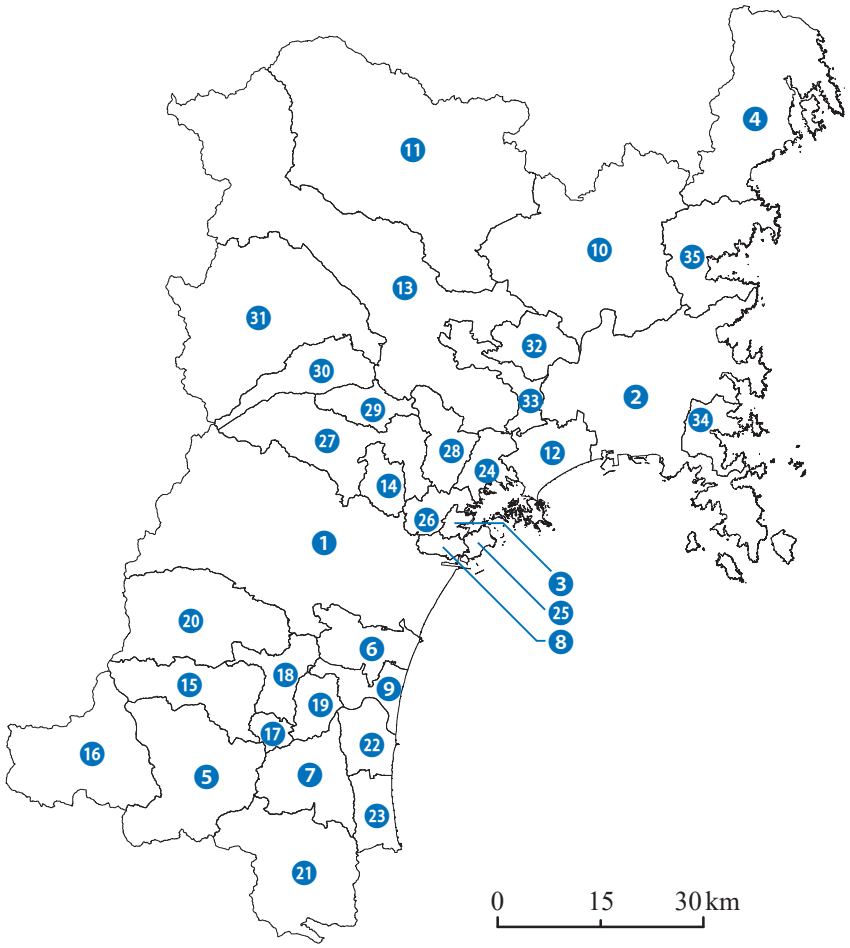
Chapter 3

The SDGs Miyagi Model: Human Security Indicators for Miyagi Prefecture

Figure 3-1: **Municipalities in Miyagi Prefecture**



(1) Sendai City
(2) Ishinomaki City
(3) Shiogama City
(4) Kesennuma City
(5) Shiroishi City
(6) Natori City
(7) Kakuda City
(8) Tagajo City
(9) Iwanuma City
(10) Tome City
(11) Kurihara City
(12) Higashi-Matsushima City
(13) Osaki City
(14) Tomiya City
(15) Zao Town
(16) Shichikashuku Town
(17) Ogawara Town
(18) Murata Town
(19) Shibata Town
(20) Kawasaki Town
(21) Marumori Town
(22) Watari Town
(23) Yamamoto Town
(24) Matsushima Town
(25) Shichigahama Town
(26) Rifu Town
(27) Taiwa Town
(28) Osato Town
(29) Ohira Village
(30) Shikama Town
(31) Kami Town
(32) Wakuya Town
(33) Misato Town
(34) Onagawa Town
(35) Minami-Sanriku Town

3-1 Miyagi Prefecture on the Map

1 Social Context

(1) Municipalities and Population

Miyagi Prefecture is located south of the geographic center of the Tohoku region and in a north-northeast direction from Tokyo. In 2020, it had a population of 2,301,996, the largest in the Tohoku region and the 14th largest among all prefectures in Japan (2020 National Census). The prefecture has 35 municipalities, including 14 cities, 20 towns, and one village (see **Figure 3-1** and Reference Materials 2 for population figures as of August 31, 2022).

Sendai is the prefectural capital and is the only ordinance-designated city in the Tohoku region. It lies about 300 km from Tokyo, while Kesennuma in the northern part of the prefecture is located about 400 km from Tokyo. Approximately 70% of the prefecture's population resides in Sendai and its surrounding municipalities (Natori, Iwanuma, Shiogama, Tagajo, Tomiya, etc.) (**Figure 3-2**).

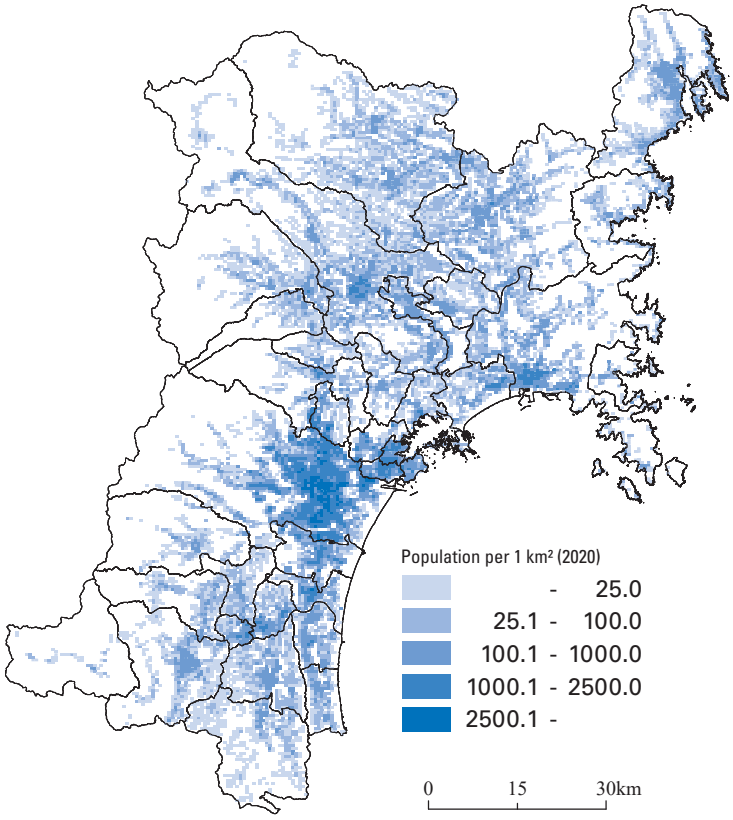
Data from the 2015 and 2020 censuses show that the prefecture's population decreased by 31,903, while the population of Sendai and its suburbs (Sendai, Natori, Tagajo, Tomiya, Taiwa, Onagawa, and Ohira) increased, with particularly high growth rates in Natori, Ohira, and Taiwa. Accordingly, the socioeconomic characteristics of Miyagi Prefecture are heavily influenced by the Sendai Metropolitan Zone. Other cities with large populations include Ishinomaki, Osaki, and Tome.

On the other hand, some municipalities suffer from declining numbers of children, demographic aging, and depopulation, such as Shichikashuku and Kawasaki in the southern part of Miyagi Prefecture bordering Yamagata Prefecture.

(2) Transportation Network

Figures 3-3 and **3-4** show Miyagi Prefecture's rail and major road networks, respectively. The Tohoku Shinkansen and Tohoku Expressway run through the region, and there are many stations and interchanges, providing good access to the Kanto and northern Tohoku regions. In addition, the city saw the opening of a subway system and improvements to the Sendai Metropolitan Zone Ring Network expressway system from the early Heisei period (around 1989)[*1], making intra-city transportation very convenient. Meanwhile, the Japan Railways (JR) Kesennuma Line used to connect Yanaizu to Kesennuma in the northern part of the prefecture, but it was severely damaged in the Great East Japan Earthquake. Passenger transportation is now provided by a Bus Rapid Transit (BRT) system operated by East Japan Railway Company.

Figure 3-2: Population density of Miyagi Prefecture (2020)



Source: Regional Grid-Square Statistics, National Census

[*1] The Heisei period (1989–2019) corresponds to the reign of the previous emperor, Emperor Akihito.

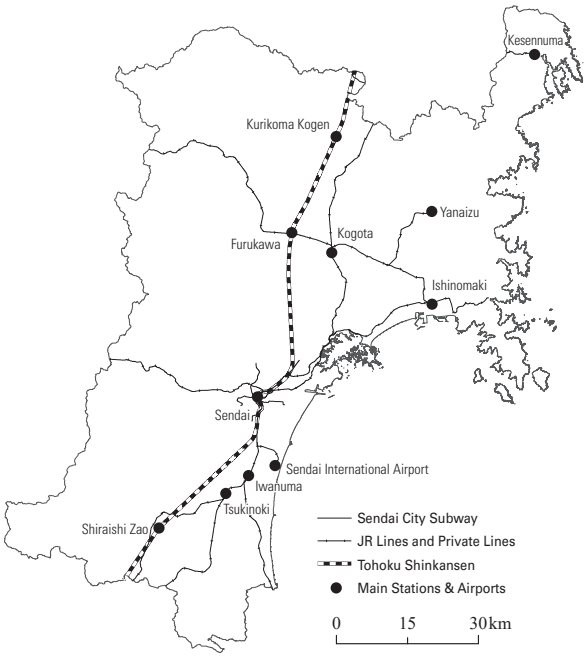
A bird's eye view of the prefecture's transportation system shows that the network was built outwards from Sendai City, with major railways and roads, such as the north-south Shinkansen line and expressway, running through it. Conversely, east-west arterial routes are less developed. The commuting area into Sendai City extends from Kogota in Misato Town, about 40 kilometers to the north, to Yamamoto Town on the border of Fukushima Prefecture to the south.

(3) Regional Administrative Divisions

In Miyagi Prefecture, regional administrative zones (regional divisions) are defined according to the geographic area under the jurisdiction of the prefecture's regional offices. The prefecture is divided into seven zones, from the Sennan Zone in the southern part of the prefecture to the Kesennuma/Motoyoshi Zone in the northern part (**Figure 3-5**). These correspond closely to the prefecture's commuting, commercial, and other nodal regions (functional regions).

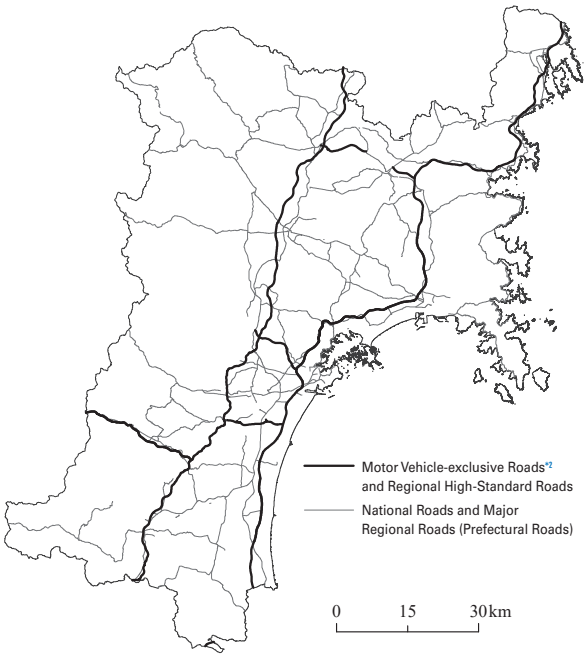
In principle, the information for the Human Security Indicators discussed in this book was gathered at the municipal level, but for some indicators, municipal-level data was not available, so the data used is collated by regional administrative zone instead. As mentioned, these divisions correspond to functional regions and are therefore treated as equivalent to municipalities.

Figure 3-3: Railway network in Miyagi Prefecture



Source: Based on 2021 Railway Data from the National Land Information Division, National Spatial Planning and Policy Bureau

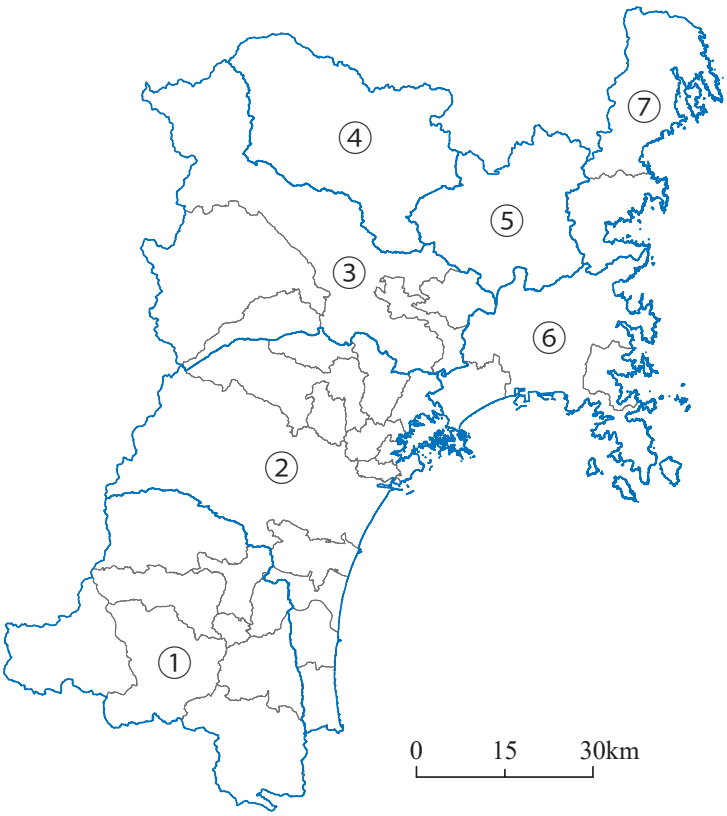
Figure 3-4: Major roads in Miyagi Prefecture



Source: Based on 2020 Emergency Transportation Road Data from the National Land Information Division, National Spatial Planning and Policy Bureau

*2 Under the Road Act of 1952, a motor vehicle-exclusive road is a road or a portion of a road designated by a road administrator to be only for automobiles. These roads mainly correspond to the expressways.

Figure 3-5: **Map of Miyagi Prefecture's regional divisions (blue lines)**



(1) Sennan Zone
(2) Sendai Metropolitan Zone
(3) Osaki Zone
(4) Kurihara Zone
(5) Tome Zone
(6) Ishinomaki Zone
(7) Kesennuma/Motoyoshi Zone

Source: Based on the Miyagi Prefectural Government website

2 Natural Environment

(1) Terrain

The natural environment of Miyagi Prefecture is varied, with the eastern side facing the Pacific Ocean, and the northern coastal area consisting of a series of rias, with many inlets and outlets. The Sanriku region is a tidal area where the warm Kuroshio Current and the cold Oyashio Current meet, which creates a rich environment for many species of fish. The region is considered to be one of the world's four major fishing grounds.

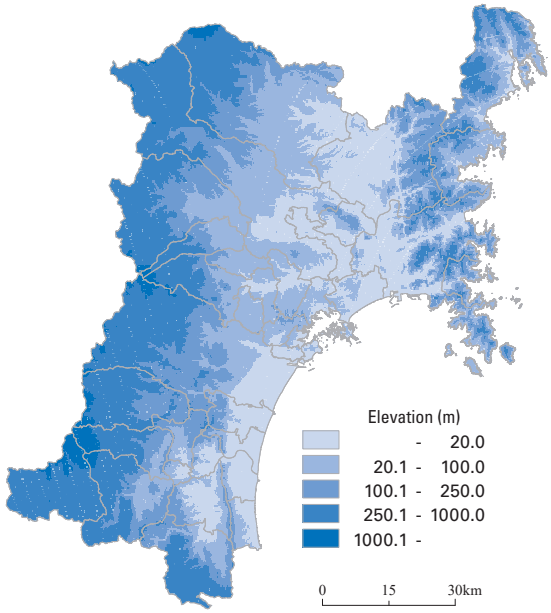
Heading south from the Sanriku region, the scenic terrain typified by Matsushima, one of Japan's top three landscapes[*3], is a delight to behold. On the west side of the prefecture lie the Ou Mountains, including Mt. Zao and Mt. Kurikoma, whose beautiful scenery can be enjoyed in each of the four seasons. Meanwhile, across the center of the prefecture stretches one of its most fertile agricultural areas, the Sendai Plain. As such, Miyagi Prefecture has a well-balanced natural environment of sea, mountains, and plains.

Looking down at the prefecture's terrain from above shows that the western part (Ou Mountains), the southern part (the northern end of the Abukuma Highlands that extend from Fukushima Prefecture), and the northern coastal area (the southern end of the Kitakami Mountains that extend from Iwate Prefecture) have a high elevation. In particular, the western section is lined with mountains over 1,000 meters high, including Byobudake (1,825 meters), the highest peak in the prefecture (**Figure 3-6**).

In the central part of the prefecture lies the wide Sendai Plain. This plain faces Sendai Bay and is surrounded by the Abukuma Highlands to the south, the Ou Mountains to the west, and the Kitakami Mountains to the

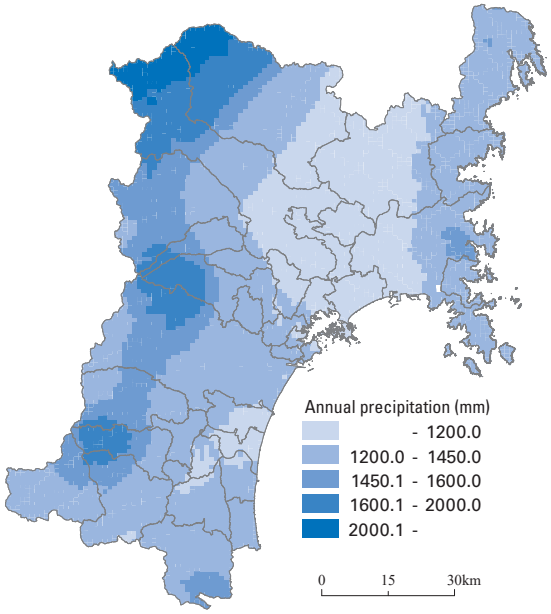
[*3] Matsushima (Miyagi Prefecture), Amanohashidate (Kyoto Prefecture), and Miyajima (Hiroshima Prefecture), are considered the top three scenic spots of Japan.

