Who Are Leaving Metropolitan Areas in the Post-COVID-19 Era：An Analysis of Urban Residents' Migration Decisions in Japan

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Abstract: Japan's central and local governments have implemented various measures to encourage internal migration from metropolitan areas to local areas to address issues related to population decrease and unbalanced regional development. However, despite a significant decrease in net migration flow from Japan's local areas to main metropolitan areas over the past 50 years, the net outflow from metropolitan to local areas has remained negative. This suggests that Japan's population migration spatial pattern is more difficult to change than that of developed countries in Europe and America. On the other hand, the three-year-long COVID-19 pandemic has brought significant changes to people's work, consumption, learning, and daily life. Will such changes affect Japanese residents' residential location choices and migration patterns? This paper uses data from "The Fifth Survey on Residents' Life Consciousness and Behavior Changes under the Influence of COVID-19" and a multinomial logit model to conduct empirical analysis. Our findings suggest that individuals who are more likely to leave metropolitan areas are those with relatively low job opportunity costs in metropolitan areas and high employment probabilities in local areas, young adults who have entered the labor market within the past ten years, individuals who have been retired for a few years, and those who prioritize their well-being. In contrast, household-related factors such as marital status, having underage children, and the work status of residents' spouse did not significantly affect their decision to move. These results provide new evidence to support major migration theories. Based on our analysis, policy recommendations are also discussed.

Key Words： leaving metropolitan areas, migration decision, Japan, the post-Covid-19 era.

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1. Introduction

After the outbreak of the COVID-19 pandemic, metropolitan areas in many countries have experienced a phenomenon whereby residents are moving out (Tønnessen, 2021), such as in German (Stawarz et al., 2022), Australia (McManus, 2022), Norway (Tønnessen, 2021). Similarly, Japan has seen a notable exodus of urban residents from its major metropolitan areas. Fielding and Ishikawa (2021) report that net in-migration is decreasing in prefectures in main metropolitan areas of Japan: Tokyo-to (in Tokyo Metropolitan Area), Shiga-ken (in Kansai Metropolitan Area), Aichi-ken (in Nagoya Metropolitan Area), and Fukuoka-ken (in Fukuoka Metropolitan Area), based on a comparison of population distribution data from 2019 and 2020. Additionally, Kotsubo and Nakaya (2022a) found that the pandemic has strengthened migration from the center to the suburbs within the Tokyo Metropolitan Area, showing a gradual increase, while having minimal impact on migration among other areas. These phenomena suggest that people's residential area preferences are shifting in the post-COVID-19 era.

Japan has been grappling with the issue of an aging population and decreasing labor force for a long period. This problem is far more acute in local areas compared to metropolitan ones. To address the socio-economic issues arising from the rapid population decline in local regions and mitigate the uneven regional development, Japan's central and local governments have actively implemented measures to encourage internal migration from metropolitan to local areas. Examples include the Community-Reactivating Cooperator Squad Project and the Regional Revitalization (chihō sōsei) Strategy. Despite such efforts, the effectiveness of these measures has been limited. One of the main reasons for this is the lack of understanding about the underlying factors of residents' migration decisions among policymakers and academia. It seems that Japan's population migration spatial pattern, which is affected by many economic and non-economic factors, is more difficult to change than that of developed countries in Europe and America.

On the other hand, the three-year-long COVID-19 pandemic has brought significant changes to people's work, consumption, learning, and daily life. It has promoted the trend of people leaving densely populated cities worldwide. This situation presents an opportunity for local areas in Japan to attract new residents. Although domestic migration trends in Japan after the pandemic haveS been studied at the national level and regional level (e.g., Fielding & Ishikawa, 2021; Kotsubo & Nakaya, 2022a), very few empirical study has been conducted at the micro-level. Until recently, our understanding of internal migration behavior after the COVID-19 pandemic is still limited, and existing literature has not provided enough information to identify those who are more mobile during this period. To understand the new migration trends in the post-COVID-19 era, it is essential to conduct micro-data-based empirical studies that reveal the factors influencing migration movements. This

knowledge will help the government formulate more effective policies and measures to attract residents to move to local areas.

The central research question of this study is: *who are more likely to move out of metropolitan areas in Japan in the post-COVID-19 era, and what factors influence migration behaviors?* To answer this question, we utilize data from "The Fifth Survey on Residents' Life Consciousness and Behavior Changes under the Influence of COVID-19," conducted by the Cabinet Office of Japan. Using a Multinomial Logit Model (MNL), we examine the determinants of residents' migration decisions of leaving the metropolitan areas. Based on our findings, we also discuss how to optimize the theoretical model of migration decisions and propose policy implications to encourage residents to settle in local areas.

In Section 2, we present a literature review on influencing factors in migration leaving metropolitan areas. Section 3 briefly reports the data and variables. In Section 4, a discrete choice model of the multinomial logit model is introduced. Empirical testing results are presented in Section 5. The paper concludes with Section 6, which summarizes the findings and policy implications.

2. Literature review

2.1 Reasons for leaving metropolitan areas

Although the literature on migration is extensive, there is no single, coherent theory in social science about the reasons for migration leaving metropolitan areas. For example, residents in Japan mainly leave the Tokyo Metropolitan Area for work-related reasons, followed by reasons such as enrolling in or graduating from a university, and reuniting with family (Ito, 2001). Conversely, in the Netherlands, people's desire to relocate to smaller cities or towns is driven not only by employment opportunities but also by factors such as health, education, more suitable dwelling, and the vicinity of support networks of friends and family (Van Leeuwen and Venhorst, 2021). As a subfield of internal migration, the factors that influence residents' decisions to leave metropolitan areas remain a topic of interest in migration studies.

The neoclassical economic perspective is the most well-known theory of migration, which posits that individuals are rational decision-makers who seek to maximize their utility. Individuals decide to migrate when they determine that the expected benefits outweigh the costs, resulting in a maximum positive net return. Both benefits and costs can be measured in monetary or non-monetary terms. In monetary terms, a higher expected benefit, often represented by expected wage in the destination, increases the likelihood of migration, while higher migration costs reduce the likelihood (Sjaastad, 1962; Massey et al., 1993). Previous research has also emphasized the importance of the probability of obtaining employment in people's migration decisions (Massey et al., 1993; Greenwood, 1997). For example, a recent research by Tønnessen (2021) in Norway indicates that those in professions with equally accessible job opportunities across the country, such as teachers and nurses, are more likely to

move out of the capital city of Oslo after the COVID-19 pandemic.

In addition to monetary factors, Sjaastad (1962) emphasizes the significance of non-monetary factors in affecting migration. Similarly, Graves and Linneman (1979) classified the goods consumed into traded and non-traded goods, and find that variables lead to changed non-traded demand increase the probability of movement. Environmental amenities, such as air quality, weather, open and green spaces, are essential part of non-monetary factors as well as non-traded goods. Metropolitan and local areas offer distinct environment amenities for residents. Metropolitan areas provide convenience, diversity, and infrastructures, but are also characterized by noise, traffic congestion, and other drawbacks. Conversely, local areas offer a quiet living environment, natural landscapes, and good air quality, but often lack the vibrancy, chances to meet diverse people, and range of shopping and cultural options. In the wake of the COVID-19 pandemic, scholars argue that due to the fear of infection and a desire to reduce risks, the benefits of living in local areas have become more pronounced, with the increasing value of environmental amenities such as natural resources and low population density (Kotsubo & Nakaya, 2022b), green space and having an own garden (Dolls & Mehles, 2021). As a result, the population leaving metropolitan areas has been observed in many countries, and local areas have become more attractive to residents (Cotella & Vitale-Brovarone, 2021; Nathan & Overman, 2020; Takahashi et al., 2021).

