Portuguese explorer **João Cabrilho** sailed through the **Santa Barbara Channel** in 1542, anchoring briefly in the area. In 1602 **Sebastian Vizcaino** gave the name "Santa Barbara" to the region, in gratitude for having survived a violent storm in the Channel on December 3, the eve of the feast day of *that saint*.

Spanish period

[[edit](#)]



A land expedition led by **Gaspar de Portolá** and accompanied by missionary Padre **Junipero Serra** visited in 1769, but did not stay. The first permanent European residents were Spanish missionaries and soldiers under **Felipe de Neve** and again accompanied by Serra, who came in 1782 to build the **Presidio** and Mission. They were sent both to fortify the region against expansion by other powers such as England and Russia, and to convert the natives to Christianity. Many of the Spaniards brought their families with them, and those formed the nucleus of the small town – at first just a cluster of adobes – that surrounded the Presidio. Mission Santa Barbara was dedicated December 4, 1786, the feast day of **Saint Barbara**.^[6] The Mission fathers began the slow work of converting the native Chumash to Christianity, building a village for them on the Mission grounds. Many of the natives died in the following decades of diseases such as smallpox to which they had no natural immunity.^[7]

City of Santa Barbara

— City —



The coastline of Santa Barbara



Flag

Nickname(s): The American Riviera, The 805, SB, Santa Bruta, Silicon Beach



Location in **Santa Barbara County** and the state of **California**
Coordinates: 34°25′33″N 119°42′51″W﻿ / ﻿﻿ / ﻿

Country United States

State California

Narrative descriptions

- Tabular data in these pages can be extracted



- But can we take rich information about places in narrative descriptions on the web and operationalize for GIS?
 - Quantifying thematic knowledge

Topic Modeling

- Data mining technique to discover latent topics in a collection of documents

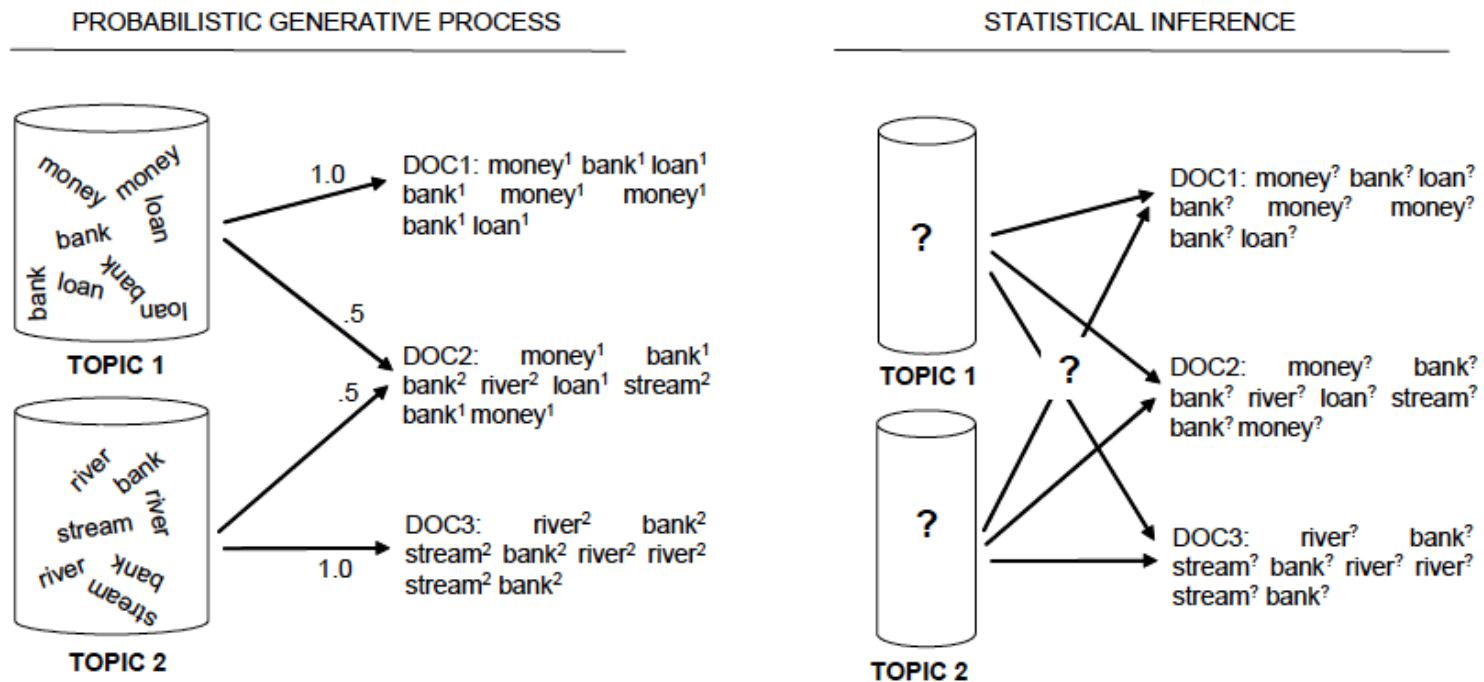


Figure 2. Illustration of the generative process and the problem of statistical inference underlying topic models

Sample topics extracted from 275,000 travel blog entries

A word cloud centered around the word "market". The most prominent word is "market" in large, bold black font. Other significant words include "shop", "sell", "street", "buy", "stall", "local", "tourist", "price", "vendor", "bought", "walk", "wander", "food", "sale", "cloth", "try", "bargain", "fruit", "stall", and "tourist".

A word cloud centered around the word "tree". The most prominent word is "tree" in large, bold black font. Other significant words include "beautiful", "garden", "forest", "flower", "plant", "hill", "leaves", "bird", "grass", "area", "wood", "green", "nature", "small", "grow", "palm", "house", "ground", "look", "grass", "wood", "area", "green", "nature", "small", "grow", "palm", "house", "ground", "look", "grass", "wood", "area", "green", "nature", "small", "grow".

A word cloud centered around the word "hike". The most prominent word is "hike" in large, bold black font. Other significant words include "climb", "mountain", "trail", "rock", "steep", "summit", "start", "made", "reach", "path", "walk", "route", "view", "feet", "top", "hour", "peak", "step", "guide", "made", "reach", "path", "walk", "route", "view", "feet", "top", "hour", "peak", "step", "guide".

A word cloud centered around the word "festival". The most prominent word is "festival" in large, bold black font. Other significant words include "celebration", "parade", "people", "dance", "music", "group", "street", "watch", "party", "traditional", "march", "perform", "year", "event", "dress", "crowd", "band", "costume", "fireworks", "celebration", "parade", "people", "dance", "music", "group", "street", "watch", "party", "traditional", "march", "perform", "year", "event", "dress", "crowd", "band", "costume", "fireworks".

A word cloud centered around the word "beach". The most prominent word is "beach" in large, bold black font. Other significant words include "sea", "ocean", "sand", "sun", "swim", "coast", "water", "beautiful", "bay", "wave", "white", "pool", "resort", "swim", "coast", "water", "beautiful", "bay", "wave", "white", "pool", "resort", "sun", "sand", "ocean", "sea", "beautiful", "bay", "wave", "white", "pool".

A word cloud centered around the word "sea". The most prominent word is "sea" in large, bold black font. Other significant words include "whale", "dolphins", "island", "bird", "lion", "watch", "water", "ocean", "rock", "land", "swim", "spot", "close", "wildlife", "boat", "bird", "lion", "watch", "water", "ocean", "rock", "land", "swim", "spot", "close", "wildlife", "boat", "bird".

A word cloud centered around the word "peru". The most prominent word is "peru" in large, bold black font. Other significant words include "lima", "arequipa", "bus", "canyon", "plaza", "city", "spanish", "peruvian", "local", "puno", "lake", "titicaca", "day", "hour", "made", "reed", "inca", "cusco", "plaza", "city", "spanish", "peruvian", "local", "puno", "lake", "titicaca", "day", "hour", "made", "reed", "inca", "cusco".

A word cloud centered around the word "egypt". The most prominent word is "egypt" in large, bold black font. Other significant words include "pyramid", "cairo", "arab", "egyptian", "tomb", "nile", "dubai", "luxor", "jordan", "visit", "king", "day", "hotel", "petra", "desert", "camel", "ali", "egypt", "pyramid", "cairo", "arab", "egyptian", "tomb", "nile", "dubai", "luxor", "jordan", "visit", "king", "day", "hotel", "petra", "desert", "camel", "ali".

A word cloud centered around the word "amazing". The most prominent word is "amazing" in large, bold black font. Other significant words include "beautiful", "incredible", "lovely", "absolutely", "experience", "great", "seen", "wonder", "entire", "little", "huge", "imagine", "truly", "actual", "fantastic", "definitely", "people", "completely", "gorgeous", "wonder", "entire", "little", "huge", "imagine", "truly", "actual", "fantastic", "definitely", "people", "completely", "gorgeous".

