

Article

Impacts of the COVID-19 Pandemic on Rural Residents of Japan and Their Interactions with the Outside World

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Abstract: In this study, we clarified the impact of the pandemic on the daily lives of rural Japanese residents who experienced the pandemic and on their attitudes toward relationships with people in the broader world. From July to August 2021, an anonymous questionnaire survey was conducted in three rural and fishing community districts (Oshio, Sugane, and Ozushima) in Shunan City, Yamaguchi Prefecture, Japan, among the residents of each district. We found that the survey respondents had decreased their frequency of engaging in activities that were not essential to daily life. During the pandemic, people consciously avoided visitors from outside their districts, but after the pandemic restrictions were lifted, many people welcomed visitors the same way they had before the pandemic; indeed, people welcomed migrants who would increase their populations. As long as COVID-19 infections are under control, residents of the three districts have one thing in common: they want to interact with people outside their districts. It is necessary to consider how to continue community activities under the pandemic so that rural Japanese citizens can maintain interactions with the outside world after the pandemic.

Keywords: COVID-19 pandemic; rural community; island; attitude survey; questionnaire; community development; interaction



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1. Introduction

The pandemic caused by SARS-CoV-2 spread around the world in 2020 and has yet to be contained [1]. Various measures have been implemented in each country to prevent the spread of infection, and social distancing policies in particular were effective at controlling spread during the early stages of COVID-19 outbreaks [2]. However, these measures have had significant impacts people's mobility and transportation [3–5].

One of the industries that has been greatly affected by the restrictions on movement is tourism [6]. During the pandemic, much research has accumulated on COVID-19's impacts on tourism and is still being conducted because the pandemic has not yet been declared over. Tourism-related impacts in the literature include impacts on the economy and on tourists' awareness [7–10]. Researchers have also paid considerable attention to both distinctions between urban and rural areas [11] and impacts on rural tourism during the COVID-19 era [12–15]. Indeed, as research increases on efforts to revive tourism [15–17], the topic of COVID-19's impacts on residents' perceptions of tourism has grown in importance [18,19]. Particularly in Japan, many rural communities have implemented community development plans that promote not only tourism but also interaction with the outside world, and it is likely that the pandemic and restrictions on movement have likely had some impact on residents' perceptions of these plans. However, there are no studies on how people's awareness changed as a result of the pandemic experience in these regions. There have been many studies on COVID-19 in rural areas, as well as on local economy and vulnerability [20–24], movement behavior [25], migration [26,27], and agriculture and farmers [28–30]. There are also comparative studies between urban and rural areas [31–34].

Therefore, this study aims to clarify how the daily lives of rural residents changed during the first year and a half after the outbreak of the pandemic and how their attitudes toward outsiders changed as a result. If the pandemic has led to a change in attitudes toward outsiders that will continue even after the pandemic is over, we must change our approach to regional development. This study was conducted to ascertain whether such a need exists at present. Specifically, a questionnaire survey was administered among the residents of the three rural communities to understand the changes experienced by each resident and to clarify if there were any differences among the three districts.

2. Materials and Methods

2.1. Research Methods

From 8 July to 13 August 2021, an anonymous questionnaire survey was conducted in three rural communities with different characteristics in Shunan City, Yamaguchi Prefecture (Oshio District, Sugane District, and Ozushima District) among 50 residents of each district. The distribution of the questionnaires was entrusted to the district officers. The sample size was the maximum size that could be distributed by district officers and respondents were selected to reflect the district in terms of age and gender. Those who agreed to the survey were asked to respond by 13 August. We collected a total of 119 responses: 38 from Oshio, 36 from Sugane, and 45 from Ozushima. The total recovery rate was 79.3%, with 76% from Oshio, 72% from Sugane, and 90% from Ozushima. χ^2 tests were conducted for the population of the district population and the age groups of the respondents (less than 60 and equal or more than 60). There was no significant difference at the 5% level or higher in the age structure of the population and the sample, but the results have to be interpreted considering the limitations caused by the sample size. We noted that the total numbers of respondents differ by question because we omitted non-responses and incomplete answers by question rather than discarding the entire survey. For each question, an χ^2 test was conducted on the differences in the response results for the three districts; however, none of the differences were found to be significant at the 5% level or higher. In the questionnaire, before the COVID-19 pandemic was defined as before February 2020, and after the COVID-19 pandemic was defined as after May 2020.

2.2. Study Area

Figure 1 shows the location of each district in Shunan City. All three districts surveyed are somewhat distant from the city center. Shunan City has a population of 139,786 (<60:60.7%). Later, we will discuss the aging rates for each district because all three have very high percentages of elderly people [35].