The third aspect of adjusting the explanatory model concerns the decision-making unit. While neoclassical economic theory generally views movement as an individual decision, the new economic model of migration sees migration as a household decision (Stark & Bloom,1985; Etzo, 2008; Mincer, 1978; Massey et al., 1993). According to the model, households make migration decisions to minimize risks and overcome constraints related to various market imperfections (Stark & Bloom, 1985; Massey et al., 1993; Etzo, 2008). Another line of research has investigated how changes in family composition, including marriage, the birth of children, children leaving home, or divorce, can lead to revised housing demands that are typically met by moving (Graves and Linneman, 1979). With respect to children, it has been argued that families with children often prefer more rural and spacious areas (Schwanen and Mokhtarian, 2004) due to their pursuit of larger living spaces and lower housing costs. Dolls and Mehles (2021) found that the pandemic increased demand for (semi)detached housing and a desire to live in a greener environment among families in Germany. Kotsubo and Nakaya (2022b) observed that underage children in the Tokyo Metropolitan Area tended to move out with their parents after the outbreak of COVID-19. However, a study by Tønnessen (2021) in Norway contradicts these findings, indicating that families without children were leaving metropolitan areas at a higher rate.

The fourth aspect highlighted in migration studies is the life cycle, with age often serving as a proxy for different life stages. Jong et al. (2016) discovered that younger migrants in the Netherlands tended to move up the urban hierarchy, while older migrants tended to move down. Regarding post-epidemic migration, Stawarz et al. (2022) observed a significant decline in residents moving to metropolitan

areas, particularly among those aged 18-24 and 25-29 in Germany. Dolls and Mehles (2021) similarly found that a high proportion of young people in Germany plan to leave metropolitan areas. In Japan, Kotsubo and Nakaya (2022b) suggest that many young people are relocating from Tokyo to the surrounding areas. However, Tønnessen (2021) noted that there was not much increase among residents under 25 who moved out of Oslo, the capital of Norway. Additionally, the migration propensity of middle-aged adults was discussed in the previous paragraph concerning the marital status and children. Last but not least, retired migrants have also been shown to have a tendency to move out of metropolitan areas (Ishikawa, 2016). Kotsubo and Nakaya (2022b) have found that many residents over 55 years old move from the Tokyo Metropolitan Area to peripheral areas after the COVID-19 epidemic.

2.2 Evaluation of previous studies

As mentioned above, migration motivations can be numerous and difficult to distinguish (Tønnessen, 2021). Previous studies have used various theories, such as neoclassical economic theory, new economic model, and life cycle theory, to explain migration behavior. However, there is still a lack of a satisfactory explanation for migration decisions in the context of leaving metropolitan areas in Japan.

Firstly, among the economic factors, the effect of job opportunity cost is implicitly ignored. Under Japan's prevailing lifetime employment system, the qualifications, experiences, and social capital accumulated at one company generally transfer imperfectly to another. If residents made the relocation decision out of one's willingness rather than the transfer order from the company, they might have to bear the loss of job opportunity cost. Such loss can be more significant for formal employees in Japan than in other countries where rejoining formal employment is less difficult.

Secondly, existing explanations regarding households as the decision-making unit are inadequate. Previous studies have conflicting conclusions, such as whether having underage children increases a household's propensity to move. Furthermore, while the employment status of the respondent is typically included in explanatory models, the spouse's work is often overlooked.

This study uses questionnaire data on individual migration behavior in the post-COVID-19 era to analyze the factors affecting migration decisions. We aim to provide new evidence for migration theory and address the flaws mentioned above in previous studies.

3. Data and variables

"The Fifth Survey on Residents' Life Consciousness and Behavior Changes under the Influence of COVID-19" was conducted by the Cabinet Office of Japan from June 1 to June 9, 2022. The survey used stratified random sampling method and divided the population into smaller subgroups based on prefecture and gender. The sample size for subgroup in each prefecture was proportional to its

population, and the number of male and female respondents were equal. Besides these controls, a random sample were drawn from each subgroup and combined to form the final sample. A total of 10,056 valid questionnaires were collected.

3.1 Dependent variable

The questionnaire inquired about migration behavior by asking, "***Have you taken any specific action moving to local areas in the last six months?***" In the context of this question, "local areas" refer to places with a smaller population than the respondent's previous residence. Therefore, "metropolitan areas" and "local areas" are relative concepts used here, rather than absolute geographic definitions. However, this approach is acceptable, if not preferable, in the post-COVID-19 era, as it reflects the migration behavior of people leaving crowded and potentially hazardous areas for less dense areas.

Respondents could choose multiple answers from the ten options provided. These optional answers were then grouped into four alternative migration choices: 1) No action taken; 2) Intention to move (including actions such as gathering information on employment, housing, or schools, consulting with local government officials, discussing plans with family members, or saving money for the move); 3) Specific moving plan (including having chosen a destination or created a detailed schedule); and 4) Actual movement completed from metropolitan to local areas.

Table 1 presents the distribution of the data based on our classification. By using these four alternatives as dependent variable values, it becomes possible to analyze the different stages of migration behavior, thereby facilitating a deeper understanding of the underlying mechanisms and influencing factors of migration decisions.

Table 1. Distribution of migration choices

Alternatives of the Variable *Migration*	**No. of Respondents**	**Percent (%)**
1= No action taken	8938	88.92
2= Intention to move (referred as "Intention" hereinafter)	596	5.93
3= Specific moving plan (referred as "Plan" hereinafter)	102	1.01
4 = Actual movement completed (referred as "Movement" hereinafter)	416	4.14
Total	10052	100

3.2 Independent variables

This paper introduces two income variables: annual individual income and family income, both graded on a relative scale from 1 to 6. The scale represents income levels ranging from below 2 million Yen to above 10 million Yen. The average individual income level is 2.062, with a standard deviation of 1.262, while the average family income level is 3.232, with a standard deviation of 1.525. Additionally, this analysis includes the square of the two income level variables to examine potential non-linear relationships with migration decisions.

This analysis also includes dummies corresponding to the work status of the respondent and their spouse, including formal employee (=1); informal employee (=2); manager (=3); self-employed (=4); domestic workers (=5); student (from high school student to graduate student, =6); unemployed job seekers (=7); unemployed but not looking for a job (=8). The number of people in each type of occupation is listed in Table 2.

Table 2. Distribution of the respondent and the spouse's work status

Type of work status	Work status of the respondent		Work status of the respondent's spouse	
	Freq.	Percent (%)	Freq.	Percent (%)
1=formal employee	4,147	41.26	2,169	39.7
2=informal employee	1,979	19.69	1,122	20.54
3=manager	136	1.35	127	2.32
4=self-employment	540	5.37	394	7.21
5=domestic worker	81	0.81	78	1.43
6=student	723	7.19	9	0.16
7=unemployed job seeker	305	3.03	82	1.5
8=unemployed but not looking for a job	2,141	21.3	1,482	27.13
Total	10,052	100	5,463	100

Our data contains dummies related to the family demographics, such as marital status (=1 if having a spouse or married; 0 otherwise) and children (=1 having underage children under 18; 0 otherwise). Specifically, we have 5,463 participants who are married and 1,911 who have children under the age of 18.