Faroe Islands

Norway

Sweden

Finland
Finland

Denmark
Denmark

Lithuania
Lithuania

U.K. of Great Britain and Northern Ireland

Denmark

Russian Federation

Ireland

Isle of Man

Poland

Netherlands

Germany

Belgium

Luxembourg

Czech Republic

Guernsey
Guernsey
Jersey

Guernsey

Liechtenstein

Austria

Slovakia

Hungary

France

Switzerland

Slovenia

Croatia

Romania

Andorra

Monaco

San Marino
Italy

Holy See

Montenegro

Albania

Portugal

Spain

Italy

Greece

The former Yugoslav Republic of Macedonia

Gibraltar

Italy

Malta

Malta

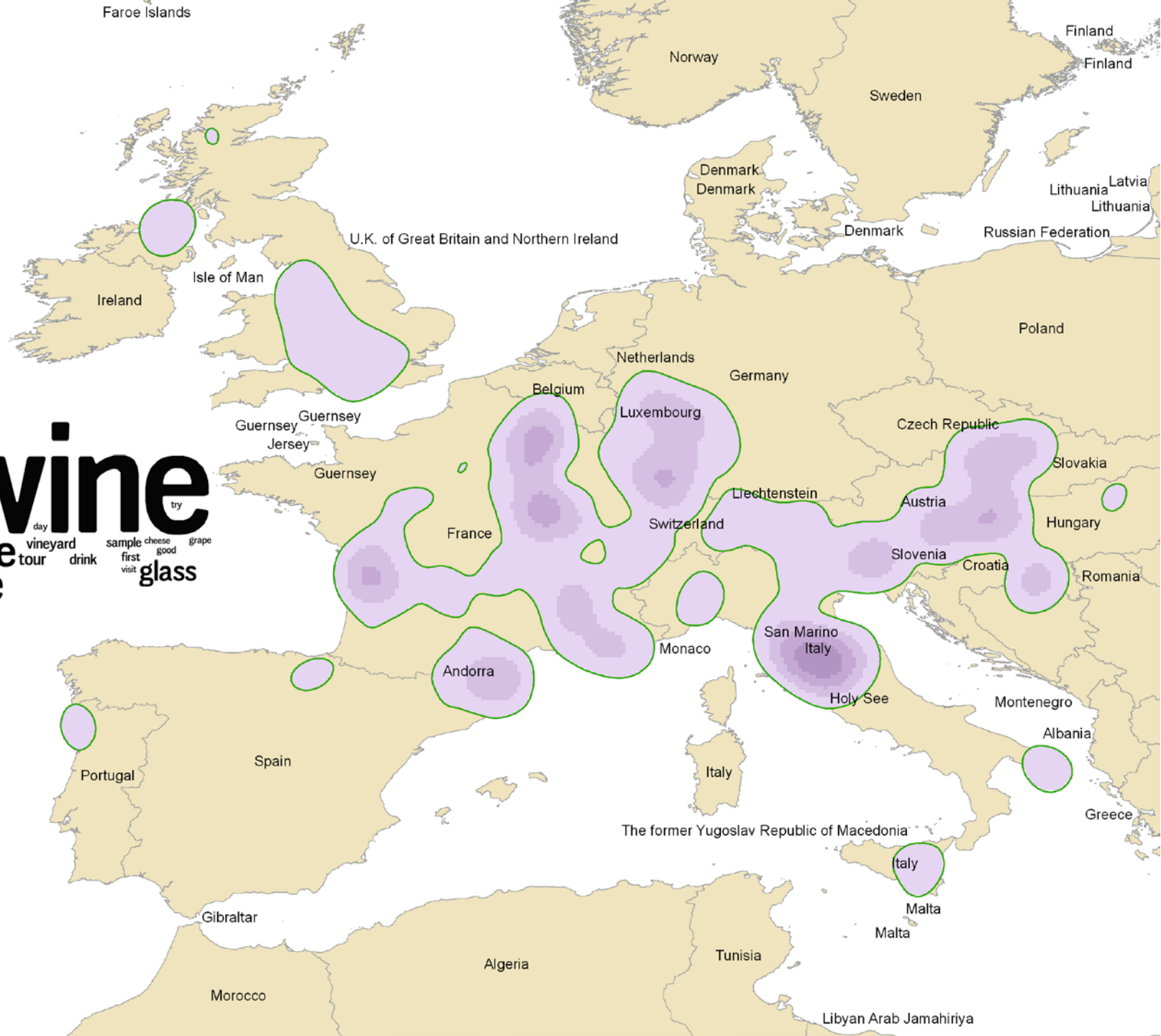
Algeria

Tunisia

Morocco

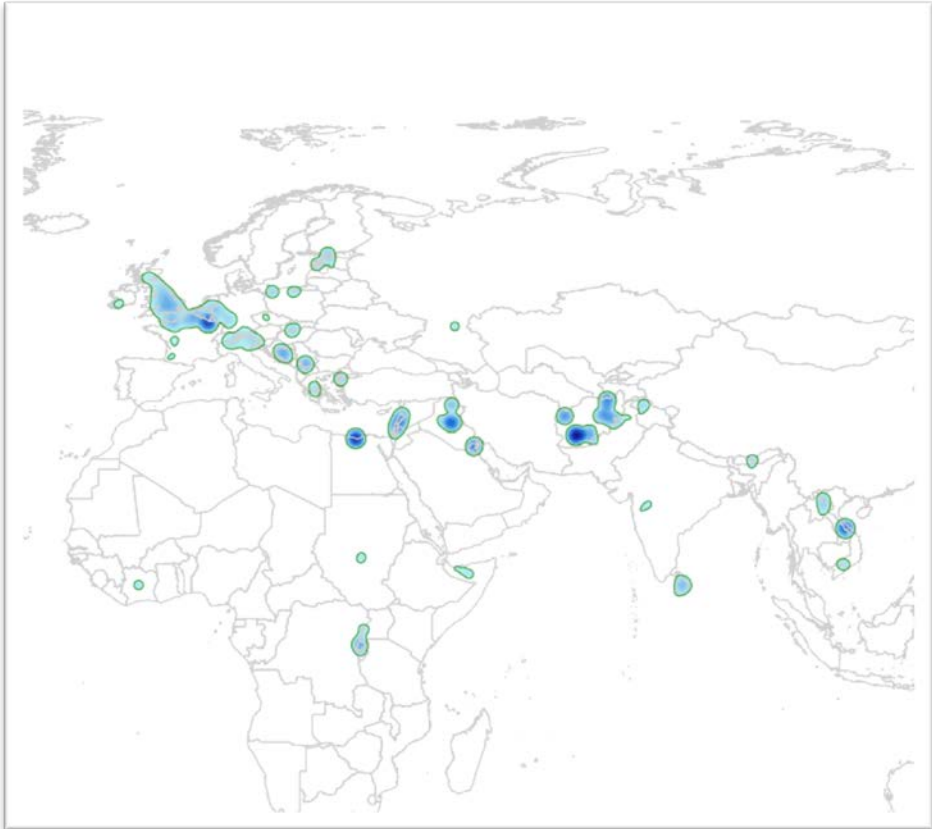
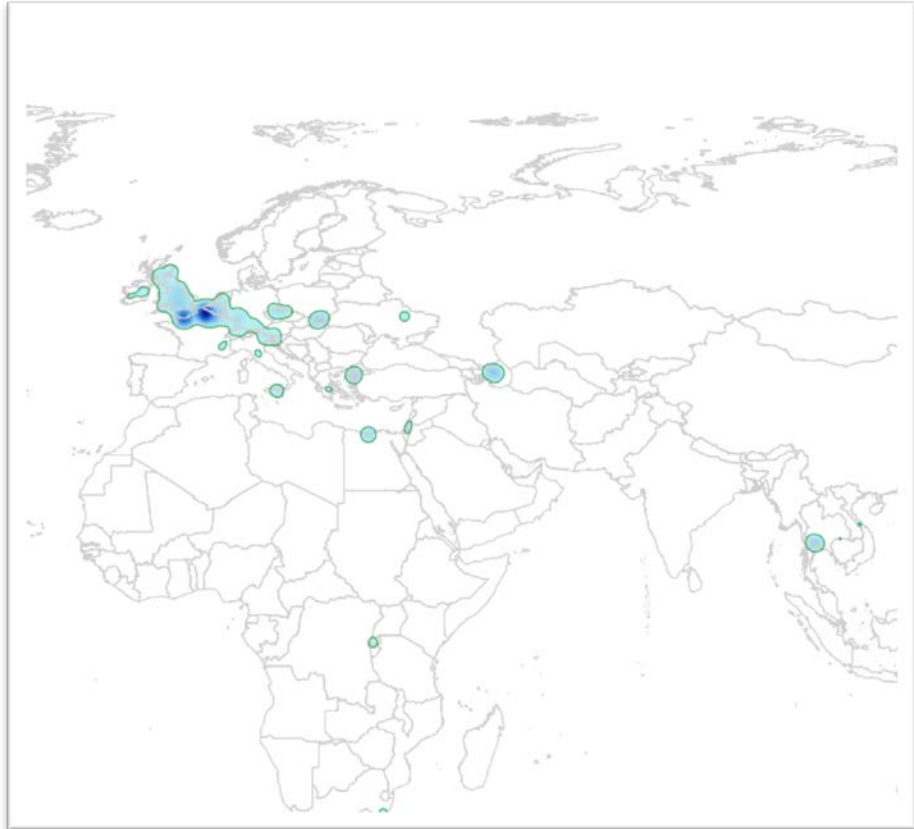
Libyan Arab Jamahiriya

