

Compiled list of data-related occupations and their involvement rates

October 2024
Economic and Social Research Institute (ESRI), Cabinet Office, Government of Japan

A) Meta Data

Country: Japan
Name(s) of classification(s) used: Japan Standard Occupational Classification (JSOC)
Digit of publication level of the classification: 5th revision
Digit of working level of the classification:
Reference year/Vintage year: December, 2009

B) Occupations selected

Note:
1. We used Occupational Classifications from the Japanese 2020 Census, which is based on Japanese Standard Occupational Classification (Revision 5th, December 2009). However, due to the presence of some occupations at the subcategory level with limited number of internet survey respondents, we merged some occupational sub-categories with the adjacent ones, forming new categories for our analysis. These newly formed categories are denoted with "(integrated)" at the end of their names.
2. Furthermore, as indicated in the [yellow cell](#), "system consultants, designers" and "software creators" have been excluded from the occupations. This exclusion aims to prevent double counting because they are used in the estimation of the output of in-house developed software.
3. 'Data' used in-house for less than one year is included inside the production of data assets, although this does not align with the current System of National Accounts (SNA) treatment on intermediate consumption on its own account.
4. The Involvement rate of Research and Development has been excluded from the Involvement rate of data and database to avoid double counting.
5. This is a list of occupations and their involvement rates for 2022. The involvement rates are derived from 2022 survey results, with each rate multiplied by the proportion of digital storage (93.4%) obtained from 2023 survey results.

