



Returning home or Recreation?



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Background

- Recently, activities before and after work draws people's attention in Japan.



Activities before and after work contribute to worker's happiness and economic effect.



Example

- Japanese government recommends activities before and after work.
- Some companies cooperate it.
- These activities are called “あさ活(asa-katsu)” and “ゆう活(yu-katsu)” respectively.

あさ

morning

活

activity

ゆう

evening

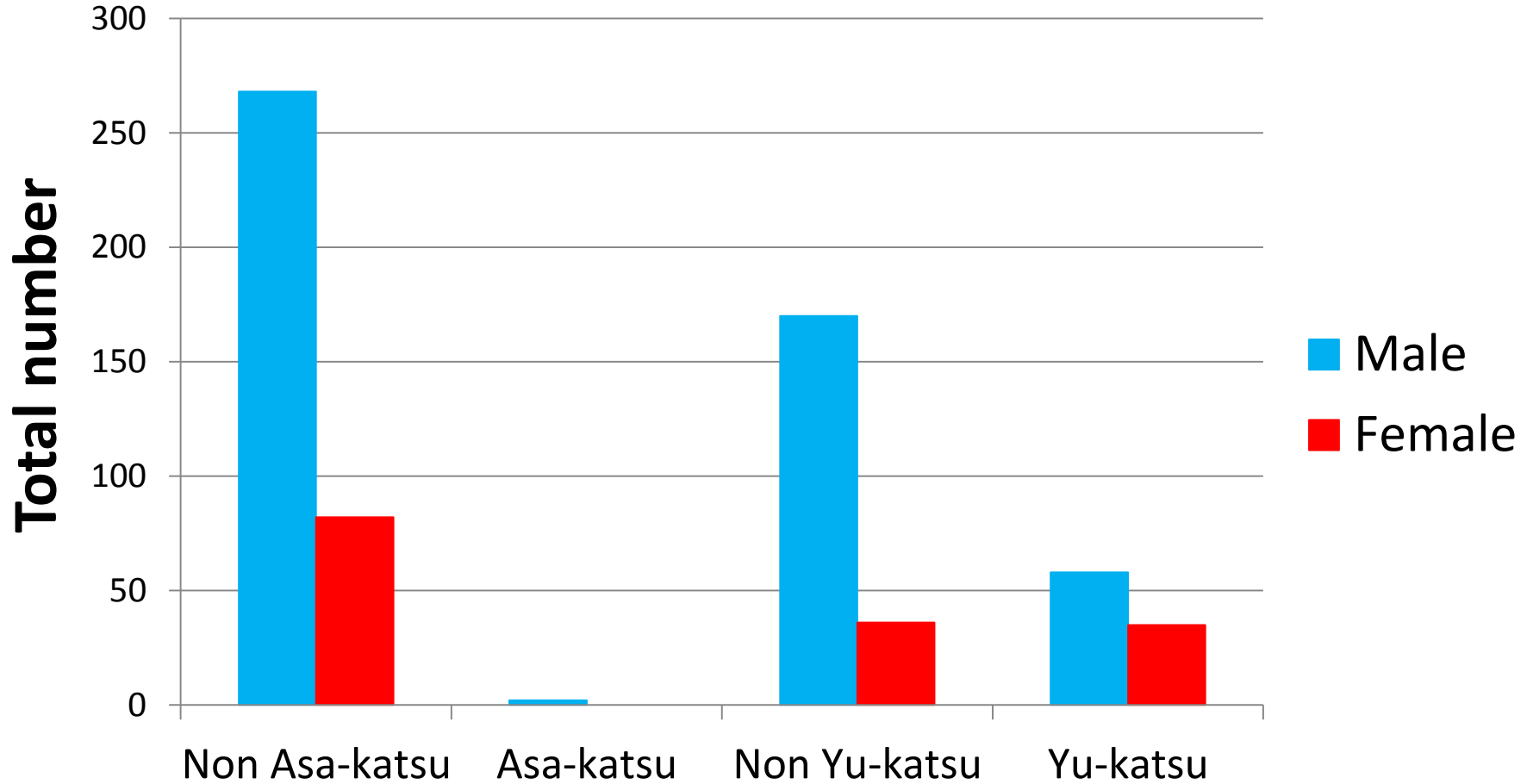
活

activity

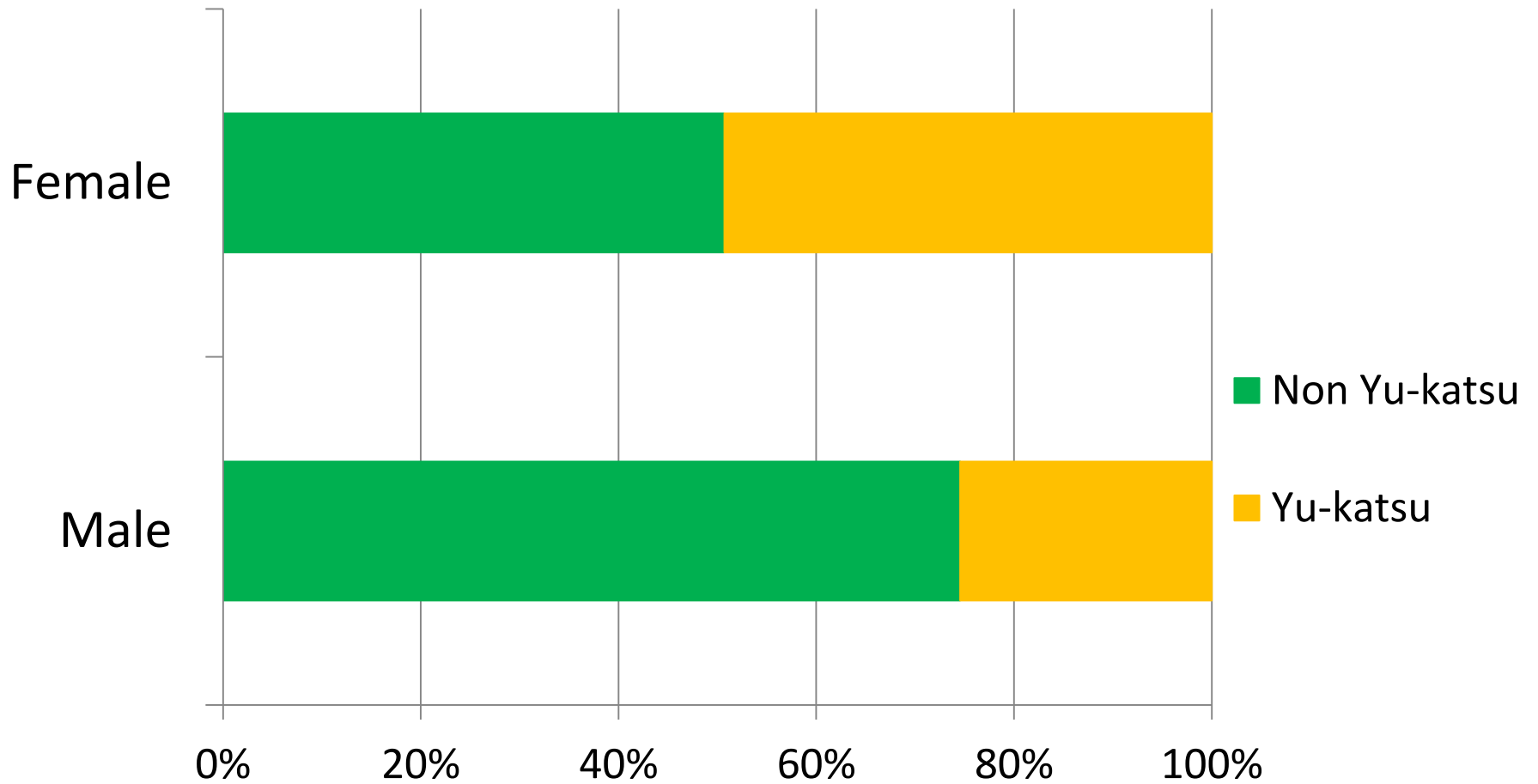
http://www.mhlw.go.jp/seisakunitsuite/bunya/koyou_roudou/roudoukijun/summer/

(in Japanese)

Present state of "Asa-katsu"&"Yu-katsu"