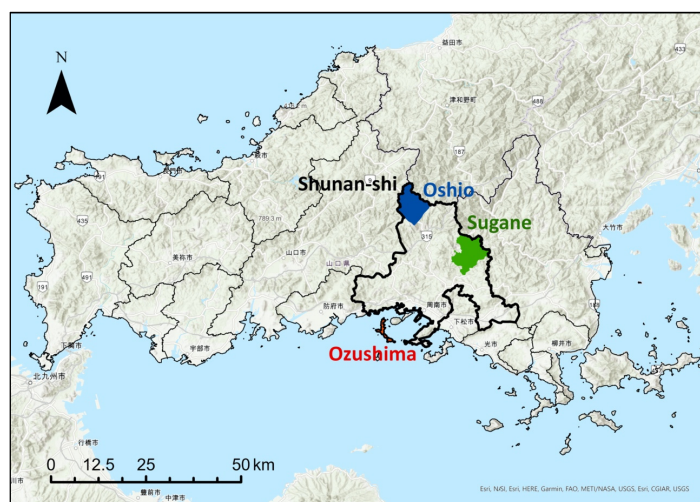


Figure 1. Location of each district. This map created by the author using ESRI ArcGIS Pro (2.7.0), Background map (ESRI) [36], and agricultural village boundary data (Ministry of Agriculture, Forestry and Fisheries) [37].

The Oshio district is located in the northernmost part of Shunan City, with a population of 210; it takes about one hour to get there by car from downtown Shunan City. There are no special tourism resources, but community development organizations and an agricultural producers' cooperative corporation have been set up to revitalize the region by promoting interaction between urban and rural areas as well as to preserve farmland [38]. Interaction between urban and rural areas is a policy promoted in Japan to increase the flow of people, goods, and information as well as to deepen mutual understanding between urban and rural areas. The activities are conducted in the rural landscape, which is everywhere. There are two administrative districts within Oshio district, Nishigawachi and Nakatsu, that have different elementary school districts that conduct district activities separately from Oshio district. Therefore, for this study, we excluded those two administrative districts from the nine administrative districts and defined those seven districts as the Oshio district; the district population was 107 (<60:13.1%).

Sugane district is located in the northeastern part of Shunan City with a population of 281 (<60:22.1%). It is about 40 min by car from downtown Shunan City. There are 16 tourist farms in the district that attract visitors from neighboring municipalities [39].

Ozushima is a remote island with a population of 208 (<60:14.9%), located off the coast of downtown Shunan City. It takes a minimum of 20 min to reach the island by ferry from the port in the city. The island has tourist attractions such as the remains of a training base for human torpedoes built at the end of the Pacific War and a memorial hall, as well as facilities for hands-on exchange, making it an island of history and tourism that promotes exchange with people outside the region. In addition, in recent years, the islanders have been cooperating with groups of natives to develop the community [40].

2.3. Status of COVID-19 in Japan

In Japan, the first positive case of COVID-19 was confirmed on 16 January 2020. The number of newly confirmed cases per day increased dramatically around late March 2020 [41], and the first state of emergency was declared on 7 April 2020 [42]. There was no lockdown during this period, but the government asked citizens to stay at home except for necessary activities such as shopping. The government also asked for temporary closures of public facilities such as schools and movie theaters [38]. The Japanese term typically translated as "request" is understood to mean "demand," with a strong expectation that those asked will obey the directives, but there are no legal penalties if they do not [43].

Figure 2 shows the newly confirmed cases per 1,000,000 population. In Japan, the first positive case was confirmed on 16 January 2020, and the number of infected people nationwide has peaked five times to date. The questionnaires were distributed and collected during the period indicated in the figure by the black arrows, and during that period, states of emergency were declared only in Tokyo and Okinawa prefectures. Semi-emergency coronavirus measures were called for elsewhere that were designed to target specific municipalities as a pre-emergency measure; these measures allowed, and allow, prefectural leaders to request or order business owners to close at 8 p.m. and take other steps [44]. Semi-emergency measures were enacted in five prefectures: Gunma, Saitama, Chiba, Kanagawa (all in the suburbs of Tokyo), and Osaka. Beginning on 2 August, all seven prefectures above were under a state of emergency, and four others were added to the list of prefectures subject to semi-emergency coronavirus measures; eight more were added on 8 August. In Yamaguchi Prefecture, where we conducted the survey, a state of emergency was declared from 16 April to 30 May 2020 (emergency declarations were issued throughout Japan during this period). The prefecture has not been subjected to another state of emergency or semi-emergency coronavirus measures since the first state of emergency was lifted because the level of infection in the prefecture was always lower than in the country as a whole. Further, there have been no cases of COVID-19 infection in Oshio, Sugane, and Ozushima. Therefore, it can be inferred that the population of Yamaguchi Prefecture felt more threatened by the situation outside the region. The infection situation is changing daily, and people's awareness is also expected to be constantly changing

according to the situation. Therefore, all survey results are as of the time of the survey, not final assessments.

