

Persontrips Data Browser, Visualizer and Analyzer

Understanding of human mobility from spatial perspective

User Manual

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1. GRAPHICAL USER INTERFACE

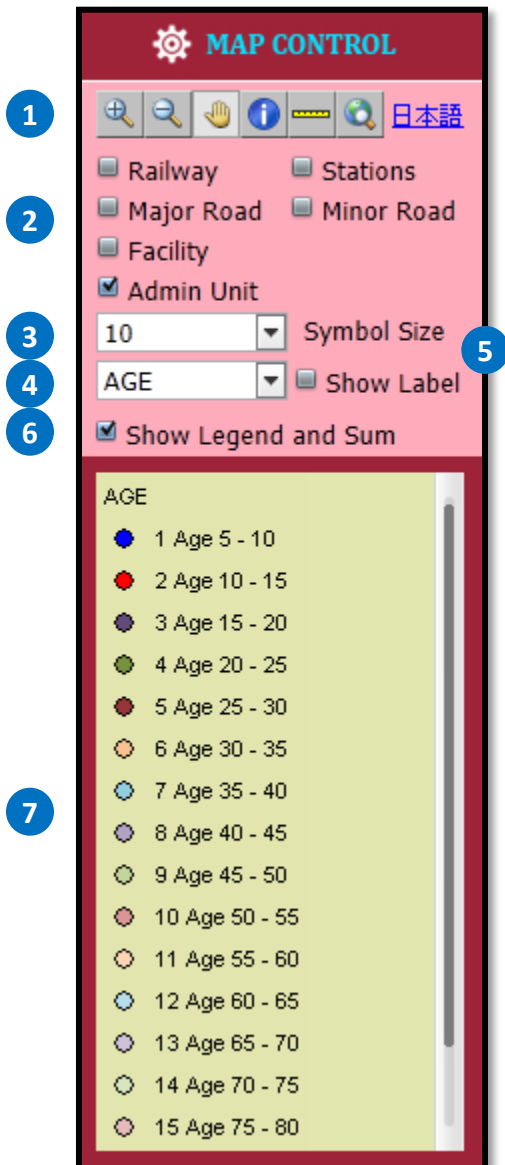
URL: <http://land.geo.tsukuba.ac.jp/persontrips>

Persontrips DATA BROWSER AND ANALYZER
Jointed research project with CSIS University of Tokyo
Division of Spatial Information Science
University of Tsukuba

1 MAP CONTROL
2 MAP LAYERS
3 SYMBOL SIZE
4 LEGEND AND SUM
5 QUERY BUILDER
6 QUERY BY FEATURE
7 INTERACTIVE QUERY
8 DETAILS FOR: TCODE
9 QUERY RESULTS
10 SPATIAL QUERY

- 1 Map controls (Zoom In/Out, Pan, Get Attribute Information, etc.)
- 2 Map layers control (Layer On-Off, Label On-Off)
- 3 Map symbol size
- 4 Show map legend and select attribute field for generating sum of each category
- 5 Query builder
- 6 Spatial Query by Feature
- 7 Interactive Spatial Query
- 8 Result of sum of each category in user defined attribute field
- 9 Result of each query string
- 10 Result of spatial query

2. MAP CONTROLS



- 1 Map viewer control
- 2 Map layer control
- 3 Change symbol size
- 4 Select attribute field for labeling and get sum by each category
- 5 Show map legend and generate sum by each category
- 6 Map legend

3. QUERY BUILDER

3.1. Simple Query

The screenshot shows the 'QUERY BUILDER' interface. It has a header with a database icon and the title 'QUERY BUILDER'. Below the header are two dropdown menus: 'Area' (set to 'Kanto') and 'Year' (set to '20081001'). There are two rows of time selection: 'Hour' (set to '15') and 'Minute' (set to '00'). Each row has a dropdown, a '+' button, and a text input field. Below the time selection are two radio buttons: 'All Records' (selected) and 'Custom'. A text area contains the SQL query: 'SELECT *, LON AS X, LAT AS Y FROM'. Below the text area is a text input field containing '1400'. Below that is another text area containing 'WHERE PURPOSE = 5'. At the bottom left, it says 'Records: 2791'. At the bottom right is a 'Query' button. Numbered callouts 1 through 8 point to these various elements.