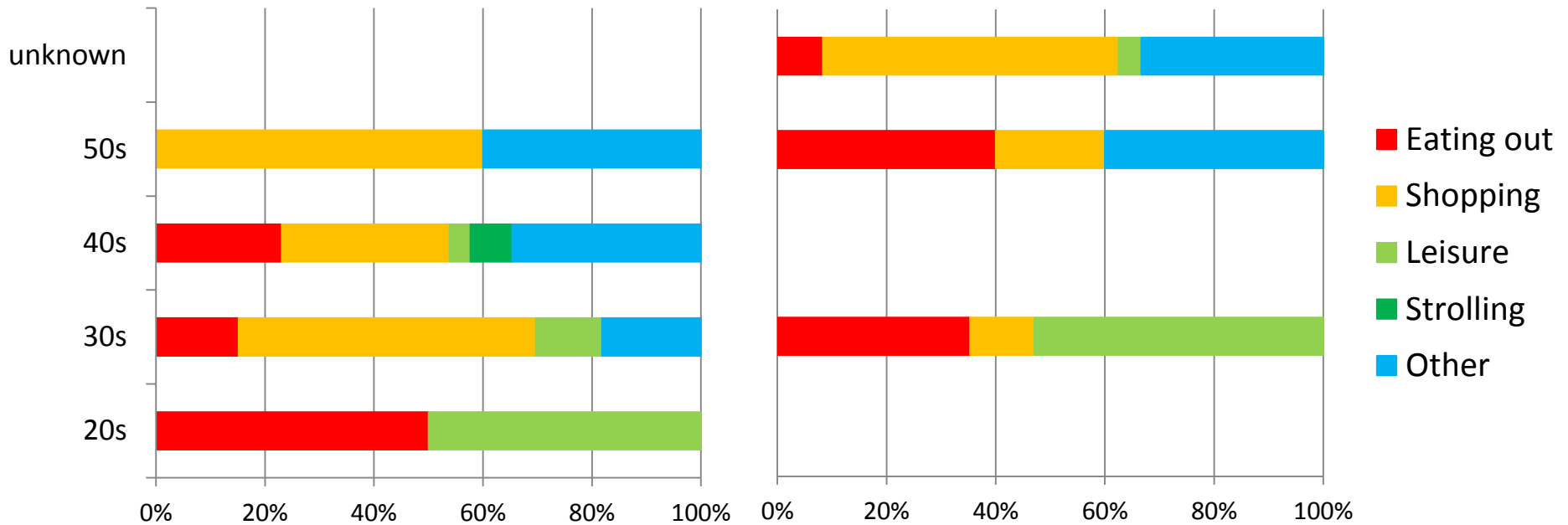
Gender Difference in "Yu-katsu"



Generation Difference in "Yu-katsu"

Male

Female



Model Structure

$$U_{\text{yu-katsu}} = V_1 + \varepsilon_1 = \beta_{\text{yu-katsu}} + \sum_k \beta_k x_k + \varepsilon_1$$
$$U_{\text{non}} = V_2 + \varepsilon_2 = \varepsilon_2$$

- Candidates of explained variables x_k

- Closing time
- Dummy variable of sex
- Dummy variable of age
- Dummy variable of day of the week
- Commuting time
- Travel mode
- Land price of participants' home

yu-katsu

non yu-katsu

- We focus on the existence of Yu-katsu, so we use BLM.

It may distinguish whether participants are rich or not, and the place is urban or rural.

Model Structure

$$U_{\text{yu-katsu}} = V_1 + \varepsilon_1 = \beta_{\text{yu-katsu}} + \sum_k \beta_k x_k + \varepsilon_1$$
$$U_{\text{non}} = V_2 + \varepsilon_2 = \varepsilon_2$$

- Candidates of explained variables x_k

- Closing time → Average Closing Time

- Overtime = Closing Time – Average Closing Time

- ~~Dummy variable of sex~~

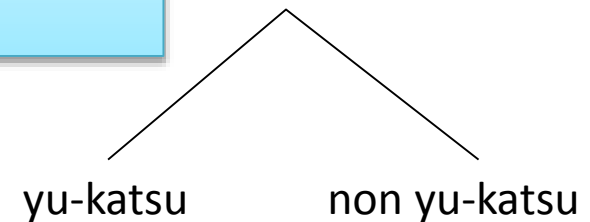
- ~~Dummy variable of age~~

- Dummy variable of day of the week

- ~~Commuting time~~

- ~~Travel mode~~

- ~~Land price of participants' home~~



Result

$$U_{\text{yu-katsu}} = ASC_{\text{Yu-katsu}} + \beta_{\text{Overtime}}x_{\text{Overtime}} + \beta_{\text{AverageCloseTime}}x_{\text{AverageCloseTime}} + \beta_{\text{Weekend}}x_{\text{Weekend}} + \varepsilon_1$$

