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Full Research Article

Do japanese citizens move to rural areas seeking a slower life? Differences between rural and urban areas in subjective well-being

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Abstract. For some time, individuals in multiple contexts have been moving from rural to urban areas for economic reasons. In recent years, however, young people in Japan have been increasingly turning to rural areas to embrace a slower, less-hectic lifestyle. Despite this interesting development, researchers have thus far failed to identify determinants of residents' well-being in rural and urban areas in Japan. Moreover, recent empirical work has shown that stated happiness or subjective well-being (SWB) can serve as an empirical proxy for perceived utility. To expand upon this line of research, in this paper, I use SWB to gauge disparities between the Japanese rural and urban environments. In addition, I determine how natural capital and social capital affect SWB for both rural and urban residents. Results show that on average, rural residents report higher SWB than urban residents despite low average income. I also identify multiple factors other than household income that affect SWB; these relationships are particularly pronounced for rural residents. Finally, results demonstrate that residents that migrate from urban to rural areas reported high levels of SWB. Taken together, the results of this study provide new insight into rural values and the attractiveness of rural residency.

Keywords. Happiness, subjective well-being, natural capital and social capital.

JEL codes. I31, D63, Q15.

1. Introduction

Japan is one of the first countries in the world to face problems associated with depopulation. The "Masuda Report" (Masuda, 2014) generated significant interest throughout Japan with its prediction that nearly half of all Japanese municipalities may disappear due to population decline and the inability to maintain administrative functions. Because the municipalities at risk for disappearance are mostly located in rural areas, the need to cope with rural community issues has come to the fore for policy makers.

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Contrary to the findings of the Masuda Report, a recent opinion poll showed that a growing number of young Japanese urbanites wish to settle in rural areas (Cabinet Office of Japan, 2014), indicating a general interest among Japanese citizens to embrace a rural lifestyle. This interest in rural living was not always pervasive. In the 1980s, Tokyo served as the center of the Japanese population, causing overconcentration there. In turn, the concentration of urban functions in Tokyo resulted in substantial income disparity between citizens in urban and rural areas.

Despite the economic benefits of living in an urban area, a growing number of people have begun to leave cities in search of better lives in rural areas (Ministry of Internal Affairs and Communication of Japan, 2017). To illustrate, the aforementioned opinion poll showed that the proportion of Japanese citizens interested in living in rural areas increased from 21% in 2005 to 32% in 2014 (Cabinet Office of Japan, 2014). This trend was particularly pronounced for young people. The return of young citizens to rural areas could revitalize these areas and improve Japanese agriculture on the whole. To date, the Cabinet Office has not performed an econometric analysis to determine which variables affect citizens' motivations for returning to rural areas. Still, the results of the survey suggest that increasing interest in rural residence among young citizens may be a result of shifting perceptions regarding that which makes living conditions attractive and changing values. Internationally, researchers and policymakers have widely accepted that not only that food is the key product of agriculture, but also there are other benefits of agriculture. Taken together, these benefits have come to describe "multifunctionality" of agriculture (Organization of Economic Co-operation and Development [OECD], 2001 and 2003).

Past research by agricultural economists on multifunctionality has largely focused on "visualizing value" in monetary terms through Stated Preference and Revealed Preference methods. These researchers have not sufficiently explored (a) which elements of rural areas contribute to well-being, or (b) how these variables are related. These questions are of utmost importance, given recent emphasis on the use of ecosystem services[1], which relate to the association between ecosystems and well-being (TEEB D0). In short, ecosystem services directly or indirectly support our quality of life.

In the last decade, the economic literature has experienced the emergence of a new research agenda that uses subjective questions to measure individual well-being. Some of this work has provided support for a link between factors related to the regional environment (e.g., air quality, green space) and well-being. Given the emergence of this link, the purpose of this paper is to use subjective measures to compare urban and rural residence in terms of well-being. In doing so, I will show how rural characteristics affect subjective well-being (SWB), which may influence Japanese citizens' motivations for migrating from urban to rural areas. As an empirical indicator of utility, happiness data permit comparison of urban and rural areas to a degree greater than traditional economic indicators (e.g. GDP).