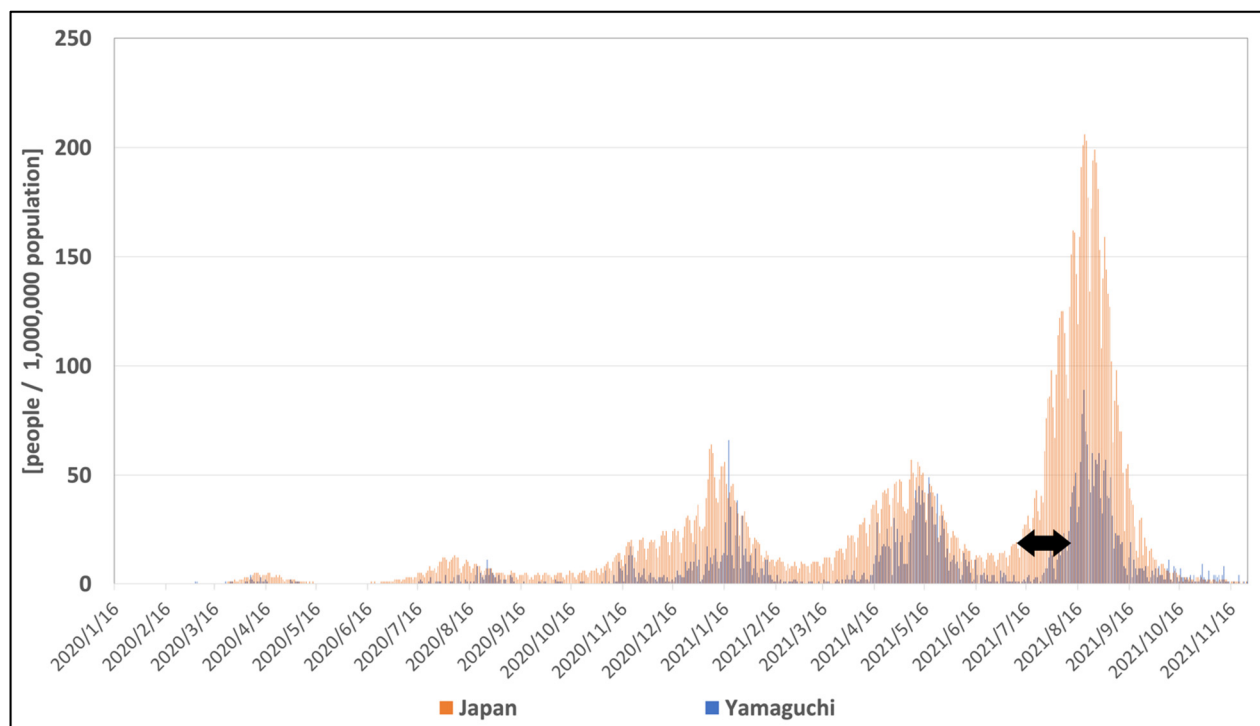


Figure 2. Newly confirmed cases per 1,000,000 population. Compiled by the author from daily open case data provided by the Ministry of Health, Labour, and Welfare [45].

3. Results

The attributes of the questionnaire respondents are shown in Table 1. The respondents were 119 men and women aged 30 years or older, and 70.4% of the respondents were retirees, housewives, and others.

3.1. Impacts on Daily Life

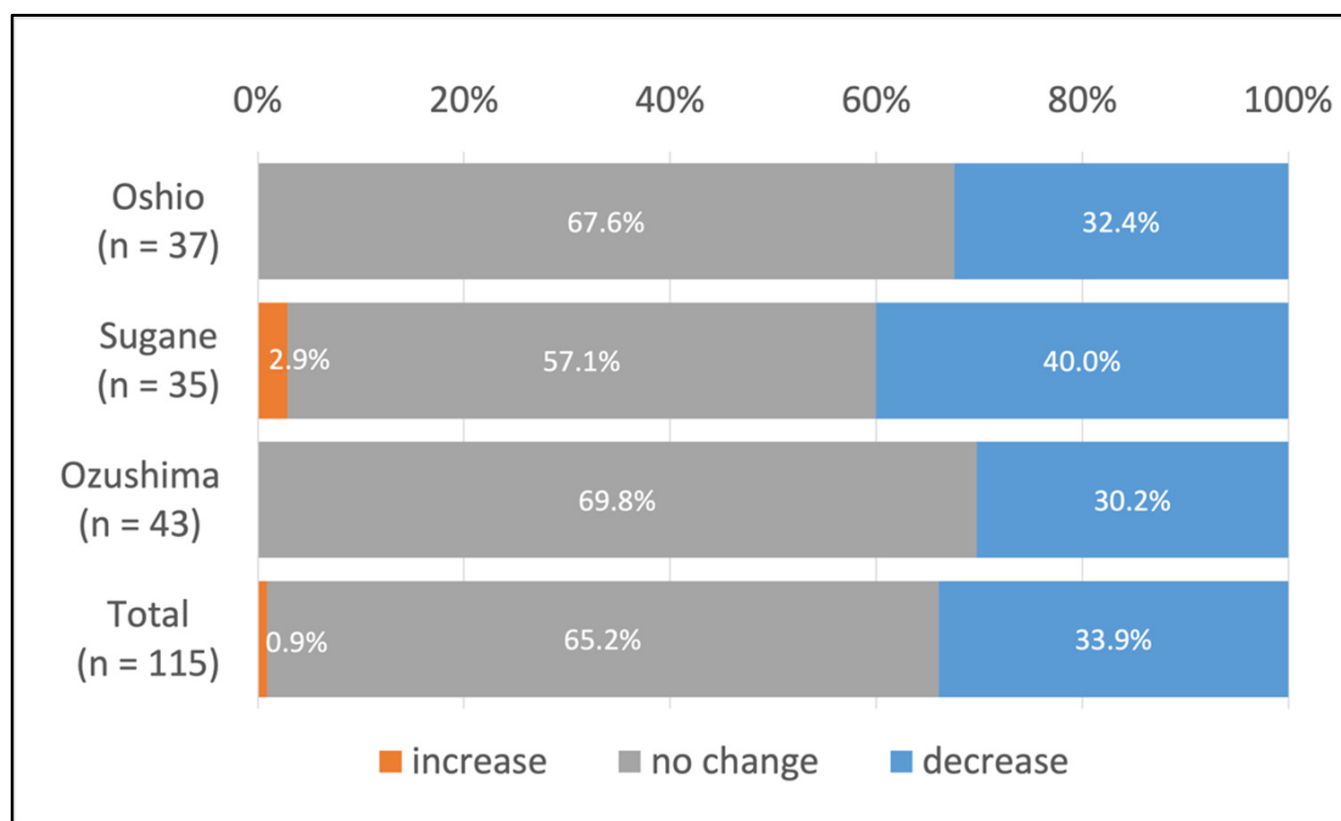
The survey asked three questions about the impacts of the COVID-19 pandemic on daily life: (1) frequency of going out, (2) changes in daily activities, and (3) frequency of visiting people living outside the district. The response options for (1), for both before and since the pandemic, were “never”, “about once a week”, “2~3 times a week”, “4~5 times a week”, and “almost every day”. Figure 3 shows these results.