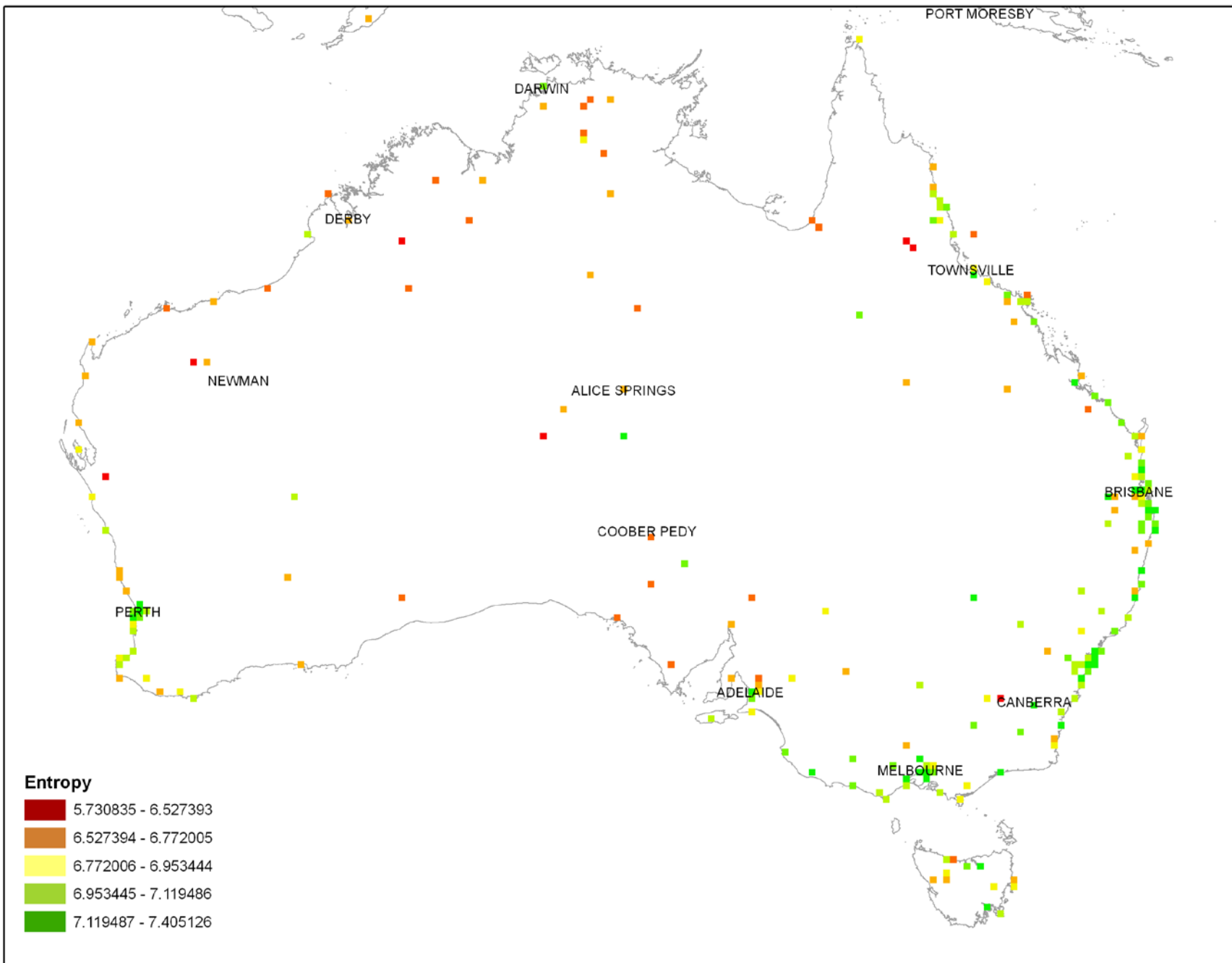
region white
 made red
 winery
wine
 day
 vineyard
 bottle
 taste
 tour
 drink
 sample
 first
 visit
 cheese
 good
 grape
 glass



monument world bridge history
 visited graves **war** cemetery railway dead built
 died museum japanese site **memorial**
 death grave day buried

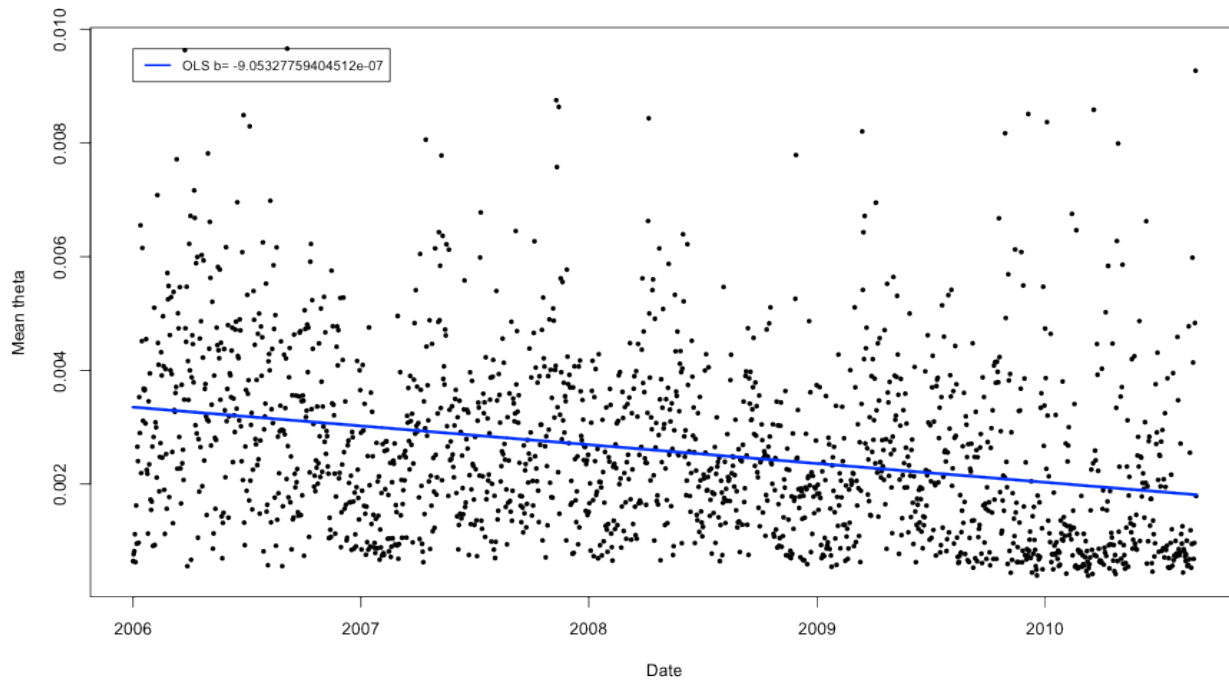
shot troops gun
 civil years **war** military forces
 weapons fighting **army** history
 killed soldier **army** base
 armed **army** american
army
soldiers