Figure 3-6: Elevation of Miyagi Prefecture



Source: 250 m Grid-Square Elevation Data, National Land Information Division, National Spatial Planning and Policy Bureau

Figure 3-7: Precipitation in Miyagi Prefecture



Source: 1 km Grid-Square Annual Average Data, National Land Information Division, National Spatial Planning and Policy Bureau

Table 3-1: Land area by type of terrain in the Tohoku Region and Miyagi Prefecture

	Land area (km²)	Mountains	Hills	Plateaus	Lowlands	Inland waters, etc.
National	377,976	230,331 (60.9)%	44,337 (11.7)	41,471 (11.0)	51,963 (13.7)	9,232 (2.4)
Tohoku region	66,948	41,498 (62.0)%	9,504 (14.2)	5,964 (8.9)	9,538 (14.2)	367 (0.5)
Miyagi Prefecture	7,282	2,158 (29.6)%	2,673 (36.7)	652 (9.0)	1,757 (24.1)	23 (0.3)

Source: Based on the 1982 National Land Information Compilation Survey. The sum of the areas of different terrain types does not equal the total land area for the country, region, or prefecture.

northeast. As a result of these topographical factors, several travel routes have converged here since antiquity, making it an important transit hub. The Sendai Plain is divided by the Matsushima Hills in the center of the prefecture, with the northern part known as the Senpoku Plain and the southern part as the Sennan Plain. The area of the Senpoku Plain near Osaki City is also called the Osaki Plain. Miyagi Prefecture's Furukawa Agricultural Experiment Station, which has produced new rice brands such as "Sasanishiki" and "Hitomebore," are located here. The Sennan Plain consists of the coastal plain along Sendai Bay and basins such as the Kakuda Basin and the Shiroishi Basin. Topographically, the area is somewhat contiguous with Hamadori in Fukushima Prefecture, and in the summer, sea breezes blow through. In some years, the northeasterly winds (*yamase*) can produce cool summers with persistent low temperatures.

The breakdown of land area by terrain type shows that mountainous areas account for about 30% of the prefecture's total area, which is low compared with the rest of the country. Conversely, hills and plateaus comprise 46% and lowlands 24% of the total, indicating that hills and plateaus have developed more markedly than elsewhere in the country (**Table 3-1**). The hills and plateaus of the Sendai Plain have been developed into residential land in the suburbs of Sendai City, while the rest is used as farmland to grow cucumbers, tomatoes, Japanese parsley, strawberries, and other crops.

(2) Climate

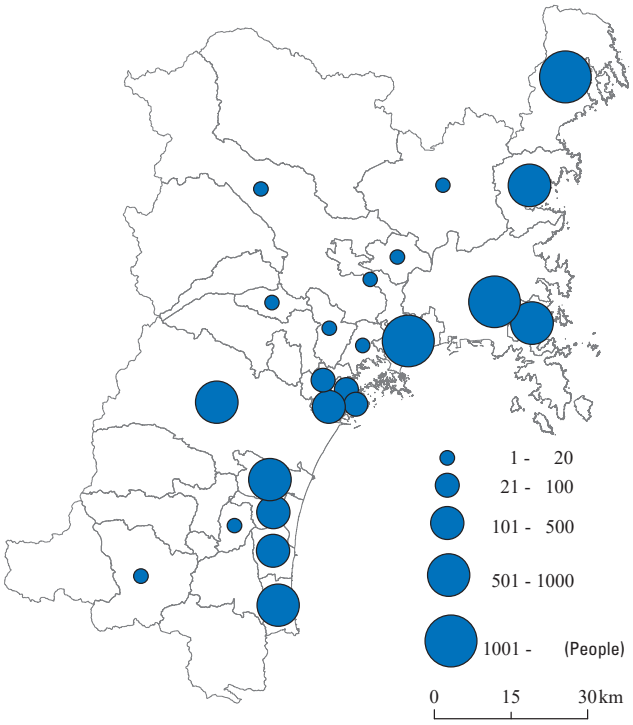
While cold temperatures and heavy snowfall in winter are often assumed to be typical of the climate of the entire Tohoku region, Miyagi Prefecture's climate is very different, with not much snowfall except in the mountainous areas in the west of the prefecture. The Pacific coast, in particular, has cold temperatures, but dry, sunny days are common. Spring is also relatively dry with many sunny days, but precipitation increases from June to October, often peaking in September due to the effects of autumn rain fronts and typhoons. The 30-year average annual precipitation (1981-2010) was 1,254 mm for Sendai City on the Sendai Plain, 1,188 mm for Shiogama City, and 1,067 mm for Ishinomaki City, which is about 70% to 80% of the precipitation of Tokyo, indicating a generally dry climate (**Figure 3-7**).

3 Damage from the Great East Japan Earthquake

At 2:46 p.m. on March 11, 2011, a magnitude 9.0 earthquake occurred off the coast of Miyagi Prefecture. On the Japanese seismic scale, Kurihara City recorded an intensity of 7 (the maximum value), while many other locations recorded intensities of Lower 6 or Upper 6.

Immediately after the earthquake, at 2:49 p.m., the Japan Meteorological Agency issued a major tsunami warning for the coast of Miyagi Prefecture, and coastal areas were subsequently hit by a tsunami that caused massive damage. The total number of deaths and missing persons in the prefecture as a result of the Great East Japan Earthquake was 11,785 (as of July 2019, according to the Miyagi Prefecture website). When broken down by municipality, most deaths and missing persons were located in coastal areas, which sustained extensive damage from the tsunami: 3,553 people in Ishinomaki City (as of February 2022), 1,433 people in Kesennuma City (as of April 2022), and 1,133 people in Higashi-Matsushima City (as of March 2021). Many victims were in the northern coastal areas of the prefecture, the Ishinomaki Zone and the Kesennuma/Motoyoshi Zone.

Figure 3-8: Numbers of dead and missing persons from the Great East Japan Earthquake in Miyagi Prefecture (as of October 20, 2011)



Source: Miyagi Prefectural Government Website

References: Toshikazu Tamura, Hideya Ishii, Masateru Hino (eds.) *Nihon no Chishi 4: Tohoku*. Asakura Shoten, 2008.

Written by Shinya Kawamura

3-2 Miyagi Prefecture 10 Years After the Great East Japan Earthquake: What Has Changed?

1 Impact of the Great East Japan Earthquake and Reconstruction

As noted previously, the Great East Japan Earthquake of March 11, 2011, caused tremendous damage to people's lives, homes, living environment, infrastructure, industry, employment, and education, especially in the coastal areas of Miyagi, Fukushima, and Iwate prefectures.

In cooperation with the national government, prefectural government, related organizations, businesses, and civic organizations, the local governments of Miyagi Prefecture have been implementing various recovery and reconstruction initiatives based on the *Miyagi Prefecture Disaster Recovery Plan*, including rebuilding the lives of people affected by the disaster, revitalizing industries, and restoring infrastructure.

According to the Miyagi Prefectural Government, as of the end of February 2021 (about ten years after the disaster), the physical aspects of these initiatives, such as rebuilding the livelihoods of disaster victims, restoring and improving infrastructure facilities essential for daily life, and creating disaster-resistant settlements, had been completed in most areas (with some exceptions).

Progress of Reconstruction in Miyagi Prefecture (end of February 2021)

Reconstruction and urban development: 195 areas for collective relocation for disaster prevention, 35 areas for land readjustment for reconstruction of disaster-affected urban areas
Residents in emergency temporary housing: 12 households (22 persons)
Provision of public housing for disaster victims: 100% (15,823 units planned/completed)
Disposal of disaster-related waste: 100% (11.6 million tons)
Total length of seawall: approximately 239 km
Source: Miyagi Prefectural Government data

By 2015, almost all industries had surpassed the level of economic activity at the time of the disaster (according to the FY2015 Miyagi Prefecture Input-Output table released in February 2021). The industry, construction, and manufacturing sectors, in particular, saw significant increases, while the share of tertiary industries declined significantly. In the primary industries, for which Miyagi Prefecture's share of output (1.7%) is higher than the national average (1.2%), the fishing and forestry industries have been recovering. However, the agricultural sector has not recovered to its 2005 level, although its decline was suspended (**Table 3-2**). The seafood processing industry, which is one of Miyagi Prefecture's most important industries (including approximately 10% of business establishments and 7% of employees) was hit particularly hard by the tsunami. It saw significant decreases in the number of establishments, value of shipments, and employees, though it has since shown signs of recovery.

In 2013, the value of shipments of manufacturing products recovered to its 2010 pre-disaster level and has been steadily expanding since then (**Figure 3-9**).

Miyagi Prefecture's gross prefectural product expanded at an annual rate of 4–5% from 2012 to 2015, partly due to demand associated with reconstruction efforts following the disaster. Since 2016, however, growth has remained below 1% (**Figure 3-10**).

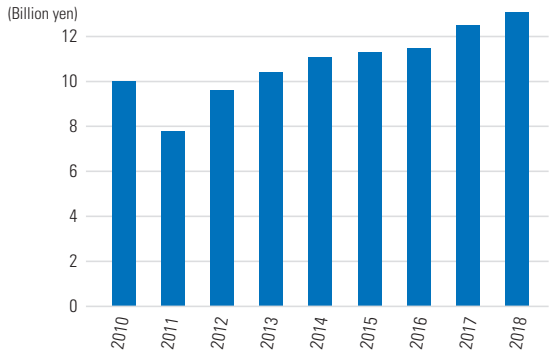
The value of landings at major fish markets in 2020 was about 49 billion yen, about 81% of what it was before the disaster (about 60.2 billion yen). The operating status of the commercial and industrial enterprises affected by the

Table 3-2: Makeup of Miyagi Prefecture's industrial output

	Miyagi Prefecture industrial output (Billion yen)				Proportion of industrial output (%)		
	2005	2011	2015	Change 2011–15	2005	2011	2015
Prefectural pro-duction	15,535.9	13,577.5	17,790.9	31.0%	100	100	100
Agriculture	242	205.7	210.7	2.4%	1.6	1.5	1.2
Forestry	18.4	13.1	16	22.1%	0.1	0.1	0.1
Fisheries	83	46.2	74.8	61.9%	0.5	0.3	0.4
Primary industry	343.4	265	301.5	13.8%	2.2	1.9	1.7
Secondary indus-try	5,077.5	4,117.9	6,363.2	54.5%	32.7	30.4	35.8
Tertiary industry	10,115	9,194.6	11,126.2	21.0%	65.1	67.7	62.5

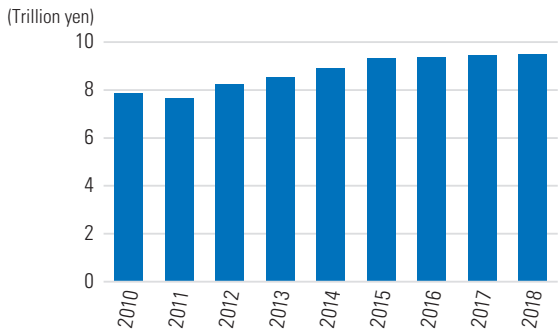
Source: Miyagi Prefecture Input-Output Table for 2015 (released February 2021)

Figure 3-9: Shipment value of manufacturing products in Miyagi Prefecture



Source: Census of Manufacture

Figure 3-10: Miyagi gross prefectural product (nominal)



Source: Miyagi Prefecture Municipal Accounts (FY2019)

Table 3-3: Number and breakdown of employees in Miyagi Prefecture

	Number of employees in Miyagi Prefecture			Proportion of total (%)			Rate of change (%)	
	2005	2011	2015	2005	2011	2015	2005-2011	2011-2015
Total employees	1,144,408	1,030,818	1,224,031	100	100	100	-9.9	18.7
Agriculture	72,674	62,011	54,257	6.4	6	4.4	-14.7	-12.5
Forestry	811	1,428	1,790	0.1	0.1	0.1	76.1	25.4
Fisheries	11,795	5,911	9,576	1	0.6	0.8	-49.9	62
Primary industry	85,280	69,350	65,623	7.5	6.7	5.4	-18.7	-5.4
Secondary industry	244,404	215,202	271,194	21.4	20.9	22.2	-11.9	26
Tertiary industry	814,724	746,266	887,214	71.2	72.4	72.5	-8.4	18.9

Source: Miyagi Prefecture Input-Output Table for FY2015 (released February 2021)

disaster returned to approximately 99% as of February 2021, based on information from the 9,807 members of the Society of Commerce and Industry who didn't go out of business (out of the 11,425 members affected by the disaster).

Looking at the number of employees, it is noteworthy that the number of agricultural workers has been on a steady decline due to a lack of successors, even from before the disaster, while the number of employees in the forestry and fishery industries has been increasing. However, as

seen in the example of the seafood processing industry, major challenges include the recruitment of personnel, expansion of sales channels, shortages of raw materials, brand appeal, and collaboration (Source: *Current Status and Issues in the Seafood Processing Industry of Miyagi Prefecture*, Bank of Japan Sendai Branch).

2 Psychological Changes

According to the Health Promotion Division of Higashi-Matsushima City, which has been examining the mental health of residents on an ongoing basis since the disaster, each stage of reconstruction, from the immediate aftermath onwards, is characterized by psychological changes such as fear of recurrent earthquakes, anxiety that makes it impossible to cope with changes in circumstances, isolation in the community after reconstruction, isolation within the family, anxiety about the future due to economic hardship, and interpersonal difficulties (**Table 3-4**).

It should not be forgotten that the mental conditions seen during the development period (2016–2017), such as a sense of loss and isolation in the community after reconstruction, isolation within the family, anxiety about the future, worsening physical illness, and complaints of insomnia, are continuing even ten years after the disaster. There are still many people, from children to the elderly, who have not been able to restore their mental health.

Table 3-4: Psychological changes among disaster victims

Recovery and reconstruction period (2012–2013)	Recovery and reconstruction period (2014–2015)	Development period (2016–2017)	Present (2019 onwards)
Complaints regarding experiences of the disaster, insomnia, PTSD-like symptoms, fear of recurring earthquakes, and vague anxiety as a result of environmental changes related to the disaster (loss, housing, unemployment, etc.)	Experiences of the disaster, loss, insomnia (sleeping pills prescribed by physician)	Many complaints of loss, isolation, financial insecurity, worsening physical illness, caregiver fatigue, and insomnia	Increased consultations from relevant agencies regarding children's behavior and development, such as inability to join groups, restlessness, difficulty in controlling emotions, and increased obesity Interruption of children's medical care, self-neglect
Distress of continuing to live in damaged homes, as well as anger and frustration at disparities in support immediately after the disaster, are evident	Many respondents checked "Criticisms from others" and "Feelings of guilt" regarding alcohol consumption. Reduction of alcohol consumption through information pro-vision	Many people who talk about the disaster tend to recall it and express the feelings they had at that time	Vague anxiety about the future due to financial difficulties after reconstruction
Increased alcohol consumption due to the disaster	Some said, "I'm able to talk about the disaster for the first time" or "I can finally talk about it"	Isolation in the community after reconstruction, isolation within the family	Inability to fit into new communities, interpersonal problems, isolation Increased counseling and support for families with no one close by to rely on
Lethargy (burnout)	Insomnia and other symptoms improved after rebuilding homes or moving to public housing for disaster victims		Obesity, hypertension, and the percentage of men with metabolic syndrome or pre-metabolic syndrome remain high Progression of disuse syndrome in the elderly, exacerbation of chronic diseases, cognitive decline Ongoing depression
Multiple stresses, including physical illness and life issues	Depression due to physical ailments, financial and community changes		Stress due to behavioral restrictions caused by the COVID-19 pandemic
Depression due to deterioration of relationships with close family members/relatives following the disaster or due to inability to adapt after evacuating to the house of a child outside of the city or nearby	Numerous complaints of physical symptoms from elderly people, tendency to develop fatigue from caring for elderly family members		Lack of exercise and overeating due to increased time spent at home

Source: Compiled from the *Results of the Specific Mental Health Examination Survey* by the Higashi-Matsushima City Health Promotion Division

3 Remaining Issues

Even ten years after the disaster, there is "still a long way to go to achieve true recovery that will lead to peace of mind and restored livelihoods for people affected by the disaster" (Miyagi Prefecture's *Vision for the Future of a New Miyagi 2021–2030*). Many issues still need to be addressed as priorities, such as providing in-depth psychological care to disaster victims, supporting the revitalization of communities and industries in their new environments as they relocate and move into public housing for disaster victims, and passing on the lessons of the disaster to future generations. In particular, efforts in areas other than physical infrastructure require fine-tuned support for each individual to ensure that no one is left behind.

Disaster prevention: With the objective of "building disaster-resilient and safe communities," Miyagi Prefecture is working to improve disaster preparedness by training leaders in disaster prevention and increasing the proportion of schools and other public facilities that are seismically reinforced (referred to as the rate of seismic reinforcement). While the rate of seismic reinforcement of public facilities that serve as disaster prevention centers has reached 100% in 21 municipalities, there are still 3 municipalities where it had yet to reach 90% at the end of FY2018.[*4] Moreover, the seismic reinforcement rate for municipal water and sewage systems is low, at less than 10% in 11 municipalities. The rate of voluntary disaster reduction organizations is less than 70% in 5 municipalities, and only 13 have reached 90% volunteer fire brigade sufficiency, with 5 municipalities having less than 80% (as of October 2020).[*5] To build disaster-resilient communities, it is necessary to urgently increase the rate of seismic reinforcement as well as increase voluntary disaster reduction organizations, and to complete the establishment of disaster prevention systems.

Passing on the lessons of the disaster: Historically, Miyagi Prefecture has been subjected to repeated earthquakes and tsunamis, and even recently, it has experienced several disasters involving typhoons and heavy rains. It is important that the memories and lessons of the disaster are not allowed to fade away, but are passed on to the next generation and people in other regions, helping them to protect themselves in the event of a new disaster. Municipalities in the hard-hit coastal areas are working to pass on the experiences and lessons of the disaster by preserving disaster sites and developing memorial parks, museums, monuments, stone inscriptions, and exhibitions. Miyagi Prefecture has also established a *Basic Policy on Passing On Memories and Lessons from the Great East Japan Earthquake* (April 2021) and is promoting various initiatives, but a sustained and systematic response is required.