- 1 Select **Area** and **Date**
- 2 Select **Hour** and **Minute**
- 3 Select **All Records** or **Custom** to define search category in 4 and 6
- 4 Under **Custom** search: Select desire column fields
For example:
* for all fields <or> To return PID, AGE and GENDER fields only
SELECT PID, AGE, GENDER, LONG AS X, LAT AS Y FROM (Same as SQL Language)
- 5 Database Table Name (Fixed, cannot edit)
Similar to Time
For Example
8:00 ➡ 0800, 12:30 ➡ 1230
- 6 Search Conditions
For Example
People age between 20 and 30 who only travel for entertainment purposes
WHERE PURPOSE = 5 AND AGE BETWEEN 4 AND 6
- 7 Click **Query** to start
- 8 Get the total records for that search category
- 9 Display the result in below text box.

```
65 SELECT *, LON AS X, LAT AS Y FROM 0800 WHERE PURPOSE = 5 AND AGE BETWEEN 4 AND 6
```

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3. QUERY BUILDER

3.2. Query by Specific Time Intervals

- 1 Select **Area** and **Date**
- 2 Select **Hour** and **Minute**
- 3 Insert Hour or Minute interval in appropriate text box
For example:
 1 hour interval for **1** hour text box and 5 minute intervals for **5** in minute text box
- 4 Select **All Records** or **Custom** to define search category in 5 and 6
- 5 Under **Custom** search: Select desire column fields
For example:
 * for all fields <or> To return PID, AGE and GENDER fields only
SELECT PID, AGE, GENDER, LONG AS X, LAT AS Y FROM (Same as SQL Language)
- 6 Search Conditions
For Example
 People age between 20 and 30 who only travel for entertainment purposes
WHERE PURPOSE = 5 AND AGE BETWEEN 4 AND 6
- 7 Click to query. Click continuously for every specific time intervals.
- 8 Get results in below text box

5	SELECT *, LON AS X, LAT AS Y FROM 0500 WHERE PURPOSE = 5 AND AGE BETWEEN 4 AND 6
16	SELECT *, LON AS X, LAT AS Y FROM 0600 WHERE PURPOSE = 5 AND AGE BETWEEN 4 AND 6
48	SELECT *, LON AS X, LAT AS Y FROM 0700 WHERE PURPOSE = 5 AND AGE BETWEEN 4 AND 6
65	SELECT *, LON AS X, LAT AS Y FROM 0800 WHERE PURPOSE = 5 AND AGE BETWEEN 4 AND 6
130	SELECT *, LON AS X, LAT AS Y FROM 0900 WHERE PURPOSE = 5 AND AGE BETWEEN 4 AND 6

Total records **8** Specific time intervals

3. QUERY BUILDER

3.3. Get Sum of Each Category in User Defined Attribute Field

1 Check **Show Legend and Sum** to show map legend and generate sum of each category in selected attribute field

2 Select attribute field to show sum of the each category in that field
For example:
 Select **AGE** to show different age group in map legend

3 and get sum of each group in age attribute field

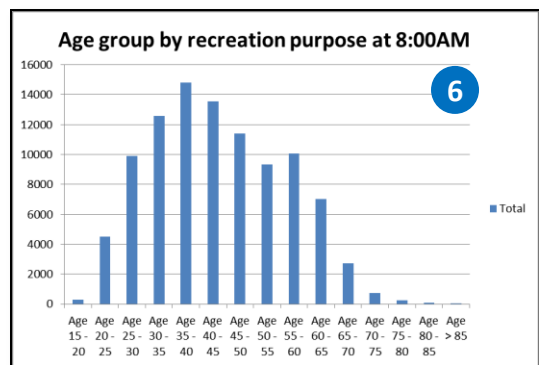
4 Click **Query** button to query

5 Get sum of each category in user defined attribute field

4 **Records: 2791** **Query**

```
SELECT *, LON AS X, LAT AS Y FROM
0800 WHERE PURPOSE = 1
DETAILS FOR: AGE
304 Age 15 - 20
4499 Age 20 - 25
9882 Age 25 - 30
12583 Age 30 - 35
14793 Age 35 - 40
13547 Age 40 - 45
11398 Age 45 - 50
9338 Age 50 - 55
10069 Age 55 - 60
7033 Age 60 - 65
```

