25th Meeting of the Wiesbaden Group on Business Registers
- International Roundtable on Business Survey Frames -
Business Demography and Data Products from the Business Registers

Analysis of the effective utilization of the Business Register in Japan

Mikio Suga

Statistical Research and Training Institute,

Ministry of Internal Affairs and Communications

Faculty of Economics, Hosei University

Restaurant guide website information

- First, we propose geographical tabulations based on the merged dataset of Economic Census data and restaurant guide website information.
- The major characteristics of restaurant guide website information are that
- 1) everyone can access it at no cost,
- 2) it is updated frequently and
- 3) it contains rich information about restaurants' locations, including longitude and latitude
- In the Economic Census, such information was not collected.
- By using this, statistical survey respondents can receive more information than they supply from geographical tabulations based on the merged dataset of Economic Census data and restaurant guide website information.
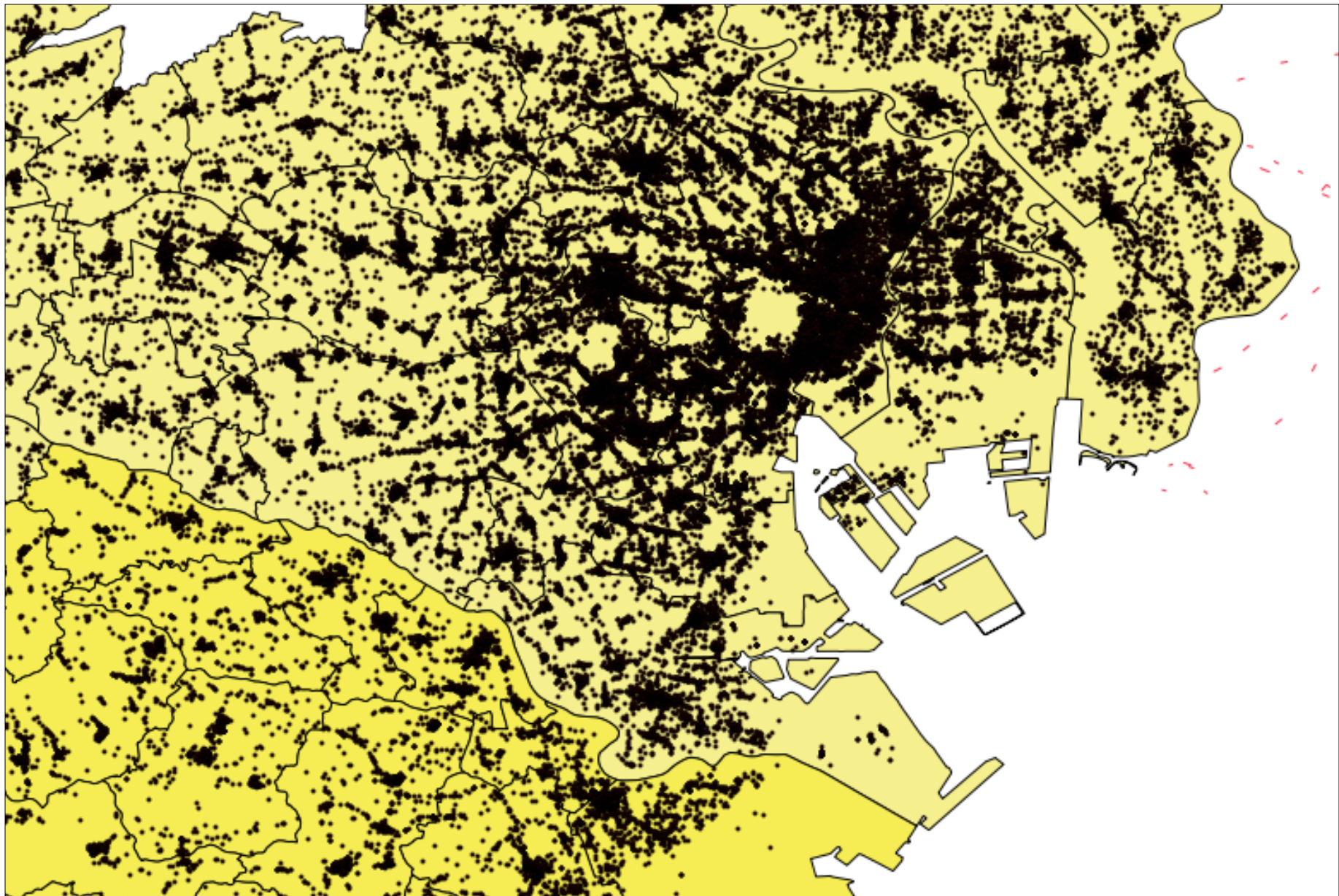
Figure 1 Geographical distribution of restaurants (black dots)
Area: Tokyo and Kanagawa prefecture   Time period: January 2016
Source: Restaurants guide website information