U_{non}	$= \varepsilon_2$		
	Name	Value	t-test
	β_{Overtime}	-0.148	-2.57
	$\beta_{\text{AverageCloseTime}}$	-0.298	-3.97
	β_{Weekend}	0.517	2.25
	$ASC_{\text{Yu-katsu}}$	5.45	3.89

Over Time : Closing Time – Average Closing Time

Average Closing Time : The average of closing time of each person

Weekend : 1 if the day is Friday or Saturday, otherwise 0

ASC : Alternative Specific Constant

Result

$$U_{\text{yu-katsu}} = ASC_{\text{Yu-katsu}} + \beta_{\text{Overtime}}x_{\text{Overtime}} + \beta_{\text{AverageCloseTime}}x_{\text{AverageCloseTime}} + \beta_{\text{Weekend}}x_{\text{Weekend}} + \varepsilon_1$$

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	$ASC_{\text{Yu-katsu}}$	5.45	3.89

If over time is smaller, people tend to do Yu-katsu.

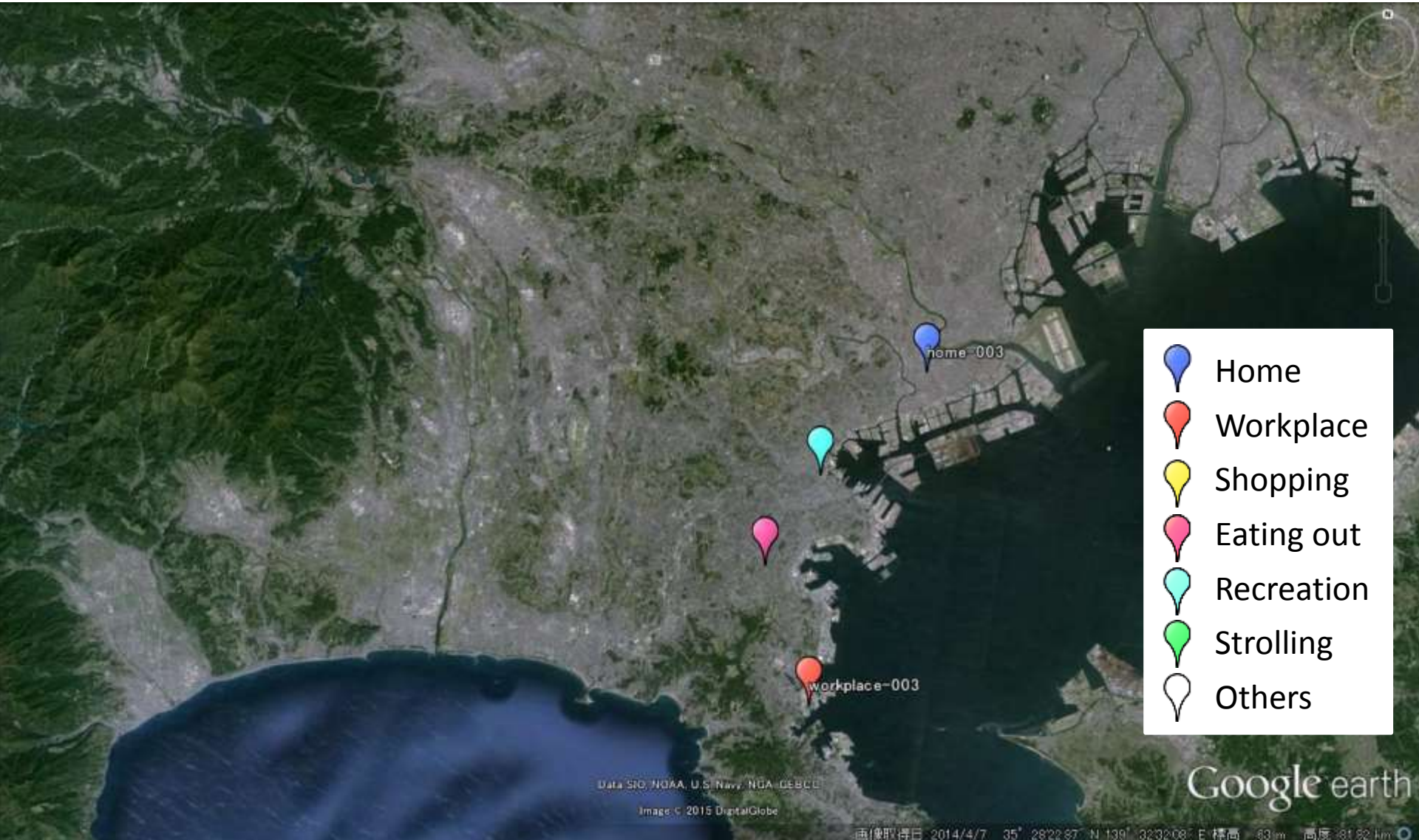
If Average Closing Time is earlier, people tend to do Yu-katsu.