We compared the responses before and after the COVID-19 pandemic and recategorized the options “increase”, “decrease”, or “no change”. Overall, 65.2% of the respondents in the three districts showed no change in their frequency of going out, while 33.9% showed a decreased frequency. Only one respondent in the Sugane district reported an increase in their frequency of going out.

For survey question (2), the survey asked nine items regarding changes in daily activities, and the response options were large increase, small increase, no change, small decrease, and large decrease. The nine items were commuting to school, work, farming, and fishing—that is, income-generating activities (work); shopping at supermarkets, stores, etc. (shopping); use of medical facilities (hospital); going out for lessons or hobbies (hobbies); daily exercise (exercise); work such as farming and fishing for self-sufficiency (farming and fishing); use of day care services (day care); participation in community events (community events); and gathering with family and relatives (gathering with relatives). Figure 4 shows the results for all three districts.

Table 1. Attributes of the Questionnaire Respondents.

Sociodemographic Variable	Characteristics	Oshio		Sugane		Ozushima		Total	
		People	Percentage	People	Percentage	People	Percentage	People	Percentage
Respondent		38	100.0%	36	100.0%	45	100.0%	119	100.0%
Gender	Men	21	55.3%	13	36.1%	14	31.1%	48	40.3%
	Women	17	44.7%	23	63.9%	31	68.9%	71	59.7%
Age	<60	1	2.6%	10	27.8%	5	11.1%	16	13.5%
	≥60	37	97.4%	26	72.2%	40	88.9%	103	86.5%
Occupation	Company employee	4	10.5%	2	5.6%	2	4.4%	8	6.7%
	Tourist farm workers	0	0.0%	2	5.6%	0	0.0%	2	1.7%
	Farmers other than in tourist farm	19	50.0%	2	5.6%	0	0.0%	21	17.6%
	Fishery	0	0.0%	0	0.0%	1	2.2%	1	0.8%
	Self-employed	5	13.2%	2	5.6%	3	6.7%	10	8.4%
	Housewife/other	2	5.3%	10	27.8%	15	33.3%	27	22.7%
	Retired and pensioner	6	15.8%	16	44.4%	24	53.3%	46	38.7%
	No answer	2	5.3%	1	2.8%	0	0.0%	3	2.5%

