Casual Travel Planner:

Exploring Venues around Post Offices with Web APIs:

Hokkaido, Japan

Coursera: IBM Data Science Professional Certificate: Capstone Project

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Looking for a Different Type of Travel Experience

- ## As a global and domestic traveler

  - ### Used to consult guidebooks and seek advices from hotel concierges
  - ### Getting a bit tired of just visiting famous places and attractions

    - Felt like just re-experiencing what other people had experienced

- ## Use the new technology I learned in the course(*) to offer to myself new experiences for not-so-popular places

  (*) https://www.coursera.org/specializations/ibm-data-science-professional-certificate

Approaches

- First, choose a pivotal geo-location dataset in order to explore with Web APIs
  - Option 1: 744 cities in Japan
    http://worldpopulationreview.com/countries/japan-population/cities/
    Not new. Guidebooks are available from multiple publishers. → ❌
  - Option 2: Post office location data in Japan
    24,376 post offices, with latitudes and longitudes
    Source: Japan Geographic Data Center (in Japanese)
    http://www.kokudo.or.jp/database/005.html
    → Looks promising for my purpose ⭕

- My travel preference
  - Not so popular places, yet not too natural and wild
  - Accessible with rent-a-car; Not too far from hotels and inns; Somewhat civilized

Side note: About Post Offices (Yuubin-kyoku) in Japan

- Not just handling surface mails
  - ATMs
  - Teller counters for financial institutions
    - "Yuucho" Bank: Savings & Loans
    - "Kampo" Life Insurance: Policies & Loans
  - Gift catalog + delivery service: "YuuPack"
  - Implication: you can draw cash while traveling and speak with people with standard accent when need arises
- Related to civilization
  - Modern postal system in Japan established 148 years ago (1871)
  - Used to be government-owned
  - Historically, the head of local post office is/was a person with influence in each vicinity

Data to be used

- Geo-location data for 99 post offices

  in Hokkaido, Japan

  - Hokkaido: the northern-most, largest prefecture in Japan
    - https://en.wikipedia.org/wiki/Hokkaido
  - Out of 1,499 post offices in Hokkaido, I use 99 data points available free of charge from the Japan Geographic Data Center

    http://www.kokudo.or.jp/database/005.html

	po_code	po_name	longitude	latitude
0	0600906	Sapporo Chuo	141.35972	43.06700
1	0470031	Otaru	141.00484	43.19470
2	0510011	Muroran	140.97584	42.31625
3	0460004	Yoichi	140.80186	43.18976
4	0450013	Iwanai	140.51592	42.97640
5	0613361	Ishikari Kita	141.37573	43.24296
6	0520024	Date	140.86732	42.46821
7	0580204	Erimo	143.15268	42.01319
8	0530021	Tomakomai	141.60620	42.63660
9	0670001	Ebetsu	141.55686	43.11170
10	0460104	Furubira	140.64357	43.27572
11	0613101	Hamamasu	141.38721	43.59872
12	0613601	Atsuta	141.43838	43.39667
13	0600063	Sapporo Minami Sanjo	141.35717	43.05414
14	0480351	Isoya	140.35384	42.85859

APIs to be used

- Map rendering: Folium

    https://python-visualization.github.io/folium/index.html

- Venue data: Foursquare Places API

    https://developer.foursquare.com/places-api
    - Get Trending Venues
    - Get Venue Recommendations
    - Get Venue Categories

99 post office locations in Hokkaido, Japan

Map rendered with Folium.
Location data: https://github.com/hisakato/Capstone/blob/master/2019-07_post-office-Hokkaido1e.csv
Jupyter notebook: https://github.com/hisakato/Capstone/blob/master/Kato_Hokkaido4e.ipynb

Picking up candidate locations to travel …

- Excluding where I already visited
    - Sapporo (largest city with ~2M population)
    - Otaru (very popular, scenic city)
    - Yoichi (famous Nikka Whisky distillery)
- Excluding other big cities
    - Muroran
    - Tomakomai
- 78 locations left (out of 99 places mentioned before)
- My interests this time
    - Far ends (East, West, North, …)
    - Inland areas with interesting names

Check for trending venues

- Foursquare Developers: Get Trending Venues
  - https://developer.foursquare.com/docs/api/venues/trending

- The only trending venue around 78 post office locations is an airport …

Chitose Kuukou (Airport) : New Chitose Airport (CTS) (新千歳空港) : Airport

- This API might not be very useful for Hokkaido, Japan.
  - But this is OK for me. I am interested in not-so-popular places.