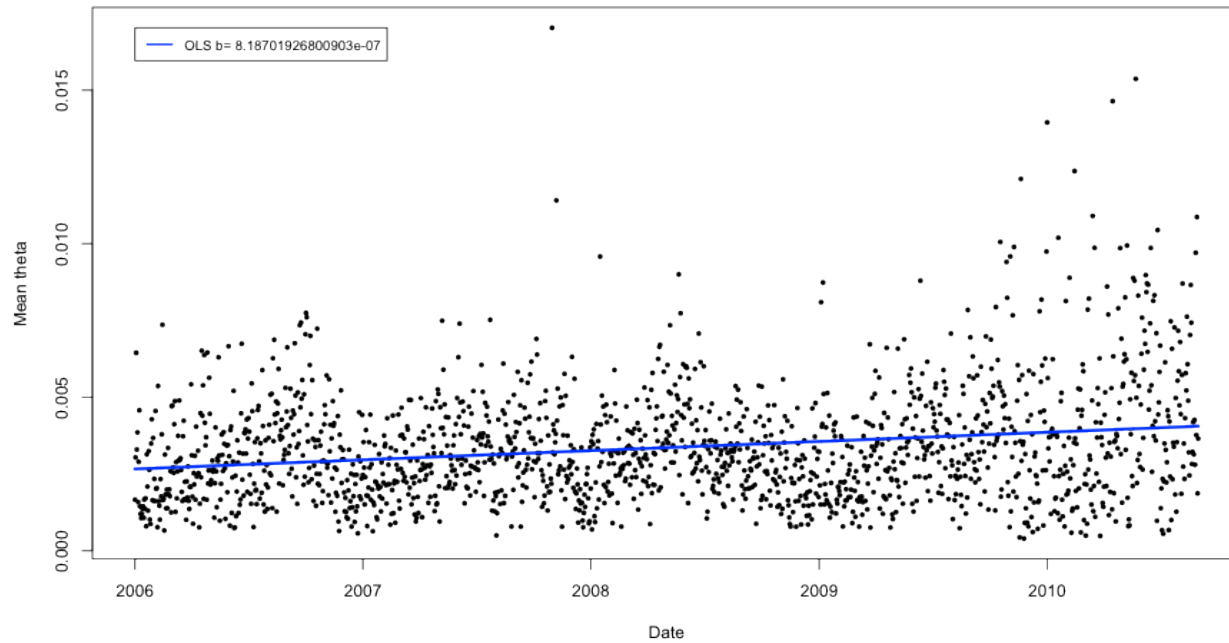




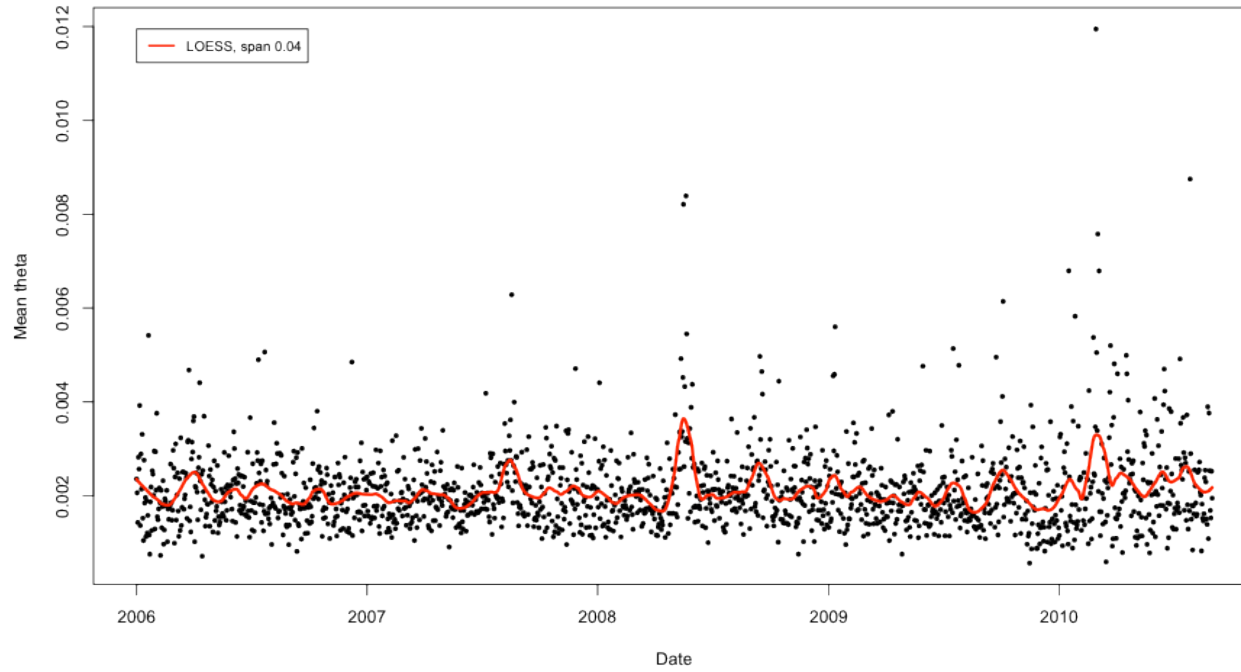
Topic 7 - japanese, japan, tokyo, kyoto, train, sushi, osaka



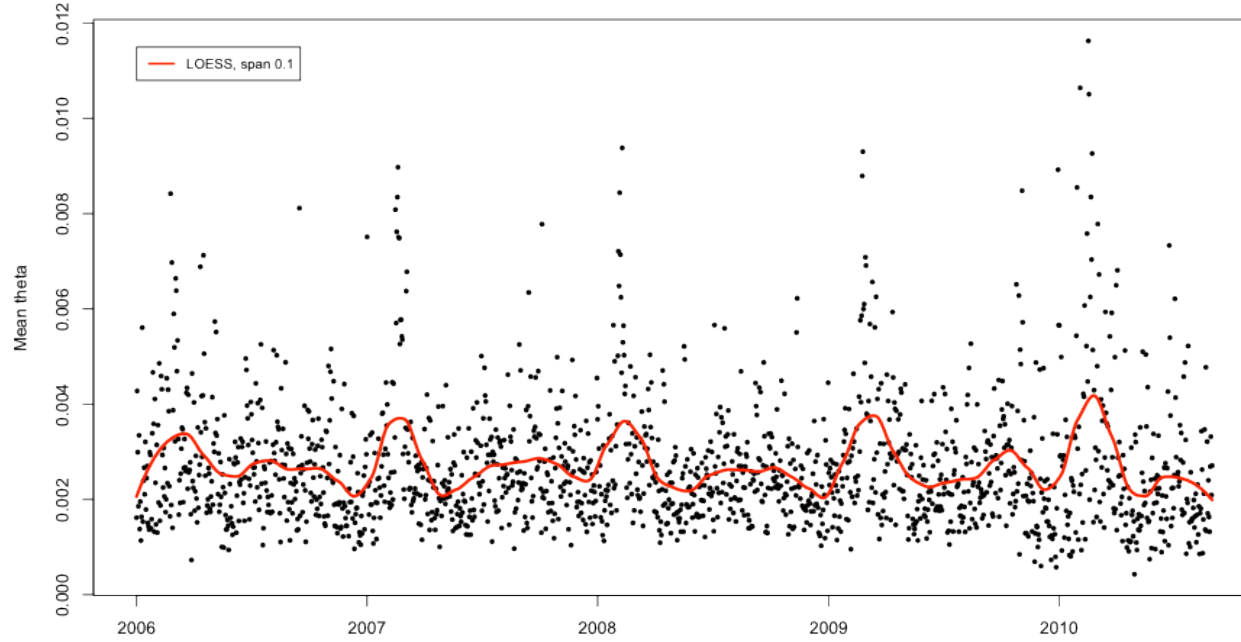
Topic 121 - chinese, china, beijing, shanghai, city, square, forbidden



Topic 387 - people, news, hit, earthquake, damage, happened, bomb



Topic 33 - festival, people, parade, streets, street, music, fireworks



Where is this?

Today Phil took us up to in to the hills around town. We climbed up and up the mountain side, with views getting better and better as the road got worse and worse. On the way we passed lots of local houses and shops full of interesting fruit. This was the area where Phil grew up and we passed his school on the way, learning about the different trees and fruit as we went along. Next stop was Phil's sister's house, where he rummaged around and found a large machete. He then proceeded to chop down some bananas and another fruit I'd never heard of, I think he called it star fruit, although it was round. We finished the afternoon at his uncle's house. There we were given coconut water and jelly fresh from the tree - significantly better than the one from the roadside the day before. The afternoon was spent drinking rum under a tree and playing dominoes with all of his family.

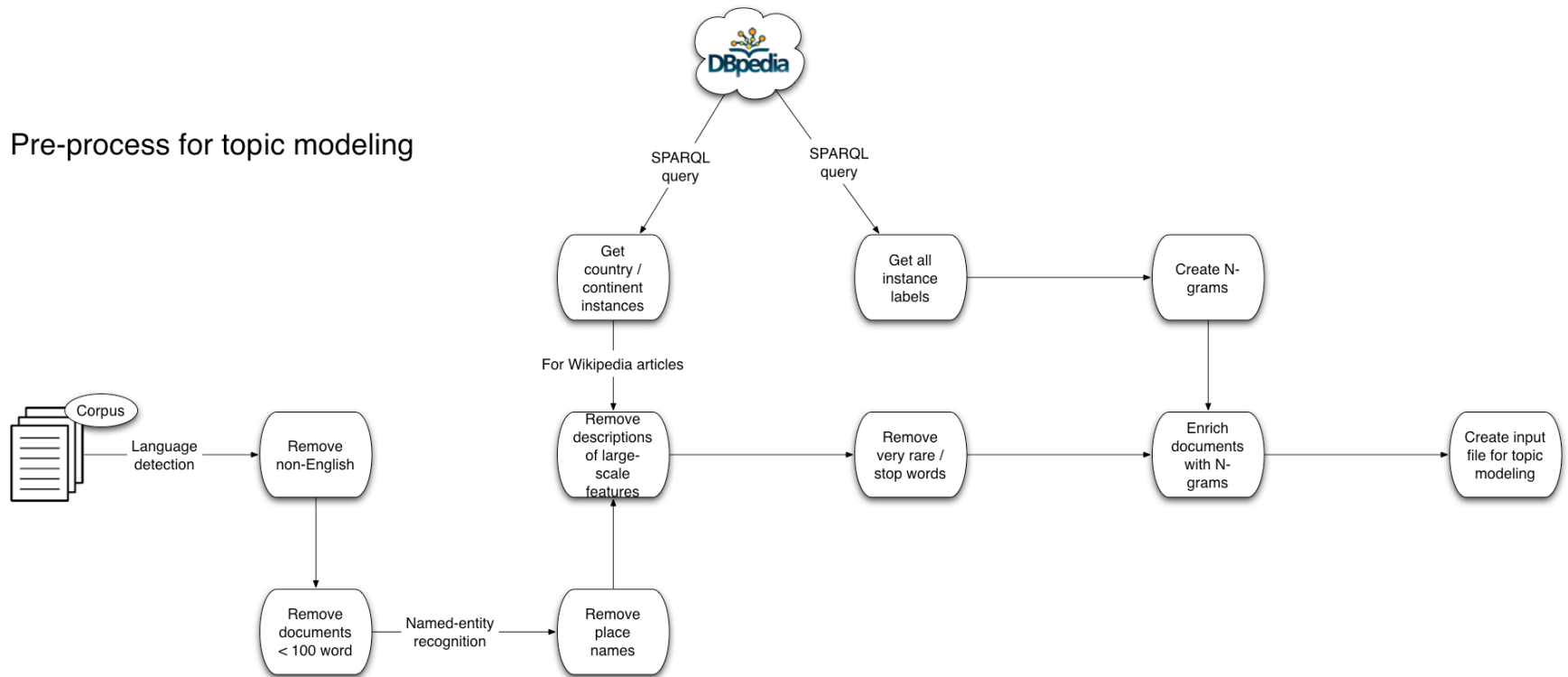
Where is this?