**Figure 3.** Changes in the frequency of going out before and after the COVID-19 pandemic.

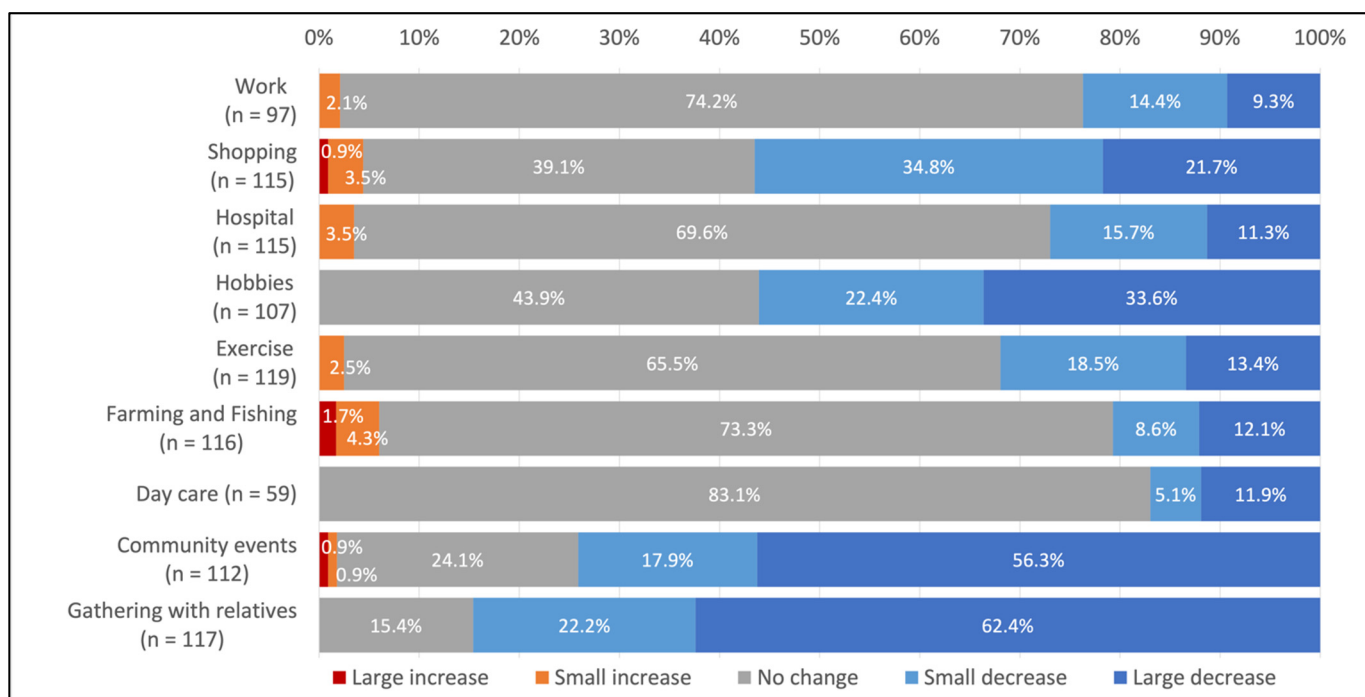


Figure 4. Changes in daily activities before and since the COVID-19 pandemic (all three districts).

For community events and gathering with relatives, more than 55% of the respondents answered large decrease; when we included small decrease, more than 70% of the respondents had decreased the frequency of their activities. Both community events and family gatherings attract large groups of people, and the study findings indicate that many people refrained from such activities during the pandemic. More than 20% of respondents reported large decreases in their shopping and participation in hobbies, and when we included small decreases, more than 55% of the respondents had reduced the amount of time they spent in these activities. Shopping is a necessary activity in daily life, but we considered that survey respondents were able to reduce the frequency of engaging in these activities by buying in bulk or using home delivery.

More than 70% of respondents reported no change in the three categories of work, farming and fishing, and day care, although farming and fishing had the highest percentage among all items of respondents who reported large or small increases, possibly because these activities entail little contact with people. For hospital and exercise, more than 65% of the respondents answered no change. We considered that people's hospital routines changed little because the elderly residents likely needed daily medical care, and that exercise frequency changed little because it was possible to keep exercising with little contact with others.

For survey question (3), Figure 5 reflects that we divided gatherings with relatives into frequency of visits outside of the district to immediate family, other relatives, and friends outside the district. The response options for visit frequencies were "almost every day", "about once a week", "about once a month", "about once a year", and "no regular visit" for before and since the pandemic. Respondents also selected the places of residence of the people they visited from the following options: within the city, within the prefecture, within Japan (Chugoku region, where Yamaguchi Prefecture is located), and within Japan (all regions).