Table 1 The number of employment and sales of restaurants by type of cuisine in Shinjuku ward 2012
Source: Merged dataset of Economic Census data and restaurant guide website information

Type of cuisine	The number of restaurants matched	The number of employment	Sales (million JPY)	Sales per restaurant (million JPY)	Sales per employment (1000 JPY)
Asian or ethnic cuisine	13	92	229	18	2489
Italian or French cuisine	18	110	616	34	5598
Cafe, Sweets	51	512	3682	72	7191
Curry	7	47	159	23	3379
Bar, Dining bar	86	285	628	7	2203
Family restaurant - Fast food	11	158	665	60	4206
Ramen noodles	34	320	999	29	3123
Banquet, Karaoke	7	66	240	34	3635
Tavern	107	388	922	9	2376
Sushi	44	300	839	19	2797
Yakiniku-Hormone-Teppanyaki	22	322	2069	94	6426
Shokujidokoro	3	4	25	8	6373
Shokudo or teishoku (set menu)	20	130	410	21	3155
Creative cuisine	2	8	12	6	1498
Chinese	41	268	1325	32	4943
Hot pot	5	16	5	1	319
Western, western cuisine	19	129	267	14	2073
Japanese food	168	964	2665	16	2765
Total	658	4119	15757	24	3825

Entry and Exit rate

- By using restaurant guide website information, we can calculate the entry and exit rate of restaurants by type of cuisine.

- Here, "entry" is defined as a restaurant which did not exist at the beginning period or before, but exists at the end of the period. "Exit" is defined as a restaurant which existed in the beginning period, but does not exist at the end of the period or after.

- Restaurants which ceased to exist but appeared again are defined as "cessation" in the period they did not exist and "reactivate" in the period they appeared again.

Table 2 Entry rates by type of cuisine

Source: Restaurant guide website information Area: total of 23 wards of Tokyo prefecture