Our data also includes dummies corresponding to individuals' attitudes toward environmental amenities. Due to the difficulty of measuring specific changes in amenities at the micro-level before and after relocation, we instead rely on participants' recognition of new values. We use three dummy variables to represent their attitude toward Sustainable Development Goals (SDGs), Well-being and community participation activities. The first dummy of SDGs has four values (=0 indicating no knowledge; =1 indicating no interest; =2 indicating some interest; =3 indicating very interested) and the percentage of respondents in each of these interest levels are 9.6%, 28.5%, 51.4%, and 10.5%, respectively. The second dummy for Well-being has the same four values and a corresponding percentages of 42.1%, 26.6%, 24.8%, and 6.5%. The third dummy for community participation activities has three values (= 0 indicating no change from pre-pandemic levels; =1 indicating increased interest; =-1 indicating decreased interest). The corresponding percentage are respectively 84.2%, 8.1%, and 7.7%, respectively. These variables represent a more environmentally friendly and sustainable lifestyle, which is more attainable in local areas than in metropolitan areas.

In addition, we incorporated a set of variables that pertained to an individual's evaluation of their life satisfaction in our analysis. In typical circumstances, migration is a deliberate decision made by individuals or households with the intention of improving their living conditions, which should ideally increase their overall life satisfaction (however, we do not consider forced migrations caused by situations such as wars, earthquakes or hunger in this study). Nevertheless, the correlation between

migration and life satisfaction has seldom been studied. Hence, we include variables measuring satisfaction with health status, job, parenting environment, social relationships, entertainment, and overall life satisfaction. These variables are measured on a scale of 1 to 11, with a rating of 1 representing "not satisfied at all," and 11 indicating "extremely satisfied." The mean values of satisfaction for health status, job, parenting environment, social relationships, entertainment, and overall life satisfaction are 6.767, 6.268, 6.150, 6.533, 6.889, and 6.863, respectively.

The definitions of these variables are presented in Table 3, and summary statistics are reported in Table 4.

Table 3. Definitions of variables

Variable	Definition	Nature
IncomeF	The family annual income level: 1=less than 2 million Yen; 2=2~4 million Yen; 3=4~6 million Yen; 4=6~8 million Yen; 5=8~10 million Yen; 6=above 10 million Yen.	Ordinal
IncomeF2	square of *IncomeF*.	Ordinal
IncomeP	The individual annual income level: 1=less than 2 million Yen; 2=2~4 million Yen; 3=4~6 million Yen; 4=6~8 million Yen; 5=8~10 million Yen; 6=above 10 million Yen.	Ordinal
IncomeP2	square of *IncomeP*.	Ordinal
WorkSelf	The work status of the respondent: 1=formal employee; 2=informal employee; 3=manager; 4=self-employment; 5=domestic worker; 6=student; 7=unemployed job seeker; 8=unemployed but not looking for a job.	Dummy
WorkSpouse	The work status of the respondent's spouse: 1=formal employee; 2=informal employee; 3=manager; 4=self-employment; 5=domestic worker; 6=student; 7=unemployed job seeker; 8=unemployed but not looking for a job.	Dummy
Marriage	The respondent's marital status: 1=married; 0=otherwise.	Dummy
Childun18	Whether the respondent's family has underage children: 1=yes; 0=otherwise.	Dummy
Female	Whether the respondent is a female:1=yes; 0=otherwise.	Dummy
Age	The respondent's age level: 1=Age:<=19; 2=Age:20~24; 3=Age:25~29; 4=Age:30~34; 5=Age:35~39; 6=Age:40~44; 7=Age:45~49; 8=Age:50~54; 9=Age:55~59; 10=Age:60~64; 11=Age:65~69; 12=Age:70~74; 13=Age:75~79; 14=Age:>=80.	Ordinal
Age2	The square of one's age level.	Ordinal
Education	The respondent's educational attainment, in or graduated from: 1=middle school; 2=high school; 3=vocational school; 4=junior college; 5=university; 6=graduate school.	Ordinal
VaSDGs	One's attitude toward Sustainable Development Goals: 0=no knowledge; 1=no interest; 2=some interest; 3=very interested.	Ordinal
VaWellbeing	One's attitude toward Well-being: 0=no knowledge; 1=no interest; 2=some interest; 3=very interested.	Ordinal
ComActivity	One's attitudes towards community participation activities: 0= no change from pre-pandemic level; 1=increased interest; -1=decreased interest.	Ordinal
SatisOverall	One's satisfaction with life overall: 1=not satisfied at all; ~ 11=extremely satisfied.	Ordinal
SatisHealth	One's satisfaction with health status: 1=not satisfied at all; ~ 11=extremely satisfied.	Ordinal
SatisJob	One's satisfaction with job: 1=not satisfied at all; ~ 11=extremely satisfied.	Ordinal
SatisParenting	One's satisfaction with parenting environment: 1=not satisfied at all; ~ 11=extremely satisfied.	Ordinal
SatisRelation	One's satisfaction with social relationships: 1=not satisfied at all; ~ 11=extremely satisfied.	Ordinal
SatisEntertain	One's satisfaction with entertainment: 1=not satisfied at all; ~ 11=extremely satisfied.	Ordinal

Table 4. Descriptive statistical results of each variable

Variable	Mean	SD	Min	p50	Max
IncomeF	3.232	1.525	1	3	6
IncomeF2	12.77	10.92	1	9	36
IncomeP	2.062	1.262	1	2	6
IncomeP2	5.844	7.504	1	4	36
SatisOverall	6.863	2.23	1	7	11
SatisHealth	6.767	2.174	1	7	11
SatisJob	6.268	2.385	1	6	11
SatisParenting	6.150	2.338	1	6	11

Variable	Mean	SD	Min	p50	Max
SatisRelation	6.533	2.154	1	6	11
SatisEntertain	6.889	2.172	1	7	11
Marriage	0.543	0.498	0	1	1
Childun18	0.19	0.392	0	0	1
Occuselt	3.969	3.265	1	3	9
Student	0.0719	0.258	0	0	1
WorkSelf	0.685	0.465	0	1	1
FworkSelf	0.48	0.5	0	0	1
MworkSelf	0.0135	0.116	0	0	1
VaSDGs	1.629	0.797	0	2	3
VaWellbeing	0.956	0.963	0	1	3
ComActivity	0.0041	0.397	-1	0	1
OccuSpouse	1.914	2.793	0	1	8
StudentSpouse	0.0009	0.0299	0	0	1
WorkSpouse	0.387	0.487	0	0	1
FworkSpouse	0.268	0.443	0	0	1
MworkSpouse	0.0126	0.112	0	0	1
Education	3.861	1.397	0	4	6
Female	0.5	0.5	0	0.5	1
Age	6.622	3.422	1	7	14
Age2	55.56	48.09	1	49	196

4. Method: a multinomial logit model

Here we propose a multinomial logit model dealing with the migration choices as presented in Table 1. The econometric model is based on the works of Hausman and McFadden (1984). In this analysis, the individual *n* chooses among four migration decisions. The individual *n*'s utility derived from alternative *j*, *j=1,…, J* (*J*=4) is

$$U_{nj} = V_{nj} + \varepsilon_{nj} = x_n^{'}\beta_j + \varepsilon_{nj};\ j \in J, n \in N, \quad (1)$$

where U_{nj} is the utility that the *n*th individual obtains by choosing *j*th alternative choice; V_{nj} is the observed utility (also called representative utility); x is a vector of personal attributes; ε_{nj} is the stochastic utility, which remains unobserved; β is a vector of individual-specific coefficients; and N is the total number of individuals.