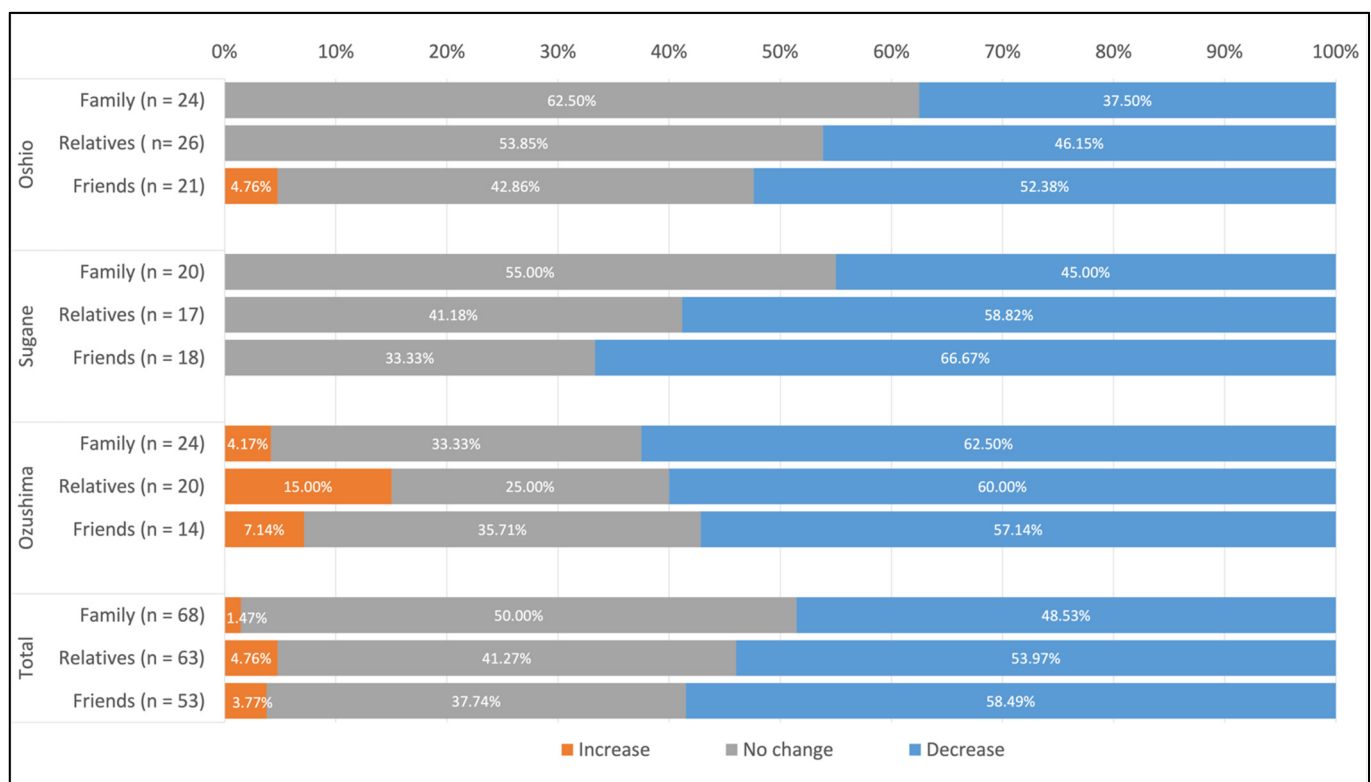


Figure 5. Changes in frequency of visits to family, relatives, and friends who live outside the community (all districts).

For the responses before and since the pandemic, we reduced them to increase, decrease, and no change. The number *n* of answers for each item differs because we excluded people who reported no regular visits for both periods from any of the visit categories. Overall, more than 50% of the respondents reported decreasing their visits to relatives and friends, with less of a decrease in visits to immediate family. Ozushima showed different percentages from the other two districts. There were no significant differences in the frequency of visits depending on the destination (city, prefecture, or outside the prefecture).

3.2. Impact on Attitudes toward Relationships Outside the District

We investigated how the experience of the COVID-19 pandemic had affected the respondents' attitudes toward relationships outside the community with two questions, about their attitudes toward visitors from other regions and what they would like to focus on in future community development. For the former, the response options were "very welcome", "welcome", "not so welcome", "not welcome", and "never bothered" for each of the following periods: before the COVID-19 pandemic, during the pandemic, and after the pandemic assuming the social distance constraints will be lifted and normal activity can resume. The respondents also had the following response options for why they had answered as they did for the period before the pandemic: "Because it will help revitalize the local economy", "Because it contributes to maintaining the physical environment (transportation and public facilities)", "Because it is fun to interact with visitors", "Because it will help raise the profile of the community", "Because it would have a negative impact on my personal life (noise, garbage problems, road congestion, etc.)", "Because it will reduce the connection between local residents", "Because it will weaken the power of the community", and "Other". For the period during the pandemic, we added "Because of worry that the coronavirus will spread again, and for the post-pandemic period", we added "To prepare for a situation in which people's movement are restricted due to a future epidemic of an infectious disease". Multiple answers were allowed.

Figure 6 presents the results for changes in attitudes toward visitors from outside the region; all respondents reported feeling less welcoming during the pandemic, but the percentages of people who said visitors would be welcome or very welcome were higher for after the pandemic than they had been before COVID-19. The percentages of respondents who answered “not welcome” and “not so welcome” during the pandemic were larger in Ozushima than in the other two districts. It is possible that outside visitors were more salient for residents of Ozushima because it is such a remote island. Overall, respondents strongly expected to welcome visitors again after it was safe to do so again, and Table 2 shows the respondents’ answers.

As for before the COVID-19 pandemic, for those who answered that visitors would be welcome or very welcome, 51 people, the most, said it was because it would help revitalize their local economies. Of the respondents who reported that they would not welcome outside visitors after the pandemic, 59, also the most, were concerned that the coronavirus would spread again. Among those who expected to be welcoming to outside visitors, 70, the most also said that they expected visitors help revitalize their local economies; six respondents said that they welcomed visitors before the pandemic but that they would not afterward; five were worried about the return of the virus and two said they wanted be prepared for future restricted movements because of another infectious disease pandemic. All six were in their 70 s or older, and all but one was female. Although there were some characteristics related to their attributes, there were no notable changes in the frequency of going out or behavior during the pandemic.