Type of cuisine	2014 Sep - 2015 Feb	2015 Feb -2015 Jun	2015 Jun -2015 Oct	2015 Oct -2016 Jan	Average
Asian or ethnic cuisine	16.3%	12.5%	10.2%	7.5%	11.6%
Italian or French cuisine	16.5%	13.8%	10.9%	8.1%	12.3%
Organic food	32.5%	14.3%	18.4%	12.6%	19.5%
Cafe, Sweets	13.9%	10.2%	6.7%	6.9%	9.4%
Curry	18.1%	14.7%	10.1%	8.6%	12.9%
Bar, Dining bar	14.9%	15.1%	10.0%	7.6%	11.9%
Buffet	25.9%	17.5%	18.1%	6.1%	16.9%
Family restaurant - Fast Food	8.2%	4.0%	1.8%	1.7%	3.9%
Ramen noodles	9.1%	10.1%	5.2%	6.4%	7.7%
Banquet, Karaoke	17.9%	15.5%	13.4%	9.2%	14.0%
Tavern	12.8%	13.2%	9.7%	7.1%	10.7%
Sushi	6.5%	5.4%	2.9%	3.6%	4.6%
Yakiniku-Hormone-Teppanyaki	13.2%	14.2%	10.4%	8.6%	11.6%
Shokujidokoro	17.9%	3.9%	1.3%	1.3%	6.1%
Shokudo or teishoku (set menu)	7.0%	6.2%	3.0%	3.6%	5.0%
Creative cuisine	10.0%	6.8%	12.4%	6.3%	8.9%
Multinational cuisine	25.0%	20.0%	8.5%	8.5%	15.5%
Chinese	8.6%	9.2%	5.1%	4.4%	6.8%
Hot pot	15.1%	23.8%	10.3%	9.1%	14.6%
Box lunches	11.1%	50.0%	8.3%	8.0%	19.4%
Fusion food	2.6%	4.1%	1.8%	1.2%	2.4%
Vegetable dish	10.4%	18.3%	7.4%	1.8%	9.5%
Yakuzen cuisine	9.1%	9.1%	18.2%	8.3%	11.2%
Western, western cuisine	12.1%	9.5%	7.2%	6.4%	8.8%
Japanese food	8.2%	10.2%	4.3%	4.6%	6.8%
Unknown	11.3%	24.6%	17.1%	26.2%	19.8%
Total	11.7%	11.7%	7.5%	6.6%	9.4%

Note: Sep. 2014 - Feb. 2015 is the entry and reactivate rate.

Table 3 Exit rates by type of cuisine
Source: Restaurant guide website information Area: total of 23 wards of Tokyo prefecture

Type of cuisine	2014 Sep - 2015 Feb	2015 Feb -2015 Jun	2015 Jun -2015 Oct	2015 Oct -2016 Jan	Average
Asian or ethnic cuisine	11.4%	16.7%	8.5%	8.1%	11.2%
Italian or French cuisine	10.5%	16.2%	9.1%	7.9%	10.9%
Organic food	20.0%	14.3%	9.2%	6.3%	12.4%
Cafe, Sweets	7.9%	14.2%	5.6%	5.8%	8.4%
Curry	11.3%	16.4%	8.1%	6.5%	10.6%
Bar, Dining bar	10.5%	15.0%	8.6%	8.1%	10.5%
Buffet	15.2%	20.2%	13.8%	15.6%	16.2%
Family restaurant - Fast Food	3.9%	9.3%	3.0%	6.8%	5.7%
Ramen noodles	5.2%	12.5%	5.0%	5.7%	7.1%
Banquet, Karaoke	10.9%	16.4%	10.6%	8.2%	11.5%
Tavern	8.6%	14.9%	8.6%	7.3%	9.9%
Sushi	4.9%	9.5%	2.8%	4.6%	5.5%
Yakiniku-Hormone-Teppanyaki	8.8%	17.5%	7.8%	7.4%	10.4%
Shokujidokoro	4.3%	18.9%	6.3%	5.8%	8.8%
Shokudo or teishoku (set menu)	4.4%	9.4%	3.5%	5.9%	5.8%
Creative cuisine	5.6%	11.9%	7.6%	9.1%	8.6%
Multinational cuisine	16.7%	20.0%	8.5%	8.5%	13.4%
Chinese	5.9%	13.1%	4.8%	6.0%	7.4%
Hot pot	7.5%	28.8%	7.8%	7.0%	12.8%
Box lunches	33.3%	10.0%	0.0%	8.0%	12.8%
Fusion food	30.8%	26.0%	4.2%	4.1%	16.3%
Vegetable dish	5.2%	20.2%	7.4%	7.1%	10.0%
Yakuzen cuisine	9.1%	9.1%	9.1%	0.0%	6.8%
Western, western cuisine	8.2%	12.0%	6.0%	6.9%	8.3%
Japanese food	6.3%	13.1%	4.3%	5.5%	7.3%
Unknown	29.3%	17.9%	9.3%	12.0%	17.1%
Total	8.3%	14.3%	6.5%	6.7%	8.9%

Note: Oct. 2015 - Jan. 2016 is the cessation and exit rate.