4 Issues from before the Disaster

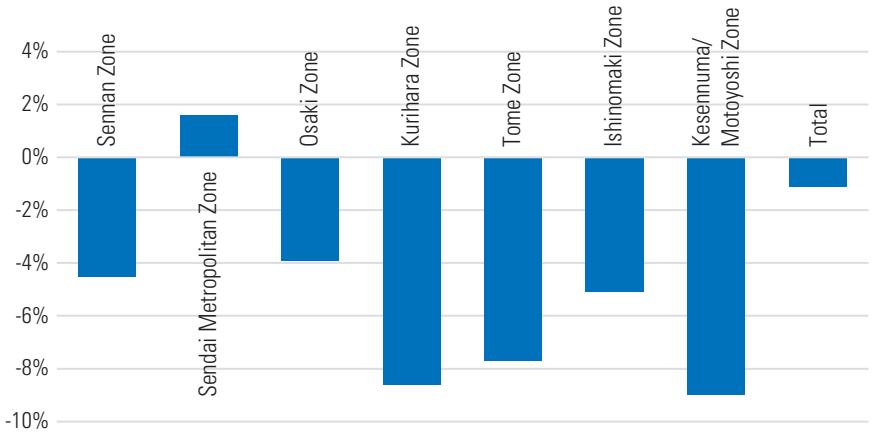
Many of the issues that municipalities in Miyagi Prefecture must address after rebuilding damaged infrastructure and living environments cannot be treated as simply being the result of the disaster. While the disaster brought to light issues such as depopulation, children's education, and the gender gap, these are issues that should have been addressed even before the disaster, and which have become even more serious because of it. As noted by Toru Kikawada, former Deputy State Minister for Reconstruction, depopulation "would have been a problem even if the disaster had never taken place."

(1) Population Decline — Miyagi Prefecture's Greatest Challenge

Before the disaster: The population of Miyagi Prefecture peaked in 2003 at 2.37 million and had been declining even before the disaster. With the exception of the Sendai Metropolitan Zone, many municipalities in the prefecture experienced population declines, reflecting a trend of polarization between Sendai and other areas. Between 2000 and 2010 (the year before the disaster), the population of Miyagi Prefecture decreased by about 1.1%, from 2,365,000 to 2,335,000. While the population of the Sendai Metropolitan Zone increased by 1.6%, other areas experienced rapid population decline. In the northern inland part of the prefecture, the populations of the Kurihara, Tome, and Osaki Zones declined by 8.6%, 7.7%, and 3.9%, respectively. Meanwhile, in the northern coastal region, the Kesennuma/Motoyoshi and Ishinomaki Zones saw decreases of 9.0% and

[*4] This rate is calculated as the number of public facilities for which seismic reinforcement work has been performed, out of all public facilities that are used as disaster prevention centers.
[*5] An organization in which local residents work together through neighborhood associations, etc. to carry out various activities aimed at improving disaster resilience.

Figure 3-11: **Changes in the population of Miyagi Prefecture before the disaster (2000–2010)**



Source: Calculated from Miyagi Prefecture Population Estimates

5.1%, respectively. Finally, the Sennan Zone experienced a decline of 4.5%.

In the immediate aftermath of the disaster: Large numbers of people died or went missing, houses and businesses were lost, and the population of the prefecture's coastal areas plummeted (Kesennuma/Motoyoshi and Ishinomaki Zones). The population increased or decreased due to migration from heavily damaged municipalities to neighboring municipalities that were relatively less affected (e.g., Onagawa to Ishinomaki, Minami-Sanriku to Tome). In Onagawa (8.7% decrease), which suffered the greatest human losses in terms of population, the damage caused an additional outflow on top of the pre-existing population decline, with a population drop of 37% between 2010 and 2015, while sharp declines were also observed in Kesennuma (11.6%) and Ishinomaki (8.5%). Due to an influx of people affected by the disaster and also the demand for labor generated by reconstruction activities, the population of Sendai City in particular has increased since 2012–13 (1,012,000 in 2011 → 1,020,000 in 2012 → 1,039,000 in 2013 → 1,050,000 in 2014 → 1,054,000 in 2015). In 2012 and 2013, factors such as reconstruction-related demand gave rise to a slight increase in Miyagi Prefecture as a whole, but the downward trend resumed in 2014 and has continued ever since.

Recent changes: The population of Miyagi Prefecture decreased by an additional 2.2% from March 1, 2011 (just before the disaster) to 2021. If we compare the populations of the 12 disaster-affected coastal municipalities, Natori, Sendai, Rifu, and Iwanuma, located in the Sendai Metropolitan Zone, showed slight increases over this period, while all others showed high rates of population decline. In the northern coastal areas of the prefecture (Kesennuma/Motoyoshi and Ishinomaki Zones), population decline bottomed out due to reconstruction-related demand, support activities, and other factors, but the trend has become more pronounced since 2017, with extremely high rates of decline from 2011 to 2021 in Onagawa (43.3%), Minami-Sanriku (37.2%), Kesennuma (18.7%), and Ishinomaki (13.3%). High rates of decline are also observed in the coastal areas, such as Shichigahama, (12.5%), Matsushima (12.0%), and Shiogama (7.5%), as well as in Yamamoto (29.3%) and Watari (5.5%) in the southern part of the prefecture.

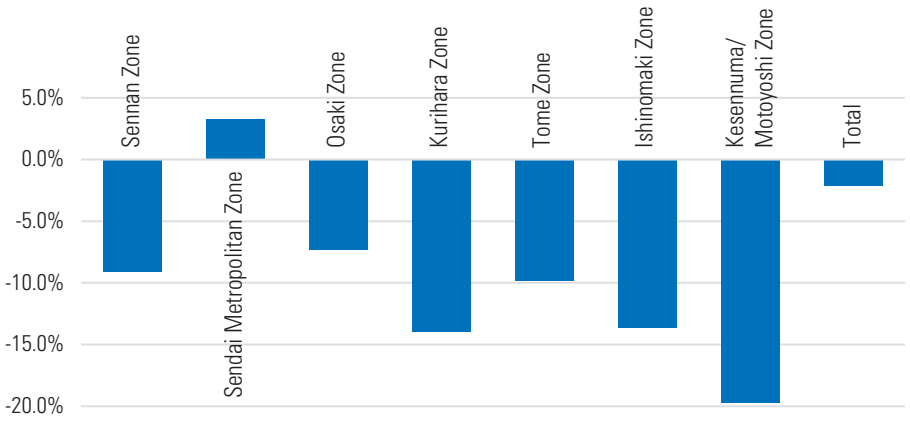
In the northern inland region (Kurihara, Tome, and Osaki Zones), population decline eased somewhat due to migration from coastal areas following the disaster, but has since accelerated after 2014, with Kurihara (14.0%), Tome (9.8%), and Osaki (7.3%) showing the highest rates of decline from 2011 to 2021, after the northern coastal areas. In the Sennan Zone in the south, population decline has become more pronounced since 2016, with the rate of population decline from 2011 to 2021 (9.1%) reaching almost the level of the northern inland region (Figure 3-12).

Table 3-5: Estimated population changes in coastal disaster-affected municipalities: 10 years after the disaster

	March 1, 2011	January 1, 2021	Population change	Rate of population change (%)
Onagawa Town	9,932	5,636	-4,296	-43.3
Minami-Sanriku Town	17,378	10,906	-6,472	-37.2
Yamamoto Town	16,608	11,750	-4,858	-29.3
Kesennuma City	73,154	59,504	-13,650	-18.7
Ishinomaki City	160,394	139,070	-21,324	-13.3
Shichigahama Town	20,353	17,818	-2,535	-12.5
Matsushima Town	15,014	13,206	-1,808	-12.0
Higashi-Matsushima Town	42,840	38,910	-3,930	-9.2
Shiogama City	56,221	52,029	-4,192	-7.5
Watari Town	34,795	32,872	-1,923	-5.5
Tagajo City	62,990	61,963	-1,027	-1.6
Iwanuma City	44,160	44,339	179	0.4
Rifu Town	34,279	35,461	1,182	3.4
Sendai City	1,046,737	1,092,478	45,741	4.4
Natori City	73,603	79,393	5,790	7.9
Coastal municipalities (total)	1,708,458	1,695,335	-13,123	-0.8
Coastal municipalities (total excl. Sendai)	661,721	602,857	-58,864	-8.9
Inland municipalities (total)	638,395	595,580	-42,815	-6.7
Prefecture (total)	2,346,853	2,290,915	-55,938	-2.4

Source: Miyagi Prefecture, data on estimated population change in municipalities compared to before the Great East Japan Earthquake (2021)

Figure 3-12: Changes in the population of Miyagi Prefecture after the disaster (2011–2021)



Source: Calculated from Miyagi Prefecture Population Estimates

Future population estimates: The population of all regions in the prefecture, including the Sendai Metropolitan Zone, is expected to continue to decline, falling 3–5.4% every five years until 2045 (relative to the population in 2020). It is expected to reach 2,046,000 in 2035 (10.9% less than in 2020) and 1,809,000 in 2045 (21.2% less than in 2020).

Table 3-6: Population estimates for Miyagi Prefecture

	2020	2025	2030	2035	2040	2045
Estimated population	2,296,113	2,227,471	2,143,601	2,046,219	1,933,258	1,809,021
Rate of decline (compared with 2020)		-3.00%	-6.60%	-10.90%	-15.80%	-21.20%

Source: National Institute of Population and Social Security Research (IPSS), *Regional Population Projections for Japan* (March 2018)

Low fertility rate: Until around 2000, the total fertility rate (TFR) of Miyagi Prefecture exceeded the national average, resulting in population growth, but since 2003, it has continued to trend well below the national average. Since 2010, the gap with the national average has widened from 0.09 to 0.15, and the TFR in 2021 was 1.15, dropping to the second lowest in the country after Tokyo (1.08). While population estimates by the National Institute of Population and Social Security Research (IPSS) are based on a TFR of around 1.4, Miyagi Prefecture aims to increase the fertility rate to 1.6 in 2030, 1.8 in 2035 (desired fertility rate), and 2.07 in 2040 (population replacement level), to control population decline. However, it is among the lowest in the country at present, and the average age of first marriage is also increasing, leading to a high rate of people who have never been married by the age of 50 (23.11%). Only seven municipalities in Miyagi Prefecture currently have fertility rates above 1.5. As of October 1, 2020, the prefectural population was slightly smaller (3,423) than estimated by the IPSS, and if current trends continue, population decline after 2025 will be more severe than the IPSS estimates.

Table 3-7: Changes in total fertility rates in Miyagi Prefecture

	Miyagi Prefecture	National average	Difference with national average
1980	1.86	1.75	0.11
1985	1.80	1.76	0.04
1990	1.57	1.54	0.03
1995	1.46	1.42	0.04
2000	1.39	1.36	0.03
2005	1.24	1.26	-0.02
2010	1.30	1.39	-0.09
2015	1.36	1.45	-0.09
2016	1.35	1.44	-0.09
2017	1.31	1.43	-0.12
2018	1.30	1.42	-0.12
2019	1.29	1.36	-0.07
2020	1.21	1.34	-0.13
2021	1.15	1.30	-0.15

Source: Ministry of Health, Labour and Welfare, *Report of Vital Statistics*

In addition to natural population growth due to births, population growth has been driven by an influx of people from other regions attracted by Sendai's appeal as an academic and commercial city. Recently, however, the inflow of people who come to pursue higher education in the city has been shrinking, and the outflow of people after graduation has been expanding. As such, the social increase in population is no longer expected to be significant (*Demographics of Miyagi Prefecture*, Bank of Japan Sendai Branch, November 2018). This suggests that Miyagi Prefecture's appeal as a destination for employment has declined relative to Tokyo and other large metropolitan areas, with only 45.1% of higher education graduates employed by companies in the prefecture in March 2019 (Miyagi Labor Bureau).

(2) Uneven Population Distribution and Depopulation

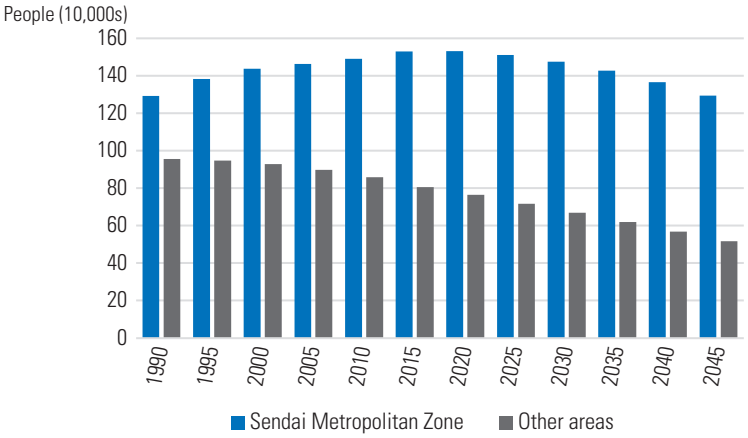
Sendai City accounts for 46.2% of the prefecture's population (Ishinomaki, the second largest city in the prefecture, accounts for 6.3%) and holds a dominant position in terms of the economy, cultural activities, and higher education opportunities. Together with the surrounding municipalities that form an economic zone for commuting, shopping, and other daily activities, nearly 70% of the population is concentrated in this area, making it a typical unipolar prefecture characterized by a large disparity between the capital and other areas.

Many disaster-affected areas outside the Sendai Metropolitan Zone had been undergoing depopulation due to population decline and shrinking spheres of activity even before the Great East Japan Earthquake, but the earthquake further accelerated this process. The population outside of the Sendai Metropolitan Zone is rapidly declining, and even there, the population, including social growth, has reached a peak. As such, the prefecture as a whole is entering a medium- to long-term population decline. Nevertheless, the Sendai Metropolitan Zone remains a magnet in terms of the economy, education,

culture, and other areas, so the polarization between Sendai and other municipalities in Miyagi Prefecture is likely to become even more pronounced. The disparity with inland municipalities, where depopulation continues apace, is considerable.

As population decline outside the Sendai Metropolitan Zone gathers pace, the northern coastal region of the prefecture (Kesennuma/Motoyoshi and Ishinomaki Zones), the inland region (Kurihara, Tome, and Osaki Zones), and the Sennan Zone in the south show the highest rates of decline, in that order. In particular, it is estimated that 7 of the 35 municipalities in Miyagi Prefecture (Shichikashuku and Marumori in the southern inland region, Onagawa, Kesennuma, and Minami-Sanriku in the northern coastal region, and Kurihara and Kami in the inland region) will see their populations decline by more than 20% by 2030, and by about 40% by 2040, relative to 2015 (four years after the Great East Japan Earthquake). By 2045, the number of municipalities with a decrease of 40% or more relative to 2015 will increase to 14 (6 coastal municipalities and 8 inland municipalities), and depopulation will intensify in many areas outside the Sendai Metropolitan Zone.

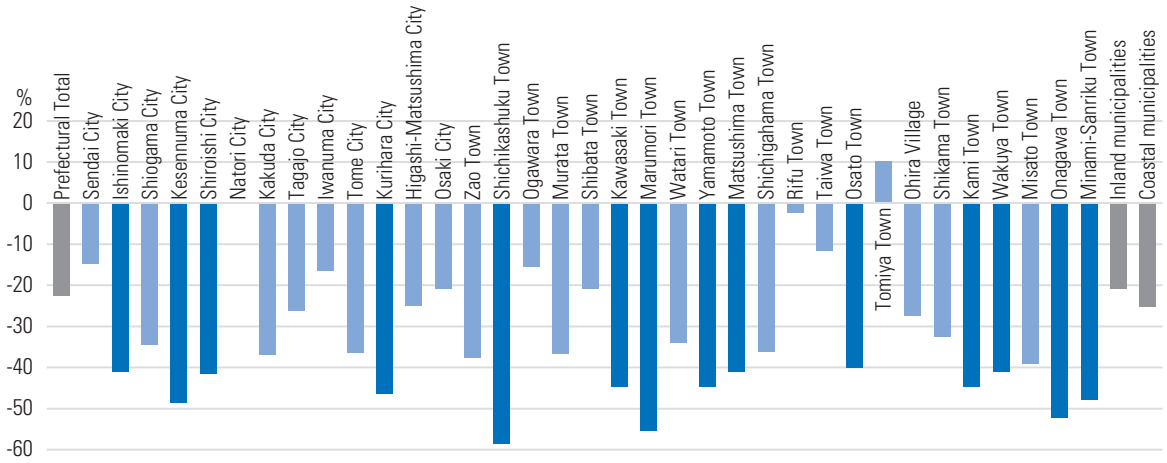
Figure 3-13: Population projections for the Sendai Metropolitan Zone and other regions (1990–2045)



Source: National Census (1990–2015), IPSS (2015 onwards), estimates as of 2018

Regional differences in aging rates: Regional disparities are also reflected in different rates of aging. Looking at the population by age group, the number of births has declined and the populations of people aged under 15 and 15–64 have declined, leading to the acceleration of aging. Although demographic aging is an issue for Japanese society as a whole, the gap between Miyagi Prefecture and the national average is continuing to widen. The working-age population (15–64) accounts for 59.2% of the total population of Miyagi Prefecture, and the elderly population (65 and older) accounts for 29.0% (2020). According to IPSS estimates of the prefecture's future population, the proportion made up of the elderly will increase to 33.1% in 2030, 37.9% in 2040, and exceed 40% in 2045, while the proportion made up of the working-age population will decrease to one out of every two people (50.0%).

Figure 3-14: Estimated population change rates for municipalities in Miyagi Prefecture (2015-2045) (municipalities shown in dark blue are those with declines of 40% or more)



Source: National Institute of Population and Social Security Research, *Regional Population Projections for Japan*

Table 3-8: **Estimated proportion of elderly people among the population in Miyagi Prefecture (%)**

	2015	2020	2025	2030	2035	2040	2045
Miyagi Prefecture	25.7	29.0	31.2	33.1	35.0	37.9	40.3
National average	26.6	28.9	30.0	31.2	32.8	35.3	36.8
Gap	-0.9	0.1	1.2	1.9	2.2	2.6	3.5

Source: National Institute of Population and Social Security Research, *Regional Population Projections for Japan*

Large discrepancies in aging rates are also evident within the prefecture. Among the municipalities in the prefecture, the proportion of the working-age population differences ranges from 47.0%–65.0% while the proportion of population aged 65 and over ranges from 19.8%–46.3% of the total population. Shichikashuku, Yamamoto, and Marumori in the southern part of the prefecture, Kurihara in the northern inland region, and Onagawa, Kesennuma, and Minami-Sanriku in the coastal region, almost meet the criteria of a high rate of population decline; a small proportion of the population made up of children (less than 10%); a small proportion of the population made up by people of working age (less than about 55%); a large proportion of the population aged 65 and over (more than 35%); and a high rate of households comprised of a single elderly person (more than about 11%). For these municipalities, there is a pressing need for countermeasures against depopulation.