If the day is Friday or Saturday, people tend to do Yu-katsu.

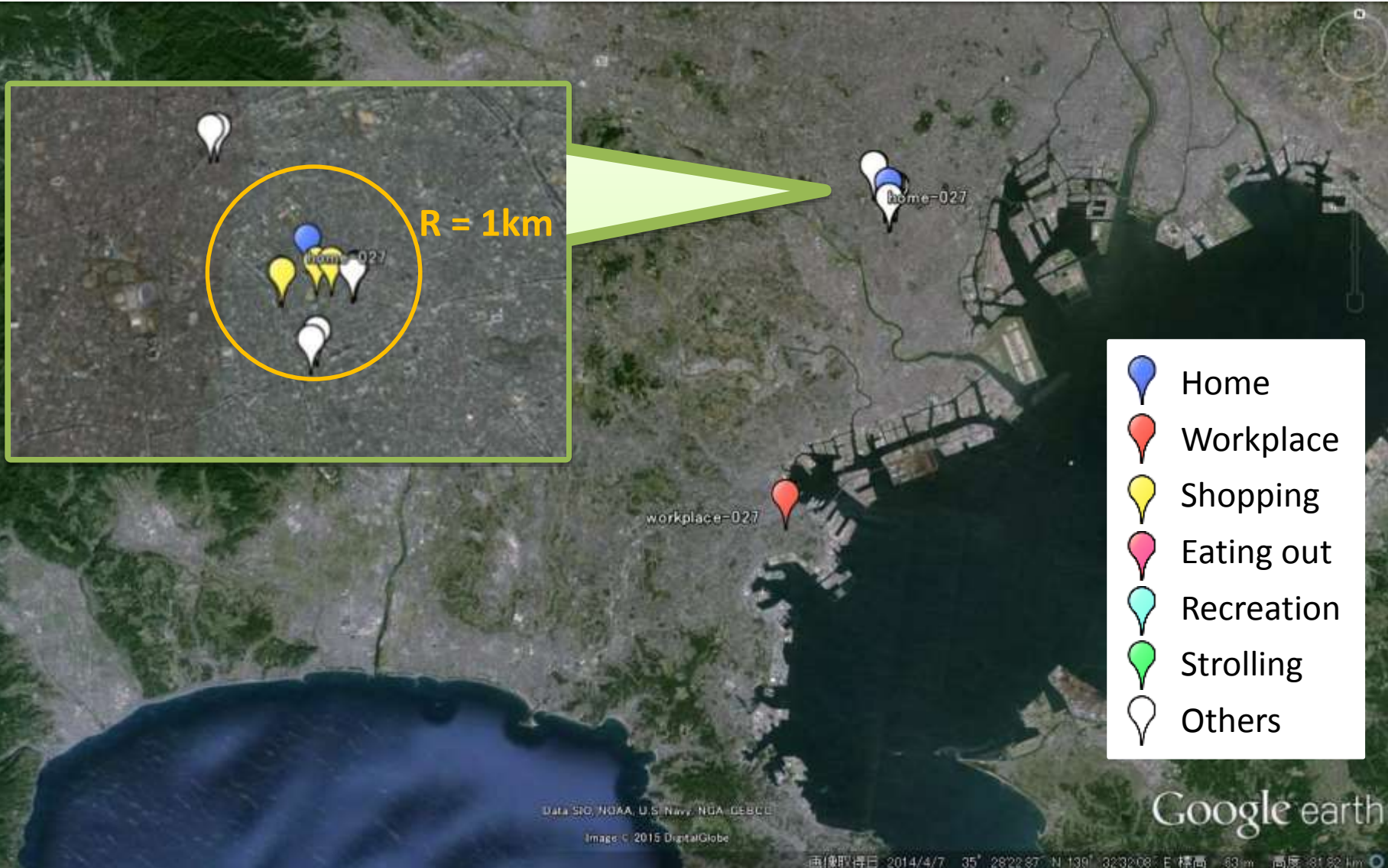
About Location

- Location of home, workplace and where to go may affect Yu-katsu activity.
- ✓ Visualized the location data to understand the trend of activity