(Technique) Picking up where to visit next

<Folium map in Jupyter Notebook>

Larger latitude = upward = further north
Larger longitude = to the right = further east

- Choosing places with Pandas functions
  - Top 2 latitude (North-end): Horo, Hamamasu
  - Top 4 longitude (East-end):
    Hidaka Meguro, Shoya, Erimo Misaki, Erimo
  - Bottom 2 longitude (West-end): Shimamaki, Honme

- Choosing places by clicking on a blue marker and reading the popped-up name. Chosen inland places with interesting names
  - Mid-south-east: Niwan, Biratori
  - Western part: Nakoma, Konbu

(Technique) Calculate the distance between two points based on latitude and longitude

- Sample Python code in Stack Overflow
  https://stackoverflow.com/questions/19412462/getting-distance-between-two-points-based-on-latitude-longitude

- Example 1: How far is "Hidaka Meguro" from "Erimo Misaki"?
  - 22.2 km

- Example 2: How far is "Nakoma" from major post offices
  - from Sapporo Chuo to Nakoma: 79.3 km
  - from Otaru to Nakoma: 61.9 km
  - from Muroran to Nakoma: 70.1 km
  - from Tomakomai to Nakoma: 96.5 km

Looking for neighborhood venues around the target locations

- Foursquare Developers: Get Venue Recommendations
  - https://developer.foursquare.com/docs/api/venues/explore
- Any interesting places around "Hidaka Meguro"?

27	Hidaka Meguro	えりも黄金トンネル	Tunnel

  - Erimo Golden Tunnel
    - https://ja.wikipedia.org/wiki/%E3%81%88%E3%82%8A%E3%82%82%E9%BB%84%E9%87%91%E3%83%88%E3%83%B3%E3%83%8D%E3%83%AB
  - Hmm … The name sounds gorgeous, but the picture on Wikipedia isn't.
- Any interesting places around "Nakoma"?

19	Nakoma	フィッシュ・アンド・名駒	Museum

  - Fish and Nakoma museum
    - https://rankoshi-tourism.com/spot/spot04-02/
  - The name is interesting … Is it related to British fish and chips? Probably no. Anyway, it drew my attention.

Interested in what kind of venue categories there are and listed up all the venue categories
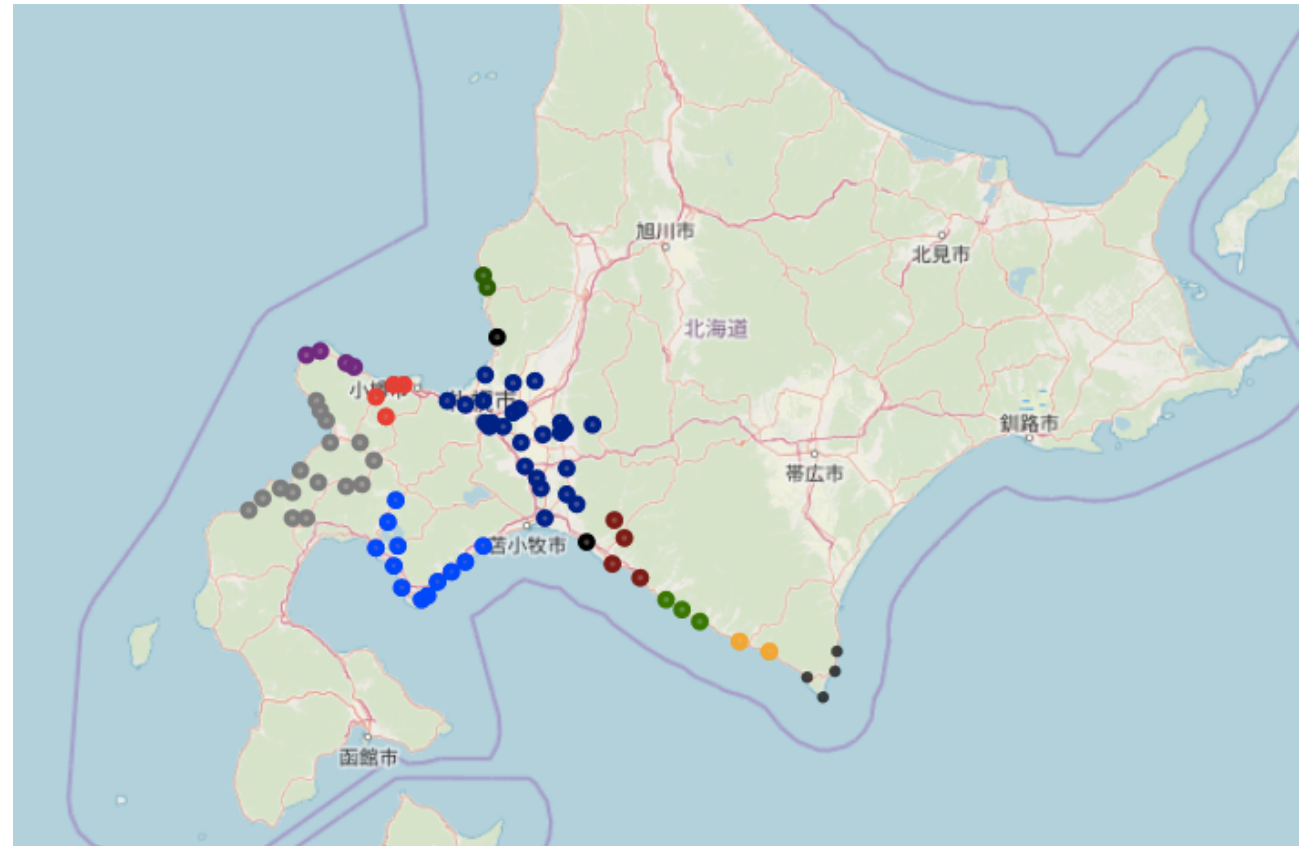
- Foursquare Developers: Get Venue Categories (API)
  - https://developer.foursquare.com/docs/api/venues/categories
- Nested, 5 levels

