Kobe Demographics API

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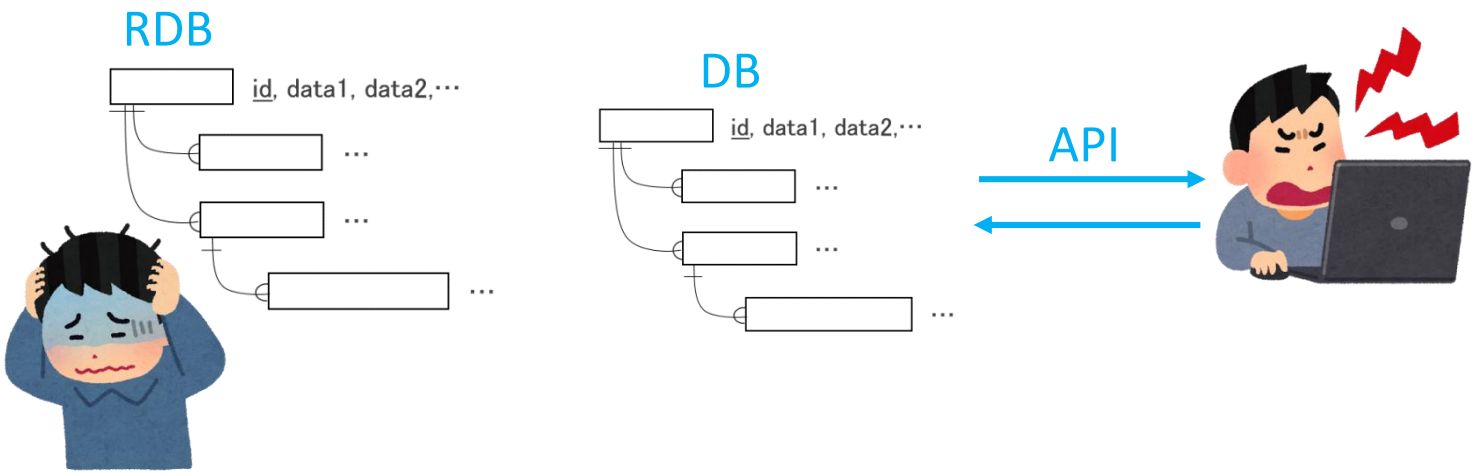
Problems of current demographic data

- Current demographic data
  - Understanding and analysis of complicated table structure is required
  - Extraction of data of interest is very complicated
  - To incorporate in web applications is hard
  - There is no demographic data at the micro level

    → Data of micro level is data by town block, street, or age level



When holding events

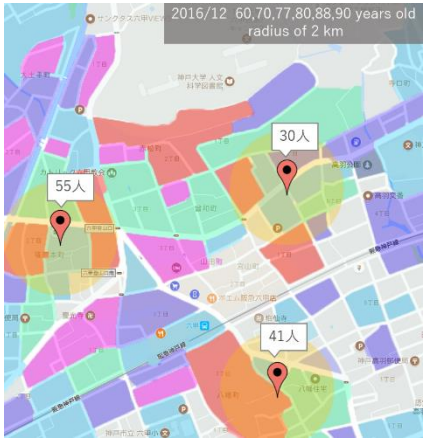
- Determination of the venue and notice of the event is difficult
  - Where do people who are likely to participate live?
    → Where is the desired demographic data?
  - There is no demographic data at the micro level
    → Can not hold a small number of events
    Can not know the proper venue

- ➢ It is hard for private companies and general people to hold events
- ➢ It is difficult to hold events close to local people

Proposed system

- Kobe Demographics API
  - Allows easy access to micro demographic data
    - Can be retrieved from various viewpoints and granularity such as period, place, gender, and age
    - Can be retrieved by town block, street, or age
  - Viewer using API

➢ We can realize applications, services, events that are close to the lives of Kobe citizens



Using open data

- “Basic Resident Registration (Japanese /Foreigners) Population by Town block, Street, and Age“
  - PDF or XLS format
  - Population statistics information by town block, street, and age

	町別世帯数年齢１歳階級別人口統計（灘区）　　平成２８年１２月３１日現在　　※1.世帯数・人口が小さい町（丁・字）につては上段もしくは下段の町（丁・字）と合算する形式で秘匿を講じています。2.空白の町名は秘匿を講じた町（丁・字）です。									
Ward Name	Ward Code	Town Code	Town-chome Name	世帯数	Man	Woman	Total	0 years old	1 years old	2 years old
＊灘区計＊	28102		神戸市灘区	67142	62179	70955	133134	1141	1215	1096
灘区	28102	102001002	青谷町２丁目	117	101	134	235	3	2	2
灘区	28102	102001003	青谷町３丁目	227	148	231	379	0	0	1
灘区	28102	102001004	青谷町４丁目	277	243	295	538	2	2	7
灘区	28102	102002001	赤坂通１丁目	108	114	97	211	0	1	0
灘区	28102	102002002	赤坂通２丁目	45	40	42	82	0	0	0
灘区	28102	102002003	赤坂通３丁目	192	168	220	388	1	0	2

http://www.city.kobe.lg.jp/information/data/statistics/toukei/jinkou/juukijinkou.html

API : Population and coordinates

- Retrieve demographic data from Excel, PDF and store it into MySQL
  - Store data by town block, street, and age
  - Added latitude/longitude information using GeoCoding API of Yahoo Japan!