6 You can copy and paste into Excel sheet and draw the graph.



```
27268 SELECT *, LON AS X, LAT AS Y FROM 0800 WHERE PURPOSE = 1 AND AGE BETWEEN 3 AND 6
17017 SELECT *, LON AS X, LAT AS Y FROM 0800 WHERE PURPOSE = 2 AND AGE BETWEEN 3 AND 6
175 SELECT *, LON AS X, LAT AS Y FROM 0800 WHERE PURPOSE = 3 AND AGE BETWEEN 3 AND 6
90 SELECT *, LON AS X, LAT AS Y FROM 0800 WHERE PURPOSE = 4 AND AGE BETWEEN 3 AND 6
73 SELECT *, LON AS X, LAT AS Y FROM 0800 WHERE PURPOSE = 5 AND AGE BETWEEN 3 AND 6
122 SELECT *, LON AS X, LAT AS Y FROM 0800 WHERE PURPOSE = 6 AND AGE BETWEEN 3 AND 6
98 SELECT *, LON AS X, LAT AS Y FROM 0800 WHERE PURPOSE = 7 AND AGE BETWEEN 3 AND 6
250 SELECT *, LON AS X, LAT AS Y FROM 0800 WHERE PURPOSE = 8 AND AGE BETWEEN 3 AND 6
250 SELECT *, LON AS X, LAT AS Y FROM 0800 WHERE PURPOSE = 8 AND AGE BETWEEN 3 AND 6
42481 SELECT *, LON AS X, LAT AS Y FROM 0800 WHERE PURPOSE = 2
```

Clear Log

4. SPATIAL QUERY

4.1.. Query by Feature

1 Map Layer: KantoAdmin
2 Field: Prefecture
3 Value: 千葉県
4 Distance (m):
5 Find

- 1** Select **Map Layer**
- 2** Select **Attribute Field**
- 3** Select **Field Value**
- 4** Set **Buffer Distance** (Only available in point and line features)
- 5** Click **Find** button to analyze
- 6** Display result in a map
- 7** Display result as a Text

6

QUERY BUILDER
Area: Kanto Year: 20081001
Hour: 11 Minute: 00
All Records Custom
SELECT *, LON AS X, LAT AS Y FROM
1100
WHERE PURPOSE = 5
Records: 4291 Query

QUERY BY FEATURE
Map Layer: KantoAdmin
Field: Prefecture
Value: 千葉県
Distance (m): Find

INTERACTIVE QUERY
250 Find

```
653 SELECT *, LON AS X, LAT AS Y FROM 0800 WHERE PURPOSE = 5
2033 SELECT *, LON AS X, LAT AS Y FROM 0900 WHERE PURPOSE = 5
4113 SELECT *, LON AS X, LAT AS Y FROM 1000 WHERE PURPOSE = 5
```

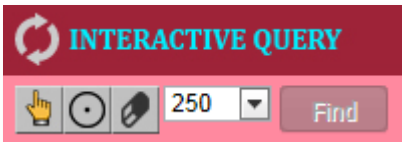
SPATIAL QUERY
FEATURE TYPE: POLYGON
FEATURE NAME: 千葉県
FEATURE AREA: 512900.19 Ha.
RECORDS FOUND: 617

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4. SPATIAL QUERY

4.2.. Interactive Spatial Query



- 1
- 3
- 4
- 5
- 2

- 1 Click to select multiple features
- 2 Click to analyze
- 3 Click to draw a circle on a map
- 4 Click to clear all selected features
- 5 Specify buffer distance in meter
- 6 See result in a map
- 7 Get result in a Text