Code	Classification name	Involvement rate	Fill out this part only if readily available		Sum of involvement	Control	Comments
			Involvement rate computer software	Involvement rate Research and Development			
312	Data entry device operators	25.5%		2.6%	2.6%	28.1%	
311	Personal computer operators	22.2%		2.1%	2.1%	24.3%	
104	Software creators		21.4%	8.6%	30.1%	30.1%	excluded to avoid double counting with in-house developed software
10c	Other data processing and communication engineers	18.6%		4.1%	4.1%	22.6%	
10a	System consultants, designers		17.9%	5.8%	23.6%	23.6%	excluded to avoid double counting with in-house developed software
55x	Machine maintenance and repair workers not classified elsewhere	13.6%		5.9%	5.9%	19.4%	
07e	Metal engineers	12.8%		18.8%	18.8%	31.6%	
721	Packaging workers	12.2%		7.9%	7.9%	20.1%	
332	Insurance agents and brokers	11.4%		6.6%	6.6%	18.0%	
27a	Production-related clerical workers	10.8%		1.6%	1.6%	12.4%	
18x	Other management, finance, and insurance professionals (integrated)	10.6%		2.5%	2.5%	13.1%	integrated due to limited number of internet survey respondents
07c	Machinery engineers	9.5%		5.5%	5.5%	15.0%	
34a	Machinery, communication and system sales workers	9.3%		0.4%	0.4%	9.7%	
32x	Merchandise sales workers not classified elsewhere	8.9%		1.1%	1.1%	10.0%	
06a	Agriculture, forestry, fishery, and food engineers	8.9%		5.3%	5.3%	14.2%	
343	Medicine sales workers	8.4%		0.3%	0.3%	8.7%	
03a	Corporations, organization management workers	8.4%		2.0%	2.0%	10.3%	
091	Architectural engineers	8.3%		2.2%	2.2%	10.5%	
092	Humanities, social science, and other researchers	8.3%		10.1%	10.1%	18.4%	
07a	Electrical, electronic, telecommunications engineers (except communication network engineers)	8.2%		5.0%	5.0%	13.2%	
071	Chemical engineers	8.2%		9.9%	9.9%	18.1%	
421	Travel and tourist guides	8.2%		1.3%	1.3%	9.4%	
021	Company officers	8.0%		2.8%	2.8%	10.8%	
43a	Self-defense officials	8.0%		0.0%	0.0%	8.0%	
01a	Management-level government officials	8.0%		2.2%	2.2%	10.2%	
28a	Sales clerks	8.0%		0.3%	0.3%	8.2%	
31a	Other office appliance operators	7.9%		1.8%	1.8%	9.7%	
257	Comprehensive clerical workers	7.5%		0.5%	0.5%	8.0%	
02a	Officers of other corporations, organizations	7.4%		2.3%	2.3%	9.7%	
131	Public health nurses	7.4%		1.1%	1.1%	8.5%	
51x	Machine assembly workers	7.3%		3.2%	3.2%	10.5%	
56x	Product inspection workers	7.3%		1.7%	1.7%	9.0%	
50x	Product manufacturing and processing workers (except metal products)	7.2%		1.6%	1.6%	8.8%	
196	Special needs education school teachers	7.2%		0.2%	0.2%	7.3%	
09a	Civil engineers and surveyors	7.1%		1.5%	1.5%	8.6%	
24a	Librarians, curators	7.0%		0.5%	0.5%	7.5%	
11a	Other engineers	7.0%		3.7%	3.7%	10.7%	
40a	Food and drink service workers, and personal assistance workers	7.0%		0.0%	0.0%	7.0%	
049	Other administrative and managerial workers	6.9%		1.1%	1.1%	8.0%	
331	Real estate agents and dealers	6.5%		1.3%	1.3%	7.8%	
40x	Restaurateurs, restaurant managers, Japanese inn owners and managers	6.5%		1.7%	1.7%	8.2%	
322	Wholesalers, wholesale manager	6.5%		0.8%	0.8%	7.3%	
25a	General affairs and human affairs workers	6.4%		0.6%	0.6%	7.1%	
212	Journalists, editors	6.4%		1.2%	1.2%	7.7%	
321	Retailers, retail manager	6.4%		0.1%	0.1%	6.5%	
24v	Specialist professionals not classified elsewhere (integrated)	6.3%		1.3%	1.3%	7.6%	integrated due to limited number of internet survey respondents
201	Workers in religion	6.1%		1.4%	1.4%	7.5%	
592	Quasi-manufacturing workers	6.1%		1.5%	1.5%	7.6%	
199	Other teachers	6.0%		0.0%	0.0%	6.0%	
44a	Police officers, maritime safety officials	5.9%		0.0%	0.0%	5.9%	
051	Natural science researchers	5.9%		12.4%	12.4%	18.2%	
246	Communication equipment operators	5.8%		5.5%	5.5%	11.3%	
551	General-purpose, manufacturing, and business-use mechanical apparatus maintenance and repair workers	5.8%		0.7%	0.7%	6.5%	
41x	Residential facilities, office buildings and other management personnel	5.8%		1.4%	1.4%	7.2%	
47x	Forestry and fishery workers	5.7%		5.7%	5.7%	11.5%	
43x	Other public security workers not classified elsewhere (integrated)	5.7%		3.4%	3.4%	9.1%	integrated due to limited number of internet survey respondents
552	Electro-mechanical apparatus maintenance and repair workers	5.7%		0.3%	0.3%	6.0%	
69x	Mine workers	5.6%		5.6%	5.6%	11.3%	
34c	Other sales workers	5.6%		0.2%	0.2%	5.9%	
141	Diagnostic radiographers	5.5%		0.5%	0.5%	6.0%	
17x	Legal workers	5.5%		1.0%	1.0%	6.4%	
26a	Accountancy clerks	5.2%		0.3%	0.3%	5.5%	
143	Clinical laboratory technicians	5.2%		2.4%	2.4%	7.6%	
49x	Product manufacturing and processing workers (metal products)	5.1%		1.1%	1.1%	6.2%	
225	Photographers, film operators	5.1%		0.0%	0.0%	5.1%	
326	Goods purchase canvassers	5.1%		2.1%	2.1%	7.2%	
40c	Customer entertainment workers	5.1%		0.4%	0.4%	5.5%	
24x	Private tutors not classified elsewhere (integrated)	5.0%		1.7%	1.7%	6.8%	integrated due to limited number of internet survey respondents
461	Crop farming workers	5.0%		1.3%	1.3%	6.3%	
38y	Domestic hygiene service workers not classified elsewhere	5.0%		1.2%	1.2%	6.2%	
181	Certified public accountants	4.9%		3.4%	3.4%	8.4%	
19c	University professors	4.8%		4.0%	4.0%	8.8%	