The probability that individual *n* chooses alternative *j* is the probability that the utility of alternative *j* exceeds that of all other choices.

$$P_{nj} = P(U_{nj} > U_{nk}), \forall k \quad \text{where } j,\ k \in J \quad \text{and} \quad k \neq j \quad \exp(x_n^{'}\beta_k) \quad (1)$$

Under the multinomial logit framework, the choice probability also equals:

$$P_{n1} = \frac{1}{1+\sum_{k=2}^{J} \exp(x_n^{'}\beta_k)} \quad (2)$$

$$P_{nj} = \frac{\exp(x_n' \beta_k)}{1+\sum_{k=2}^{J} \exp(x_n' \beta_k)} \text{ for } j = 2,\ldots, J. \quad (3)$$

The model can be estimated by maximizing the log-likelihood. Meanwhile, the model has an implicit restriction named independence of irrelevant alternatives (i.e., IIA property). The independence placed on ε_{nj} requires that for any individual, the ratio of choice probabilities of any two alternatives is independent of the utility of any other alternative. This implies that the odds ratio between any two alternatives should not change by the inclusion or exclusion of any other alternative.

5. Results

We have estimated multiple versions of the MNL model and presented the outcomes in Table 5~7. To ensure the models' validity, we conducted a likelihood ratio test to verify the independence of irrelevant alternatives (IIA) assumption. The test follows a $\chi^2(m)$ distribution, where m denotes the number of independent variables. Our results reveal that the IIA assumption cannot be rejected in any of the models, indicating that the models are valid.

Table 5. Estimation results for the Model 1、2

	Model 1			Model 2		
variable	Intention (j=2)	Plan (*j*=3)	Movement (*j*=4)	Intention (*j*=2)	Plan (*j*=3)	Movement (*j*=4)
IncomeF	-0.147	-0.393	-0.311	-0.640*	0.092	-0.015
IncomeF2	0.020	0.036	0.023	0.089**	-0.002	-0.018
IncomeP	-0.008	0.382	-0.253	-0.095	-0.144	-0.102
IncomeP2	0.009	-0.057	0.039	0.027	0.001	0.004
1.WorkSelf= formal employee	0	0	0	0	0	0
2.WorkSelf= informal employee	-0.221	0.310	-0.245	-0.490	0.637	-0.051
3.WorkSelf= manager	0.393	0.460	0.185	-0.584	0.746	0.787
4.WorkSelf= self-employed	0.163	-0.285	0.504*	-0.796*	-0.574	0.780*
5.WorkSelf= domestic worker	-0.007	0.391	1.439***	-0.561	-12.040	1.500**
6.WorkSelf= student	-0.200	-0.691	-0.990***	0.179	0.956	-14.710
7.WorkSelf= unemployed job seeker	0.239	-0.979	0.743**	0.155	-0.195	0.960**
8.WorkSelf= unemployed but not looking for a job	-0.536**	-0.146	0.272	-0.644*	0.202	0.296
Marriage	-0.011	0.791**	0.269			
Childun18	-0.053	-0.227	0.217	-0.200	-0.174	0.026
Female	-0.197*	0.037	-0.283*	-0.033	-0.593	-0.194
1.WorkSpouse= formal employee				0	0	0
2.WorkSpouse= informal employee				-0.189	0.032	0.049
3.WorkSpouse= manager				1.036**	1.295	0.166
4.WorkSpouse= self-employed				1.097***	0.816	-0.294
5.WorkSpouse= domestic worker				1.251**	1.750*	0.726
6.WorkSpouse= student				3.769***	3.934***	-33.000
7.WorkSpouse= unemployed job seeker				0.956*	1.372	0.048
8.WorkSpouse= unemployed but not looking for a job				-0.013	-0.891	0.236
Age	-0.294***	-0.505**	-0.383***	-0.692***	-0.545	-0.478***
Age2	0.011*	0.008	0.019***	0.036***	0.007	0.022**
Education	0.075*	0.080	0.118**	0.158**	0.138	0.125*
_cons	-1.393***	-2.467**	-1.207**	0.326	-2.076	-1.160
N	10052			5463		

	Model 1	Model 2
pseudo R^2	0.047	0.079
	LR chi2(51) = 424.77, Prob > chi2 = 0.0000	LR chi2(69) = 350.49, Prob > chi2 = 0.0000

Notes: *, **, and *** mean for significance at 5%, 1%, and 0.1% levels, respectively.

Table 6. Estimation results for the Model 3、4

	Model 3			Model 4		
variable	Intention (j=2)	Plan (j=3)	Movement (j=4)	Intention (j=2)	Plan (j=3)	Movement (j=4)
IncomeF	-0.091	-0.310	-0.315	-0.091	-0.327	-0.305
IncomeF2	0.012	0.023	0.022	0.012	0.025	0.022
IncomeP	-0.043	0.344	-0.267	-0.033	0.407	-0.279
IncomeP2	0.011	-0.054	0.039	0.009	-0.067	0.041
1.WorkSelf	0.000	0.000	0.000	0.000	0.000	0.000
2.WorkSelf	-0.231	0.291	-0.246	-0.239	0.263	-0.263
3.WorkSelf	0.352	0.411	0.177	0.343	0.376	0.167
4.WorkSelf	0.131	-0.348	0.488*	0.135	-0.394	0.489*
5.WorkSelf	-0.084	0.366	1.454***	-0.082	0.346	1.441***
6.WorkSelf	-0.216	-0.683	-1.015***	-0.216	-0.714	-1.025***
7.WorkSelf	0.171	-1.012	0.766**	0.159	-0.809	0.807**
8.WorkSelf	-0.521*	-0.075	0.263	-0.553**	-0.061	0.278
Marriage	0.042	0.832**	0.241	0.032	0.815**	0.270
Childun18	-0.057	-0.218	0.221	-0.044	-0.286	0.290
Female	-0.179	0.104	-0.300*	-0.194*	0.090	-0.302*
Age	-0.275***	-0.458*	-0.347***	-0.284***	-0.434*	-0.360***
Age2	0.010	0.005	0.016**	0.011*	0.002	0.012**
Education	0.031	0.031	0.099*	0.029	0.026	0.102**
VaSDGs	0.063	-0.112	0.002	0.065	-0.105	0.005
VaWellbeing	0.402***	0.524***	0.124*	0.403***	0.521***	0.127*
ComActivity	0.582***	0.868***	0.043	0.598***	0.854***	0.061
SatisOverall	-0.0611**	-0.047	0.050*			
SatisHealth				-0.037	-0.074	-0.003
SatisJob				0.009	0.151*	0.045
SatisParenting				-0.007	0.047	-0.058*
SatisRelation				-0.054	-0.075	-0.013
SatisEntertain				0.002	-0.026	0.039
_cons	-1.512***	-2.694**	-1.614***	-1.328***	-3.107***	-1.400**
N	10052			10052		
pseudo R^2	0.068			0.070		
	LR chi2(63) = 614.93 Prob > chi2 = 0.0000			LR chi2(75) = 630.43 Prob > chi2 = 0.0000		

Notes: *, **, and *** mean for significance at 5%, 1%, and 0.1% levels, respectively.