Level	# of entries	Example
1	10	Food
2	456	Latin American Restaurant
3	367	South American Restaurant
4	91	Brazilian Restaurant
5	13	Tapiocaria

(Applying Machine Learning Techniques)
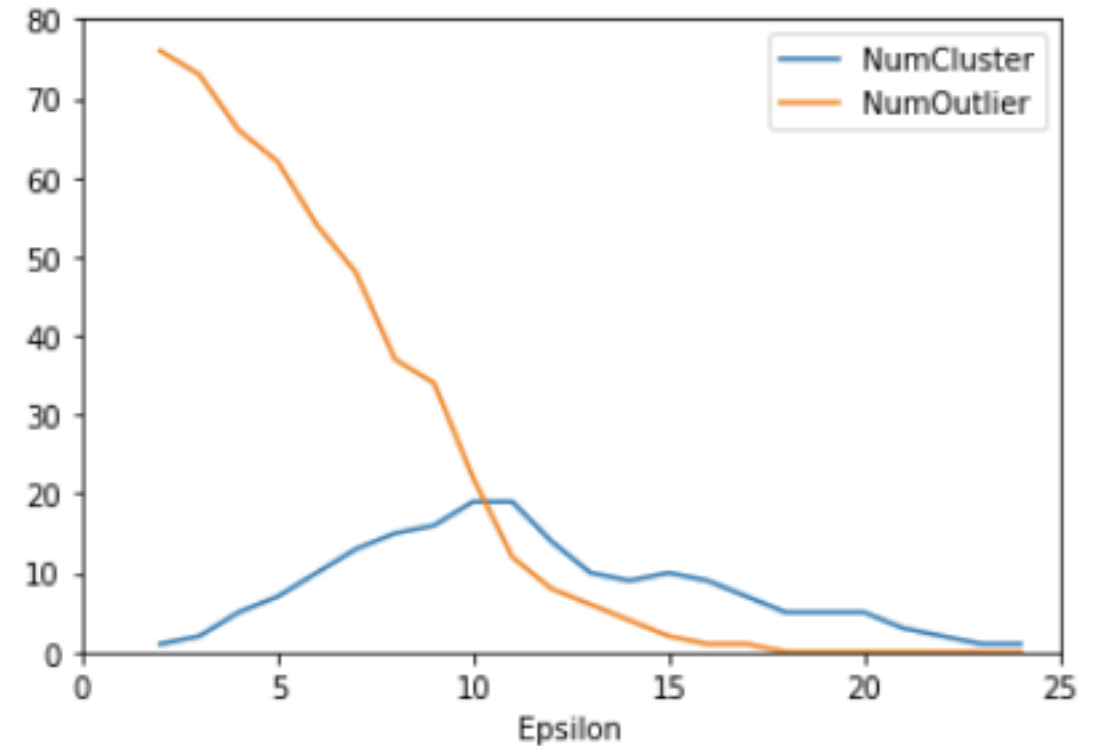# Which target locations are close together?
Density-based clustering

- Clustering 78 candidate locations

- Same Color
  = Neighboring locations within a specified distance (ε)
  - ε = 15km

Changing ε in density-based clustering

- Number of clusters and Number of outliers change according to the parameter ε.

- Number of outliers (singular points without a neighbor) monotonically decreases to zero.

- Number of clusters increases, and then decreases to one. (All locations in one cluster.)

Discussion

- Good starting point for choosing next places to travel
  - Post office location data + Web APIs (Folium, Foursquare)
- Speak with a post office teller to explore the vicinity
  - Buy a stamp, send a post card to a friend
  - Ask for a "YuuPack" gift catalog, choose a gift, pay for it, and arrange delivery via post office network
  - Ask a post office teller (or the head of post office) to introduce interesting places around (only if they are not busy working. Usually they aren't)
- Safety? Doing this is safe in Japan

Conclusions

- Came up with a new way of travel planning
- Future plans
  - Obtain all post office geo-location data and explore other prefectures
- Need other web services to complete a travel planning
  - Car navigation (www.google.com/maps)
  - Train navigation (ekitan.com (in Japanese))
  - Gourmet navigation (www.gnavi.co.jp (in Japanese))