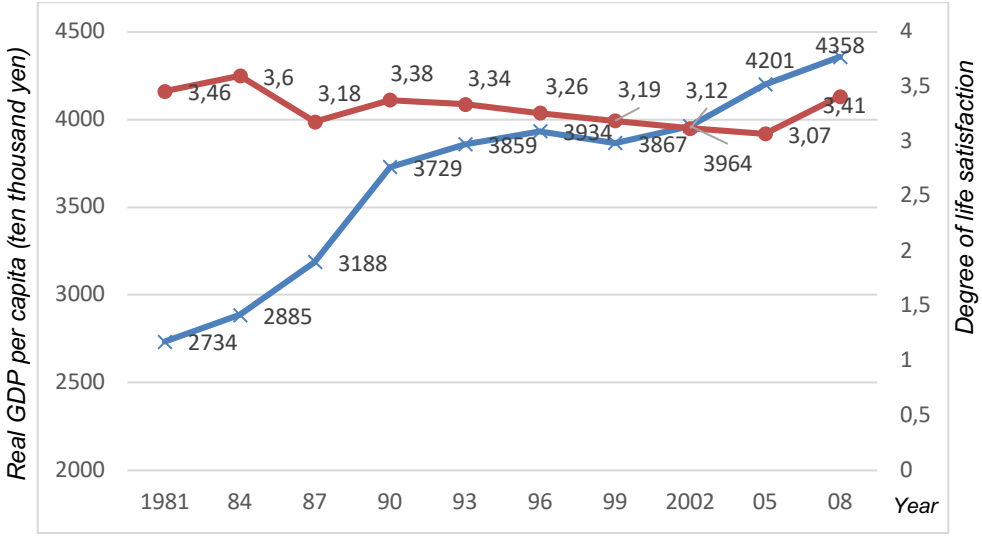
[1] Ecosystem services can be classified into one of four main categories: provisioning services, regulating services, habitat services, and cultural services. Provisioning services relate to products obtained from ecosystems, including food, fresh water, wood, fiber, genetic resources, and medicines. Regulating services are defined as the benefits obtained from the regulation of ecosystem processes. These include climate regulation, natural hazard regulation, water purification and waste management, pollination, and pest control. Habitat services emphasize the importance of ecosystems to provide habitats for migratory species and to maintain the viability of gene pools. Cultural services include non-material benefits that people obtain from ecosystems, including spiritual enrichment, intellectual development, recreation, and aesthetic enjoyment.

To address the issues outlined above, the remainder of the article is organized in a series of interrelated sections. Section 2 features a review of research on SWB, with a particular emphasis on differences between rural and urban areas. In Section 3, I describe the data and empirical model used to test these differences. Following this, I report the results of the econometric analysis in Section 4. Finally, in Section 5 I discuss the limitations of the analysis and offer some concluding remarks.

2. Subjective well-being research: rural vs. Urban areas

The Easterlin paradox is a key concept in happiness economics. Related to the relationship between economic variables and well-being, Easterlin (1974) showed that within developed nations, reported happiness was not significantly associated with per capita GDP. This paradox has recently manifested in Japan, where survey data has shown that happiness levels have not risen in parallel with increases in income (Cabinet Office, 2008: Figure 1). In short, these data show that economic wealth does not necessarily determine the degree to which one is satisfied with his/her life.

Figure 1. Japanese real GDP per capita and the Degree of Life Satisfaction.



Source: Cabinet Office 2008.
(Notes)
1. Compiled from the Cabinet Office "National Survey on Lifestyle Preferences," "Annual Report on National Accounts" (Data before 1993 is compiled from 2002 report and data after 1996 is compiled from 2006 report), and the Ministry of Internal Affairs and Communication "Population Statistics".
2. "Degree of Satisfaction" is calculated as follows: The question, "Are you satisfied with life or not?" was answered using five scales from "Satisfied" to "Unsatisfied." The weighted average of each answer was indexed into "Degree of Satisfaction."
3. The respondents represent both sexes from the age of 15 to 75. (Excludes "do not know" and "no answer").

Happiness research based on self-reports of life satisfaction has made significant contributions to our understanding of how people conceptualize well-being beyond their consumption habits. In addition, the growing literature on SWB has thus far focused on degree and determinants of happiness. This is useful in a variety of fields that inform policy (Bok, 2010).

Despite the growing literature on SWB and happiness, studies that focus on rural areas, agriculture, and their respective relations to SWB are scarce. In one of the rare studies to explore these associations, Baaske *et al.* (2009) surveyed 18,000 citizens in 60 municipalities to show a close relationship between farming performance and perceived quality of life. This finding reiterates that agriculture is one of the most significant predictors of quality of life within a municipality.

In another example, a team of researchers from the University of Évora and Cardiff University have been conducting a survey in rural Portugal to measure SWB. These researchers have surveyed local farmers and other community members using a place-based approach. To evaluate causality between SWB and agriculture, the researchers plan to add specific questions on agriculture to complement general questions about SWB (Surove *et al.*, 2012). In addition, although multiple researchers have measured SWB in the rural areas of developing countries (e.g. Markussen *et al.*, 2014 in Vietnam; Dedehouanou *et al.*, 2011 in Senegal; Guillén *et al.*, 2006 in Thailand), none of these studies have compared rural areas with urban areas in terms of SWB.