Tabulation based on railway lines

- Second, we propose geographical tabulation based on railway lines. In Japan, administrative districts are used for geographical tabulation of business data, and this is thought to be conventional.

- Rather than staying inside the administrative districts in which people live, people freely move across administrative boundaries, and their actual behavioral spaces do not match administrative districts.

- If respondents saw geographical tabulation based on their actual behavioral spaces, they might say it is realistic and useful.

- We applied QGIS, a cross-platform free and open-source desktop geographic information system (GIS) application for the restaurant guide website information and tabulated it by area along with railway lines.
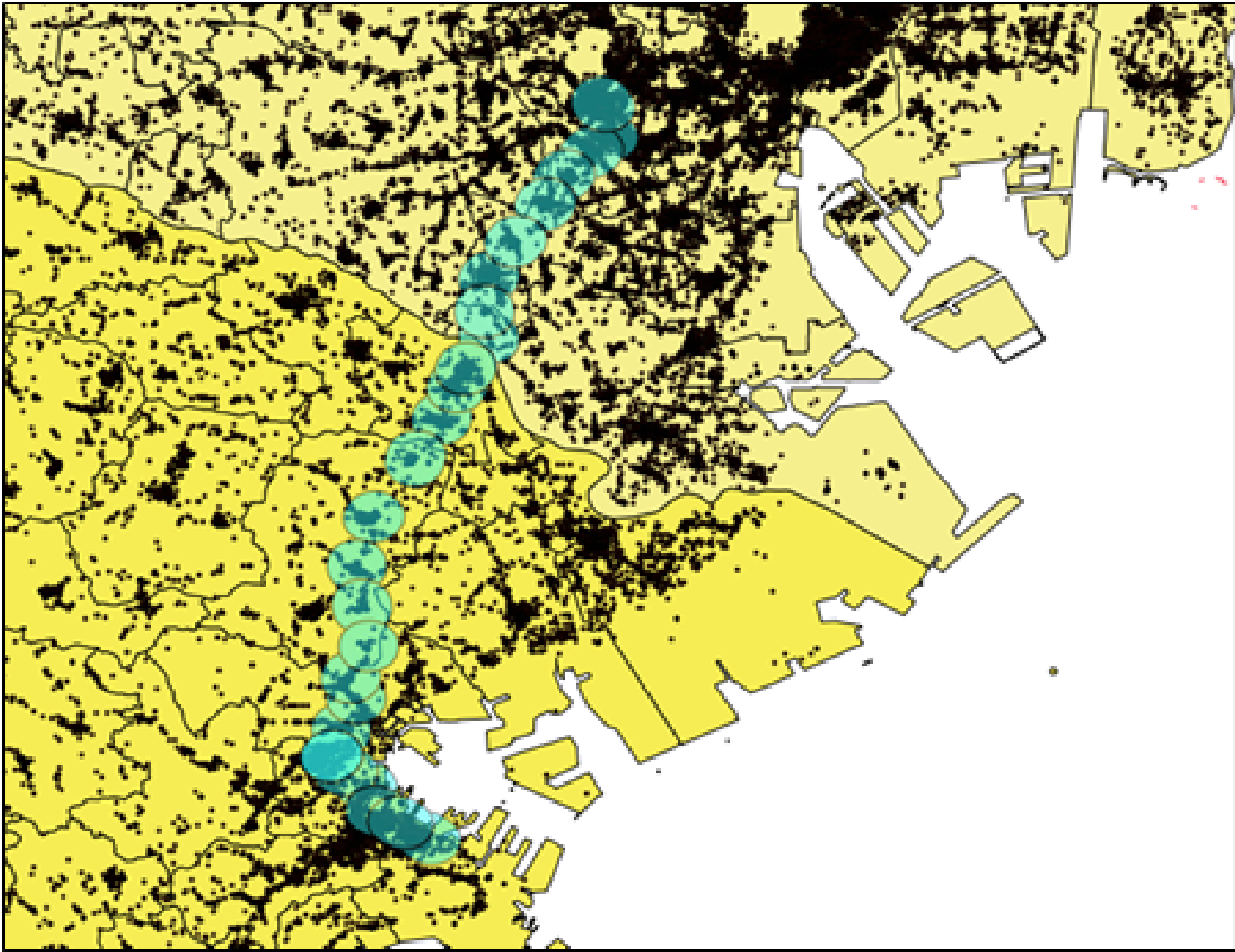
Figure 2　800 meter buffer along the Toyoko and Minatomirai Lines and restaurants
（black dots）