5.1 Economic factors

This section examines the economic factors that influence migration decisions, specifically work status and income level. Model 1 in Table 5 tests these factors, with formal employees as the base group and other work statuses compared against it. The positive or negative results of other work statuses represent the relatively higher or lower probability of making a choice. The results show that self-employed persons, domestic workers, and unemployed job seekers are more likely to complete the movement from metropolitan to local areas, while their work statuses are not significantly

correlated with migration intention or plan. Unemployed individuals who are not actively seeking employment are less likely to have the intention to leave metropolitan areas. The work statuses of managers and informal employees have no significant impact on migration decisions at any stage, no matter in the stage of intention, plan, or actual movement.

The different work statuses' impact on migration decisions may be rooted in cost considerations, including relocation costs, and opportunity costs - the benefits that are forgone by choosing one option over another. The analysis shows that neither the income level of an individual nor a household is significantly associated with migration decisions, possibly because domestic relocation costs are relatively low (especially compared with international migration, which usually considers relocation costs). However, individuals in self-employed, domestic worker, or unemployed job seeker status are more likely to move out of metropolitan areas than formal employees. Their higher mobility may be because they experience lower opportunity costs when relocating. There isn't a significant difference between managers and formal employees when it comes to deciding whether to relocate or not, because they face similar high opportunity costs.

Notably, although informal employees are supposed to be more mobile than formal employees, the analysis shows no significant difference in migration decisions between them. Such a result may be because the employment probability also plays a role. Although the opportunity cost of informal employees moving is not very high, they still need to stay in metropolitan areas, where the economy is more prosperous and employment opportunities are more plentiful. This higher chance to get a job keeps the informal employees to retain in metropolitan areas rather than moving to local areas.

5.2 Values of environment amenity

The COVID-19 pandemic has shifted people's preferences for their living environment, with new values such as treasuring the natural environment and sustainable development gaining prominence. This section explores the relationship between three types of new values and migration decision-making.

The analysis shows that the value of well-being has a significantly positive impact on all three stages of migration decision-making - intention, plan, and actual movement (see Model 3 in Table 6). In contrast, the value of community participation has a positive effect on intention and plan to move out of metropolitan areas, but has no significant impact on actual movement. Lastly, the value of SDGs does not influence any of the three stages of migration decisions.

The lack of Impact from the value of SDGs may be due to the perceived distance between this macroscopic topic and residents' daily lives. Although residents may have concerns about SDGs, they may not necessarily take action to move out of metropolitan areas to support this value. Similarly, community participation is crucial in considering migration intentions and plans, but residents tend to refrain from participating in community affairs after relocating.

These findings suggest that new values related to the environment and sustainable development are

increasingly important in migration decision-making, with well-being being the most significant factor.

5.3 Household as a decision-making unit

Regarding the household as the decision-making unit, we examine factors such as marital status, underage children, gender, and the spouse's work status (see Model 1 in Table 5). The results show that while being married has a positive correlation with migration plans, there is no significant correlation between marital status and migration intention or actual movement. Surprisingly, the existence of underage children does not influence the family's migration decision, and being female negatively correlates with migration intention and actual movement. According to the odds ratio derived from Model 1, the probability of women's migration intention is 21% lower than that of men, and their probability of actual movement is 26% lower than that of men. These results add new evidence to the existing theory of family decision-making, which suggests that families with underage children are more likely to move out of metropolitan areas and that mothers play a vital role in the migration decision. Our results in Tables 4 and 5 do not support such assumptions.

Economic factors may explain these results. After the COVID-19 pandemic, the economy has regressed, and employment opportunities in the job market have decreased. At the same time, commodities prices rose, and the families' economic pressure increased, leading them to stay in their previous workplaces instead of leaving metropolitan areas where employment opportunities are more abundant. Additionally, jobs more suitable for women, such as office and service jobs, are primarily located in bigger cities. In contrast, jobs more suited for men, such as manufacturing and agriculture, are more likely to distribute in peripheral or rural areas. Therefore, the employment opportunity of women may be lower than that of men in local areas, making women reluctant to move out of metropolitan areas.

Next, we include the spouse's work status in our model, by which our sample size shrank from 10,052 to 5,463 (see Model 2 in Table 5). Our findings indicate that the spouse's work status has a significant impact on residents' migration intention and plan, but not on their actual movement. Specifically, residents are more likely to have migration intentions if their spouse is a manager, self-employed, a domestic worker, a student, or an unemployed job seeker. In addition, we find a negative correlation between household income level and migration intention, as well as a positive correlation between the square of household income and migration intention. This suggests that as household income increases, migration intention tends to decrease until it reaches a turning point, beyond which it rises again. Regarding migration plans, residents whose spouses are domestic workers or students have a higher probability of setting them up. Our results suggest that two factors increase the likelihood of migration intentions or plans: higher financial capacity, which increases people's mobility, and a spouse with flexible work arrangements, which reduces the household's opportunity costs. However, the spouse's work status ultimately does not impact the final decision to move.

In conclusion, while the household does play a role as a decision-making unit in migration decisions,

the factors that influence those decisions are complex and multifaceted, and may not always align with existing theories on family decision-making. Economic and work-related factors appear to play a significant role in shaping migration decisions, and may be more influential than traditional family factors such as marital status or the presence of underage children.

5.4 Life cycle

This paper mainly estimates the relationship between the life cycle and migration decisions from the aspect of age. Our analysis reveals that if taking 30~34 years old as the base group, individuals aged 35-69 are less likely to actually move out of metropolitan areas (see Model 5d in Table 7). Moreover, the likelihood of moving out decreases as retirement age approaches, with individuals aged 35-44 having a probability of 60%, those in their early 50s having a probability of about 40% and those aged 60-64 having a probability of about 30% of the base group's migration probability. After exceeding the retirement age, in one's late 60s (65-69 years old), the probability of actual movement increases to about 40% of the base group. Combined with the analysis of other age groups as the base group (see all models in Table 7), our findings suggest that people's preference for metropolitan areas typically forms in the age group of 25-34, with actual movement generally occurring in this life stage. The low probability of moving out continues until age 65-69, likely due to Japan's system of seniority and permanent employment, which encourages long-term employment in the same workplace.

Notably, in the age group of 20-24, individuals show a peak of migration intention to leave metropolitan areas (see Model 5d in Table 7), which is about 65% higher than when they are 30-34 years old. However, the correlation between age 20-24 and actual movement is insignificant. It is in consistence with the finding that student identity is negatively correlated with the probability of actual movement within last six months (see Model 1 in Table 5). The high prevalence of universities in metropolitan areas and the academic system's requirements may be the reason, because 20-24 years old university students need to stay in the university city until graduation. However, when considering employment opportunities, they often look beyond local areas and consider a wider geographical range.

We also find that the relationship between the probability of migration decision and age group follows a U-shaped curve, with the age group being negatively associated with migration intention and actual movement, while the square of the age group is positively correlated. We adopted another analysis method and estimated the impact of each age group, setting one age group as the base group in each estimation (in Table 7). The coefficients of the age group variables represent the relative higher or lower probabilities compared to the base group. When the 60-64 age group is the base, the coefficients of the younger and older groups in actual movement are mostly positive (although not necessarily significant), indicating that this age group represents the bottom of the U-shaped curve.