In a similar line of research, Tsutsui *et al.* (2009) compared large Japanese cities (the 13 largest in Japan), medium-sized cities (>100,000 residents), and other cities/towns/villages in terms of SWB. Their results show that on average, the size of the city positively corresponded to respondents' reported SWB. This finding is not consistent across all studies, however. For example, Hellevik (2003) found no significant difference between rural and urban residents in Norway with respect to reported SWB.

All studies that have evaluated differences in SWB between rural and urban residents delineated respondents contingent on the province or prefecture in which they lived. Despite the convenience this method offers, classification based on administrative boundaries may not highlight how rural and urban areas differ in terms of how they moderate the relationships between multifunctionality conservation, social capital, and migration on SWB. Given the specificity of the SWB construct, greater nuance with respect to respondents' locations may reveal significant effects on SWB that would otherwise remain hidden. This is especially true in Japan, where capturing one's residential environment is difficult using any standard means due to Japan's geographic diversity.

Given the shortcomings of past research, this paper offers two key contributions to the literature. First, it features a comparison of rural and urban residents' SWB using "subjective" classifications of urban and rural areas. Specifically, respondents are classified as rural or urban based on their own self-reports. Delineation of rural areas from urban areas has always been a controversial endeavor. One criterion for disaggregating urban and rural areas is the presence of Densely Inhabited Districts (DIDs), which have been accounted for since the 1960 Population Census of Japan. This criterion would dictate that areas that have not been classified as a DID are rural in kind. Despite the simplicity of this solution, land use in Japan is complicated; farmland is often scattered across multiple kinds of districts, even in Tokyo. Furthermore, even areas designated as DIDs are often

surrounded by farmland. Therefore, it is not appropriate to distinguish urban and rural areas as a function of their DID-status[2].

Second, this classification protocol will allow for the identification of rural characteristics and individual experiences that affect SWB. The recent movement in Japan for residents to return to rural areas is affected by the multifunctional value of rural land, but no researcher has attempted to identify variables that affect rural and urban residents. The increased understanding that will derive from this analysis can potentially contribute to rural-development policy planning.

3. Empirical application

3.1 Econometric model

Consistent with most extant studies in this domain, in this paper, SWB is operationalized with participants' responses to the following question: "How dissatisfied or satisfied are you with your life overall?" Responses to this question were posed as an 11-point Likert scale ranging from 0 (not at all satisfied) to 10 (completely satisfied).

The first step in this life-satisfaction approach is to estimate a micro-econometric SWB model in which SWB is estimated as a function of socio-economic and demographic variables, factors related to natural and social capital, and other control variables. The model takes the form of an indirect utility function for individual i in location k:

$$SWB_{i,k} = \beta_0 + \beta_1 \, ln(y_{i,k}) + \beta_2 \, x_{i,k} + \beta_3 \, a_{i,k} \qquad i = 1 \ldots I, \, k = 1 \ldots K \tag{1}$$

In this model, $y_{i,k}$ represents household income; x is a vector of a wide range of socio-economic and demographic characteristics other than income, including relative income, age, marital status, employment, health status, and migration experience; and a_{ik} depicts respondents' attitudes towards rural natural capital and social capital (Brereton *et al.*, 2008; Ambrey *et al.*, 2014). For the purposes of this paper, I estimated Eq. (1) as an ordered logit model. As such, SWB is assumed to be a categorical variable, making it impossible to directly observe happiness levels. Instead, I could determine only the range of values in which respondents' happiness levels lie.

3.2 Data

The empirical model used in this study is guided by existing studies on SWB. Data for the model were collected in October of 2014 via an Internet survey in which I asked

[2] According to the Japanese Ministry of Agriculture, Forestry, and Fisheries' (MAFF) "Classification of Agricultural Area," "rural areas" refer to areas that are not "urban areas." The MAFF approach involves using rural areas as a unit of classification. In contrast, the OECD uses the prefecture (of which there are 47 in Japan) as a unit of classification. Both the MAFF and OECD approaches are based on an area's population density (OECD, 2009). Hayashi and Sasaki's (2015) classification is similar to the OECD's; they identified 14 rural prefectures, 21 intermediate prefectures, and 12 urban prefectures. Regardless of how different approaches delineate rural and urban areas, none of them captures the specific elements that affect SWB (Hayashi and Sasaki, 2015).

participants questions related to their perceptions of SWB, demographics, socio-economic factors, and personal attitudes.