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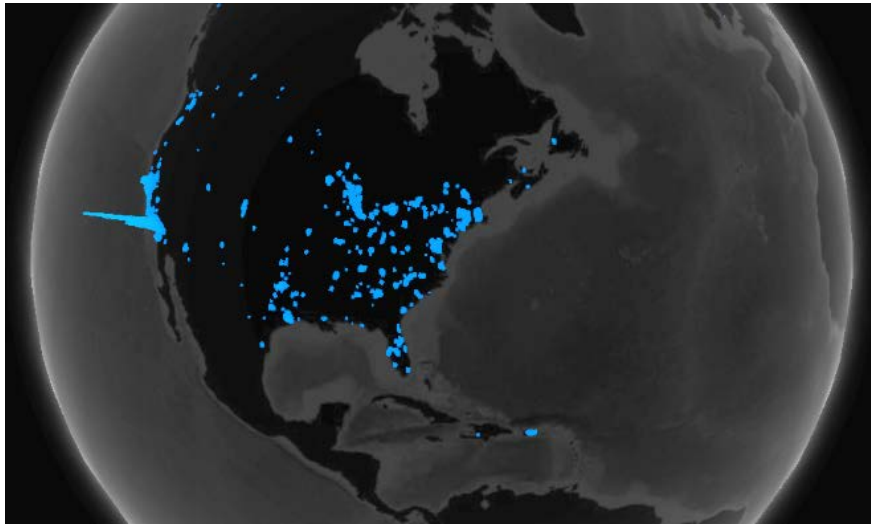
Montego Bay, Jamaica