(3) Economic and Industrial Decline and Regional Disparities

The uneven regional distribution of population and labor shortages caused by the decline in the working-age population have had significant impacts on local communities, including declines in economic activity. There is concern that shrinking local demand, the lack of successors to take over businesses, and the withdrawal or loss of local companies, will lead to a vicious cycle of declining industry, declining economic output, fewer job opportunities, out-migration from the prefecture, and further reduction in the population. In agriculture/forestry and fisheries, the percentage of workers aged 60 or older is high (around 70% and 50%, respectively), the problem of successors is serious, and the populations of regions associated with these industries are continuing to contract. As local demand declines alongside industrial and economic activity, it will become difficult to maintain local community functions, public transportation, and medical care. Then, as areas with no public transport or medical care coverage expand, disparities between urban areas and depopulated areas may widen further. There are many possible measures to address this problem, such as compact cities, stronger cross-boundary cooperation between multiple municipalities, and enhancing mutual aid to provide services on behalf of local government. However, to create a caring society, where no one is left behind and everyone can live comfortably, it is important to respond in a way that reflects the views of residents to the greatest extent possible and to ensure genuine and substantial resident participation.

Compared to the Sendai Metropolitan Zone (Sendai, Tomiya, Rifu, Natori, and Iwanuma), the regional disparities in economic and income indicators such as per capita income, percentage of households in poverty, the rate of full unemployment, and the rate of the elderly with a job, are more pronounced in the coastal region (Ishinomaki, Shiogama, Kesennuma, Matsushima, Yamamoto, etc.), the northern inland region (Kurihara, Shikama, Kami, etc.), and the southern inland region (Shichikashuku, Murata, Kawasaki, Marumori, etc.). Among coastal areas, Onagawa and Minami-Sanriku have high per capita income and labor productivity, but also high rates of households in poverty. Meanwhile, among inland areas, Taiwa, Ohira, and Osato, which have been successful in attracting businesses, have high income levels and low rates of households in poverty, and a relatively large number of their regional revitalization plans have been approved by the prefectural government. The *Vision for the Future of a New Miyagi 2021–2030* aims to avoid industrial decline and achieve sustainable growth in order to address population decline, fewer children, and demographic aging. To prevent depopulation and further revitalize the region, it is essential to create local jobs, and we expect to see further efforts to promote inward migration and settlement, attract businesses involved in digital technology, and create IT-related work opportunities.

(4) Education and Welfare of Children, Support for Childcare

Miyagi Prefecture faces many challenges in terms of protecting the lives, livelihoods, and dignity of children. In the prefectural comparison given in *SDGs and Japan*, Miyagi has high numbers of children who are habitually absent from school (non-attendance, or *futoukou*)[*6] (47th) and cases of bullying (45th), low levels of academic achievement (38th) and athletic ability (37th), and few social education classes (38th). In terms of family welfare, the number of consultations at Child Welfare Centers is high (47th), as is the number of days children stay in temporary child protection facilities (44th).

In order to slow down and reverse population decline and demographic aging due to the declining birth rate, it is extremely important to take good care of every child and to promote the development of communities where women and children can live comfortably. The *Vision for the Future of a New Miyagi 2021–2030* prioritizes support for child-raising age groups, with the aim of transforming Miyagi into a childcare-friendly prefecture. To this end, the prefectural government aims to raise the total fertility rate by providing stronger support for marriage, childbirth, and childcare.

A comparison of indicators such as coverage of children's medical expenses, number of obstetrics and gynecology clinics, children on waiting lists for nurseries, places for children to spend time and play outside of their schools, and promotion of comprehensive plans and gender equality, shows that the child-rearing environment is most favorable in Tomiya, Iwanuma, Natori, and other areas in the Sendai suburbs. Cities with large populations, such as Osaki in the northern part of the prefecture, Ishinomaki and Shiogama on the coast, and Shiroishi in the south, lag behind others in expanding coverage of children's medical expenses.

Municipalities have been making particular efforts to reduce the number of children on nursery waiting lists. The number has been steadily decreasing (613 on April 1, 2018; 583 on April 1, 2019; and 340 on April 1, 2020). Two cities (Kakuda and Tomiya) and eight towns and villages (Zao, Shichikashuku, Kawasaki, and Marumori in the south, Ohira, Shikama in the north, as well as Rifu and Wakuya) have reduced their respective figures to zero.

The childcare-related indicators suggest that Shichigahama, Shibata, and Misato generally have many issues. In addition, the shortage of obstetricians and gynecologists is a serious issue for many municipalities. The total number of obstetrics and gynecology facilities in the prefecture is 83, or 3.56 per 100,000 population, slightly below the national average, but most are located in Sendai or other large cities, and 20 municipalities have none. Efforts are required to create an environment in which no one is left behind, such as having multiple municipalities work together to bring these facilities to the area.

Academic achievement: In the 2019 academic year (hereinafter abbreviated as AY 2019), the average correct response rate for 6th-grade elementary students in Miyagi Prefecture, excluding Sendai City, was 3 points lower than the national average in Japanese language and math. For 3rd-grade junior high students[*7], it was 2 points lower in Japanese, 5 points lower in math, and 6 points lower in English. There is a slight improvement when Sendai City is included, but the gap with the national average is still significant, indicating that academic performance is an area of concern. After 2014, Miyagi Prefecture's annual survey of attitudes towards learning (5th graders in elementary school and 1st graders in junior high school) shows that the percentage of children who said that the disaster made it difficult to study at home, that they sometimes suddenly recalled the disaster and could not concentrate in class, or that they sometimes felt restless, decreased gradually from about 20% of 5th graders in elementary school and about 10% of 1st graders in junior high school in the 2014 academic year, to about 10% of 5th graders in elementary school and about 5% of 1st graders in junior high school in the 2019 academic year. However, the disaster's effects on children's development still cannot be ignored.

Obesity: Miyagi Prefecture ranks high in obesity rates for both boys and girls (8th for boys and 7th for girls among 5th grade elementary students, 4th for boys and 7th for

[*6] The Japanese term "*futoukou*" refers to the act of not going or refusing to go to school due to some psychological, emotional, physical, or social factors. It excludes students who do not attend due to illness or financial reasons. In this report, we use the terms "habitually absent" and "non-attendance" to refer to "*futoukou*" students.
[*7] Equivalent to the 9th grade in the American educational system.

girls among 2nd grade junior high students), suggesting the need to review dietary habits, including in relation to athletic ability.

Habitual absence from school (non-attendance): In recent years, Miyagi Prefecture has had the highest rates of non-attendance among elementary and junior high school students in the country (2012, 2016–2019). While the number of elementary and junior high school students not attending school in the AY2020 increased nationwide from the previous year (from 181,000 to 196,000) as a result of the COVID-19 pandemic, Miyagi Prefecture ranked 8th, due to a slight decrease among junior high school students. The number of habitual absentees per 1,000 students in elementary schools was 10.5 in AY2020 (10 in the previous year) and 46.1 (51.0 in the previous year) in junior high schools, giving a total of 22.6 per 1,000 (24 in the previous year). In terms of actual numbers, this was 3,921 students (4,187 in the previous year). In Sendai City, there were 9.6 absentees per 1,000 students in elementary schools (9.5 in the previous year), and 46.7 (55.8 in the previous year) in junior high schools, giving a total of 21.6 per 1,000 (24.3 in the previous year). In actual numbers, this was 1,668 students (42.5% of the total for the prefecture) in Sendai, and 2,253 in other areas. For high school students, the rate was 20.3 per 1,000 (actual number: 1,164), down from the previous year (25.9), but still high, ranking 2nd or 3rd nationally since 2018. As such, the problem of habitual absence from school remains a serious issue throughout the prefecture.

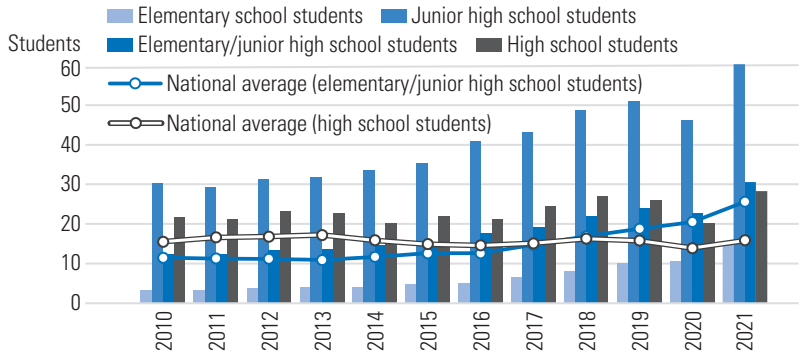
Regarding the impact of the Great East Japan Earthquake on non-attendance, figures broken down by municipality have not been published, making it difficult to identify a causal relationship. Certainly, the number of elementary school students who have not been attending school in Miyagi Prefecture as a whole has been on a slight upward trend since 2012, while the number for junior high school students increased slightly in 2012 and then rose sharply in 2014 (children aged 9–11 at the time of the disaster) and 2016 (children aged 7–9 at the time of the disaster). The number for high school students also increased in 2012. This suggests that the disaster did have some kind of impact; for example, the circumstances may have made it difficult for students to travel to school, with their families, homes, and schools suffering damage and an unstable living environment. In Chapter 11, 11-1 of this book, an important point is made regarding children who were born after the earthquake. In response to comments heard in kindergartens and schools that such children were "hyperactive and quick to become angry" and "slightly different from previous children," the author cites an expert who notes that the most important time for forming attachments is when a child is between 1 and 2 years old, and that because the parents were not in a position to affirm their emotional bonds at that time, these children have grown up with unstable attachments. The expert calls for the continuous monitoring of the situation.

On the other hand, an analysis of the available municipal-level data on the number of habitually absent students for the period 2005–13 (i.e., before and after the disaster) did not find that the number of non-attending students was higher in municipalities in disaster-affected areas compared to those in inland areas. Among elementary school students, rates of non-attendance increased in Minami-Sanriku and Tagajo between 2011 and 2013, but there was no particular change in other disaster-affected coastal areas. Among junior high school students, rates of non-attendance increased in Shiogama, Higashi-Matsushima, and Minami-Sanriku between 2011 and 2013, while rates increased only slightly or showed no change in disaster-hit areas such as Ishinomaki, Kesennuma, Sendai, and Tagajo. Conversely, rates increased between 2011 and 2012 in the inland towns of Kawasaki, Shibata, and Ogawara in the southern part of the prefecture.

Even before the disaster, the non-attendance rate in Miyagi Prefecture was higher than the national average (especially among junior high school students), indicating that this had been an issue for some time, and that the disaster appears to have exacerbated this trend.

The growing divergence in the number of students who are habitually absent from school between Miyagi Prefecture and the national average is particularly noteworthy. Non-attendance rates increased from 1-2 per thousand (2011-2013) to more than 5 per thousand (2016-2019) for elementary and junior high school students. The impact of the COVID-19 pandemic narrowed the gap in 2020, but in AY2021, figures for Miyagi Prefecture's elementary and junior high school students surged to the second highest in the country, and the divergence from the national average returned to around 5. For high school

Figure 3-15: Number of non-attendance in Miyagi Prefecture (per 1,000 students)



Elementary school students	3.2	3.4	3.7	4.0	4.1	4.7	5.2	6.6	8.1	10.2	10.5	14.6
Junior high school students	30.2	29.2	31.4	31.7	33.7	35.3	40.8	43.0	48.7	51.0	46.1	60.1
Elementary/Junior high school students	12.4	12.3	13.3	13.6	14.5	15.4	17.6	19.1	21.9	24.0	22.6	30.3
National average (elementary/junior high school students)	11.5	11.3	11.2	10.9	11.7	12.6	12.6	14.7	16.9	18.8	20.5	25.7
Ranking (elementary/junior high school students)	**10**	**10**	**1**	**6**	**3**	**2**	**1**	**1**	**1**	**1**	**8**	**2**
High school students	21.6	21.3	23.3	22.7	20.3	21.9	21.3	24.5	26.9	25.9	20.3	27.9
National average (high school students)	15.5	16.6	16.8	17.2	15.9	14.9	14.6	15.1	16.3	15.8	13.9	16.9
Ranking (high school students)	**5**	**6**	**4**	**4**	**6**	**5**	**5**	**4**	**2**	**3**	**3**	**2**

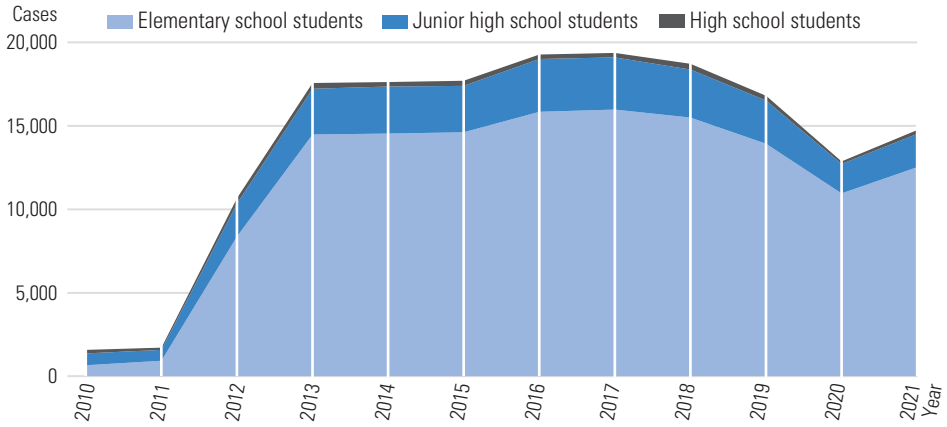
Source: Ministry of Education, Culture, Sports, Science and Technology (MEXT), *AY2021 Survey on Problem Behavior, Non-Attendance at School, and other Student Guidance Issues*

students, the divergence from the national average went up from 5 to 6 students to around 10 students per 1000 since 2017, so measures to address this issue are urgently needed. Some municipalities, such as Kesennuma, have published their school non-attendance rates and are working on countermeasures. However, to implement practical measures to create places for children to spend time (such as "free schools") and make schools more inviting, data for each municipality should be published, and cooperation between the public and private sectors should be expanded.

Bullying: In the 2021 school year, the number of recognized bullying incidents increased sharply compared to the previous year, when there was a nationwide decrease due to pandemic-induced school closures. The total number of cases at elementary and junior high schools was 615,000, up from 517,000 the previous year, while the figure per 1,000 students was 47.7, up from 39.7 the previous year. In Miyagi Prefecture, the total number of cases was 14,783, or 62.9 cases per 1,000 students, a sharp increase from the previous school year and the 10th highest in Japan. In particular, the number of recognized bullying incidents in Sendai was extremely high at 152.3 per 1,000 students (actual number: 12,271), ranking second among ordinance-designated cities and accounting for 83% of all bullying cases in the prefecture.

In 2012, immediately after the Great East Japan Earthquake, the number of recognized cases of bullying jumped to more than six times that of the previous year (from 6.7 cases per 1,000 students to 42 cases per 1,000 students), strongly suggesting a connection with the disaster. However, since the number of recognized cases was not published for each region, it is not possible to compare the affected areas with the rest of the prefecture, making it impossible to say this with certainty. On the other hand, even before the disaster, the number of bullying cases in Miyagi Prefecture tended to be slightly higher than the national average. Due in part to proactive instruction on identifying cases since 2013, the number of cases has consistently exceeded around 70 per 1,000 since that year, a very large divergence from the national average (around 50 per 1,000 from 2013–17). While there are signs of a slight reduction since 2018, in both the number of recognized cases and the difference from the national average, efforts to address this issue remain a major priority.

Figure 3-16: Number of recognized cases of bullying in Miyagi Prefecture



Elementary school students	669	934	8,377	14,478	14,545	14,613	15,840	15,970	15,491	13,928	10,949	12,532
Junior high school students	708	649	1,984	2,741	2,804	2,782	3,161	3,127	2,887	2,577	1,774	1,989
High school students	201	131	325	340	274	303	280	276	335	291	153	220
Total	1,586	1,722	10,699	17,567	17,627	17,708	19,288	19,455	18,765	16,844	12,902	14,783
Per 1,000	6.1	6.7	42	69.2	69.9	70.8	77.9	79.5	77.5	70.1	54.2	62.9
(National average)	5.1	5.5	14.3	13.4	13.7	16.5	23.8	30.9	40.9	46.5	39.7	47.7
Ranking	**11**	**8**	**3**	**4**	**2**	**2**	**3**	**3**	**3**	**9**	**10**	**10**

Source: MEXT, *AY2020 Survey on Problem Behavior, Non-Attendance at School, and other Student Guidance Issues*

Abuse and foster care placement: The number of consultations on child abuse per population is lowest in Shichikashuku, Marumori, and Kawasaki in the south, Minami-Sanriku in the northern coastal area, and Yamamoto in the southern coastal area, in that order. On the other hand, Osaki, Wakuya, Matsushima, Shiroishi, and Onagawa in the north have the highest number of consultations per population, in that order. Miyagi Prefecture achieved a high rate of foster care placements relative to the national average (33.1% in FY2017, ranking 4th in the nation), with a slight increase in FY2019 over the previous year. While the rates for the Eastern Office and Kesennuma Office of the Child Welfare Centers stand at around 60%, it is hoped that the placement rates for Sendai City (28.6% → 35.3%), the Central Office (33% → 27.6%), and the Northern Office (22.1% → 20%) will increase.