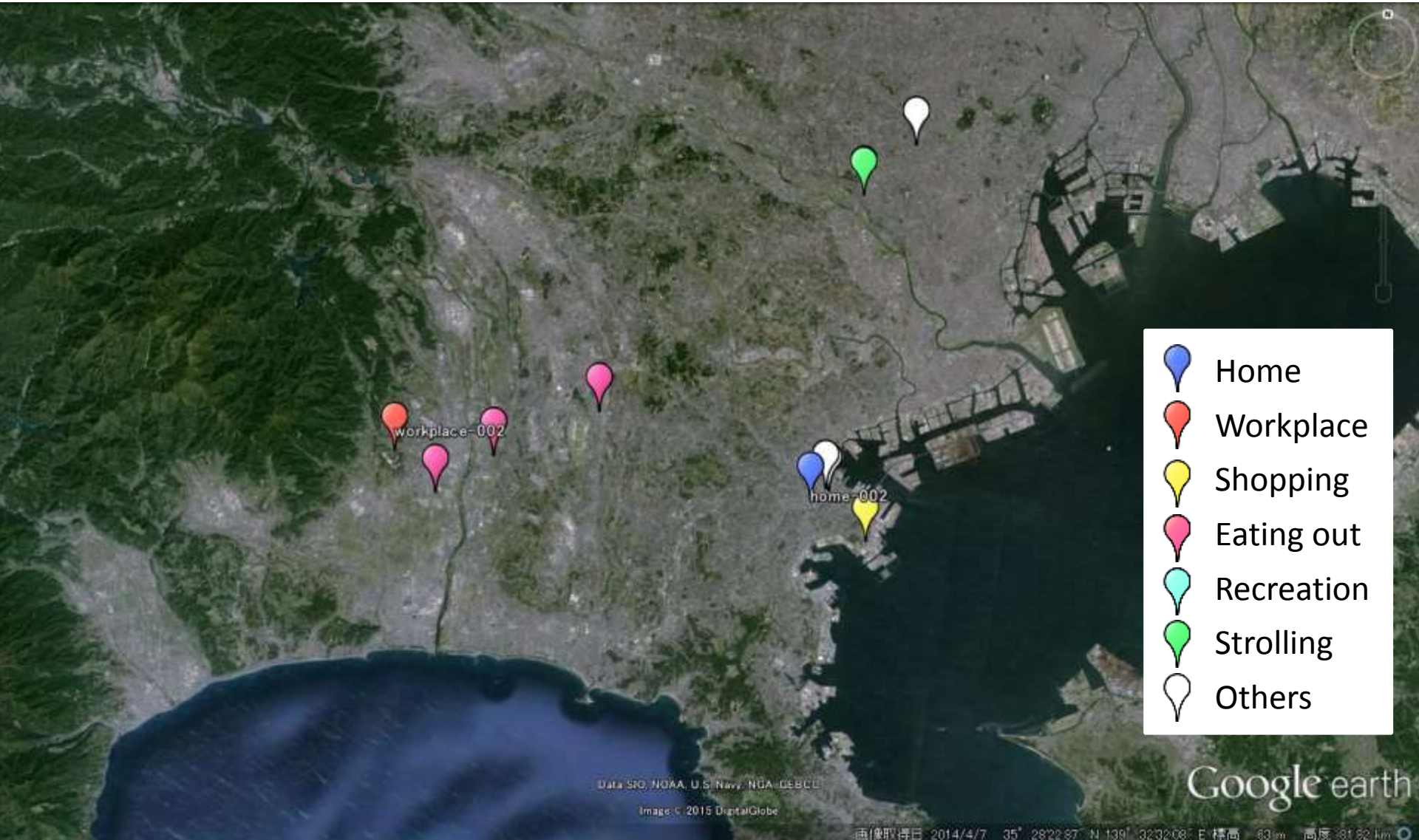
Activity Locations – Type Way-home



Activity Locations – Type Nearby



Activity Locations – Type ???



About Location

- Location of the places show some trend.
- Only the place of Yu-katsu activity was investigated. Surrounding environment, such as city or rural area, was ignored.
- We need to pay attention to the surrounding environment of each place.
 - Downtown or not
 - Access availability, Land price
- The factor of location could improve our model.

Proposal

- Average Closing Time should be earlier.
- On Friday and Saturday, many people already do Yu-katsu. If closing time on other days become earlier, more Yu-katsu activities would be done.