Pre-process for topic modeling

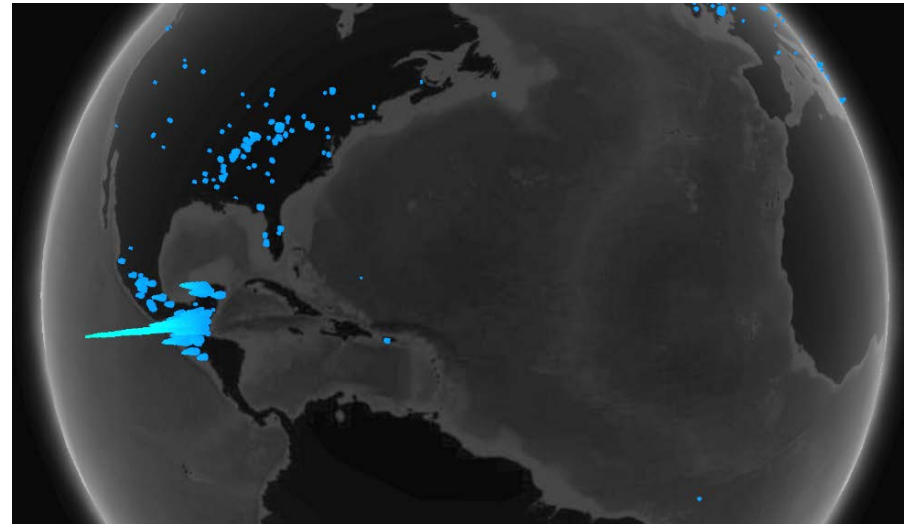
Pre-process for topic modeling



Mapping mixtures of topics for documents

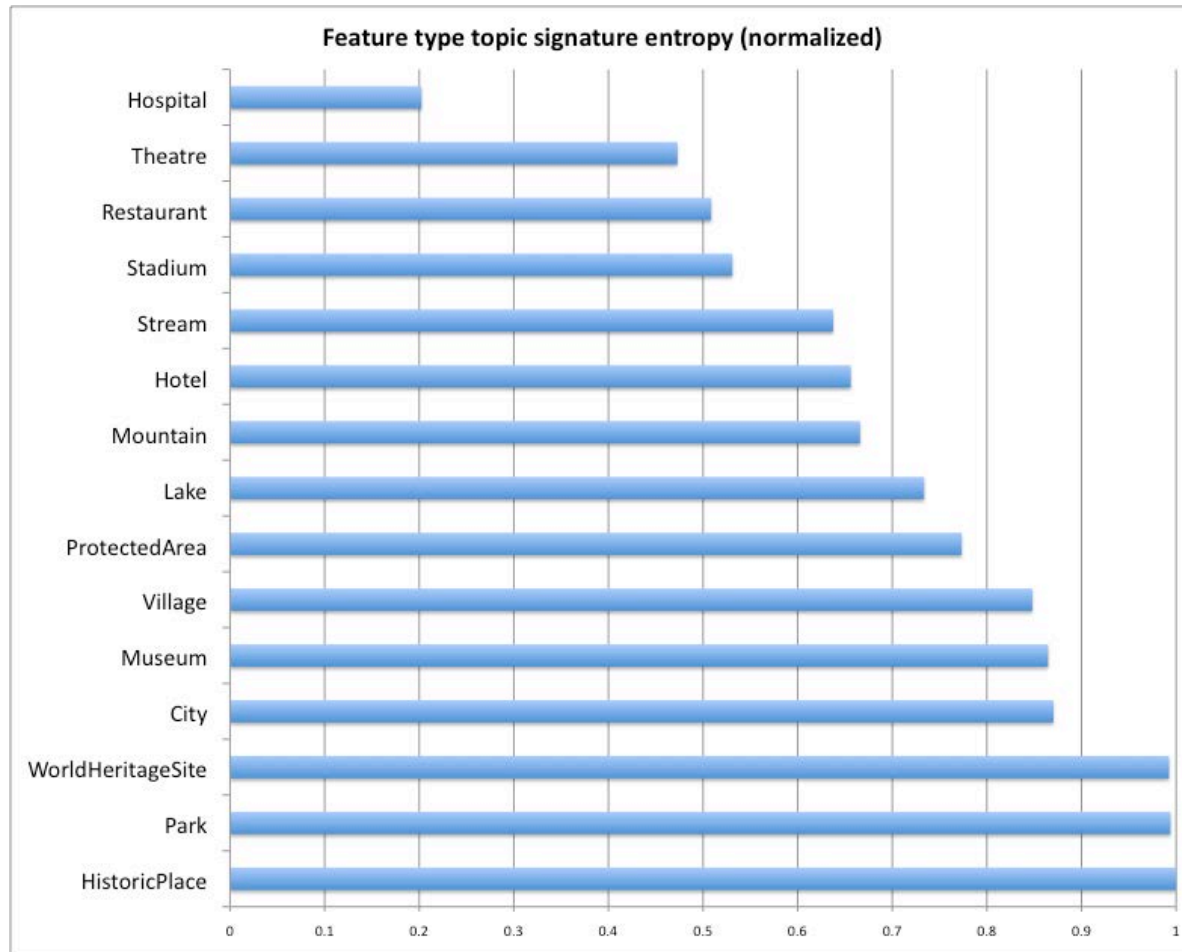


Santa Barbara Wikipedia article

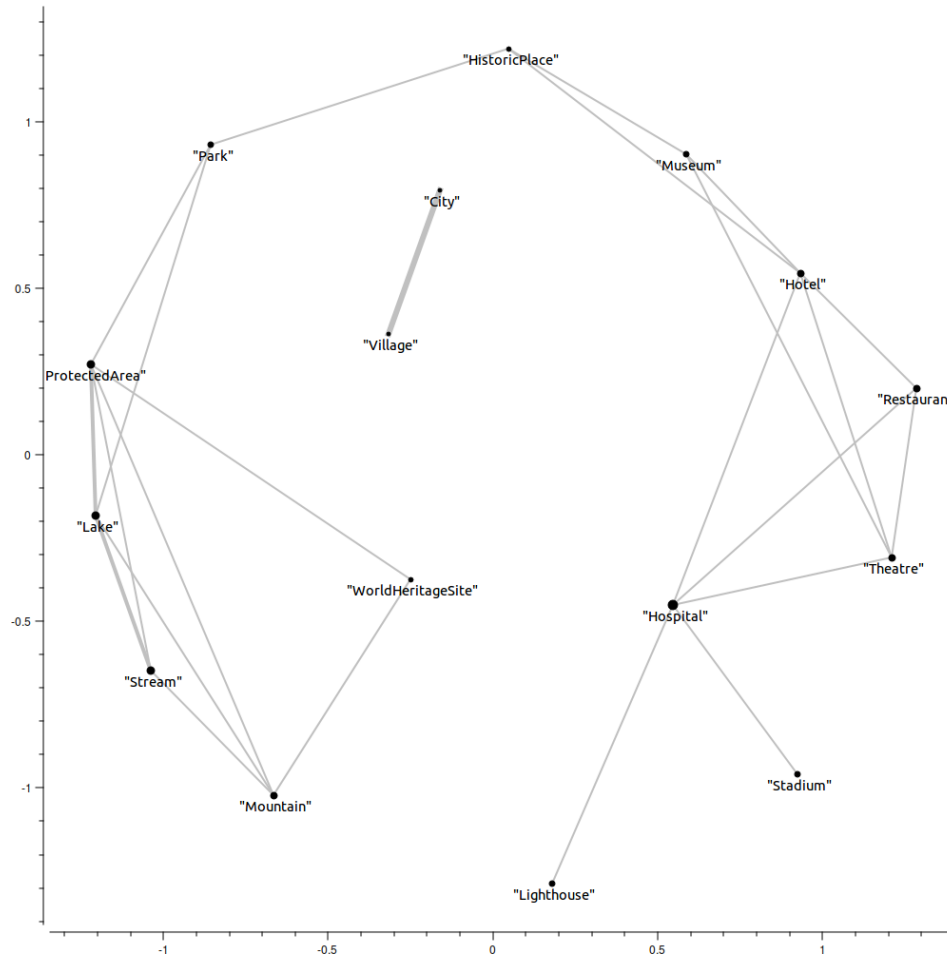


Temple of the Moon Wikipedia article

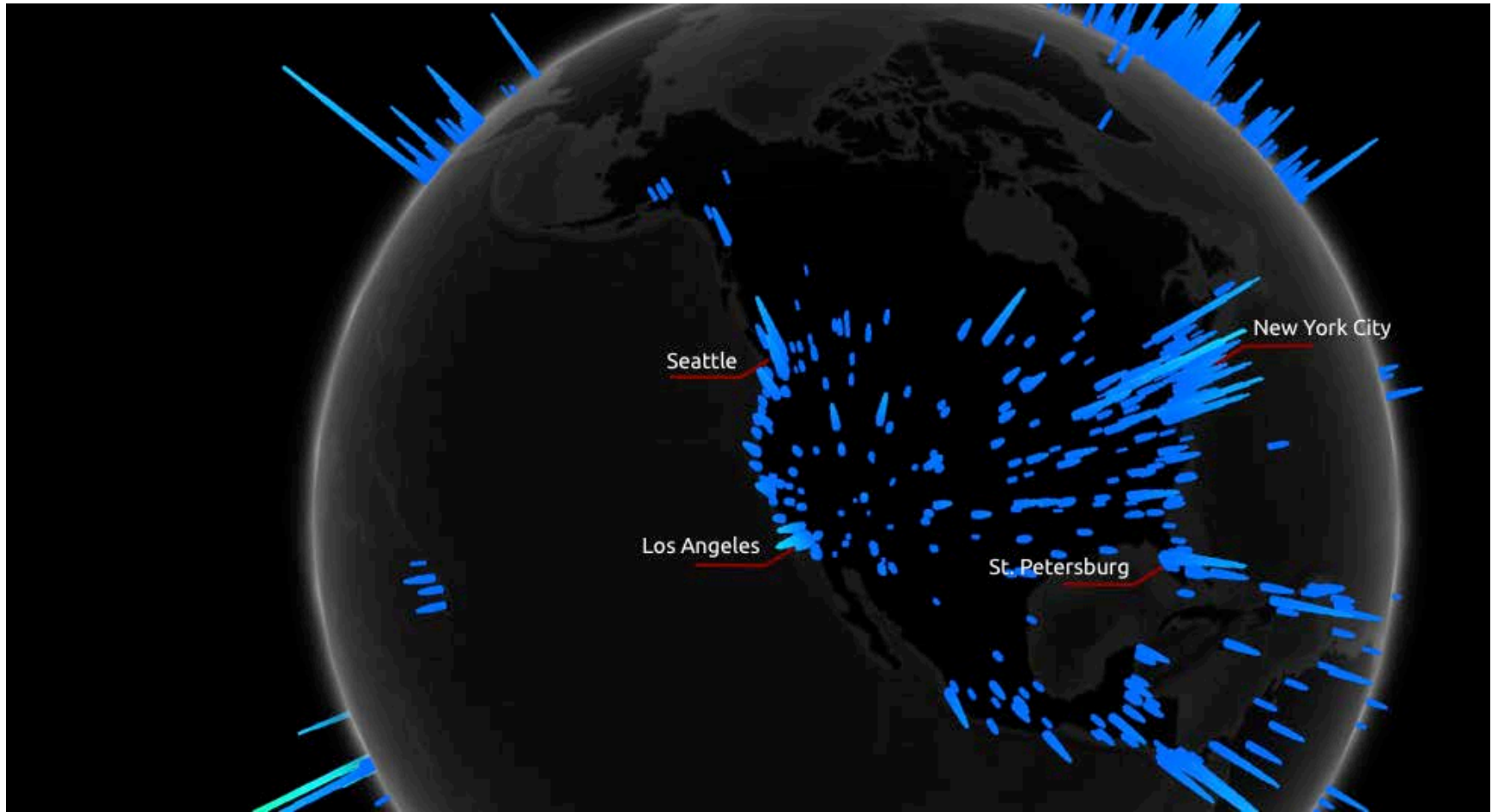
How many topics are related to certain feature types