The OECD's Guidelines on Measuring Subjective Well-being (OECD, 2013) contend that although economic variables, demographic variables, and quality of life affect SWB, many other issues (e.g., measuring personality traits) are complex. As a result, the OECD did not provide recommendations in relation to these complex issues. Nevertheless, recent research has shown conscientiousness to be the strongest predictor of life satisfaction among the Big Five personality traits (i.e. Tanksale, 2015). Because the Big Five personality traits are important predictors of political and social attitudes, in addition to typical variables that have appeared in past SWB studies, I also added questions to measure respondents' thoughts regarding the conservation of natural capital and expectations for food, agriculture and rural issues in the coming decade.

I administered this survey with the Policy Research Institute in the Ministry of Agriculture, Forestry and Fisheries in Japan through a consumer monitoring company with access to 2.3 million registered subjects. The survey platform randomly selected respondents based on the demographics of each prefecture by ensuring the sex and age ratios of participants reflected those of Japan overall. In total, 1,500 Japanese participants aged 20 to 64 provided data. To collect data concerning SWB, the survey included a question asking individuals "How dissatisfied or satisfied are you with your life overall?" Table 1 provides summary statistics for all explanatory variables used in the estimation. Explanations of all explanatory variables in the empirical model are offered in the following subsections.

3.2.1 Socio-economic characteristics

Socio-economic variables in the model include age, marital status, health status, income, and relative income. I selected these variables based on past research on SWB. The survey also included questions related to participants' places of residence; they were asked to indicate if they lived in a rural area, sub-rural area, suburban area, or urban area.

3.2.2 Awareness and personal thoughts concerning natural capital and social capital

Respondents provided answers to questions meant to capture the respective determinants of SWB for rural and urban residents. These items relate to the conservation of natural capital and the perceptions of their living environment's social capital. The items concerning natural capital test participants' awareness toward natural capital conservation, which is a summation of answer towards degree of awareness for eight types of key elements of Multifunctionality in agriculture[3]. Questions related to social capital measure how much respondents trust their neighbors ("number of trustable person") and how much respondents help others ("degree of norm of reciprocity") in their region of residence. I selected these questions based on a MAFF policy report focusing on social capital in rural areas (Japanese Ministry of Agriculture, Forestry and Fisheries, 2007). While

[3] 1. Conservation of Land, 2. Fostering Water Resources, 3. Preservation of the Natural Environment, 4. Development of Favorable Landscapes, 5. Maintenance of Cultural Heritage, 6. Recreation/Relaxation, 7. Viability of Rural Community, 8. Food Security (MAFF-Japan, http://www.maff.go.jp/e/nousin/tyusan/siharai_seido/s_about/cyusan/tamen/).

Table 1. Definition of variables and descriptive statistics.

Variable	Definition	Mean	Max	Min	Std. Dev	Observations
SWB	Reported current life satisfaction (happiness) by integers from 0 to 10. Based on the following survey question "Overall, how happy are you these days?" The respondent is to choose from a scale of 0 to 10, where 0 is "very unhappy," 5 "neither happy nor unhappy" and 10 is "very happy"	5.823	10	0	2.230	1500
Age	Age of respondents in years	43.147	64	20	12.508	1500
Age squared/100	Age of respondents in years squared/100	20.180	40.96	4	10.843	1500
Unemployed/seeking	Dummy variable = 1 if respondent is currently unemployed and seeking a job	0.066	1	0	0.248	1500
Married	Dummy variable = 1 if respondent is legally married	0.590	1	0	0.492	1500
Very good health	Dummy variable = 1 if respondent's health condition is very good	0.108	1	0	0.310	1500
Good health	Dummy variable = 1 if respondent's health condition is good	0.624	1	0	0.485	1500
Ln(income)	Natural log of household income	6.137	7.65	3.91	0.770	1246
Relative income	Dummy variable = 1 if respondent thinks their income is higher than the average income in the neighborhood	0.341	1	0	0.474	1500
Citizen in urban	Dummy variable = 1 if respondent subjectively believes him/herself to live in an urban area	0.287	1	0	0.452	1500
Citizen in suburban	Dummy variable = 1 if respondent subjectively believes him/herself to live in a suburban area	0.402	1	0	0.490	1500
Citizen in subrural	Dummy variable = 1 if respondent subjectively believes him/herself to live in a subrural area	0.216	1	0	0.412	1500
Citizen in rural	Dummy variable = 1 if respondent subjectively believes him/herself to live in a rural area	0.079	1	0	0.270	1500
I turn	Dummy variable = 1 if respondent experienced urban-to-rural migration	0.033	1	0	0.178	1500
U turn	Dummy variable = 1 if respondent experienced returning to the countryside in home town	0.097	1	0	0.297	1500
J turn	Dummy variable = 1 if respondent experienced returning to the countryside other than home town	0.035	1	0	0.185	1500
MF conservation	Degree to which respondents recognize the importance of agriculture's multifunctionality (Index of eight elements of agricultural multifunctionality)	17.971	24	0	4.527	1500