Finally, our research find evidence of migration occurring approximately ten years after retirement, but not common among individuals in their 60s. Compared to the age group of 60-64, who are around the traditional retirement age, people aged 45-59 show no significant difference in actual migration

Table 7. Estimation results for the Model 5a~5n

	M5a	M5b	M5c	M5d	M5e	M5f	M5g	M5h	M5i	M5j	M5k	M5l	M5m	M5n
variable	**Intention (*j* =2)**													
IncomeF	-0.18	-0.18	-0.18	-0.18	-0.18	-0.18	-0.18	-0.18	-0.18	-0.18	-0.18	-0.18	-0.18	-0.18
IncomeF2	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023
IncomeP	0.209	0.209	0.209	0.209	0.209	0.209	0.209	0.209	0.209	0.209	0.209	0.209	0.209	0.209
IncomeP2	-0.00914	-0.00914	-0.00914	-0.00914	-0.00914	-0.00914	-0.00914	-0.00914	-0.00914	-0.00914	-0.00914	-0.00914	-0.00914	-0.00914
Marriage	-0.0263	-0.0263	-0.0263	-0.0263	-0.0263	-0.0263	-0.0263	-0.0263	-0.0263	-0.0263	-0.0263	-0.0263	-0.0263	-0.0263
Childun18	-0.0844	-0.0844	-0.0844	-0.0844	-0.0844	-0.0844	-0.0844	-0.0844	-0.0844	-0.0844	-0.0844	-0.0844	-0.0844	-0.0844
Student	0.109	0.109	0.109	0.109	0.109	0.109	0.109	0.109	0.109	0.109	0.109	0.109	0.109	0.109
1.Age:<=19	0	-0.145	0.0951	0.357	0.352	0.756*	0.931**	1.287***	1.018**	1.300***	1.608***	1.179**	1.693**	1.453
2.Age:20~24	0.145	0	0.24	0.502**	0.497**	0.901***	1.076***	1.432***	1.163***	1.445***	1.753***	1.324***	1.838***	1.598*
3.Age:25~29	-0.0951	-0.24	0	0.262	0.257	0.661**	0.836***	1.192***	0.923***	1.205***	1.513***	1.084***	1.597**	1.358
4.Age:30~34	-0.357	-0.502**	-0.262	0	-0.00543	0.399*	0.574**	0.929***	0.661**	0.942***	1.251***	0.822**	1.335*	1.096
5.Age:35~39	-0.352	-0.497**	-0.257	0.00543	0	0.404*	0.579**	0.935***	0.666**	0.948***	1.257***	0.827**	1.341*	1.102
6.Age:40~44	-0.756*	-0.901***	-0.661**	-0.399*	-0.404*	0	0.175	0.530*	0.262	0.544*	0.852**	0.423	0.936	0.697
7.Age:45~49	-0.931**	-1.076***	-0.836***	-0.574**	-0.579**	-0.175	0	0.356	0.0869	0.369	0.677*	0.248	0.761	0.522
8.Age:50~54	-1.287***	-1.432***	-1.192***	-0.929***	-0.935***	-0.530*	-0.356	0	-0.269	0.0131	0.322	-0.108	0.406	0.167
9.Age:55~59	-1.018**	-1.163***	-0.923***	-0.661**	-0.666**	-0.262	-0.0869	0.269	0	0.282	0.590*	0.161	0.674	0.435
10.Age:60~64	-1.300***	-1.445***	-1.205***	-0.942***	-0.948***	-0.544*	-0.369	-0.0131	-0.282	0	0.309	-0.121	0.393	0.154
11.Age:65~69	-1.608***	-1.753***	-1.513***	-1.251***	-1.257***	-0.852**	-0.677*	-0.322	-0.590*	-0.309	0	-0.429	0.0841	-0.155
12.Age:70~74	-1.179**	-1.324***	-1.084***	-0.822**	-0.827**	-0.423	-0.248	0.108	-0.161	0.121	0.429	0	0.513	0.274
13.Age:75~79	-1.693**	-1.838***	-1.597**	-1.335*	-1.341*	-0.936	-0.761	-0.406	-0.674	-0.393	-0.0841	-0.513	0	-0.239
14.Age:>=80	-1.453	-1.598*	-1.358	-1.096	-1.102	-0.697	-0.522	-0.167	-0.435	-0.154	0.155	-0.274	0.239	0
Education	0.0662	0.0662	0.0662	0.0662	0.0662	0.0662	0.0662	0.0662	0.0662	0.0662	0.0662	0.0662	0.0662	0.0662
_cons	-2.450***	-2.305***	-2.546***	-2.808***	-2.802***	-3.207***	-3.382***	-3.737***	-3.469***	-3.750***	-4.059***	-3.629***	-4.143***	-3.904***
variable	**Plan (*j* =3)**													
IncomeF	-0.437	-0.437	-0.437	-0.437	-0.437	-0.437	-0.437	-0.437	-0.437	-0.437	-0.437	-0.437	-0.437	-0.437
IncomeF2	0.0428	0.0428	0.0428	0.0428	0.0428	0.0428	0.0428	0.0428	0.0428	0.0428	0.0428	0.0428	0.0428	0.0428
IncomeP	0.304	0.304	0.304	0.304	0.304	0.304	0.304	0.304	0.304	0.304	0.304	0.304	0.304	0.304
IncomeP2	-0.0459	-0.0459	-0.0459	-0.0459	-0.0459	-0.0459	-0.0459	-0.0459	-0.0459	-0.0459	-0.0459	-0.0459	-0.0459	-0.0459
Marriage	0.646*	0.646*	0.646*	0.646*	0.646*	0.646*	0.646*	0.646*	0.646*	0.646*	0.646*	0.646*	0.646*	0.646*
Childun18	-0.18	-0.18	-0.18	-0.18	-0.18	-0.18	-0.18	-0.18	-0.18	-0.18	-0.18	-0.18	-0.18	-0.18
Student	-0.652	-0.652	-0.652	-0.652	-0.652	-0.652	-0.652	-0.652	-0.652	-0.652	-0.652	-0.652	-0.652	-0.652
1.Age:<=19	0	0.672	0.625	0.973	1.809**	2.957***	3.311***	2.966***	3.064***	3.101***	4.224***	3.985***	15.89	15.81
2.Age:20~24	-0.672	0	-0.0467	0.301	1.137**	2.284***	2.639***	2.294***	2.391***	2.429***	3.552***	3.313**	15.22	15.14
3.Age:25~29	-0.625	0.0467	0	0.348	1.184**	2.331***	2.685***	2.341***	2.438***	2.475***	3.598***	3.360**	15.27	15.19