Structured demographic data for the API

http://wsapp.cs.kobe-u.ac.jp:8080/demography/api/population?townCode=101001001&year=2017&month=6&from=0&to=10

{"address":"神戸市東灘区魚崎北町1丁目","from":0,"gender":"total","latitude":34.7181473,"longitude":135.2759896,"month":6,"population":83,"to":10,"townCode":101001001,"townName":"魚崎北町1丁目","wardCode":28101,"wardName":"東灘区","year":2017}

Town

townCode 町コード	address 住所	wardName 区名	townName 町名	wardCode 区コード	longitude 経度	latitude 緯度
101001001	神戸市東灘区魚崎北町１丁目	東灘区	魚崎北町１丁目	28101	135.2759896	34.7181473
101001002	神戸市東灘区魚崎北町２丁目	東灘区	魚崎北町２丁目	28101	135.27312323	34.71776119
101001003	神戸市東灘区魚崎北町３丁目	東灘区	魚崎北町３丁目	28101	135.27263163	34.71699738
101001004	神戸市東灘区魚崎北町４丁目	東灘区	魚崎北町４丁目	28101	135.26964024	34.7161141
101001005	神戸市東灘区魚崎北町５丁目	東灘区	魚崎北町５丁目	28101	135.27468412	34.72007208

population

townCode	year	month	household	male	female	total	0	1	2	3	4	5	6	7	8
101001004	2017	9	780	770	896	1666	14	9	18	14	16	9	18	14	21
101001005	2017	12	541	541	558	1099	11	11	8	13	7	9	7	10	3
101001001	2017	3	417	436	418	854	5	10	5	9	10	8	12	9	4
101001001	2017	6	418	432	414	846	3	10	7	7	8	12	9	6	9
101001001	2017	9	414	433	413	846	6	8	8	7	5	13	6	11	8
101001001	2017	12	417	433	415	848	6	8	9	7	6	11	8	8	9

API : Section of town

- API of section data of town block and street
  - Using ``e-Stat'' released by Japanese government

Structured demographic data for the API

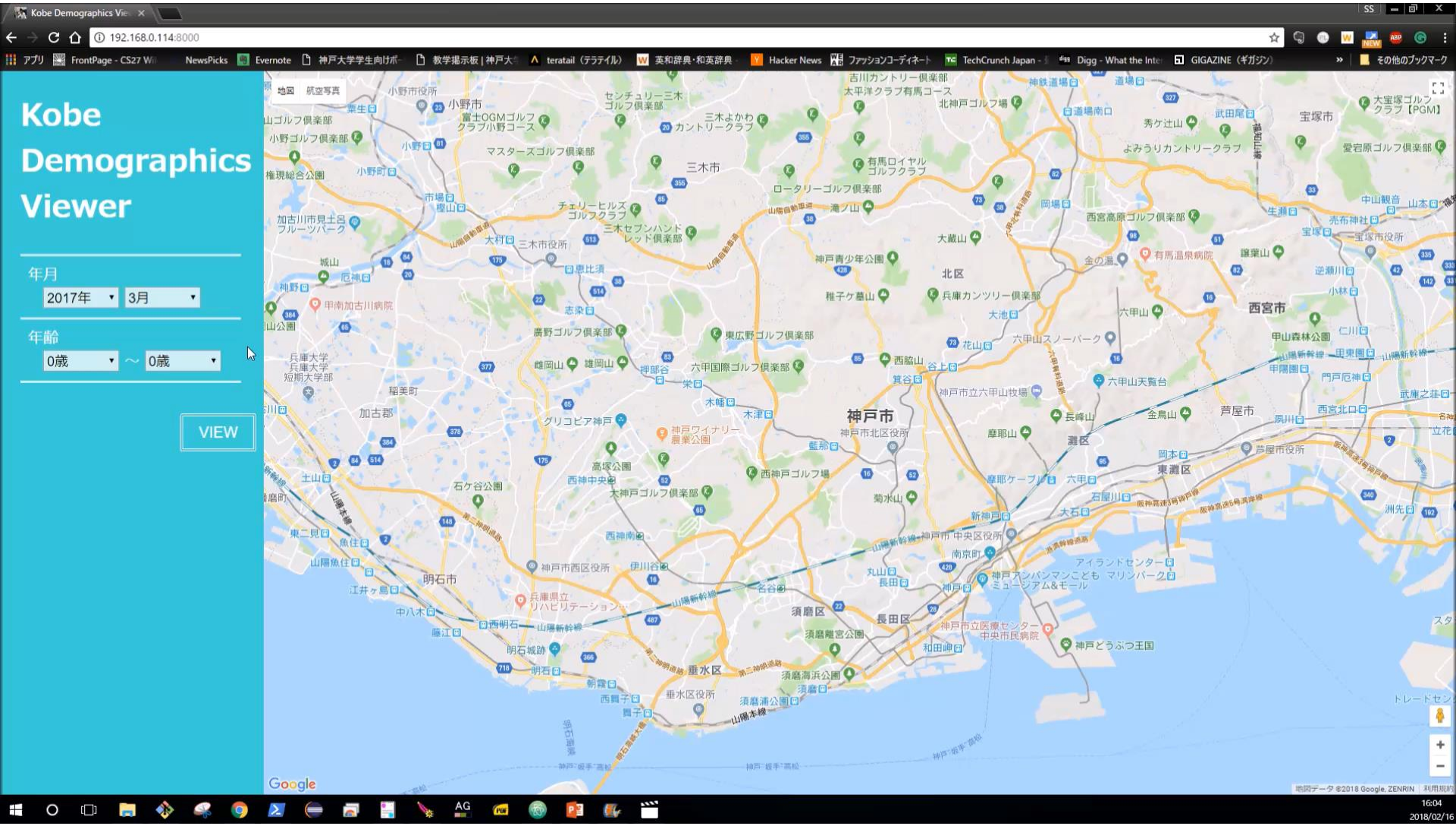
http://wsapp.cs.kobe-u.ac.jp/kobe-map/getShape.php?townCode=101001001