Variable	Definition	Mean	Max	Min	Std. Dev	Observations
Farmer	Dummy variable = 1 if the respondent is a farmer	0.062	1	0	0.241	1500
Farmland	Dummy variable = 1 if respondent resides in an area that is less than a 15-minute walk to farmland	0.611	1	0	0.488	1500
Food/Agri perspective	Expectations for state of food, agriculture and rural issues in the coming decade (higher values reflect more optimistic expectations)	7.968	21	0	3.618	1500
Neighbor friendliness	Perceptions of friendliness within the neighborhood (Scale = 0–3)	1.239	3	0	0.788	1500
Trust person	Number of trustable persons in the neighborhood (Scale = 0–3)	0.876	3	0	0.739	1500
Norms of reciprocity	Degree of norms of reciprocity	0.269	1	0	0.443	1500
Shock	Frequency with which respondent experienced a shocking event in the previous five years (Scale = 0–4)	1.145	4	0	1.284	1500
Risk aversion	Degree to which respondent wishes to avoid risk (Scale = 0–10)	5.761	10	0	2.298	1500
Satoyama	Satoyama Index (SI) of respondent's resident area (10 km × 10 km).	0.238	0.592	0.003	0.123	1500
Population decrease	Dummy variable = 1 if respondent expects the population of young women (aged 20 to 39) within his/her municipality to decrease by more than half its current level in the next 30 years	0.052	1	0	0.222	1500

Ferre-i-Carbonell and Gowdy (2007) evaluated the relationship between subjective measures of well-being and individual environmental attitudes, the current study also included variables related to social attitudes.

3.2.3 Migration from urban to rural areas

In Japan, a "U turn" refers to the migration of people who return to their hometowns to settle down and earn a living after working or studying in cities. In contrast, the "I-turn" refers to unidirectional movement out of urban areas. One final migration pattern is called the "J-turn," wherein a person leaves the city to move to a rural area other than his/her birthplace. The questionnaire included a question related to the type of migration participants engaged in. This variable was operationalized as a control variable, as migration type may exert an effect on SWB.

3.2.4 Preference parameters

Items related to respondents' aversion to risk were also incorporated into the model as controls. I included these variables because respondents' happiness may relate to these preference parameters (Tsutsui *et al.*, 2009).

3.2.5 Objective indicators

In addition to the subjective data gleaned via the above questions, I also included several objective measures as predictors in the model. First, I included the Satoyama Index (SI) to indicate the 100-sq. km area (10 × 10 km) in which a resident resides. SI was included because it can serve as a proxy designed to capture the richness of different geographic regions; "a high SI value is an indicator of high habitat diversity, which is characteristic of traditional agricultural systems, including Japanese Satoyama landscapes, while a low value indicates a monotonic habitat condition typical of extensive monoculture landscapes" (Kadoya and Washitani, 2011, pp. 20). Second, I included a predictor in the model that reflects the rate at which the population in certain regions decreases due to an outflow of young women. Because aging and decreasing fertility rates are serious problems in Japan, their salience can affect SWB. If the population of young females is in decline, the capacity for the Japanese population to replenish itself declines in parallel (Masuda, 2014).

4. Results

4.1 Estimation results: whole sample

The largest portion of the entire sample indicated that they were neither happy nor unhappy (5 on the Likert scale), followed closely by a slight leaning towards happiness (7 and 8 on the Likert scale; see Figure 2). The result is consistent with previous survey data provided by Japanese citizens (Cabinet Office, 2011). Western European countries differ. Most respondents in Western Europe mark 8 on the Likert scale, indicating slightly happier respondents. Although these differences between Japanese and European data are interesting, comparing SWB across nations should be done with caution and a consideration of cultural factors that may influence responses (Diener and Oishi, 2004).

Following the comparison of the overall sample, I then compared urban and rural respondents based on their reported levels of happiness (see Table 2). Respondents were classified into one of four categories, all of which were based on participants' subjective perceptions. These four categories are citizen in urban areas, citizen in suburban areas, citizens in subrural areas, and citizens in rural areas. Rural residents reported a slightly higher happiness level ($\mu = 6.04$) than their urban counterparts ($\mu = 5.82$), despite the latter having higher household income. However, an analysis of variance (ANOVA) failed to show statistically significant differences between the four categories (p-value = 0.35).

For the sake of simplicity, I combined the samples of urban and suburban citizens into one larger "urban citizen" category. I similarly combined the samples rural citizens and subrural citizens into a larger category of "rural citizens." Following these combinations, I evaluated the relationship between income level and SWB (see Figure 3). Results of the survey reveal a positive relationship between income level and SWB for urban residents, but this correlation is weak for rural residents. These findings suggest that income may be a contributor to SWB for urban residents, but rural residents seek out other factors for their SWB.