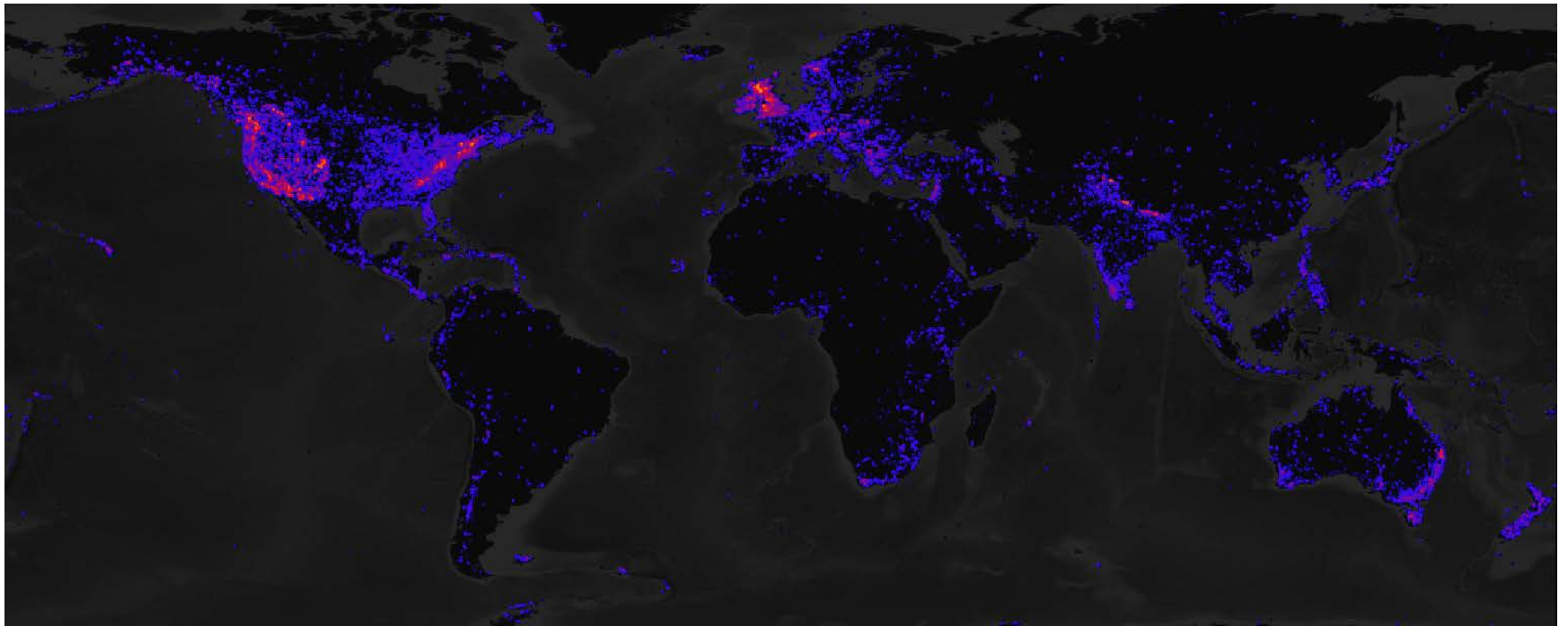
Similarity of feature type from text



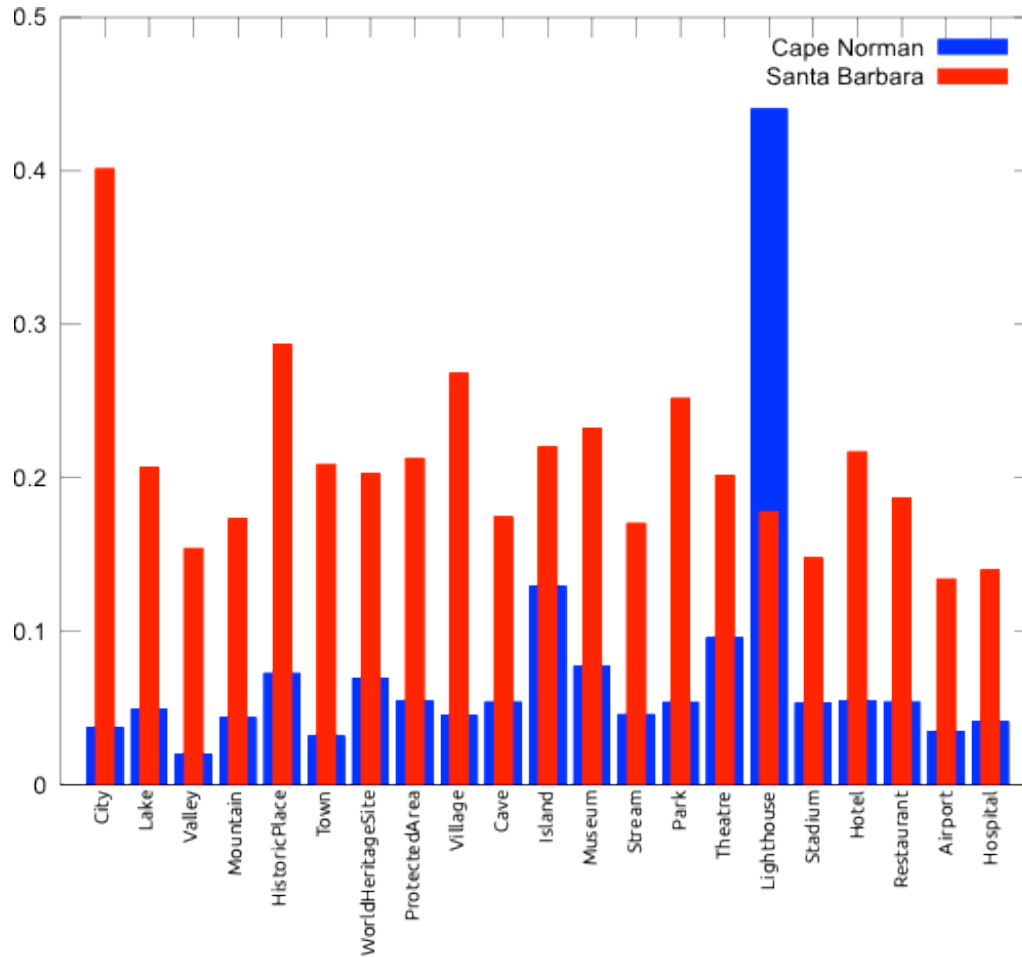
Where prototypical city topics are used



Where prototypical mountain topics are used

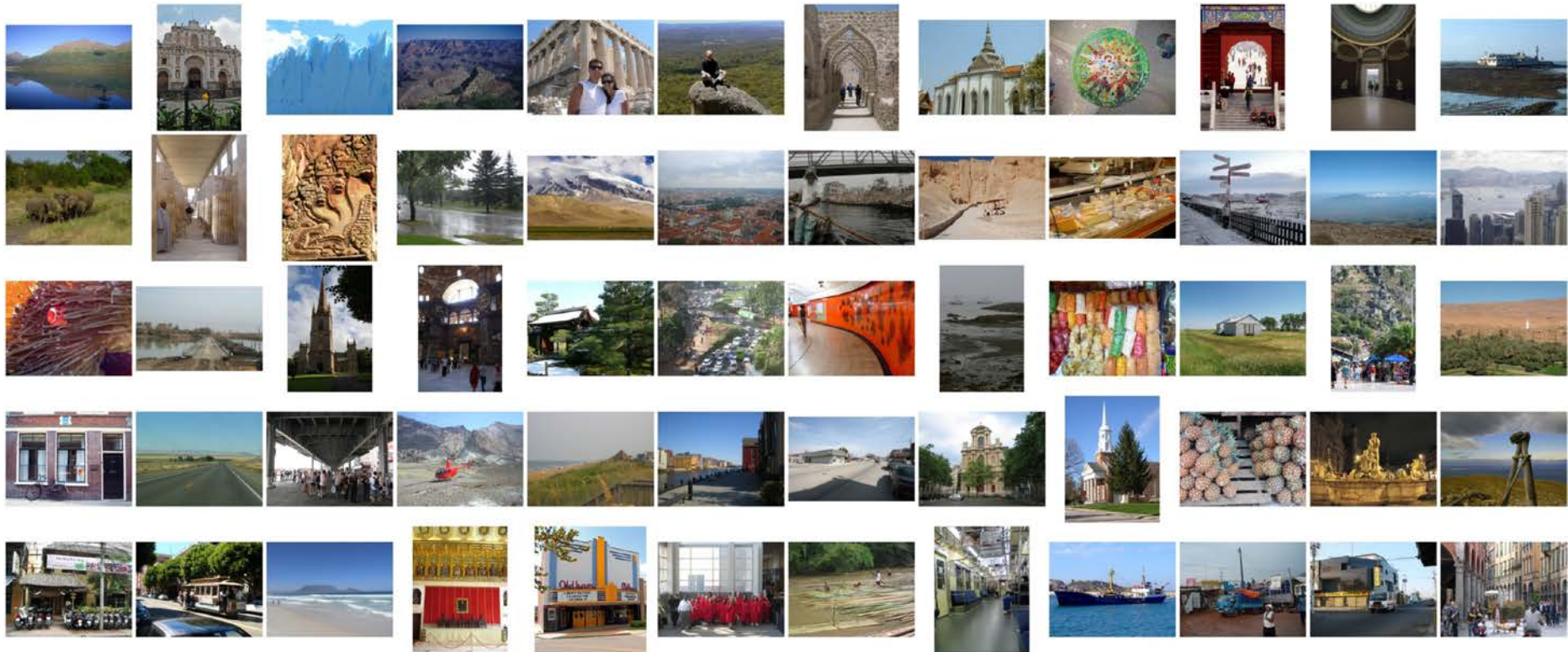


Matching feature type to text

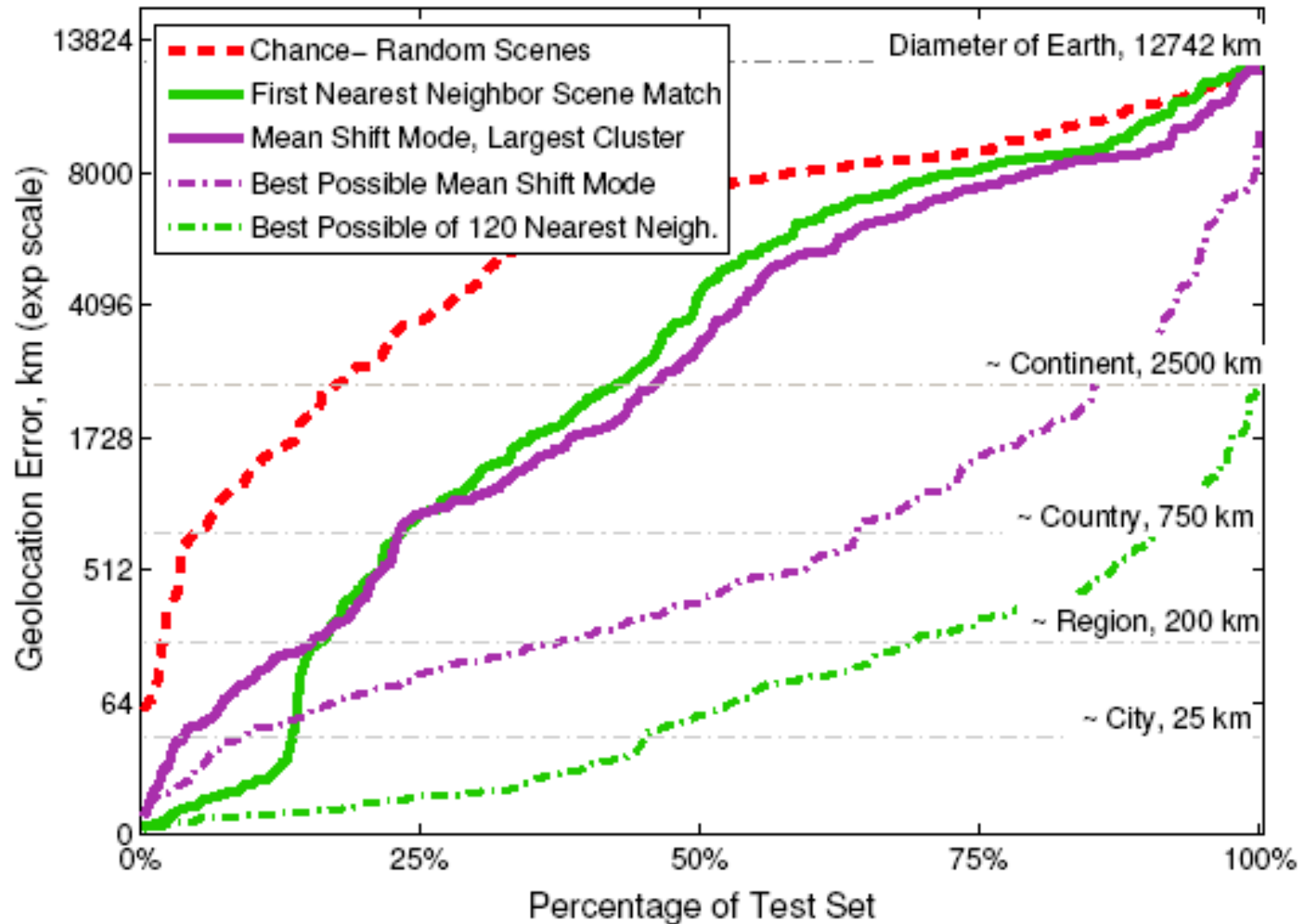


Im2gps [Hays Efros 2008]

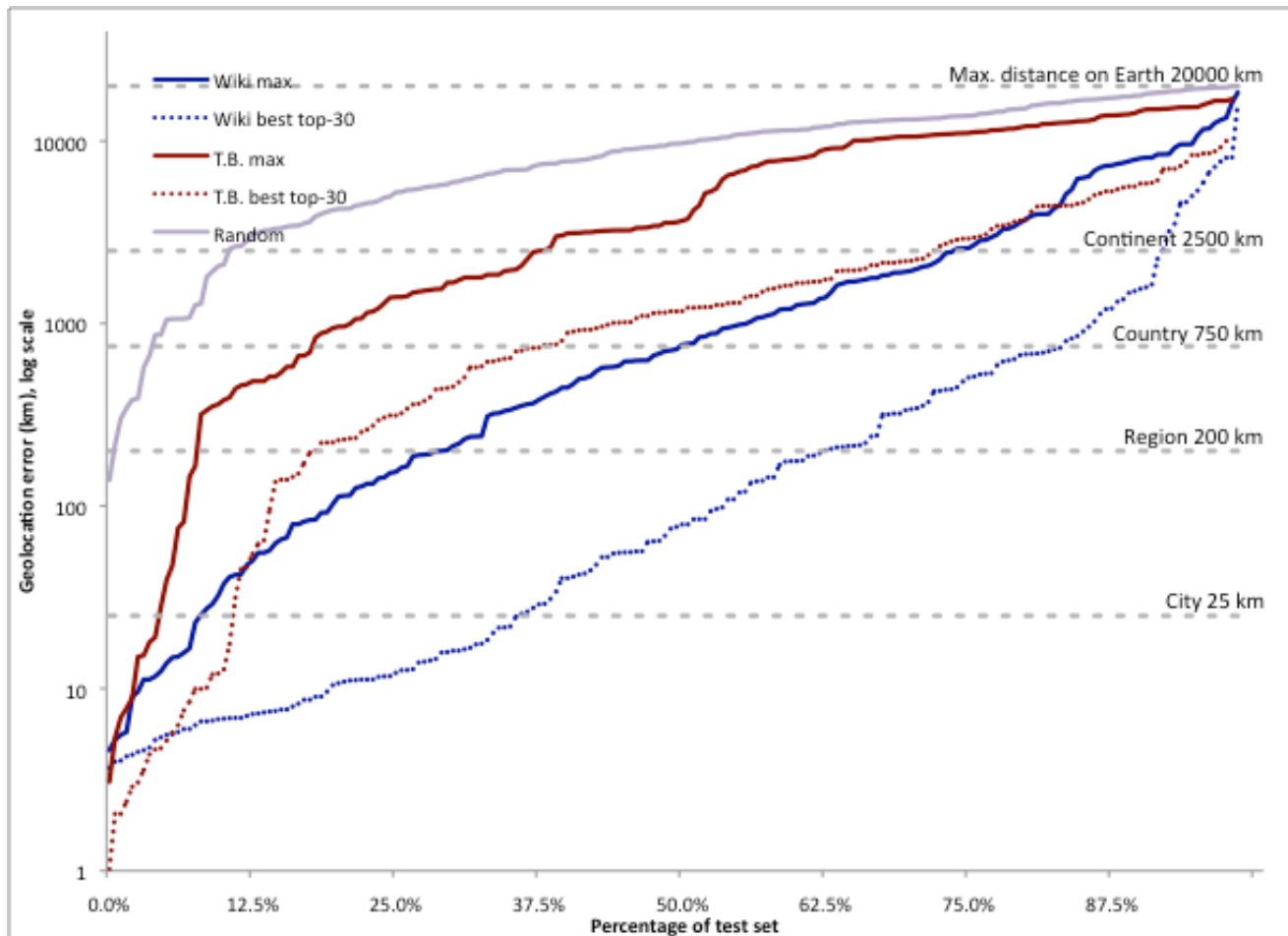
- Finder: Where are these photos taken?
- Use computer vision to estimate location