[{"townCode":"101001001","seq":"1",
"x":"135.276767964987","y":"34.7168359359825"},
{"townCode":"101001001","seq":"2",
"x":"135.275724097756","y":"34.716483438139"},
{"townCode":"101001001","seq":"3",
"x":"135.275700098988","y":"34.7165332051693"},
:
:

Shape

townCode	seq	x	y
101001001	1	135.276767964987	34.7168359359825
101001001	2	135.275724097756	34.716483438139
101001001	3	135.275700098988	34.7165332051693
101001001	4	135.275564420909	34.7168430112795
101001001	5	135.275506045949	34.7169899530696
101001001	6	135.275442491768	34.7171617254964
101001001	7	135.275317677085	34.7174669398212
101001001	8	135.275160291378	34.7177881820315
101001001	9	135.275088369731	34.7179442432631
101001001	10	135.275029633227	34.7180596360208
101001001	11	135.274845695533	34.7184464403015
101001001	12	135.275176072563	34.7185442391184
101001001	13	135.275891825734	34.7187561076284

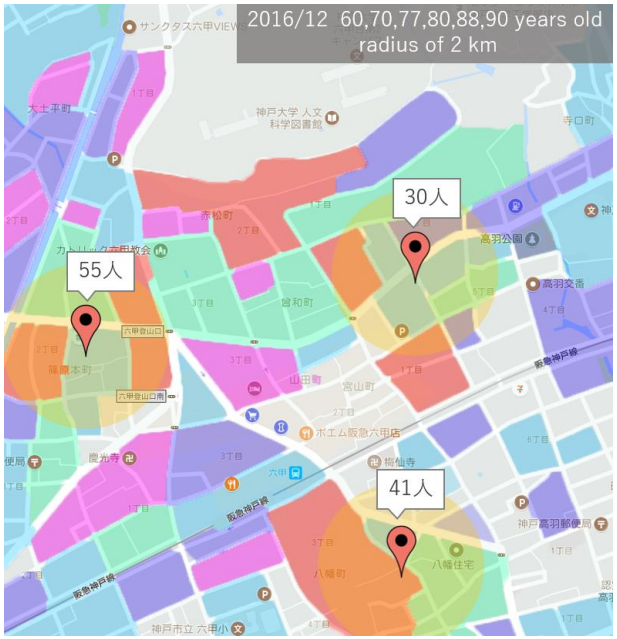
Demo


Kobe Demographics Viewer
年月
2017年
3月
年齢
0歳
～
0歳
VIEW
地図
航空写真
神戸市
西宮市
北区
垂水区
須磨区
長田区
東灘区
灘区
芦屋市
明石市
Google

Visualization

- Create a viewer to visualize demographic data
  - Demographic data is displayed as a heat map
  - Calculation of population
    - by temporal designation of year and month
    - by spatial designation of latitude, longitude and radius

Micro population information visualized on the map



Actual usage example

- Holding an event close to Kobe citizens

Event organized based on regional population information

Other applications

- Use for marketing of public facilities
  - Nursing care welfare facility
  - Public kindergarten
  - Community space

- Functions under consideration
  - Event proposal
    - By accumulating data, it is possible to propose an event, a venue from the service
  - Visualization such as aging rate
    - To make it possible for local people to find and solve problems in the area in which they live

Conclusion

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