Figure 2. Distribution of SWB scores in comparison with urban and rural residents.

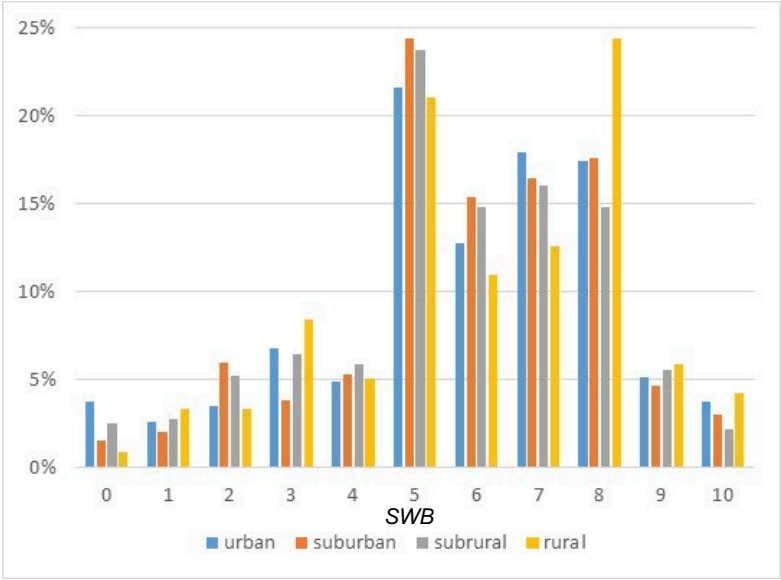


Table 2. Respondents' reported levels of SWB by category.

	Sample	Average	Variance
Urban Citizen	430	5.82	5.47
Suburban Citizen	603	5.88	4.55
Subrural Citizen	324	5.66	4.98
Rural Citizen	119	6.04	5.19
All sample	1500	5.82	4.97

Consistent with past work on SWB, I developed an ordered logit regression model to examine how multiple factors influence SWB. In this model, the main predictor variable was area of residence (i.e., urban vs. rural) and the outcome variable was SWB. Although we were primarily interested in the effect of area of residence on SWB, we also included other predictors in the model. For instance, we tested whether migration from urban to rural areas (i.e., UJI turns) influences SWB. Other important variables relate to individual respondents' relationships with the rural areas in which they reside. In the original iteration of the analysis, I included several additional agriculture related variables such as experience and frequency to participate rural activities, but ultimately removed them to avoid multicollinearity and endogeneity. Although instrumental variables can be included to avoid potential inaccuracy, there exists no consensus on which combination of variables should be used to predict SWB. In addition to the standard logit regression model, I also performed inverse probability of treatment weighting (IPTW) and propensity score (PS)

Figure 3. Distribution of Average SWB score in each income group.

matching to better understand the relationship between residential area and SWB (see Section 4.3).

Table 3 presents the main results produced by the logit regression model. The pseudo-R^2 value of 0.072 is comparable to previous work in this domain (e.g. Ambery and Fleming, 2011), suggesting that the model has an acceptable level of explanatory power.

Results of the logit regression analysis show that an individual's area of residence (i.e., rural = 1, urban, suburban and subrural = 0) has a positive effect on SWB. None of the variables related to citizen migration (i.e., the UJI turns) were statistically significant predictors of SWB across the entire sample, but the following section evaluates rural and urban residents independently. In relation to agriculture related variables, the results suggest that if respondents (a) are aware of the importance of agriculture's multifunctionality and/or (b) envise a bright future for Japanese food and agriculture, they experience higher SWB. With respect to the socioeconomic predictors, age, unemployment, health condition, income, and relative income all exert significant influence on SWB. All social control variables—degree of friendliness with neighbors, number of trusted persons and degree of norms and reciprocity—similarly exert significant, positive effects on SWB.

4.2 Estimation results: Rural and urban residents

After performing the logit regression on the entire sample, I then replicated the analysis independently on the rural and urban resident samples. These analyses respectively yielded pseudo-R^2 values of 0.075 and 0.094, which indicate that both models had satisfactory levels of explanatory (see Table 4).

Table 3. Results of the ordered logit model across all respondents (Dependent variable: SWB).