67x	Other electric construction workers (integrated)	4.8%		1.2%	1.2%	6.0%	integrated due to limited number of internet survey respondents
152	Masseurs, chiropractors, acupuncturists, moxacauterists and judo-orthopedists	4.7%		0.0%	0.0%	4.7%	
25c	Other general clerical workers	4.7%		0.4%	0.4%	5.1%	
71x	Cleaning workers	4.7%		1.9%	1.9%	6.5%	
193	Junior high school teachers	4.6%		0.7%	0.7%	5.3%	
07d	Transportation equipment engineers	4.6%		7.0%	7.0%	11.6%	
347	Real estate sales workers	4.5%		0.4%	0.4%	4.9%	
254	Reception and guidance clerical workers	4.5%		1.4%	1.4%	5.8%	
59x	Manufacturing-related workers	4.4%		2.1%	2.1%	6.5%	
407	Service workers in places of entertainment, etc.	4.4%		0.7%	0.7%	5.1%	
704	Warehouse workers	4.3%		0.9%	0.9%	5.2%	integrated due to limited number of internet survey respondents
191	Kindergarten teachers	4.2%		1.1%	1.1%	5.3%	
323	Shop assistants	4.2%		0.3%	0.3%	4.5%	
30x	Transport and post clerical workers	4.2%		0.0%	0.0%	4.2%	
46x	Other agricultural workers (integrated)	4.2%		0.6%	0.6%	4.8%	
674	Telecommunication equipment construction workers	4.2%		3.0%	3.0%	7.1%	
29x	Outdoor service workers	4.2%		0.8%	0.8%	5.0%	
122	Dental surgeons	4.0%		0.0%	0.0%	4.0%	
681	Civil engineering workers	3.9%		0.7%	0.7%	4.6%	
62x	Other transport workers (integrated)	3.9%		1.0%	1.0%	4.9%	integrated due to limited number of internet survey respondents
42x	Service workers not classified elsewhere (integrated)	3.8%		0.4%	0.4%	4.2%	
19a	Senior high school teachers	3.8%		0.8%	0.8%	4.6%	
145	Certified orthoptists, speech therapists	3.5%		0.5%	0.5%	4.0%	
371	Care assistants	3.5%		1.1%	1.1%	4.6%	
705	Delivery workers	3.4%		0.7%	0.7%	4.0%	
12x	Health care workers not classified elsewhere (integrated)	3.3%		0.1%	0.1%	3.5%	
256	Telephone receptionists	3.3%		0.3%	0.3%	3.6%	
151	Nutritionists	3.2%		0.1%	0.1%	3.3%	
64x	Stationary and construction machinery operators	3.2%		1.6%	1.6%	4.8%	integrated due to limited number of internet survey respondents
346	Finance and insurance sales workers	3.2%		0.1%	0.1%	3.3%	
192	Elementary school teachers	3.1%		0.7%	0.7%	3.8%	
739	Other carrying, cleaning, packaging, and related workers	3.1%		0.7%	0.7%	3.8%	
124	Pharmacists	3.0%		0.1%	0.1%	3.1%	
65x	Construction workers and civil engineering workers not classified elsewhere (integrated)	3.0%		0.6%	0.6%	3.6%	
61a	Motor vehicle drivers	2.9%		1.0%	1.0%	3.9%	
182	Licensed tax accountants	2.8%		0.2%	0.2%	3.0%	
60a	Railway drivers	2.8%		2.3%	2.3%	5.0%	
361	Care workers (medical and welfare facilities, etc.)	2.8%		0.1%	0.1%	2.9%	
37a	Other healthcare service workers	2.5%		0.4%	0.4%	2.9%	integrated due to limited number of internet survey respondents
23x	Musicians, stage designers	2.4%		0.5%	0.5%	2.9%	
553	Automobile maintenance and repair workers	2.4%		0.5%	0.5%	2.9%	
453	Security staff	2.3%		0.1%	0.1%	2.4%	
424	Advertisers	2.3%		3.0%	3.0%	5.2%	
661	Carpenters	2.3%		1.1%	1.1%	3.4%	
16x	Social welfare specialist professionals	2.3%		0.6%	0.6%	2.9%	
22x	Artists, designers	2.2%		1.2%	1.2%	3.4%	
121	Doctors	2.2%		1.1%	1.1%	3.3%	
144	Physiotherapists, occupational therapists	2.0%		0.1%	0.1%	2.1%	
24s	Private tutors (Study guidance)	2.0%		0.6%	0.6%	2.6%	integrated due to limited number of internet survey respondents
666	Pipe laying workers	2.0%		1.1%	1.1%	3.1%	
33a	Other quasi-sales workers	1.9%		1.0%	1.0%	2.9%	
211	Authors	1.6%		0.1%	0.1%	1.7%	
39x	Cooks and bartenders	1.5%		0.4%	0.4%	1.9%	
38x	Beauticians and cosmetic service workers	1.5%		0.0%	0.0%	1.5%	
362	Home visiting care workers	1.5%		1.9%	1.9%	3.3%	
133	Nurses (including assistant nurses)	1.2%		0.4%	0.4%	1.6%	
70x	Other carrying workers	0.8%		0.7%	0.7%	1.5%	
35x	Domestic support service workers	0.5%		0.2%	0.2%	0.6%	
381	Hairdressers	0.4%		0.4%	0.4%	0.8%	
701	Mail and telegram collection and delivery workers	0.3%		0.0%	0.0%	0.3%	

C) Sources and methods for Involvement rate estimates

Classification Code		Sources and methods for Involvement rate estimates			Comments
		Involvement rate data	Involvement rate computer software and data bases	Involvement rate Research and Development	
All	All	Survey	Survey	Survey	