(5) The Status of Women and Gender Equality

There are many issues regarding the status of women in Miyagi Prefecture, starting with employment. A comparison by prefecture shows that the employment rate for women is low (62.9%, 42nd in Japan), and the gender pay gap is large (70.1%, 38th in Japan). The rate of elderly people with a job is lower than the national average for both men and women, but is particularly low for women. Although the number of hours that men spend on housework and childcare at home is relatively high (31 hours per week, ranking 6th nationally), women still bear the brunt of the burden of housework, with employed women spending 2 hours and 31 minutes per day on chores, childcare, and nursing care, relative to 21 minutes for men. Women make up 10.9% of legislators in local assemblies, the same as the national average (24th). There were 2.956 cases per 100,000 people of temporary protection for domestic violence victims (15th). Meanwhile, there were 2,863 consultations regarding domestic violence in FY2019, a slight decrease from the previous year.

Gender equality: Most municipalities in the prefecture claim to be pursuing gender equality, but a comparison of the actual situation shows that in most municipalities,

women are mostly discussed in relation to childcare support, with a weak perspective on gender and respect for women's dignity, and few efforts are made to eliminate gender disparities.

There are large regional differences in employment rates, distribution of household responsibilities, and the rates of women in local assemblies, municipal management positions, municipal advisory board members, and disaster prevention council members. Tome, Osaki, Kami, Shikama, and Minami-Sanriku in the northern part of the prefecture are doing well in terms of both the employment rate for women and the proportion of female workers who are regular employees, while Matsushima, Tagajo, and Higashi-Matsushima are ranked low. High female employment rates but low rates of regular employees are found in Shibata in the southern part of the prefecture and Ohira and Osato in Senpoku, while low employment rates but high rates of regular employees are found in Zao, Kesennuma, and Ishinomaki.

The proportion of women in municipal assemblies, management positions, and municipal advisory councils is less than 30% in 23 municipalities, or two-thirds of the total. Higher proportions can be seen in Shibata, as well as in Tomiya and Iwanuma around Sendai, but those in Zao, Shichikashuku, Murata, and Osato are low. Municipalities with the highest rates of women in municipal management positions are Matsushima, Wakuya, Kesennuma, Shiroishi, and Minami-Sanriku, in that order. There are 17 municipalities with no female heads of residents' associations.

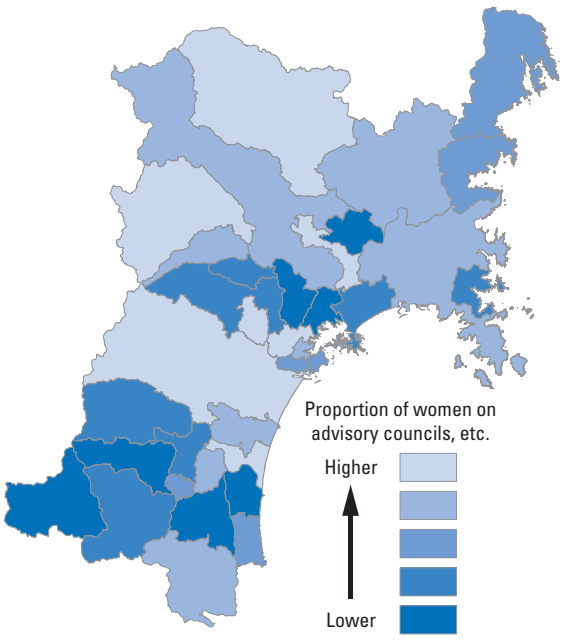
The survey of prefectural residents also showed that the percentage of those with low self-fulfillment was extremely high among women compared to men (Chapter 3, 3-5).

Miyagi Prefecture has set 12 achievement targets in its Basic Plan for Gender Equality (3rd Plan until the end of FY2020) and publicly discloses the progress towards these targets. However, as of the end of FY2019, the targets for the proportion of women on advisory councils (38.8% compared to the target of 45%), on disaster prevention councils (15.8% compared to 30%), and in management positions (7.1% compared to 15% or more), as well as for the rate of employees taking childcare leave (5% compared to 10% for men, and 77.3% compared to 90% for women), had not been achieved, indicating that further efforts are required (see Chapter 12, 12-2).

Figure 3-17: Rate of female members of advisory councils, etc. (Indicator H5)

Ranking	Municipalities	%
1st	Kurihara City	55.5
2nd	Tomiya City	50.0
3rd	Kami Town	42.7
4th	Iwanuma City	35.6
5th	Sendai City	34.3
6th	Misato Town	34.0
7th	Rifu Town	33.7
8th	Shibata Town	33.5
9th	Marumori Town	32.0
10th	Shiogama City	31.6
11th	Natori City	31.3
12th	Shikama Town	30.3
13th	Ishinomaki City	28.6
14th	Tome City	28.3
14th	Osaki City	28.3
16th	Shichigahama Town	27.2
17th	Yamamoto Town	26.3
18th	Ogawara Town	24.7

Ranking	Municipalities	%
19th	Tagajo City	24.4
20th	Kesennuma City	24.2
20th	Minami-Sanriku Town	24.2
22nd	Onagawa Town	24.1
23rd	Murata Town	23.6
23rd	Higashi-Matsushima City	23.6
25th	Taiwa Town	23.2
26th	Shiroishi City	22.9
27th	Kawasaki Town	22.8
28th	Ohira Village	22.5
29th	Osato Town	21.6
30th	Wakuya Town	20.2
30th	Kakuda City	20.2
32nd	Matsushima Town	19.5
33rd	Watari Town	19.0
34th	Shichikashuku Town	15.7
35th	Zao Town	14.2



Source: Annual Report on the Current Status of Gender Equality in Miyagi Prefecture and Related Policies (2020)

(6) Impact of the COVID-19 Pandemic

As described in Chapter 1, 1-1, the damage caused by COVID-19 since the beginning of 2020 has had a tremendous impact on all aspects of human life, including economic activities, and Miyagi Prefecture is no exception. The cumulative number of infected people was 278,000 as of October 28, 2022, or 12.2% of the prefecture's population, which remains low relative to the rest of the country. However, there have been signs of a sharp increase since the summer of 2022, with the restaurant, tourism, and manufacturing industries severely being affected. The difficulties faced by those in non-regular employment, whose employment opportunities were reduced by the pandemic, and by single-mother households, have been particularly acute (see Chapter 12, 12-3). Domestic violence and child abuse have also become nationwide problems due to truancy from school and extended periods of time spent at home, a result of school closures and significant restrictions on school life. Natural disasters such as earthquakes and other emergencies such as infectious disease pandemics have a disproportionately negative impact on women, children, single parents, those in non-regular employment, the elderly, and people with disabilities, all of whom are vulnerable even in normal conditions.

It is imperative to find ways to counteract the negative effects of the pandemic. As of the end of July 2022, the economic situation in Miyagi Prefecture has been gradually improving in terms of consumption, production activities, and employment conditions (Tohoku Finance Bureau, "Economic Situation in Miyagi Prefecture"), but support measures to address the impoverishment of people in non-regular employment and single-mother households are required.

5 Initiatives to Address Issues in Miyagi Prefecture

(1) Miyagi Prefecture is facing a falling number of children and demographic aging, which is a nationwide trend, as well as serious population decline. These issues will lead to a decline in the supply capacity to provide and produce services and goods, as well as a decrease in aggregate demand, which will put downward pressure on economic growth in the medium to long term. Avoiding industrial decline and mitigating population loss is of the utmost importance for ensuring the sustainable growth of the prefecture. Population growth resulting from inward migration for education and employment was once a strength of Miyagi Prefecture, but this has waned in recent years. For the prefecture to enjoy sustainable development in the future, it is important to enhance Sendai's appeal as an academic and commercial center offering employment opportunities, and to enhance the Sendai Metropolitan Zone's role as a core urban zone that will serve as the hub of the Tohoku region. In addition, it is important to enhance the prefecture's outreach capabilities for promoting visits and inward migration by drawing on the appeal of its history and natural environment.

(2) Miyagi Prefecture views population decline as its greatest challenge and is working to limit it. The *Vision for the Future of a New Miyagi 2021–2030* places support for the age groups raising children as the basis for implementing its policies. To this end, the prefectural government aims to raise the fertility rate by providing stronger support for marriage, childbirth, and childcare. As we have already seen, Miyagi Prefecture aims to control population decline by increasing its fertility rate to 1.6 by 2030, 1.8 by 2035 (desired fertility rate), and 2.07 by 2040 (population replacement level), compared to the 1.4 forecast by the IPSS. Indeed, a large share of respondents (30.4%, November-December 2019) to the survey of residents' attitudes raised improving support for childbirth and childrearing as an initiative that the prefecture should emphasize, along with "medical and nursing care" and "safety and disaster prevention." In a web-based survey of young people conducted by the prefecture, when asked what is needed to encourage young people to continue living in Miyagi, many respondents cited a better environment for raising children (36.1%), after greater employment opportunities (54.8%) and convenient public transport (45.1%). Nevertheless, the current fertility rate is below 1.3 (1.21 in 2020 and 1.15 in 2021), which is considerably below the national average, and there are not enough practical measures to achieve the prefecture's goal of using improved childbirth and childrearing support to raise the fertility rate to 1.8–2.07, thereby achieving natural population growth. As such, more drastic measures will be required.

(3) Another concern is that policies for women view them only as a means for bearing children to halt population decline. Emphasis needs to be placed on creating an environment that is livable for women and that allows them to live their lives in their own way. If cities are made

more child-friendly, they will also become more friendly to women and the elderly (Chapter 9).

We can look at the trend of population decline not just as a negative thing, but also as a positive sign that we have entered an era where each individual must be respected as a valuable human being and treated with greater care than in the past.

Written by Yukio Takasu

3-3 SDGs Miyagi Model (Miyagi Prefecture Human Security Indicators)

1 Features of the SDGs Miyagi Model

In order to highlight municipality-specific issues and reflect the characteristics and appeal of the local environment, population dynamics, industry and economy, and living environment, indicators for the three areas of life, livelihood, and dignity were adapted from the national version with slight modifications.

In addition to national indicators such as annual income per capita, unemployment rate, female employment rate, elderly employment rate, and the proportion of people in regular employment, this localized model includes indicators such as monthly purchases per household, agricultural and fishery output by municipality, number of certified regional revitalization plans, labor productivity, availability of housing adapted for the elderly, and number of nursing care staff. Since poverty rates by municipality are not calculated or published, we compared poverty levels based on the proportion of households with incomes of less than 3 million yen (excluding single-person households) and the proportion of people who are fully exempt from national pension insurance contributions.[*8]

Regarding indicators for natural disasters and disaster prevention which were used in *SDGs and Japan*, such as the number of deaths and missing persons from natural disasters and the public facilities seismic reinforcement rate, the indicators have been expanded by adding damage to residences caused by natural disasters, the seismic reinforcement rate for public facilities that serve as disaster prevention centers, the volunteer fire brigade member sufficiency rate, the proportion of female members on disaster prevention committees, and community bonds resulting from the Great East Japan Earthquake (based on the results of the questionnaire survey).

With regard to child welfare and child-rearing support, in addition to the indicators found in *SDGs and Japan*, such as the number of clinics, the number of children on waiting lists for nursery and kindergarten, and the rate of people getting regular health checks, new indicators were added such as support for childbirth and child-rearing in each municipality, the level of coverage for children's medical expenses, the availability of obstetrics and gynecology services, the number of places for children to spend time outside school, the degree to which the core objective of the SDGs is reflected in municipal comprehensive plans, municipalities' efforts to increase the visiting population and domestic migrants who move to the municipality, and the level of gender equality promotion. This allowed us to compare the ease of living for women and children, the ease of raising children, and the level of participation by residents, and to present the priority issues for each municipality.

With regard to children's education, important indicators are the high school dropout rate, rate of habitual absence from school (truancy), number of bullying cases, level of academic achievement of elementary and junior high school students, and children's athletic ability, but these statistics are not published at the municipal level. In addition, university enrollment rates are based on high school location, so figures broken down by where students live are not publicly available. Therefore, indicators based on available data, such as the rate of obese students, the ICT education environment, places for children to spend time outside school, children's centers, and lifelong education opportunities, were

[*8] Those with no or low incomes or who are unemployed can apply for an exemption from national pension insurance contributions.

used for the SDGs Miyagi Model in addition to indicators from *SDGs and Japan*, such as the number of students per teacher, the rate of school attendance support recipients, and education expenditure per student.

Finally, as most municipalities do not publish gender-disaggregated data (with the exception of the proportion of women in public office posts), the SDGs Miyagi Model used publicly available data to evaluate each local government's gender-equality efforts, such as the proportion of full-time employees among female workers, the rate of deaths by suicide among women, and the proportion of women among municipal council members, municipal managerial positions, municipal advisory council members, and heads of residents' associations.

This process led to a final count of 99 Human Security Indicators for the SDGs Miyagi Model, including 26 Life indicators, 48 Livelihood indicators, and 25 Dignity indicators.

2 Comparison of the SDGs Miyagi Model with the SDG Indicators

The 17 SDGs have 169 specific targets with 247 indicators. These can be seen on the United Nations website at https://unstats.un.org/sdgs/indicators/indicators-list/, as given in the annex of the resolution adopted by the General Assembly on Work of the Statistical Commission pertaining to the 2030 Agenda for Sustainable Development (A/RES/71/313).

The SDGs Miyagi Model indicators with their related targets and the SDG indicators are compared in the following table. Indicators in bold are those added in the Miyagi Model.

Indicators for the SDGs Miyagi Model

Life Indicators (26 indicators):	Life (13 indicators), Health (13 indicators)
Livelihood Indicators (48 indicators):	Economy, industry and employment (14 indicators), Education (11 indicators), Welfare (9 indicators), Nature and living environment (14 indicators)
Dignity Indicators (25 indicators):	Dignity of women and children (6 indicators), Trust in the public sector and gender equality (6 indicators), Community engagement (11 indicators), Satisfaction with life (2 indicators)

Life Indicators (26 indicators)

A: Life (13 indicators)

A1	Average life expectancy at birth (men) Average life expectancy at birth (women)	SDGs 1.2.2, 1.3.1, 1.5.1, 3.8.1, 3.8.2, 3.9.1, 3.9.2, 3.9.3, 17.19.2 SDGs 1.2.2, 1.3.1, 1.5.1, 3.8.1, 3.8.2, 3.9.1, 3.9.2, 3.9.3, 5.c.1, 17.19.2
A2	Population increase/decrease	SDGs 8.6.1, 8.b.1, 9.1.1, 9.1.2, 9.2.2, 10.7.2, 11.2.1, 11.3.2, 11.a.1
A3	Total fertility rate (TFR)	SDGs 1.2.2, 3.1.1, 3.1.2, 3.7.1, 3.7.2, 5.c.1
A4	Rate of children aged 0–14 in population	SDGs 1.2.2, 8.7.1
A5	Working age population	SDGs 1.3.1, 1.4.1, 8.6.1, 8.b.1
A6	Unmarried rate	SDGs 1.2.2
A7	**Inward/outward migration gap**	SDGs 11.2.1, 11.3.1
A8	**Rate of elderly people**	SDGs 1.1.1, 1.2.1, 1.3.1, 10.2.1, 11.2.1
A9	Rate of households comprised of single elderly person	SDGs 1.1.1, 1.2.1, 1.3.1, 10.2.1, 11.2.1
A10	Rate of children in single parent households	SDGs 1.2.2, 2.2.1, 2.2.2, 3.2.1, 3.7.2, 3.b.1, 4.2.1, 4.2.2
A11	Number of deaths by suicide	SDGs 3.4.2
A12	Number of deaths and missing persons due to natural disasters	SDGs 1.5.1, 11.b.2, 11.5.1, 13.1.1, 13.1.2, 13.1.3, 13.3.1
A13	Number of deaths and injuries due to traffic accidents	SDGs 3.6.1, 11.2.1

B: Health (13 indicators)

B1	Healthy Life Expectancy (HALE) (men) Healthy Life Expectancy (HALE) (women)	SDGs 1.2.2, 1.3.1, 3.4.1 SDGs 1.2.2, 1.3.1, 3.4.1, 5.c.1
B2	Number of general hospitals and clinics	SDGs 3.8.1
B3	Number of doctors at medical facilities	SDGs 3.c.1
B4	**Number of obstetrics/gynecology clinics**	SDGs 3.1.1, 3.1.2, 3.2.1, 3.2.2, 3.7.1, 3.7.2, 3.8.1, 5.6.1, 5.6.2
B5	Annual medical expenses per capita	SDGs 1.2.2, 3.8.2
B6	Rate of people getting regular health checks	SDGs 1.3.1, 3.8.1, 3.b.1
B7	**Amount paid for National Health Insurance per capita**	SDGs 3.8.2
B8	**Coverage of children's medical expenses**	SDGs 3.8.1, 3.8.2, 3.b.1
B9	**Number of teeth lost due to decay and other reasons**	SDGs 3.8.1
B10	Number of people with disabilities	SDGs 1.3.1, 16.7.1, 16.7.2 (Not included in the indices)
B11	Rate of smoking among adults	SDGs 3.a.1
B12	Annual rate of people participating in sports activities	SDGs 11.7.1
B13	Rate of people who know number of daily steps walked	SDGs 3.6.1, 9.1.2, 9.4.1

Livelihood Indicators (48 indicators)

C: Economy, Industry, and Employment (14 indicators)

C1	Annual income per capita	SDGs 8.1.1, 10.1.1, 10.2.1
C2	**Purchases per household per month**	SDGs 8.1.1, 10.1.1, 10.2.1
C3	**Rate of households with annual incomes of less than 3 million yen**	SDGs 10.1.1, 10.2.1
C4	**Rate of people fully exempted from national pension contributions**	SDGs 1.2.1, 1.2.2, 1.3.1, 1.4.1, 10.1.1, 10.2.1
C5	**Labor productivity by municipality**	SDGs 8.2.1, 8.3.1, 8.5.1, 10.1.1, 10.4.1
C6	**Agricultural and fishery output by municipality**	SDGs 2.3.1, 2.3.2, 2.4.1
C7	**Number of Miyagi Prefecture Regional Revitalization Plans approved for the municipality**	SDGs 8.2.1, 8.3.1, 8.4.1, 9.2.1, 9.2.2, 9.3.1