Variable	Coefficient	p-value	
AGE	-0.058	0.060	*
AGE_SQUARED_100	0.066	0.061	*
UNEMPLOYED_SEEKING	-0.695	0.002	***
MARRIED	0.675	0.000	***
VERY_GOOD_HEALTH	1.241	0.000	***
GOOD_HEALTH	0.693	0.000	***
INCOME	0.000	0.022	**
RELATIVE_INCOME	0.826	0.000	***
I_TURN	0.346	0.226	
U_TURN	-0.098	0.586	
J_TURN	0.110	0.686	
MF_CONSERVATION	0.037	0.004	***
FARMER	-0.246	0.258	
FARMLAND	-0.345	0.002	***
PERSPECTIVE_FA	0.046	0.002	***
NEIGHBOR_FRIENDLY	0.137	0.093	*
NO.__TRUST_PERSON	0.164	0.049	**
NORMS_OF_RECIPROCITY	0.397	0.001	***
SHOCK	-0.141	0.002	***
RISK_AVERSION	0.103	0.000	***
SATOYAMA	-0.686	0.102	
POP_DECREASE	-0.099	0.663	
CITIZEN_IN_RURAL	0.420	0.042	**
Pseudo R-squared	0.0726		
Sample	1498		

Note: ***p < .01, **p < .05, *p < .10.

For some variables, significant differences between urban (urban and suburban) and rural (rural and subrural) residents emerged.

First, among rural residents, there was a significant parabolic (i.e., U-shaped) relationship between age and SWB. This result may be attributable to elderly respondents' desire to move to a more peaceful residence in their final years.

Second, consistent with the correlational results reported in Section 4.1, I found that household income is significantly and positively related to SWB. This result is consistent with many previous studies that have revealed a significant relationship between income and SWB. The analyses presented in this study, however, indicate that this phenomenon applies only to urban residents. Interestingly, there was a positive correlation between *relative* income and SWB for both urban and rural residents.

Third, with respect to respondents' migration experiences, I found that respondents who moved to the rural via an "I-turn" tend to have higher SWB than their "U-turn" and "J-turn" counterparts. People who performed an "I-turn," which refers to unidirectional

movement out of an urban area to a rural area, were mostly between the ages of 20 and 40. These residents may no longer require growth in material wealth, but seek durable human communities and living environments characterized by nature. In this way, the observed I-turn may result from fundamental changes in young people's values within the "de-growth" movement.

Fourth, the analyses also produced several notable findings concerning natural and social capital. Urban residents with strong attitudes concerning conservation of the rural environment reported high levels of SWB. Similarly, urban residents with optimism towards future Japanese agriculture had high SWB, on average. Interestingly, there was no relationship between attitudes towards conservation and SWB among rural citizens. This result may demonstrate that rural residents do not seem to realize the value of natural capital in their own backyards. City residents within 15 minutes walking distance of farmland reported low SWB. In Japan, agricultural land use is common, even in urban areas across the country. This finding may be attributable to difficulties associated with managing farmland in urban areas, including the use of pesticides, noise from agricultural machines, or dust. However, urban residents have recently come to recognize the importance of the social and environmental functions of urban agriculture, and the benefits related to rural farmland (e.g. open space for disaster management, resources for recreation and education) have been promoted nationally. Issues related to social capital also seemed to exert influence on SWB, as some of these factors (i.e. degree of friendliness with people in the neighborhood, number of trustable people) were positively associated with rural residents' SWB.

Fifth, with respect to the preference-based predictors, risk-averse individuals in both rural and urban environments reported high SWB. This result was consistent with past studies (e.g. Tsutusi *et al*., 2009)

Finally, the associations between the objective variables and SWB produced unclear results. For instance, there was no clear relationship between the Satoyama Index and SWB. Decreases in population negatively affect SWB, but only for urban residents. This finding supports the work of Glaeser *et al*. (2016) who found that residents of declining cities appear less happy than residents of other areas (e.g. the American Rust belt).

In addition to identifying factors that influence current SWB, I also estimated an ordered logit regression model to predict *future* SWB. Although there were many similarities to the analysis of factors that affect current SWB, there was one key difference. Rural and urban respondents who were optimistic about future Japanese agriculture also reported high levels of future SWB.

4.3 Using propensity score methods to estimate the effect of rural residence on SWB

Past correlational studies have shown that there are differences between rural and urban residents in their SWB. However, past work has not provided evidence to show that one's area of residence is causally antecedent to SWB. Given this gap in the literature, I supplemented traditional regression methods with inverse probability of treatment weighting (IPTW) using the propensity score to better represent the relationship between an individual's area of residence and his/her SWB.

Propensity score methods compare individuals in different treatment conditions by testing differences in their average scores. Originally developed by Rosenbaum and Rubin

Table 4. Ordered Logit Model results by resident type (Dependent variable: SWB).