4.Age:30~34	-0.973	-0.301	-0.348	0	0.836*	1.984**	2.338**	1.993**	2.091**	2.128***	3.251**	3.012**	14.92	14.84
5.Age:35~39	-1.809**	-1.137**	-1.184**	-0.836*	0	1.147	1.501	1.157	1.254	1.291	2.414*	2.176*	14.08	14.01
6.Age:40~44	-2.957***	-2.284***	-2.331***	-1.984**	-1.147	0	0.354	0.00971	0.107	0.144	1.267	1.029	12.93	12.86
7.Age:45~49	-3.311***	-2.639***	-2.685***	-2.338**	-1.501	-0.354	0	-0.344	-0.247	-0.21	0.913	0.674	12.58	12.5
8.Age:50~54	-2.966***	-2.294***	-2.341***	-1.993**	-1.157	-0.00971	0.344	0	0.0973	0.135	1.257	1.019	12.92	12.85
9.Age:55~59	-3.064***	-2.391***	-2.438***	-2.091**	-1.254	-0.107	0.247	-0.0973	0	0.0373	1.16	0.922	12.83	12.75
10.Age:60~64	-3.101***	-2.429***	-2.475***	-2.128***	-1.291	-0.144	0.21	-0.135	-0.0373	0	1.123	0.884	12.79	12.71
11.Age:65~69	-4.224***	-3.552***	-3.598***	-3.251**	-2.414*	-1.267	-0.913	-1.257	-1.16	-1.123	0	-0.239	11.67	11.59
12.Age:70~74	-3.985***	-3.313**	-3.360**	-3.012**	-2.176*	-1.029	-0.674	-1.019	-0.922	-0.884	0.239	0	11.91	11.83
13.Age:75~79	-15.89	-15.22	-15.27	-14.92	-14.08	-12.93	-12.58	-12.92	-12.83	-12.79	-11.67	-11.91	0	-0.076
14.Age:>=80	-15.81	-15.14	-15.19	-14.84	-14.01	-12.86	-12.5	-12.85	-12.75	-12.71	-11.59	-11.83	0.076	0
Education	0.0624	0.0624	0.0624	0.0624	0.0624	0.0624	0.0624	0.0624	0.0624	0.0624	0.0624	0.0624	0.0624	0.0624
_cons	-2.692***	-3.364***	-3.318***	-3.665***	-4.502***	-5.649***	-6.003***	-5.659***	-5.756***	-5.793***	-6.916***	-6.677***	-18.58	-18.51
variable	**Movement (*j* =4)**													
IncomeF	-0.364*	-0.364*	-0.364*	-0.364*	-0.364*	-0.364*	-0.364*	-0.364*	-0.364*	-0.364*	-0.364*	-0.364*	-0.364*	-0.364*
IncomeF2	0.0288	0.0288	0.0288	0.0288	0.0288	0.0288	0.0288	0.0288	0.0288	0.0288	0.0288	0.0288	0.0288	0.0288
IncomeP	-0.326	-0.326	-0.326	-0.326	-0.326	-0.326	-0.326	-0.326	-0.326	-0.326	-0.326	-0.326	-0.326	-0.326
IncomeP2	0.0558	0.0558	0.0558	0.0558	0.0558	0.0558	0.0558	0.0558	0.0558	0.0558	0.0558	0.0558	0.0558	0.0558
Marriage	0.296*	0.296*	0.296*	0.296*	0.296*	0.296*	0.296*	0.296*	0.296*	0.296*	0.296*	0.296*	0.296*	0.296*
Childun18	0.0936	0.0936	0.0936	0.0936	0.0936	0.0936	0.0936	0.0936	0.0936	0.0936	0.0936	0.0936	0.0936	0.0936
Student	-0.869**	-0.869**	-0.869**	-0.869**	-0.869**	-0.869**	-0.869**	-0.869**	-0.869**	-0.869**	-0.869**	-0.869**	-0.869**	-0.869**
1.Age:<=19	0	0.109	0.34	0.235	0.772	0.71	0.951*	1.215**	1.449**	1.527**	1.166*	0.67	0.847	0.919
2.Age:20~24	-0.109	0	0.231	0.126	0.663**	0.601**	0.842***	1.106***	1.340***	1.418***	1.057***	0.561*	0.738	0.81
3.Age:25~29	-0.34	-0.231	0	-0.104	0.432	0.37	0.612*	0.875**	1.109***	1.187***	0.827**	0.33	0.507	0.58
4.Age:30~34	-0.235	-0.126	0.104	0	0.536*	0.475*	0.716**	0.980***	1.213***	1.292***	0.931***	0.434	0.612	0.684
5.Age:35~39	-0.772	-0.663**	-0.432	-0.536*	0	-0.0617	0.18	0.443	0.677*	0.755*	0.395	-0.102	0.0753	0.148
6.Age:40~44	-0.71	-0.601**	-0.37	-0.475*	0.0617	0	0.241	0.505	0.739*	0.817**	0.456	-0.0404	0.137	0.209
7.Age:45~49	-0.951*	-0.842***	-0.612*	-0.716**	-0.18	-0.241	0	0.264	0.498	0.576	0.215	-0.282	-0.104	-0.0318
8.Age:50~54	-1.215**	-1.106***	-0.875**	-0.980***	-0.443	-0.505	-0.264	0	0.234	0.312	-0.0487	-0.545	-0.368	-0.296
9.Age:55~59	-1.449**	-1.340***	-1.109***	-1.213***	-0.677*	-0.739*	-0.498	-0.234	0	0.0784	-0.283	-0.779**	-0.602	-0.529
10.Age:60~64	-1.527**	-1.418***	-1.187***	-1.292***	-0.755*	-0.817**	-0.576	-0.312	-0.0784	0	-0.361	-0.858**	-0.68	-0.608
11.Age:65~69	-1.166*	-1.057***	-0.827**	-0.931***	-0.395	-0.456	-0.215	0.0487	0.283	0.361	0	-0.497	-0.319	-0.247
12.Age:70~74	-0.67	-0.561*	-0.33	-0.434	0.102	0.0404	0.282	0.545	0.779**	0.858**	0.497	0	0.177	0.25
13.Age:75~79	-0.847	-0.738	-0.507	-0.612	-0.0753	-0.137	0.104	0.368	0.602	0.68	0.319	-0.177	0	0.0725
14.Age:>=80	-0.919	-0.81	-0.58	-0.684	-0.148	-0.209	0.0318	0.296	0.529	0.608	0.247	-0.25	-0.0725	0
Education	0.120**	0.120**	0.120**	0.120**	0.120**	0.120**	0.120**	0.120**	0.120**	0.120**	0.120**	0.120**	0.120**	0.120**
_cons	-1.830***	-1.939***	-2.170***	-2.065***	-2.601***	-2.540***	-2.781***	-3.045***	-3.279***	-3.357***	-2.996***	-2.499***	-2.677***	-2.749***
N	10052	10052	10052	10052	10052	10052	10052	10052	10052	10052	10052	10052	10052	10052