Table 4 The aggregated numbers of restaurants along the Toyoko and Minato Mirai Lines
Source: restaurant guide website information Year: 2016 January

Type of cuisine	Toyoko Line									Minatomirai Line			
	Shibuya ward	Meguro ward	Seta gaya ward	Ota ward	Naka hara ward	Kohoku ward	Kana gawa ward	Nishi ward	Total	Kana gawa ward	Nishi ward	Naka ward	Total
Asian or ethnic cuisine	73	43	3	1	18	10	14	14	176	5	22	38	65
Italian or French cuisine	374	179	30	9	43	26	35	83	779	20	125	177	322
Organic food	8	2	1			2	1	1	15		2		2
Cafe, Sweets	400	230	37	13	74	62	62	110	988	19	173	233	425
Curry	32	11	2		8	6	6	5	70	1	10	13	24
Bar, Dining bar	509	204	17	1	38	42	54	74	939	32	89	306	427
Buffet	5							8	13		12	18	30
Family restaurant - Fast food	49	26	2	1	23	21	16	18	156	5	27	25	57
Ramen noodles	106	45	3	3	34	38	36	25	290	5	33	55	93
Banquet, Karaoke	174	25			7	9	12	28	255	8	33	77	118
Tavern	551	182	8	2	130	94	131	174	1272	69	198	326	593
Sushi	81	64	10	9	21	21	21	20	247	5	28	55	88
Yakiniku-Hormone-Teppanyaki	161	67	7	2	26	15	22	32	332	11	37	67	115
Shokujidokoro	5	1			2	2	2		12	1		12	13
Shokudo or teishoku (set menu)	24	27			14	15	13	2	95	2	5	32	39
Creative cuisine	7	2	2			1		1	13		3	8	11
Multinational cuisine	1	1		1					3				0
Chinese	95	64	10	6	43	41	43	41	343	11	59	302	372
Hot pot	95	31	4		10	11	9	21	181	6	24	40	70
Boxed lunches		1							1			1	1
Fusion food	5	5			3	1		2	16		2	15	17
Vegetable dish	3	3	1		1	1	1		10			1	1
Yakuzen cuisine		1							1				0
Western, Western cuisine	115	48	2	4	21	19	20	29	258	8	40	79	127
Japanese food	479	270	40	18	136	121	116	130	1310	32	182	314	528
Unknown	36	10	1		1	4	3	5	60	1	8	30	39
Total	3388	1542	180	70	653	562	617	823	7835	241	1112	2224	3577

Conclusion and future challenge

- Since the restaurant website information is frequently updated, and the entry and exit rate at restaurant are high, it can complement the Business Register.
- Geographical tabulation based on railway lines are realistic and useful.
- Matching restaurants of website information with those in the Business Register with higher quality is the future challenge.(No unique ID, so that matching by name and address but the name of restaurant can be written in several ways; Japanese letter, Chinese letter and alphabet.)
- Also extended use of the restaurant website information for edit and imputation is the future challenge.