C8	Unemployment rate	SDGs 1.2.1, 1.2.2, 4.4.1, 8.5.2, 8.b.1, 10.2.1
C9	Rate of regular employees among employed persons	SDGs 4.4.1, 8.3.1, 8.5.1, 8.b.1, 10.2.1
C10	Rate of working females out of total female population	SDGs 4.5.1, 5.1.1, 5.4.1, 5.5.2, 5.c.1, 8.5.1, 8.5.2, 10.2.1
C11	**Rate of regular employees among female employees**	SDGs 4.5.1, 5.1.1, 5.4.1, 5.5.2, 8.5.1, 8.5.2, 10.2.1
C12	Rate of people with disabilities among employees	SDGs 4.5.1, 8.5.1, 8.5.2, 10.2.1
C13	Rate of people aged 65 and over with a job	SDGs 8.5.1, 8.5.2, 10.2.1
C14	Financial capability index	SDGs 17.1.1, 17.1.2

D: Education (11 indicators)

D1	Number of children on waiting lists for nursery	SDGs 4.2.1, 4.2.2
D2	Number of elementary school children per teacher	SDGs 4.1.1
D3	Number of junior high school students per teacher	SDGs 4.1.1
D4	Number of high school students per teacher	SDGs 4.1.1
D5	Rate of recipients of school attendance support	SDGs 1.2.2, 4.3.1, 4.5.1
D6	**Educational expenditure per capita**	SDGs 4.1.1, 4.3.1, 4.4.1
D7	University enrollment rate	SDGs 4.3.1, 8.6.1 (Not included in the indices)
D8	**Student obesity rate**	SDGs 3.4.1. 4.1.1
D9	Opportunities for lifelong learning	SDGs 4.3.1, 4.4.1, 4.5.1
D10	**ICT education environment in elementary and junior high schools (ICT facilities and equipment)**	SDGs 4.4.1, 4.a.1
D11	Rate of schools designated as UNESCO Schools	SDGs 4.7.1, 12.8.1

E: Welfare (9 indicators)

E1	Number of children's homes	SDGs 1.3.1, 4.5.1, 16.2.1
E2	Number of consultations at Child Welfare Centers	SDGs 1.3.1, 4.5.1, 16.2.1
E3	Rate of households receiving livelihood protection allowance	SDGs 1.2.1, 1.2.2, 1.3.1, 1.b.1, 1.4.1, 10.2.1
E4	**Long-Term Care Insurance contributions**	SDGs 1.3.1, 1.4.1, 8.5.1, 10.2.1
E5	**Rate of persons requiring long-term care**	SDGs 1.3.1, 1.4.1
E6	Number of facilities for the elderly (care homes, senior citizens homes)	SDGs 1.3.1, 1.4.1
E7	**Rate of applicants for special nursing facilities**	SDGs 1.3.1, 1.4.1
E8	Number of nursing care staff	SDGs 1.3.1
E9	Number of assigned households per livelihood protection allowance caseworker	SDGs 1.2.2, 1.3.1, 1.b.1

F: Nature and Lifestyle (14 indicators)

F1	**Annual hours of sunshine**	SDGs 2.4.1, 7.1.2, 7.2.1, 9.1.1
F2	**Rate of housing adapted for the elderly**	SDGs 11.2.1
F3	CO_2 emissions	SDGs 7.3.1, 8.4.1, 8.4.2, 9.4.1, 13.2.2
F4	**Amount of electricity generated from renewable sources**	SDGs 7.1.2, 7.b.1, 8.4.1, 8.4.2
F5	**Total floor space per residence**	SDGs 11.1.1
F6	**Rate of owner-occupied households**	SDGs 1.4.2, 11.1.1
F7	**Number of cars owned**	SDGs 7.3.1, 11.2.1, 16.1.4
F8	**Number of convenience stores**	SDGs 12.2.2, 12.3.1,
F9	Sewage treatment rate	SDGs 6.3.1, 8.4.1, 8.4.2, 12.2.1, 12.2.2

F10	**Damage to housing caused by natural disasters**	SDGs 11.b.2, 11.5.2, 13.1.1, 13.1.3
F11	**Volunteer firefighter sufficiency rate**	SDGs 11.b.2, 13.1.1, 13.1.3, 13.3.1
F12	**Rate of seismic reinforcement of public facilities that serve as disaster prevention centers**	SDGs 11.b.2, 11.5.2, 13.1.1, 13.1.3
F13	**Number of drunk driving violations**	SDGs 3.5.2, 3.6.1
F14	Number of reported criminal offences	SDGs 16.1-16.5, except 16.1.2

Dignity Indicators (25 indicators)

G: Dignity of Women and Children (6 indicators)

G1	**Assessment of Municipal Comprehensive Plans from the Perspective of the SDGs**	SDGs goals 1-17, 1.5.4, 11.3.2, 11.b.2, 13.1.3
G2	**Number of consultations on child abuse**	SDGs 11.7.2, 16.2.1
G3	**Number of places for children to spend time outside school**	SDGs 4.6.1, 4.a.1, 16.2.1
G4	Number of children given foster care placements	SDGs 11.7.2, 16.2.1 (Not included in the indices)
G5	Rate of deaths by suicide among children	SDGs 3.4.2, 11.7.2, 16.2.1
G6	**Rate of deaths by suicide among women**	SDGs 3.4.2, 5.2.1, 5.2.2, 11.7.2, 16.1.3

H: Trust in the Public Sector, Gender (6 indicators)

H1	Voter turnout in national and gubernatorial elections	SDGs 16.7.1
H2	**Municipality gender equality promotion**	SDGs 5.1.1, 5.2.1, 5.4.1, 5.5.1-5.6.2, 5.a.2, 5.c.1
H3	Rate of female representatives in municipal assemblies	SDGs 5.5.1, 16.7.1, 16.7.2
H4	**Rate of women in municipal management positions**	SDGs 5.5.1, 16.7.1, 16.7.2
H5	**Rate of female members of advisory councils, etc.**	SDGs 5.5.1, 16.7.1. 16.7.2
H6	**Rate of women among heads of community associations**	SDGs 5.5.1, 16.7.1, 16.7.2

J: Community Engagement (11 indicators)

J1	**Effectiveness of promotional activities by municipalities to increase visitors, migration and settlement**	**SDGs 8.9.1, 8.9.2, 11.2.1, 11.3.1, 11.4.1**
J2	Number of designated cultural properties	SDGs11.4.1
J3	Number of community centers	SDGs 11.3.2, 11.4.1, 11.7.1
J4	**Rate of people who believe community bonds got stronger after the Great East Japan Earthquake**	
J5	Number of neighborhood associations	SDGs 11.3.2
J6	Number of registered Non-Profit Organizations (NPOs)	SDGs 11.3.2, 17.9.1, 17.17.1
J7	Number of foreign nationals	SDGs 10.7.2, 10.7.4
J8	Rate of foreign nationals among children	SDGs 10.7.2, 10.7.4
J9	Number of international students	(Not included in the indices)
J10	Number of foreign technical interns	SDGs 8.8.1, 8.8.2, 10.7.1, 10.7.2
J11	Rate of people who would welcome more foreign nationals in their neighborhood	

K: Satisfaction with Life (2 indicators)

K1	Rate of people who are not satisfied with their own lives	
K2	Rate of people who do not believe that their lives will get better in the future	

3 Sources of Data

In principle, the data used for each indicator is provided by public agencies for each of the 35 municipalities, as shown below. For indicators for which data by municipality is not published, data is provided for the seven zones of the prefecture (Sennan, Sendai, Osaki, Kurihara, Tome, Ishinomaki, and Kesennuma-Motoyoshi) or the jurisdictions of individual welfare centers.

However, for items such as municipal comprehensive plans, coverage of children's medical expenses, measures to promote inward migration and settlement, and gender equality, which in themselves do not indicate whether they are in line with the core objective of the SDGs, the Indicator Team or Women's Working Group (WG) made an assessment (based on the criteria indicated in the relevant sections below).

Life Indicators (26 indicators)

A: Life (13 indicators)

A1	Average life expectancy at birth (men) Average life expectancy at birth (women)	Ministry of Health, Labour and Welfare (MHLW), Life Expectancy by Municipality, 2015
A2	Population increase/decrease (% change between 2011 and 2021)	Municipal population estimates
A3	Total fertility rate (TFR)	*Report of Vital Statistics*, Total Fertility Rate by Municipality (FY2013–FY2017)
A4	Rate of children aged 0–14 in population	National Census (2015)
A5	Working age population (aged 15-64)	National Census (2015)
A6	Unmarried rate (at 50 years old) (men) Unmarried rate (at 50 years old) (women)	National Census (2015)
A7	Inward/outward migration gap (between 2010 and 2015)	National Census (2010, 2015)
A8	Rate of elderly people (aged 65 and over)	Miyagi Prefecture, Elderly Population Survey Results (2019)
A9	Rate of households comprised of single elderly person (aged 65 and over)	National Census (2015)
A10	Rate of children in single parent households	National Census (2015)
A11	Number of deaths by suicide (per 100,000 population)	MHLW, *Basic Information on Suicide in Regional Areas* (Place of Residence and Date of Suicide), 2019
A12	Number of deaths and missing persons due to natural disasters (total 2008–2020; per 1,000 population)	Population is the average of figures from the Basic Resident Register from 2008 to 2020. The number of deaths and missing persons is the total number of victims recorded for disasters listed in "Past Disasters in Miyagi Prefecture." For the Great East Japan Earthquake, see Miyagi Prefecture, "Earthquake Damage and Evacuation Situation" (as of January 31, 2021).
A13	Number of deaths and injuries due to traffic accidents (average for 2014–2018; per 10,000 population)	Average for 2014–2018. Institute for Traffic Accident Research and Data Analysis, *Annual Report of Traffic Accident Statistics*

B: Health (13 indicators)

B1	Healthy Life Expectancy (HALE) (men) Healthy Life Expectancy (HALE) (women)	Miyagi Prefecture Health Promotion Division, Regional Healthy Life Expectancy by Municipality (2016)
B2	Number of general hospitals and clinics (per 1,000 population)	Miyagi Prefecture, Survey of Medical Facilities, October 1, 2018
B3	Number of doctors at medical facilities (per 1,000 population)	Miyagi Prefecture, Survey of Medical Facilities, October 1, 2018
B4	Number of obstetrics/gynecology clinics	Japan Medical Association, Regional Medical Information System, February 2020
B5	Annual medical expenses per capita (average of past 3 years)	Municipal National Health Insurance, per capita National Health Insurance medical expenditures by municipality (FY2017)
B6	Rate of people getting regular health checks	Miyagi Prefecture, FY2016 results from the statutory reports on "Specific Health Checkup" (medical examinations to check for lifestyle diseases), by category of insured
B7	Amount paid for National Health Insurance per capita	Municipal National Health Insurance, per capita National Health Insurance medical expenditures by municipality (FY2017)

B8	Coverage of children's medical expenses	Comparative assessment of coverage performed by the Indicator Team based on the following criteria (1) Age limit for children's medical expense coverage: up to 18 years old, up to 15 years old, or below (2) Partial payment required: Yes/No (3) Income restrictions: Yes/No
B9	Number of teeth lost due to decay and other reasons (at age 12)	Miyagi Prefecture Education Bureau, Sports and Health Division, *Results of FY2017 Statistical Survey of Health Issues for Children in Miyagi Prefecture*
B10	Number of people with disabilities (not included in the indices)	Miyagi Prefecture Mental Health and Welfare Center, number of persons holding Disability Passbooks and Special Education Passbooks, as of March 31, 2020
B11	Rate of smoking among adults (taking the whole of prefecture as 100)	Japan Health Insurance Association, data on the Municipal National Health Insurance, "Specific Health Checkup" questionnaire, disaggregated by gender (FY2016)
B12	Annual rate of people participating in sports activities (by area)	Miyagi Prefecture Health Promotion Division, *Report on the 2016 Prefectural Citizens' Health and Nutrition Survey*, January 2018
B13	Rate of people who know number of daily steps walked (by area)	Miyagi Prefecture Health Promotion Division, *Report on the 2016 Prefectural Citizens' Health and Nutrition Survey*, January 2018

Livelihood Indicators (48 indicators)

C: Economy, Industry, and Employment (14 indicators)

C1	Annual income per capita	Miyagi Prefecture Department of Disaster Reconstruction and Planning, *FY2017 Annual Report of Miyagi Prefecture Municipal Economic Accounts*
C2	Purchases per household per month	Monthly purchases of food, daily necessities, fresh produce, and prepared dishes per household in 2020, based on big data from True Data, Inc.
C3	Rate of households with annual incomes of less than 3 million yen (excluding single-person households)	*2018 Housing and Land Survey*, Basic Summary of Housing and Households
C4	Rate of people fully exempted from national pension contributions	National Health Insurance, Payment Status by Municipality, March 2019
C5	Labor productivity by municipality (per capita)	Miyagi Prefecture, *FY2017 Annual Report of Prefectural Economic Accounts*
C6	Agricultural and fishery output by municipality (per capita)	Ministry of Internal Affairs and Communications (MIC), Agricultural Output by Municipality, FY2018
C7	Number of Miyagi Prefecture Regional Revitalization Plans approved for the municipality	Miyagi Prefecture, list of approved Regional Revitalization Plans in Miyagi Prefecture
C8	Unemployment rate	2015 National Census, basic tabulation of employment status, etc. (labor force status, industry and occupation of workers, etc.)
C9	Rate of regular employees among employed persons	2015 National Census, basic tabulation of employment status, etc. (labor force status, industry and occupation of workers, etc.), number of employees aged 15 and over by employee status (8 categories) and gender
C10	Rate of working females out of total female population	2015 National Census, basic tabulation of employment status, etc. (labor force status, industry and occupation of workers, etc.)
C11	Rate of regular employees among female employees	2015 National Census, basic tabulation of employment status, etc. (labor force status, industry and occupation of workers, etc.), employee status (8 categories)
C12	Rate of people with disabilities among employees	Miyagi Labor Bureau, FY2017 Press Release Materials
C13	Rate of people aged 65 and over with a job	2015 National Census, basic tabulation of employment status, etc.
C14	Financial capability index	*FY2018 Survey of Financial Results by Municipality*

D: Education (11 indicators)

D1	Number of children on waiting lists for nursery	Miyagi Prefecture Office for the Promotion of Health, Welfare and a Childrearing Society, Number of children on waiting lists for use of nurseries, etc., FY2020
D2	Number of elementary school children per teacher	Miyagi Prefecture Board of Education, *FY2020 Overview of Education Administration in Miyagi Prefecture*

D3	Number of junior high school students per teacher	Miyagi Prefecture Board of Education, *FY2020 Overview of Education Administration in Miyagi Prefecture*
D4	Number of high school students per teacher	Miyagi Prefecture Board of Education, *FY2020 Overview of Education Administration in Miyagi Prefecture*
D5	Rate of recipients of school attendance support (out of all students in public elementary and junior high schools)	Miyagi Prefecture Education Bureau, Compulsory Education Division, Schooling Support for Children in Need of Assistance, FY2019
D6	Educational expenditure per capita	Local Education Expenditure Survey (FY2019), MEXT (e-Stat); Prefectural and Municipal Statistics (Social and Demographic Statistics System)
D7	University enrollment rate (not included in the indices)	MEXT, Basic School Survey
D8	Student obesity rate (6th grade of elementary school) Student obesity rate (2nd grade of junior high school)	Miyagi Prefecture Education Bureau, Report on FY2017 Statistical Survey of Health Issues for Children in Miyagi Prefecture
D9	Opportunities for lifelong learning (index)	Miyagi Prefecture Education Bureau, Lifelong Learning Division, Results of FY2019 Survey on Municipal Social Education Administration and Social Education Facilities (Community Centers); Miyagi Prefecture Education Offices, list of social education facilities (libraries, community centers, record offices, etc.)
D10	ICT education environment in elementary and junior high schools (ICT facilities and equipment)	MEXT, Results of FY2019 Survey on Computerization of Education in Schools (as of March 2020)
D11	Rate of schools designated as UNESCO Schools	MEXT, UNESCO Schools Website, School Basic Survey (as of March 2020)

E: Welfare (9 indicators)

E1	Number of children's homes (including foster homes and childcare institutions)	Miyagi Prefecture Child Welfare Centers (Central, North, East, and East-Kesennuma Branch Office), *FY2020 Summary of Consultations at Child Welfare Centers* (child welfare facilities in the prefecture), as of June 2020 * For the national indicators, comparisons were made using data from the MHLW's *Survey of Social Welfare Facilities*, while the Miyagi model includes smaller facilities such as children's homes, infant homes, small regional children's homes, children's self-reliance support homes, residential facilities for children with disabilities, and family homes. However, non-residential child and family support centers are excluded.
E2	Number of consultations at Child Welfare Centers (per 1,000 population)	Miyagi Prefecture Child Welfare Centers (Central, North, East, and East-Kesennuma Branch Office), *FY2020 Summary of Consultations at Child Welfare Centers* (Number of child welfare consultations (excluding disability and health consultations) received by municipality), total number of cases from FY2015 to FY2019)
E3	Rate of households receiving livelihood protection allowance	Miyagi Prefecture, Statistics on Livelihood Protection Allowance (2019)
E4	Long-Term Care Insurance contributions (standard per capita)	Municipal websites, standard amount of long-term care insurance contributions (monthly)
E5	Rate of persons requiring long-term care	Miyagi Prefecture, *FY2016 Report on the Status of Long-Term Care Insurance Services* (percentage of caregivers by municipality)
E6	Number of facilities for the elderly (care homes, senior citizens homes) (per population aged 65 and over)	Miyagi Prefecture, *FY2020 Welfare Evacuation Shelter Designation Status*
E7	Rate of applicants for special nursing facilities (out of total number of people certified at Levels 3-5 under the Long-Term Care Insurance System)	Miyagi Prefecture, Data on Medical and Nursing Care, updated end of March 2020. Long-Term Care Insurance Business Report
E8	Number of nursing care staff (per 1,000 population aged 75 and over)	Miyagi Prefecture, Data on Medical and Nursing Care, updated end of March 2020
E9	Number of assigned households per livelihood protection allowance caseworker	Miyagi Prefecture, Statistics on Livelihood Protection Allowance, Local Public Body Capacity Management Survey (Table 4)

F: Nature and Lifestyle (14 indicators)

F1	Annual hours of sunshine	1 km grid-square 30-year average annual sunshine hours, 2010 (JMA, statistical period 1981–2010, created in 2012) overlaid in GIS with locations of municipal offices
F2	Rate of housing adapted for the elderly	MIC Statistics Bureau, *2018 Housing and Land Survey*
F3	CO_2 emissions (per capita)	Ministry of Environment (MOE), current estimates of CO_2 emissions by sector (by municipality, 2019), divided by population