QUERY BUILDER

Area	Year
Kanto	20081001

Hour: 11 + 1
Minute: 00 + 5

All Records Custom

```
SELECT *, LON AS X, LAT AS Y FROM 1100 WHERE PURPOSE = 5
```

Records: 4291

QUERY BY FEATURE

Map Layer: KantoAdmin
Field: Prefecture
Value: 千葉県
Distance (m):

INTERACTIVE QUERY

250

6

```
653 SELECT *, LON AS X, LAT AS Y FROM 0800 WHERE PURPOSE = 5
2033 SELECT *, LON AS X, LAT AS Y FROM 0900 WHERE PURPOSE = 5
4113 SELECT *, LON AS X, LAT AS Y FROM 1000 WHERE PURPOSE = 5
```

FEATURE: 浦安市 (1862 Ha.)
FEATURE: 江戸川区 (4891 Ha.)
FEATURE: 市川市 (5648 Ha.)
FEATURE: 船橋市 (8532 Ha.)
FEATURE: 習志野市 (2069 Ha.)
TOTAL FEATURES: 5
RECORDS FOUND: 251

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Appendix

1. Attribute Fields

Field ID	Field Name	Description
1	PID	Unique person ID
2	TNO	Trip number
3	SNO	Suntrap number
4	LON	Longitude position
5	LAT	Latitude position
6	GENDER	Gender
7	AGE	Age group
8	ZCODE	Current location by zone code
9	OCCUP	Person occupation
10	PURPOSE	Purpose to trip
11	MAGFAC	Adjustment Factor
12	MAGFAC2	Adjustment Factor
13	TCODE	Mode of transportation

2. Attribute Values

2.1. TNO and SNO (Trip Number and Sub-Trip Number)

TNO = Trip Number (1, 2, 3,)

SNO = Sub Trip Number (1,2,3, ...), Trip is divided into Sub-Trips

2.2. GENDER

Code	Value
1	Male
2	Female
9	Unknown

2.3. AGE (AGE GROUP)

Code	Value	Code	Value
1	Age between 5 - 10	10	Age between 50 - 55
2	Age between 10 - 15	11	Age between 55 - 60
3	Age between 15 - 20	12	Age between 60 - 65
4	Age between 20 - 25	13	Age between 65 - 70
5	Age between 25 - 30	14	Age between 70 - 75
6	Age between 30 - 35	15	Age between 75 - 80
7	Age between 35 - 40	16	Age between 80 - 85
8	Age between 40 - 45	17	Age above 85
9	Age between 45 - 50		

2.4. ZCODE

Please Refer to following PDF

<http://land.geo.tsukuba.ac.jp/persontrips/zone.pdf>

Appendix

2.5. OCCUP (Occupation)

Code	Value	Code	Value
1	Agricultural/Forestry/Fishery	9	Manager
2	Labor/Factory (Blue Collar)	10	Other Occupation
3	Sales	11	Elementary and Junior-high Student
4	Service	12	High School Student
5	Transport Service	13	College and University Student
6	Security Service	14	House-wife
7	Office Worker	15	No-occupation
8	Professional	16	Others (Not Categorized)
		99	Unknown

2.6. PURPOSE

Code	Value	Code	Value
1	To-From Office	9	To Send/Pick Up Activity
2	To-From School	10	For Selling and Buying
3	To Home	11	For Appointment
4	For Shopping	12	To/For Work (Fixing and Repairing)
5	For Short Recreation	13	To Agri./Forestry/Fishery Work
6	For Sight Seeing and Leisure	14	Other Business Purpose
7	For Medical Treatment	99	Others
8	For Attending Class		

2.7. TCODE (MODE OF TRANSPORTATION)

Code	Value	Code	Value
1	Walk	9	Private Bus
2	Bicycle	10	Public Bus
3	Motor-Bicycle	11	Monorail Transit
4	Motor-Bike	12	Train/Subway
5	Taxi	13	Ship
6	Passenger Vehicles	14	Aircraft
7	Mini Car	15	No Movement
8	Freight Vehicle	16	Others
		99	Unknown



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