Notes: *, **, and *** mean for significance at 5%, 1%, and 0.1% levels, respectively.

movements, while those under 44 were more likely to have actual movements. In contrary, those aged 70-74 have a significantly higher propensity to move out compared to those aged 60-64 and 55-59. Such a trend of leaving metropolitan areas among those older than retirement age may be because seniors are often encouraged to continue working through re-employment or part-time work even after they retire. Consequently, the newly retired elderly is more inclined to remain in metropolitan areas where there are more job opportunities, they are familiar with their environment, and can continue to participate in the labor market. As they grow older and stop working, they may choose to move to local areas in search of lower living costs and better natural amenities.

5.5 Life satisfaction

This study finds that overall life satisfaction is negatively associated with migration intention, as those who are less satisfied with their current life are more likely to consider leaving metropolitan areas (see Model 3 in Table 6). Every time the satisfaction increases by one grade (where 1 = very unsatisfied, 11= satisfied very much), the probability of the migration intention decreases by 6%. After actual movement, overall satisfaction tends to increase, indicating an improvement in the living condition. However, residents who have already migrated are not satisfied with the parenting environment in local areas (see Model 4 in Table 6).

It is worth noting that job satisfaction is positively correlated with migration plans. This suggests that individuals who are satisfied with their jobs feel more in control of their financial and employment aspects and are more confident in planning their new life after relocation. Consequently, they are better equipped to leave behind their unsatisfactory life in metropolitan areas and pursue a more fulfilling one in local areas.

6. Conclusions and discussion

This paper examines the factors influencing Japanese residents' decisions to leave metropolitan areas. We use data from "The Fifth Survey on Residents' Life Consciousness and Behavior Changes under the Influence of COVID-19," organized by the Cabinet Office of Japan. We utilize a multinomial logit model for empirical analysis. The main conclusions can be summarized as follows.

(1) Similar to the 1980s, when residents in three main metropolitan areas in Japan left for occupational reasons (Ito, 2001), in the post-COVID-19 era, occupation-related factors continue to affect Japanese residents' migration decisions to leave metropolitan areas. While policymakers and scholars often prioritize attracting entrepreneurs (Tsutsui et al., 2015) and white-collar workers (Kotsubo & Nakaya, 2022b), our analysis suggests that local areas should focus on attracting self-employed individuals, including entrepreneurs and successors. However, we found no evidence supporting the idea of attracting white-collar workers to local areas, as formal employees are less likely

to leave metropolitan areas. In addition to the self-employed, domestic workers and the unemployed are also found to have a higher probability of leaving metropolitan areas. This higher mobility of certain groups, and the formal employees' lower mobility, can both be explained by opportunity costs. Besides, females are less likely to leave metropolitan areas than men, maybe because there are fewer employment opportunities for women in local areas.

These results indicate that both opportunity costs and employment probabilities influence Japanese residents' migration decisions to leave metropolitan areas. Therefore, local governments' revitalization policies should aim to create a better environment for entrepreneurship by offering resources and support to self-employed individuals, as well as encouraging domestic workers and the unemployed to join the job market. Additionally, it is vital to prioritize initiatives that make it easier for women to access employment opportunities.

(2) In line with the new economic model, which posits that households are the appropriate unit of analysis for migration research, some scholars have suggested that local governments should develop policies aimed at families (Morio & Sugita, 2008). Nevertheless, our study reveals that factors such as marital status and underage children do not significantly affect the decision to migrate from metropolitan areas. Moreover, we find that the work status of one's spouse is not correlated with the family's decision to move. These outcomes suggest that the household, as a decision-making unit, is less likely to relocate from metropolitan areas, which contradicts earlier studies. These findings highlight the complexity of new economic model. Additionally, our analysis indicates that individuals who have already migrated are discontent with the parenting environment in their new location. This implies that local areas may not be appealing enough to draw families with underage children from metropolitan areas, nor encourage them to have more children.

Further research is needed to determine whether these findings are a short-term effect of the post-COVID-19 era, or a longer-term phenomenon. Meanwhile, policymakers need to refocus their attention from attracting families to developing policies that meet the needs of individual migrants and foster the formation of new families.

(3) Looking at the life cycle perspective, our analysis indicates that most people decide to live in metropolitan or local areas by the age of 25-34. Before this age group, those between 20-24 tend to have a higher intention to migrate, and this intention is positively correlated with being a student. These findings indicate that university students often consider job opportunities beyond metropolitan areas. However, they often delay taking action until after graduation, making them an essential group in the future pool of immigrants to local areas. At age 25-34, people tend to adjust to their choice of residence within a few years after entering the labor market, but they usually settle down after age 35. As they grow older, their probability of leaving metropolitan areas decreases. These findings suggest that local governments have a greater chance of attracting people within the first decade after they graduate from universities and enter the labor market.

Another crucial age group for leaving metropolitan areas is the early 70s, a few years older than the average retirement age of 60 and the pension age of 65. However, local governments are generally not active in implementing policies to attract retirement migration. On the one hand, the elderly may not be able to enhance the purchasing power in local areas, even if they are rich. According to the behavioral life-cycle hypothesis, people's purchasing power depends not only on their wealth but also on the mental accounting in which money is allocated (Shefrin & Thaler, 1988, 2004). For example, previous studies find that when investors using pension savings get high returns and become wealthier, they tend to increase their savings to prepare for the future, instead of changing their consumption (Thaler, 2016). On the other hand, the elderly's demand for medical and elderly care may increase the burden on local finances (Takahashi, 2015). Someone suggests that the origin prefectures should bear some cost (Ishikawa, 2016) by measures such as transferring insurance funds to the prefecture of the migrant's new residence. Such reforms are expected to alleviate the financial pressure on the local receiving areas.

(4) Our study measures residents' attitudes towards amenities, through focusing on their sense of new value. We find that values related to residents' well-being play a crucial role in promoting migration from metropolitan to local areas. Conversely, values related to SDGs and community participation are unrelated to actual migration movements. These findings suggest that values that provide a vivid sense of daily life have a greater impact on people's decision-making regarding their residence location, whereas values that are distant from people have little or no influence. This conclusion can guide local governments to place greater emphasis on promoting well-being-related amenities in their publicizing and policymaking efforts.

(5) Our study also finds that leaving metropolitan areas is often an attempt by dissatisfied urban residents to pursue a better life and increase life satisfaction. However, those who are content with their jobs are more likely to consider leaving metropolitan areas as a way to compensate for other losses. As a result, choosing to live in local areas is not a compromise choice for urban residents but rather a high-quality option. Nonetheless, this study also shows that migrants who have already moved to local areas tend to be dissatisfied with the parenting environment, suggesting that the government should work on improving it.

(6) Our analysis enriched the discussion on existing migration theories. Firstly, it contributes to the neoclassical economic theory by adding new insights to the existing factors identified in previous studies. Specifically, we introduce the effect of job opportunity cost, which offers a more comprehensive understanding of the cost involved in calculating utility. Additionally, we argue that people prioritize amenities closely related to their well-being, rather than macroscope sustainability or community integration. Overall, neoclassical economic theory remains effective for explaining the migration behavior of residents leaving metropolitan areas. Secondly, we present new evidence for the new economic model, demonstrating that households, when considered as the decision-making unit,

are less likely to move out of metropolitan areas. This finding contradicts previous studies conducted before the COVID-19 pandemic. Thirdly, regarding the life cycle theory, our study suggests that it has an impact on migration from metropolitan areas. Specifically, we find that migration is more likely to occur when individuals enter the job market, within 10 years after graduation, or within a few years after retirement.

(7) Finally, our findings suggest that the factors affecting different stages of migration decisions (intention, plan, and actual movement) are not similar. While rational individuals, as homo economicus, are not expected to alter their decisions during different stages unless presented with new information (Manski, 1990), in reality, people are not always wholly rational. Samuelson's theory of rational intertemporal choice asserts that individuals tend to assign greater value to immediate choices over future ones (Samuelson, 1937). Therefore, in different decision stages, people may overlook certain information or give different weights to various factors. In order to effectively encourage people to move from metropolitan areas, governments should prioritize the factors that have the most impact on actual migration. If budgets allow, they can further consider the factors that influence migration intentions and plans and implement targeted measures for individuals who are interested in relocating to local areas.

Due to limited data availability, this analysis did not consider variables such as the net change in income, the social network tied to locations, or the attributes of origin and receiving cities (such as welfare services and unemployment rates). We strongly recommend that the Cabinet Office optimize the questionnaire to include these important variables in future surveys. Furthermore, we suggest that follow-up studies be conducted to observe the long-term migration trend from metropolitan to local areas, and examines the effectiveness and impact of relevant population policies.

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