F4	Amount of electricity generated from renewable sources	Ministry of Economy, Trade and Industry (METI), Agency for Natural Resources and Energy, "Feed-in Tariff Scheme" information page, authorized installed capacity by municipality (2017). Municipality-specific electricity sales calculated from nationwide renewable energy sales by power source and facility installations by power source
F5	Total floor space per residence	Cabinet Office, *FY2018 Housing and Land Survey*, Basic Summary of Housing and Households
F6	Rate of owner-occupied households	*2018 Housing and Land Survey*, Basic Summary of Housing and Households
F7	Number of cars owned (per capita)	Ministry of Land, Infrastructure, Transport and Tourism (MLIT), Tohoku District Transport Bureau (FY2020)
F8	Number of convenience stores (per 1,000 population)	NAVIGATE 2021.2.4 Search (field check)
F9	Sewage treatment rate	Domestic Wastewater Treatment Facilities in Miyagi Prefecture, statistics by municipality, end FY2018
F10	Damage to housing caused by natural disasters (per 1,000 housing units)	2008–2020 damage to housing (total destruction/partial destruction) * Number of households is the average of the figures from the Basic Resident Register from 2007 to December 31, 2020. * Number of damaged homes is the total number of homes that fall under "total destruction/partial destruction" or "inundation above floor level" from the disasters listed in "Past Disasters in Miyagi Prefecture" (disasters occurring in the prefecture). For the Great East Japan Earthquake, see "State of Damage from the Great East Japan Earthquake."
F11	Volunteer firefighter sufficiency rate	Data on numbers of volunteer firefighters from the Miyagi Prefecture Firefighters Association as of October 1, 2020 (date retrieved: March 1, 2021)
F12	Rate of seismic reinforcement of public facilities that serve as disaster prevention centers	MIC, Survey on Implementation of Seismic Reinforcement of Public Facilities serving as Disaster Prevention Centers (end FY2018) (State of Seismic Reinforcement of Public Facilities serving as Disaster Prevention Centers)
F13	Number of drunk driving violations (per 10,000 license holders)	Miyagi Prefectural Police, Number of Traffic Accidents by Municipality (during 2019)
F14	Number of reported criminal offences (per 1,000 population)	Crime and Crime Prevention, Overview of Miyagi Prefecture during 2016, by municipality

Dignity Indicators (25 indicators)

G: Dignity of Women and Children (6 indicators)

G1	Assessment of Municipal Comprehensive Plans from the Perspective of the SDGs (assessment by Indicator Team)	Assessment performed by the Indicator Team based on the following 12 criteria (1) Does it refer to the SDGs? (2) Are there links between individual measures and SDG indicators? (3) Does it cover anything other than environmental or industrial sustainability? (4) Does it set numerical targets to be achieved? (5) Does it emphasize pride in one's occupation or hometown? (6) Does it advocate for the protection of human rights? (7) Perspectives of women/gender perspectives (8) Perspectives of people with disabilities (9) Perspectives of multicultural coexistence, respect for diversity, and social inclusion (10) Is there substantial resident participation in drafting the comprehensive plan or community development? (11) Are children's voices heard, and are their views reflected in policies? (12) Proportion of women on the planning council
G2	Number of consultations on child abuse (per 1,000 population)	Miyagi Prefecture Child Welfare Centers (Central, North, East, and East-Kesennuma Branch Office), *FY2020 Summary of Consultations at Child Welfare Centers (Number of child abuse consultations received by municipality)*, total number of cases from FY2015 to FY2019)
G3	Number of places for children to spend time outside school (number of elementary, junior high, and high school students per facility)	Miyagi Network for Co-Creating Diverse Ways of Learning, Map of Places for Children to Spend Time in Miyagi Prefecture. Miyagi Prefecture and Sendai City official websites, List of Children's Halls and Centers. * Total number based on data for free schools, play parks, parent groups, "*Keyaki*" classes, "*Kokoro Care*" houses, children's halls/children's centers, "*Mori no Hiroba,*" and after-school children's clubs. Excludes tutoring schools and "*Nobisuku Sendai*" which are aimed mainly at infants and toddlers.

G4	Number of children given foster care placements (not included in the indices)	Miyagi Prefecture Child Welfare Centers (Central, North, East, and East-Kesennuma Branch Office), *FY2020 Summary of Consultations at Child Welfare Centers (Foster parent registrations and foster placements)*, as of end of March 2019
G5	Rate of deaths by suicide among children (aged under 18) (per 10,000 population)	MHLW, *Basic Information on Suicide in Regional Areas* (Place of Residence and Date of Suicide), 5-year average 2015–2019
G6	Rate of deaths by suicide among women (per 10,000 population)	MHLW, *Basic Information on Suicide in Regional Areas* (Place of Residence and Date of Suicide), 5-year average 2015–2019

H: Trust in the Public Sector, Gender (6 indicators)

H1	Voter turnout in national and gubernatorial elections	Average voter turnout for House of Representatives (2017), House of Councillors (2019), and Miyagi gubernatorial elections (2017)
H2	Municipality gender equality promotion (assessment by Indicator Team)	Miyagi Prefecture, *Annual Report on the Current Status of Gender Equality in Miyagi Prefecture and Related Policies* (assessment of the following 7 criteria for FY2016 to FY2020 by the Women's WG team) (1) Do they have a basic plan and set current and target values? (2) Gender equality awareness and status surveys (past 5 years) (3) Do they have a basic plan based on the Act on the Prevention of Spousal Violence and the Protection of Victims? (4) Do they have gender equality ordinances? (5) Existence of activity centers and the status of activities such as lectures and workshops (6) Public information materials (past 5 years) (7) Availability of public awareness materials/publications (past 5 years)
H3	Rate of female representatives in municipal assemblies	Miyagi Prefecture, *Annual Report on the Current Status of Gender Equality in Miyagi Prefecture and Related Policies*, FY2020
H4	Rate of women in municipal management positions	Miyagi Prefecture, *Annual Report on the Current Status of Gender Equality in Miyagi Prefecture and Related Policies*, FY2020
H5	Rate of female members of advisory councils, etc.	Miyagi Prefecture, *Annual Report on the Current Status of Gender Equality in Miyagi Prefecture and Related Policies*, FY2020
H6	Rate of women among heads of community associations	Miyagi Prefecture, *Annual Report on the Current Status of Gender Equality in Miyagi Prefecture and Related Policies*, FY2020

J: Community Engagement (11 indicators)

J1	Effectiveness of promotional activities by municipalities to increase visitors, migration and settlement (assessment by Indicator Team)	Effectiveness and inclusiveness of municipalities' policies to increase visitors, migration, and settlement (as found on municipality websites) were assessed by the Indicator Team, based on the following 12 criteria (1) Does the information on public relations, inward migration, and tourism have an immediate impact? (2) Does it effectively express a unique appeal (brand)? (3) Are childcare support measures effectively presented? (4) Are employment/ in-migration support measures effectively presented? (5) Is there a gender equality perspective in publicity efforts for childcare, employment, and in-migration support? (6) Is there a perspective that emphasizes individuality and diversity in publicity efforts for childcare, employment, and in-migration support? (7) Does the municipality appear to be a comfortable place to live after viewing the information? (8) Are there plenty of tourism resources? (relative to size) (9) Are tourism resources fully publicized? (10) Does it represent the reality of local people's lives? (11) Does it present comments from people who have moved to or visited the municipality? (12) Does it include specific information such as statistical figures?
J2	Number of designated cultural properties (per 1,000 population)	Miyagi Prefecture official website, "List of Miyagi Prefecture's Designated and Selected Cultural Properties," updated February 2020. * Total number of buildings, paintings, sculptures, handicrafts, books, archaeological materials, archival and historical documents, folk customs, historical sites, natural monuments, and folk performing arts

J3	Number of community centers (per 10,000 population)	Miyagi Prefecture Education Bureau, Lifelong Learning Division, *Results of FY2019 Survey on Municipal Social Education Administration and Social Education Facilities (Community Centers)*; Official websites of Miyagi Prefecture and municipalities, "List of Community Centers" (updated July 2020)
J4	Rate of people who believe community bonds got stronger after the Great East Japan Earthquake (questionnaire survey)	Assessed based on the results of the survey
J5	Number of neighborhood associations (per 1,000 population)	Number of residents' associations, *Annual Report on the Current Status of Gender Equality in Miyagi Prefecture and Related Policies*, Table 17 (as of April 2020)
J6	Number of registered Non-Profit Organizations (NPOs) (per 1,000 population)	Miyagi Prefecture List of Specified Nonprofit Corporations, updated December 31, 2020
J7	Number of foreign nationals (per 1,000 population)	Ministry of Justice, Statistics on Foreign Residents (as of June 2020)
J8	Rate of foreign nationals among children (per 1,000 population)	Basic Resident Register (January 2020)
J9	Number of international students (actual number) (not included in the indices)	Ministry of Justice, Statistics on Foreign Residents (as of June 2020)
J10	Number of foreign technical interns (per 1,000 population)	Ministry of Justice, Statistics on Foreign Residents (as of June 2020)
J11	Rate of people who would welcome more foreign nationals in their neighborhood (questionnaire survey)	Assessed based on the results of the survey

K: Satisfaction with Life (2 indicators)

K1	Rate of people who are not satisfied with their own lives (questionnaire survey)	Assessed based on the results of the survey
K2	Rate of people who do not believe that their lives will get better in the future (questionnaire survey)	Assessed based on the results of the survey

3-4 Miyagi Prefecture Municipal Indices

1 Calculating Indices from Indicators

Although the goal of this analysis is to compare and examine the overall challenges municipalities face, a direct comparison is not possible because the figures for the 99 indicators in the Miyagi Model are provided in different units. To integrate the indicators, the data for each indicator is normalized and converted to a variable from 1 to 0. If the most favorable state for a given indicator is 1, and vice versa is 0, then the variable for each municipality falls somewhere between 1 and 0. This method is based on UNDP's method for calculating the Human Development Index.

For indicators such as "life expectancy" or "total fertility rate," for which high values are desirable, the variable is calculated using the formula: **(value for the municipality in question - minimum value) / (maximum value - minimum value)**.

In this case, if the value for the municipality in question is the highest (most favorable) in the dataset, then the normalized variable will be 1, and if it is the lowest, (least favorable), the normalized variable will be 0.

Conversely, for indicators such as "suicide rate" or "annual medical expenses per person," for which a low value is desirable (or where a high value indicates a significant issue to be solved), the variable is calculated using the formula: **(value for the municipality in question - maximum value) / (minimum value - maximum value)**.

Here, if the value for the municipality in question is the lowest (most favorable) in the dataset, then the normalized variable will be 1, and if it is the highest (least favorable), the normalized variable will be 0.

All indicators are normalized, and then the Life Index, Livelihood Index, and Dignity Index are calculated by averaging the indexed values of the indicators in each of the three areas described in Chapter 3, 3-3. The average values for these three indices are then ranked in descending order as an Overall Index by municipality, and then visualized on a map.

In this exercise, some indicators are excluded from the calculation of indices because it is inappropriate to rank their numerical values or because the data is not available at the municipal level (for example, B10: Number of people with disabilities, D7: University enrollment rate, G4: Number of children given foster care placements, J9: Number of foreign students). The Life (25), Livelihood (47), and Dignity (23) indices are calculated without these indicators, then combined to produce an Overall Index (95 items) (please refer to the Reference Materials for ranks and maps for individual indicators).

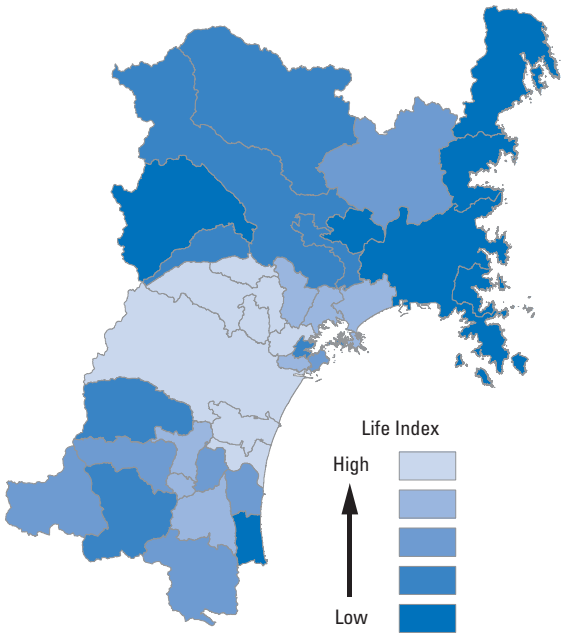
Note that indicators vary in terms of their importance and impact. As this involves subjective judgment, the Indicator Team adopted the method of taking a simple average and comparing the indices for Life, Livelihood, and Dignity. Although the three areas have different numbers of indicator variables, the rankings can be obtained by calculating an Overall Index based on the average values of the Life, Livelihood, and Dignity indices, thereby facilitating comparisons between municipalities.

2 Life Index

Sendai, Tomiya, Rifu, Iwanuma, and Natori in the Sendai Metropolitan Zone, as well as Ohira and Taiwa in Senpoku, have good medical environments, high health awareness, and low rates of aging, leading to high scores in the Life Index. Conversely, Life Index values are low in the coastal areas that suffered extensive damage in the Great East Japan Earthquake, with Onagawa, Kesennuma, Minami-Sanriku, Yamamoto, and Ishinomaki performing poorly. The inland areas of the northern part of the prefecture (Kami, Wakuya, Osaki, Misato, Shikama, etc.) have low fertility rates, low inward migration rates, low numbers of children, and acceleration of aging, giving them low scores on the Life Index. Shiroishi and Kawasaki in the southern part of the prefecture also had low Life Index scores. Issues in these areas include exercise and health awareness, suggesting the need to improve medical infrastructure and lifestyle habits.

Figure 3-18: **Miyagi Prefecture Life Index scores**

Ranking	Municipalities	Index
1st	Tomiya City	0.791
2nd	Rifu Town	0.730
3rd	Sendai City	0.719
4th	Ohira Village	0.703
5th	Taiwa Town	0.684
6th	Iwanuma City	0.630
7th	Natori City	0.629
8th	Ogawara Town	0.601
9th	Tagajo City	0.592
10th	Osato Town	0.575
11th	Higashi-Matsushima City	0.539
12th	Matsushima Town	0.537
13th	Murata Town	0.532
14th	Kakuda City	0.527
15th	Tome City	0.523
16th	Watari Town	0.519
17th	Shichigahama Town	0.515
18th	Zao Town	0.511
19th	Marumori Town	0.503
20th	Shibata Town	0.502
21st	Shichikashuku Town	0.492
22nd	Kawasaki Town	0.479
23rd	Kurihara City	0.477
24th	Shikama Town	0.466
25th	Shiogama City	0.465
26th	Osaki City	0.464
26th	Misato Town	0.464
28th	Shiroishi City	0.461
29th	Wakuya Town	0.452
30th	Kami Town	0.448
31st	Ishinomaki City	0.435
32nd	Yamamoto Town	0.408
33rd	Minami-Sanriku Town	0.399
34th	Kesennuma City	0.396
35th	Onagawa Town	0.347



3 Livelihood Index

Thanks to good figures for income, employment, and financial capability, as well as education, welfare, and living environment, the municipalities of Tomiya and Rifu, adjacent to Sendai, score extremely high in the Livelihood Index. In Senpoku, Shikama has an attractive living environment in terms of agricultural output, employment, education and welfare, total floor space per residence, rate of owner-occupied households, and number of reported crimes. Meanwhile, Taiwa has been successful in attracting companies, with high figures for income, labor productivity, and financial capability boosting its rank in the Livelihood Index.

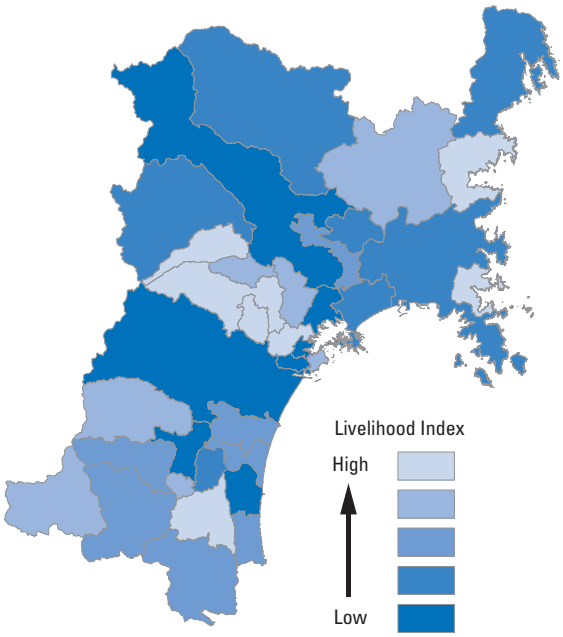
Onagawa and Minami-Sanriku in the northern coastal area of the prefecture perform well in the Livelihood Index, with good living environments in terms of fisheries output, employment, education and welfare, and housing. In the southern part of the prefecture, the Livelihood Index is high in Kakuda, which has a favorable living environment in terms of employment of women and people with disabilities, education, housing, and reported crimes.