Im2gps performance



Geolocation error based on text



Using text to geolocate

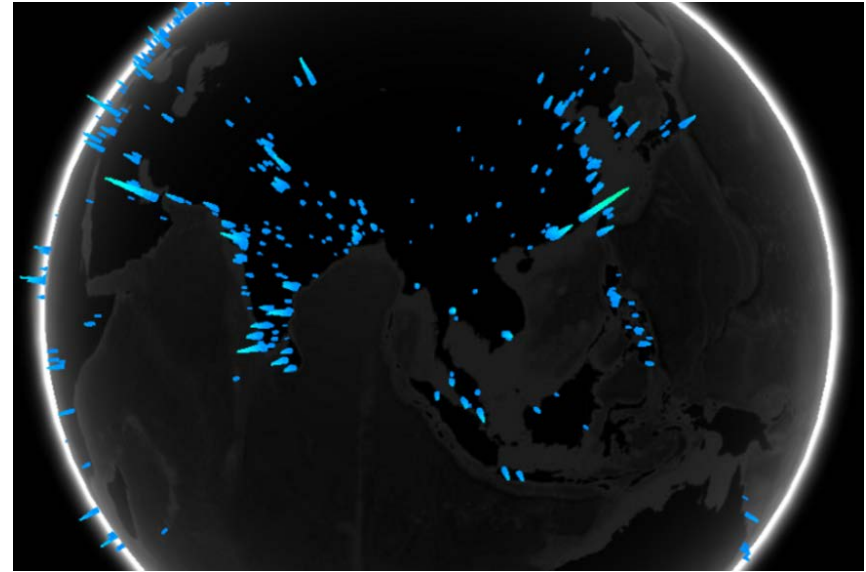


market food street narrow dense populated fast food asia economy export air conditioning smog fog humid warm skyscrapers skyline building construction shipping channel harbor transportation tram city advertisement

Photo description



Prediction based on travelblogs










Wikipedia

market food street narrow dense populated fast food asia economy export air conditioning
smog fog humid warm skyscrapers skyline building construction shipping channel harbor
transportation tram city advertisement

Thematic region keyword search

The image shows a Google search interface for the keyword "vineyard revolution". The search results are displayed on the left side of the screen, and a map of Europe is shown on the right side. The map has several red location pins placed over France, indicating the locations of the vineyards listed in the results. The search results list four vineyards: Château Carbonnieux, Château Filhot, Bouchard Père et Fils, and Chateau Lafite Rothschild. Each result includes the name, address, phone number, website, and a brief description of its history related to the "vineyard revolution".

vineyard revolution

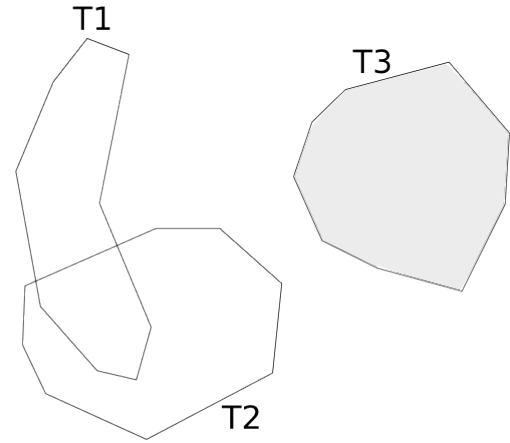
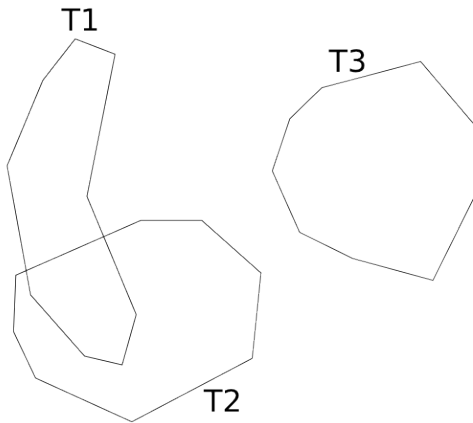
- A** **Château Carbonnieux** 
Château Carbonnieux Chemin de Peyssardet 33850 Léognan, France
+33 5 57 96 56 20 · carbonnieux.com
2 reviews
"Clearly the monks knew a business opportunity when they saw one, but of course it was all irrelevant in the end; with the **Revolution** at the end of the 18th ..." - vinehoo.com
- B** **Château Filhot** 
1 Pineau Est, 33210 Sauternes, France
+33 5 56 76 61 09 · filhot.fr
2 reviews 1 offer 
- C** **Bouchard Père et Fils** 
15 Rue du Château, 21200 Beaune, France
+33 3 80 24 80 24 · bouchard-pereetfils.com
1 review
"Confiscated from the church during the **revolution**, the Bouchards were able to purchase the **vineyard** when it was subsequently sold by the state in 1791. ..." - cellartracker.com 
- D** **Chateau Lafite Rothschild** 
33250 Pauillac, France
+33 5 56 59 25 34 · lafite.com
"Lafite became public property in 1794, after the owner (the Resident of the..." 

What about thematic regions instead?

Implementing a keyword search

	T1	T2	T3
revolution	0.0	0.5	0.1
vineyard	0.5	0.0	0.1

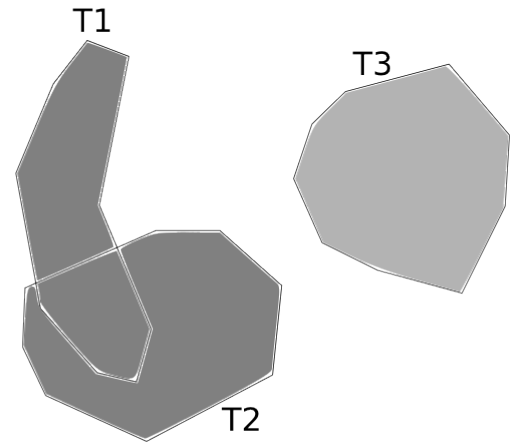
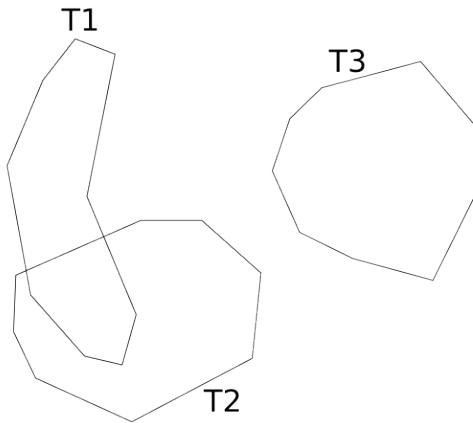
	T1	T2	T3
revolution	0.0	0.5	0.1
vineyard	0.5	0.0	0.1
AND (*)	0.0	0.0	0.01



Implementing a keyword search

	T1	T2	T3
revolution	0.0	0.5	0.1
vineyard	0.5	0.0	0.1

	T1	T2	T3
revolution	0.0	0.5	0.1
vineyard	0.5	0.0	0.1
OR (+)	0.5	0.5	0.2

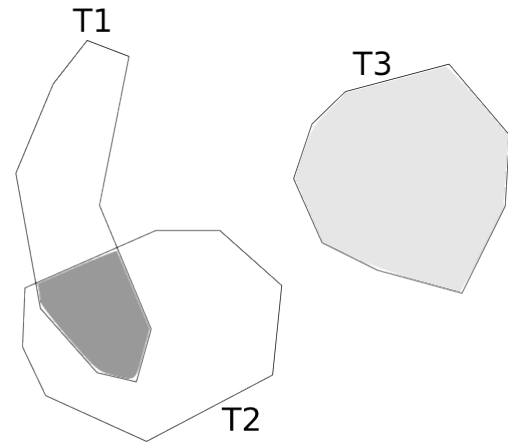
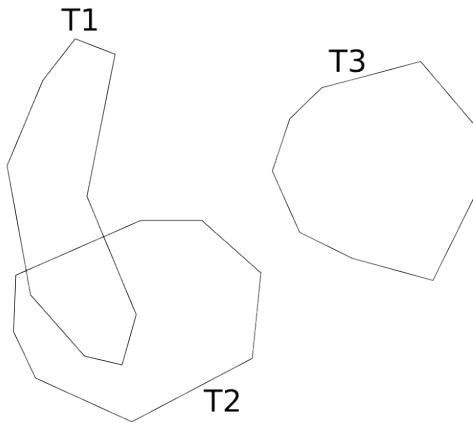


Implementing a keyword search

	T1	T2	T3
revolution	0.0	0.5	0.1
vineyard	0.5	0.0	0.1

	T1	T2	T3
revolution	0.0	0.5	0.1
vineyard	0.5	0.0	0.1

SPATIAL AND (map algebra *)



Unlike the previous two, this method takes advantage of the fact that 2 topics may not share words (e.g., T1 and T2) but still have overlapping spatial profiles.