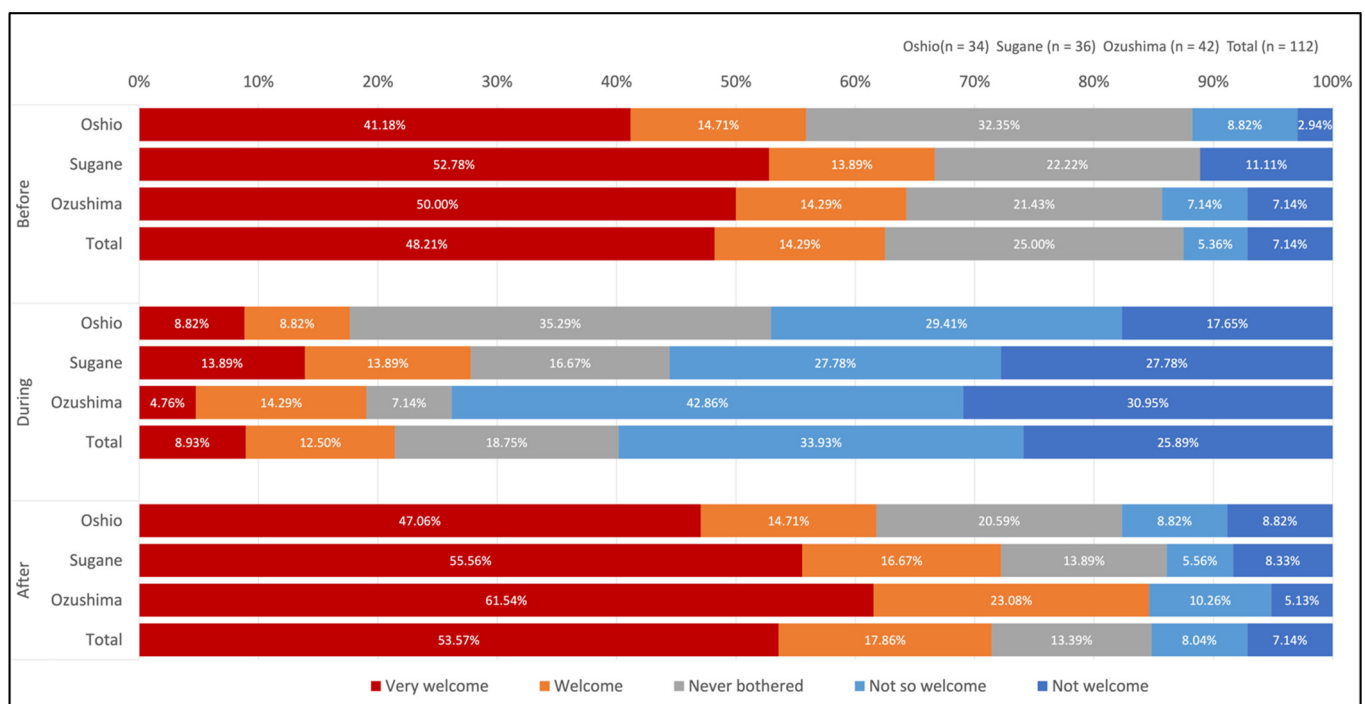


Figure 6. Changes in attitudes toward visitors to the residential area, from other regions.

Table 2. Respondents' reasons for their attitudes toward outside visitors to their regions.

Option [People]	Before			During			After		
	Very Welcome, Welcome (n = 70)	Never Bothered (n = 28)	Not so Welcome, Not Welcome (n = 14)	Very Welcome, Welcome (n = 24)	Never Bothered (n = 21)	Not so Welcome, Not Welcome (n = 67)	Very Welcome, Welcome (n = 80)	Never Bothered (n = 15)	Not so Welcome, Not Welcome (n = 17)
Because it will help revitalize the local economy	51	11	1	0	6	0	70	5	0
Because it contributes to the maintenance of the physical environment (transportation and public facilities)	28	8	0	17	3	0	37	2	0
Because it is fun to interact with visitors	39	8	1	8	5	0	44	0	1
Because it will help raise the profile of the community	34	4	1	13	1	1	36	1	0
Because it would have a negative impact on my personal life (noise, garbage problems, road congestion, etc.)	2	1	6	14	2	12	1	2	2
Because it will reduce the connection between local residents	4	2	1	1	0	3	5	1	0
Because it will weaken the power of the community	0	0	0	2	0	3	3	1	0
Because it worried that the new coronavirus will spread again	—	—	—	0	0	59	8	0	14
To prepare for a situation in which the movement of people is restricted due to a future pandemic of an infectious disease	—	—	—	—	—	—	4	0	6
Others	2	2	2	7	1	2	2	0	0

For areas respondents wanted to focus on in future community development when pandemic restrictions are lifted, their response options were “agree”, “agree a little”, “disagree a little”, “disagree”, and “don’t know” for the following eight areas: tourism (tourism), resident-led activities (resident-led), activities by community development organizations (community development org.), making the region complete within the district (complete within the district), increasing the number of migrants (migrants), increasing the numbers of so-called U-turn people who migrated to urban areas and would be returning to their hometowns (U-turn residents), increasing the numbers of people who have ties or involvement with the region in some way but who are not permanent residents or overnight tourists (that is, people in the areas for a cause; cause-related population), and continuing the same community development activities as before the pandemic (same as before).

Figure 7 shows these results. More than 75% of survey respondents either agreed a little or agreed with wanting community development to be driven by migrants, U-turn

residents, and cause-related populations. These results suggest that residents of rural Japan are seeking connections with the outside community. However, more than 75% also wanted to continue with resident-led activities. In contrast, less than 50% wanted outside visitors to make their districts complete, and about 40% answered disagree a little or disagree, the highest percentage among all items. This suggests that the residents do not want to weaken their own power while maintaining relations with outside the district.