Variable	Urban Residents		Rural Residents	
	Coefficient	p-value	Coefficient	p-value
AGE	-0.040	0.292	-0.134	0.022 ***
AGE_SQUARED_100	0.050	0.249	0.138	0.039 ***
UNEMPLOYED_SEEKING	-0.755	0.007 ***	-0.726	0.094 *
MARRIED	0.583	0.000 ***	0.898	0.000 ***
VERY_GOOD_HEALTH	1.415	0.000 ***	1.116	0.002 ***
GOOD_HEALTH	0.755	0.000 ***	0.579	0.011 **
LN_INCOME_	0.211	0.026 **	0.013	0.930
RELATIVE_INCOME	0.857	0.000 ***	0.858	0.000 ***
I_TURN	-0.896	0.032 **	1.300	0.001 ***
U_TURN	-0.262	0.300	-0.098	0.704
J_TURN	-0.041	0.896	0.573	0.327
MF CONSERVATION	0.048	0.004 ***	0.009	0.677
FARMER	0.146	0.685	-0.357	0.195
FARMLAND	-0.405	0.001 ***	0.119	0.778
PERSPECTIVE_FOOD and AG	0.048	0.010 ***	0.029	0.258
NEIGHBOR_FRIENDLY	0.066	0.525	0.298	0.034 **
NO._TRUST_PERSON	0.041	0.697	0.457	0.002 ***
NORMS_OF_RECIPROCITY	0.436	0.003 ***	0.403	0.081 *
SHOCK	-0.113	0.037 **	-0.195	0.019 **
RISK_AVERSION	0.124	0.000 ***	0.102	0.015 **
SATOYAMA	-0.303	0.552	-1.659	0.033 **
POP_DECREASE	-0.651	0.040 **	0.457	0.181
Pseudo R-squared	0.075		0.094	
Sample	850		380	

Note: ***p < .01, **p < .05, *p < .10.

(1983), PS matching has been used in several other fields (Binder and Freytag, 2014; Barra *et al*., 2016) and can be applied to research questions concerning SWB. To identify any causal relationships between rural residence and SWB, we used a matching estimator. To simplify the interpretation of the results, we created a dummy variable that adopts the value of 1 if an individual reports a SWB-value greater than 8, and 0 otherwise. Using this dummy variable, we performed an IPTW analysis with a Cox proportional hazards (PH) model, as well as a logistic regression that relies on IPTW. We then used the logistic regression model to estimate the propensity score for each subject.

Results produced by the IPTW Cox proportional hazards (PH) model indicated an estimated hazard ratio of 0.701 (95% CI: 0.420-1.171, p = 0.148), and a non-significant effect of rural residence on SWB.

In contrast, the IPTW logistic regression model produced an odds ratio of 0.635 (95% CI: 0.372-1.002, p < .10). This result suggests a marginally significant, positive, causal association between rural residence and SWB.

5. Conclusions

In this paper, I used subjective classification standards to compare rural and urban residents in terms of their SWB. Results suggest that on average, rural residents have higher SWB than their urban counterparts, despite higher average income among the latter.

By using an ordered logit estimator, I demonstrated that for rural residents, factors other than household income significantly predict SWB. In addition, urban residents with high awareness of the conservation of natural capital reported high levels of SWB. This finding is consistent with past work showing that beliefs and intrinsic religiosity significantly affect SWB (Barra, 2016). In contrast, for rural residents, some elements of social capital (i.e. friendliness with neighbors, number of trustworthy people) positively affect SWB. Past work has suggested that SWB depends on personal relationships, but the current study demonstrates that this association exists only for rural residents. Rural residents who migrated directly from urban areas reported high SWB. Taken together, these results provide new perspectives that are related to the values of rural residents, making rural areas attractive.

Furthermore, the results of the analysis using propensity score methods revealed that living in a rural area is causally antecedent to SWB. This result suggests that standard regression analyses do not satisfactorily capture these effects.

The results of the analysis provide evidence for the importance of conserving the rural environment for well-being: environmental conditions in respondents' residential areas and respondents' awareness of and attitudes towards conservation influence SWB differently in line with past researches (i.e. Kyoto University, 2013). In the current study, for example, the Satoyama index was not significantly associated with SWB, but positive attitudes towards the conservation of natural capital did exert a positive effect. Taken together, these results suggest that raising awareness of environmental issues is fundamental to maintaining SWB.

Finally, although this paper provides several new findings that can be used to inform policy, one limitation should be acknowledged. This study represents the first attempt to use data from Japanese respondents to compare urban and rural citizens in terms of their SWB. As a result, the results should be interpreted with caution. As argued by Hirschauer *et al*. (2015), the study of SWB in specific domains may help identify conditions that foster well-being, but it will inevitably raise questions as whether and how this research should inform policymaking in all contexts. Besides, the regional classification based on the self-report might severely limit its applicability for policy, even though other measures of regional classification have some limitations as well. Those who regard themselves as the residents of urban or rural are not necessarily those of urban or rural. Proposing the legislation affecting those people that think themselves living in urban or rural area seems meaningless. As such, the results reported here should encourage future applied research in other geographic regions.

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