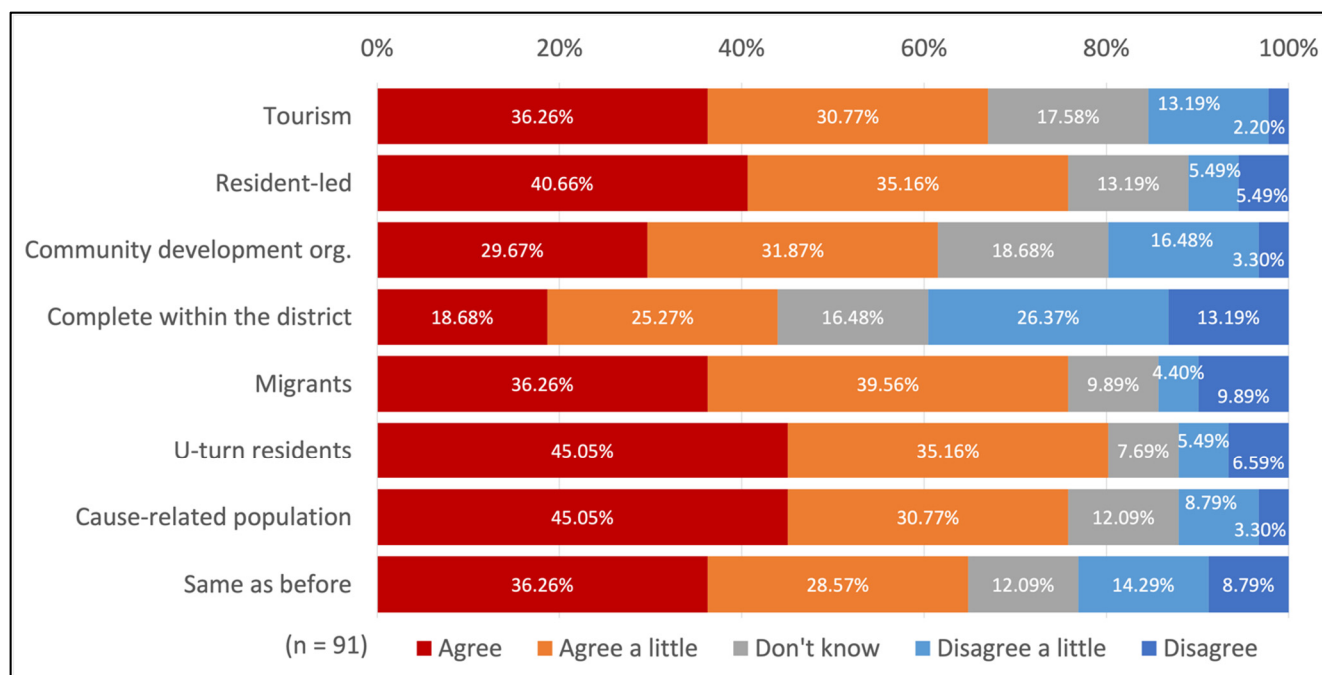


Figure 7. What do you want to focus on in future community development?

4. Discussions

This study covered three rural and fishing community districts in Japan; there were no statistically significant differences in the results between the districts. In this study of rural residents' changes in their routines since the outbreak of the COVID-19 pandemic, about one-third of the total respondents reduced the frequency of their daily outings, and by activity category, respondents significantly reduced the frequency of activities that are not essential for daily life. There was a small group, about 20%, of respondents whose frequency of participation in essential activities had decreased. We believe that although respondents' engagement in non-essential activities decreased overall, the respondents who were able to continue in some of those activities were able to so because it was easy to maintain minimal contact with others. Fifty percent of respondents did not change their frequency of visiting people outside the community if they were family members. In summary, the impacts on residents of rural areas and their daily activities and movements differed considerably depending on the purposes of the activities.

During the pandemic, people were conscious of avoiding visitors from outside their districts, but many expected to welcome outside visitors after the pandemic as they had beforehand; a number hoped there would be more migrants and people associated with local causes. People's awareness of the need to connect with people outside the district is unlikely to change after the pandemic is under control. Under that circumstance, the respondents from all three districts in this study had one thing in common: they all wanted to interact with people from outside their districts. However, the state of society is not the same as before and is changing. During the pandemic, the use of ICTs to create virtual activities has become widespread, but not everything can be replaced by virtual activities. Face-to-face activities are also important. Activities for regional promotion have been restricted as they are not considered to be the minimum activities to maintain daily life. In

order to resume activities as before after the pandemic is over, it is necessary to think about the succession of skills and sustain motivation that support activities, and at the same time, to consider new ways of interaction.

In this paper, we have suggested that in a limited number of cases, local residents may be receptive to community development measures based on interactions with the outside world once the pandemic is over. We would like to point out that more studies are needed to test this possibility.

Author Contributions: M.N. designed the work, acquired data sets, and wrote the manuscript. T.H. designed the work, supervised the acquisition and analysis of data, reviewed the manuscript, and coordinated the research. All authors have read and agreed to the published version of the manuscript.

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Institutional Review Board Statement: The study was conducted in accordance with the Declaration of Helsinki, and approved by the Ethics Committee of School of Agriculture, Meiji University (protocol code 2021–3 and 1 May 2021).

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The data sets generated and analyzed during the current study are available from the corresponding author on reasonable request. The data are not publicly available because they contain respondents' personal information.

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Conflicts of Interest: The authors declare no conflict of interest. The funders had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript; or in the decision to publish the results.

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