However, in Sendai and many of the surrounding municipalities (Matsushima, Murata, Shiogama, Tagajo, Higashi-Matsushima, and Watari), the Livelihood Index is surprisingly low. There are many issues to be addressed in terms of employment, including with respect to women, the elderly, and regular employment; education, such as the number of children on waiting lists for nurseries; welfare, such as the number of child welfare consultations and the rate of livelihood protection allowance recipients; and the living environment, such as total floor space per residence, the rate of owner-occupied households, and the number of reported crimes. As such, it is hoped that efforts will be made to enhance the appeal of the area as a well-developed living environment. In the northern part of the prefecture, Osaki, Kurihara, and Wakuya score low on the Livelihood Index. There are issues in income and employment, such as the percentage of low-income households and the employment rate of women; in education, such as the number of children on waiting lists for nursery and the rate of school attendance support recipients; in welfare, such as the number of child welfare consultations and the number of households in receipt of livelihood protection allowance; and in the living environment,

Figure 3-19: **Miyagi Prefecture Livelihood Index scores**

Ranking	Municipalities	Index
1st	Tomiya City	0.564
2nd	Shikama Town	0.548
3rd	Onagawa Town	0.544
4th	Rifu Town	0.543
5th	Kakuda City	0.538
6th	Taiwa Town	0.533
7th	Minami-Sanriku Town	0.531
8th	Ohira Village	0.526
8th	Shichikashuku Town	0.526
10th	Ogawara Town	0.525
11th	Shichigahama Town	0.524
12th	Osato Town	0.523
13th	Tome City	0.514
14th	Kawasaki Town	0.510
15th	Iwanuma City	0.506
16th	Misato Town	0.504
17th	Yamamoto Town	0.503
18th	Zao Town	0.502

Ranking	Municipalities	Index
19th	Shiroishi City	0.500
20th	Natori City	0.495
21st	Marumori Town	0.494
22nd	Kami Town	0.493
23rd	Kesennuma City	0.489
24th	Kurihara City	0.485
25th	Shibata Town	0.477
26th	Higashi-Matsushima City	0.473
26th	Wakuya Town	0.473
26th	Ishinomaki City	0.473
29th	Watari Town	0.472
30th	Tagajo City	0.467
31st	Sendai City	0.463
32nd	Osaki City	0.461
33rd	Shiogama City	0.439
34th	Murata Town	0.438
35th	Matsushima Town	0.437



such as housing adapted for the elderly and the sewage treatment rate. The Livelihood Index is also relatively low in the coastal cities of Ishinomaki and Kesennuma. This is due to several issues related to income and employment, such as the rate of low-income households, the number of households in receipt of livelihood protection allowance, employment rates for women and elderly people, and the number of child welfare consultations.

4 Dignity Index

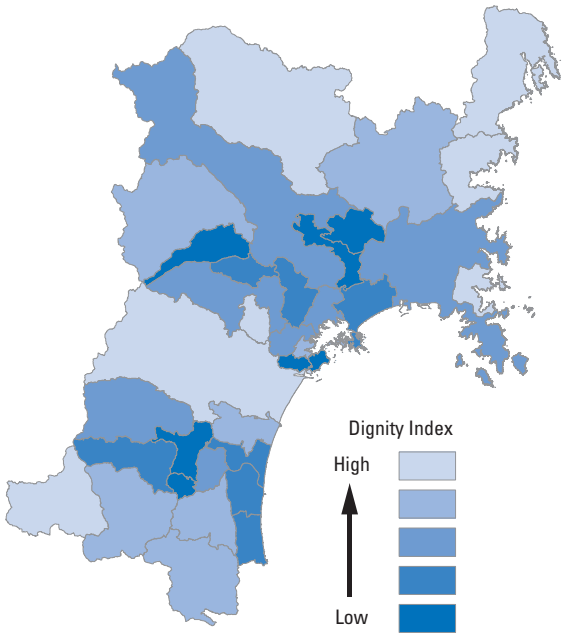
Dignity Index scores are high in Shichikashuku and Marumori in the southern interior, as well as in Minami-Sanriku, Onagawa, and Kesennuma in the north. These municipalities have lower rates of child abuse consultations and suicides among women, greater social capital such as community centers, neighborhood associations, and non-profit organizations, more effective efforts to increase inward migration and settlement, and higher rates of people who would welcome an increase in foreigners. Kurihara, in the northern part of the prefecture, is enthusiastic about promoting gender equality, has many women in managerial positions and on municipal advisory councils, has large numbers of designated cultural properties, community centers, and neighborhood associations and organizations, and communicates the appeal of the city effectively. Tomiya, Sendai, and Shiogama also rank highly on the Dignity Index, performing well in areas related to gender. This includes emphasizing the dignity of children and promoting gender equality, as well as high numbers of female assembly members, municipal advisory council members, and heads of residents' associations.

Conversely, the Dignity Index scores are low in Shichigahama and Tagajo, located adjacent to Sendai City, as well as in Wakuya, Misato, and Shikama in the northern part of the prefecture. These municipalities face many issues relating to children, such as high numbers of consultations on child abuse and few places to spend time outside school, and also gender equality, with high rates of suicide among women, and few women in municipal management positions or among heads of residents' associations. Also facing challenges in terms of promoting gender equality are the towns of Ogawara, Murata, and Zao, in the southern part of the prefecture. With few female assembly members, municipal managers, or heads of residents' associations, they perform poorly in the Dignity Index. There is a noticeable trend for smaller

Figure 3-20: **Miyagi Prefecture Dignity Index scores**

Ranking	Municipalities	Index
1st	Shichikashuku Town	0.593
2nd	Minami-Sanriku Town	0.569
3rd	Onagawa Town	0.516
4th	Kurihara City	0.481
5th	Tomiya City	0.476
6th	Sendai City	0.463
7th	Kesennuma City	0.460
8th	Marumori Town	0.459
9th	Shiogama City	0.439
10th	Natori City	0.432
11th	Shiroishi City	0.425
12th	Kakuda City	0.424
13th	Tome City	0.419
14th	Kami Town	0.415
15th	Ishinomaki City	0.404
16th	Shibata Town	0.403
17th	Rifu Town	0.402
18th	Matsushima Town	0.396

Ranking	Municipalities	Index
19th	Osaki City	0.385
20th	Kawasaki Town	0.383
21st	Taiwa Town	0.373
22nd	Ohira Village	0.368
22nd	Higashi-Matsushima City	0.368
24th	Yamamoto Town	0.362
25th	Watari Town	0.361
26th	Zao Town	0.355
27th	Iwanuma City	0.341
28th	Osato Town	0.336
29th	Murata Town	0.330
30th	Shikama Town	0.329
31st	Ogawara Town	0.306
32nd	Misato Town	0.293
33rd	Wakuya Town	0.287
34th	Tagajo City	0.283
35th	Shichigahama Town	0.264



municipalities to score lower in the Dignity Index, so it is hoped that they can take advantage of their relative agility to improve the situation.

Whereas there are only three municipalities with an index below 0.4 for the Life Index (**Figure 3-18**), and zero for the Livelihood Index (**Figure 3-19**), half (18) of the municipalities in the prefecture score under this level on the Dignity Index, suggesting that the prefecture as a whole has significant issues when it comes to women and children (**Figure 3-20**). The figures for non-attendance at school and cases of bullying, which contributed to Miyagi Prefecture's bottom ranking in the nationwide Dignity Index, are not reflected in the Miyagi Model because data for these indicators is not available for individual municipalities. If these indicators were added, it would be possible to shed further light on these issues.

5 Overall Index

In the Sendai Metropolitan Zone, Tomiya, Rifu, Sendai, Natori, and Iwanuma have the highest Overall Index scores, in that order. Ohira and Taiwa in Senpoku, which have been successful in attracting companies to the area, have extremely high Overall Index scores due to their high Life Index and Livelihood Index scores. Shichikashuku, located in the southern inland region, has a low Life Index but the highest Dignity Index, resulting in a good ranking in the Overall Index.

On the other hand, the coastal municipalities affected by the Great East Japan Earthquake recorded low Life and Livelihood indices, resulting in low scores on the Overall Index (Yamamoto, Shiogama, Ishinomaki, Matsushima, Kesennuma, Watari, Tagajo, and Shichigahama). The results for Shichigahama, Tagajo, Watari, and Yamamoto revealed issues related to the Dignity Index.

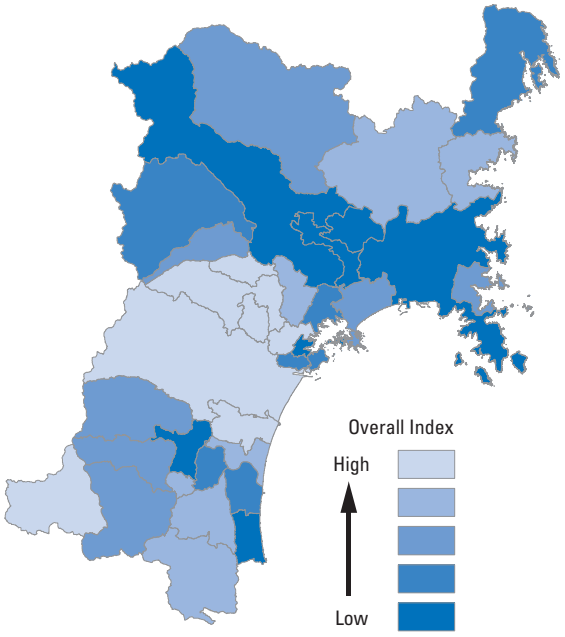
Among the disaster-affected areas, there are some cases, such as Natori, Minami-Sanriku, Iwanuma, and Onagawa, where the Life Index is low, but the Dignity Index and Life Index are high, improving the Overall Index. The Overall Index is low in Wakuya, Misato, Osaki, and other

municipalities in the northern part of the prefecture, where population decline, low numbers of children, and demographic aging are pronounced, leading to low scores in the Life and Livelihood indices. In the southern part of the prefecture, Murata has low Livelihood and Dignity indices, leading to an extremely low Overall Index score. However, some notable examples perform well in the Livelihood Index and enjoy a good ranking in the Overall Index, such as Kakuda.

Figure 3-21: Miyagi Prefecture Overall Index scores

Ranking	Municipalities	Index
1st	Tomiya City	0.608
2nd	Rifu Town	0.564
3rd	Ohira Village	0.539
4th	Taiwa Town	0.538
5th	Sendai City	0.535
6th	Shichikashuku Town	0.531
7th	Natori City	0.518
8th	Kakuda City	0.508
9th	Iwanuma City	0.503
10th	Minami-Sanriku Town	0.502
11th	Ogawara Town	0.495
12th	Tome City	0.494
12th	Osato Town	0.494
14th	Marumori Town	0.488
15th	Kurihara City	0.482
16th	Onagawa Town	0.481
17th	Shikama Town	0.473
18th	Shiroishi City	0.471

Ranking	Municipalities	Index
18th	Kawasaki Town	0.471
20th	Zao Town	0.470
21st	Higashi-Matsushima City	0.467
22nd	Shibata Town	0.466
23rd	Kami Town	0.462
24th	Shichigahama Town	0.460
25th	Watari Town	0.459
25th	Tagajo City	0.459
27th	Kesennuma City	0.456
27th	Matsushima Town	0.456
29th	Shiogama City	0.446
29th	Ishinomaki City	0.446
31st	Osaki City	0.444
32nd	Misato Town	0.443
33rd	Yamamoto Town	0.442
34th	Murata Town	0.440
35th	Wakuya Town	0.423



3-5 Subjective Evaluation by Questionnaire

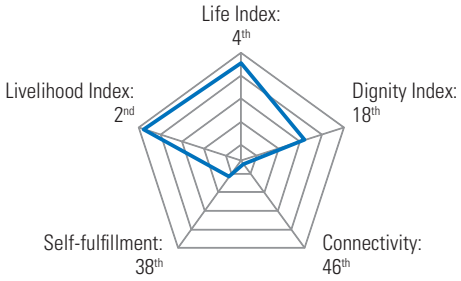
Objective statistical data alone is not sufficient to understand the concerns people have and to consider effective countermeasures. Combining the priorities identified from objective data with the subjective assessments of the residents' sense of fulfillment in life, anxiety, feelings of isolation, and connections with others, will help highlight the reality facing local communities.

The prefectural comparison reveals examples where the residents' subjective self-fulfillment and social connectivity are weak, even though the prefectures in question score highly in the Overall Index (mainly based on quantitative data). For example, residents' self-fulfillment and community ties are very weak in Toyama Prefecture, which ranks second in Japan in the Overall Index. Conversely, in many cases, residents' subjective self-fulfillment and community ties are strong despite a low Overall Index for the prefecture, indicating a discrepancy between objective data and subjective evaluation. For example, despite Osaka Prefecture's low ranking in the index based on objective data, the residents' self-fulfillment, positive attitude toward life, and community ties are strong. However, Miyagi Prefecture ranks low in both the Overall Index (45th) and in subjective self-fulfillment (40th), indicating that there are significant issues to be addressed (see *SDGs and Japan*).

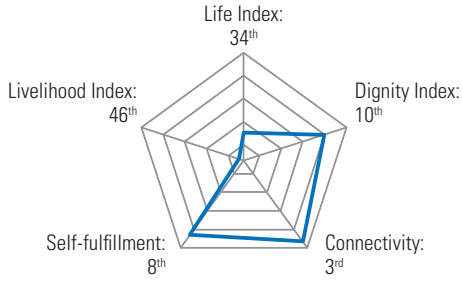
To compare the prefectures, an online survey was conducted as part of the research for *SDGs and Japan* to assess subjective self-fulfillment and social connectivity, and it was possible to categorize the responses by gender and age group. However, in this comparison of 35 municipalities in Miyagi Prefecture, there were extremely limited numbers of people registered for online surveys in some areas, which may result in an insufficient number of responses. After considering alternative methods, we decided to administer an anonymous written questionnaire in cooperation with Miyagi Co-op, covering all municipalities in the prefecture from September to December 2020. Even though there are some differences in coverage rates between municipalities in the prefecture, the Miyagi Co-op[*9] covers more than 75% of all households of Miyagi Prefecture, providing comprehensive coverage of all municipalities (the majority of which have a rate of more than 60%). There were 3,624 respondents (962 men, 2,647 women, and 15 who did not write in their gender).

The questionnaire asked the following questions to determine the extent to which respondents believe their dignity is assured in daily life, such as whether they are proud of and confident in themselves, whether they feel happy to have been born as human beings, and whether they have respect and compassion for others.

Figure 3-22: Differences between prefectural index scores and subjective ratings



Toyama (National rank: 2nd)



Osaka (National rank: 43rd)

Source: *SDGs and Japan*

[*9] The Co-op refers to a consumer co-operative, which operates food outlets in the prefecture and provides a variety of services to members such as weekly food deliveries.

List of questions for subjective evaluation of residents' perceptions

Q1: Do you think bonds in your community have become stronger after the Great East Japan Earthquake? (single answer)
Strongly agree / Somewhat agree / Neither agree nor disagree / Somewhat disagree / Strongly disagree / Don't know

Q2: What are you most proud of? (single answer)
My job / Family and relatives / Friends / Local community / Hobbies / Talents / Community service / Other / Nothing

Q3: What gives you a reason to live? (single answer)
My job / Family and relatives / Friends / Hobbies /Talents / Community service / Other / Nothing

Q4: Are you satisfied with your life? (single answer)
Very satisfied / Somewhat satisfied / Neither satisfied not dissatisfied / Somewhat dissatisfied / Strongly dissatisfied / Don't know

Q5: Do you think your life will be better in the future? (single answer)
Yes, it definitely will / Yes, it probably will / Cannot say either way / No, it probably will not / No, it definitely will not / Don't know

Q6: Do you have someone to talk to when you are having trouble? (multiple answers)
Family / Relatives / Friends / Teachers / Colleagues / Senior colleagues / Neighbors / Other / No-one

Q7: When do you feel lonely? (single answer)
When alone / With family / With friends / At work / I don't feel lonely / I don't feel lonely even if alone / Other

Q8: In what situations have you helped someone in need? (multiple answers)
Someone in trouble at work / Someone with no money / Someone who is sick / Someone with life problems / Everyday favors / Nursing care / Other / I haven't helped anyone

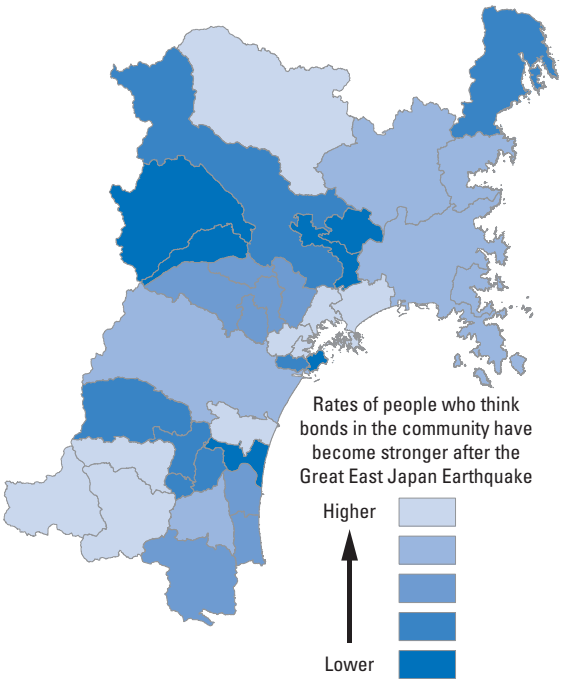
Q9: Would you welcome an increase in foreigners in your neighborhood? (single answer)
Yes, I definitely would / Yes, I probably would / Cannot say either way / No, I probably would not / No, I definitely would not / Don't know

1 Community Bonds

The percentage of "strongly agree" and "somewhat agree" responses to Q1 (Do you think bonds in your community have become stronger after the Great East Japan Earthquake?) were quantified and indexed from high to low on a scale of 1 to 0 for each municipality. Higher rankings indicate that more people feel that community bonds have improved. In areas along the coast where the disaster caused extensive damage, including Higashi-Matsushima, Matsushima, Shiogama, Natori, and Ishinomaki, many people responded that bonds had become stronger, but this was not a uniform pattern. It is noteworthy that many respondents in inland areas that suffered less direct damage, such as Kurihara in the north, and Shiroishi, Zao, Shichikashuku, and Kakuda in the south, also reported that bonds had become stronger (**Figure 3-23**). Another finding was that stronger bonds were reported more often by women than men (54.7% to 47.9%).

Figure 3-23: **Rate of people who think bonds in the community have become stronger after the Great East Japan Earthquake (Indicator J4)**

Ranking	Municipalities	%
1st	Higashi-Matsushima City	73.2
2nd	Matsushima Town	71.4
3rd	Shiogama City	66.7
4th	Rifu Town	64.0
5th	Kurihara City	63.3
6th	Natori City	58.3
7th	Shiroishi City	57.7
7th	Zao Town	57.7
7th	Shichikashuku Town	57.7
10th	Ishinomaki City	56.3
10th	Kakuda City	56.3
10th	Onagawa Town	56.3
13th	Minami-Sanriku Town	56.0
14th	Sendai City	55.0
14th	Tome City	55.0
16th	Tomiya City	54.5
17th	Yamamoto Town	52.9
18th	Taiwa Town	52.4
18th	Osato Town	52.4
18th	Ohira Village	52.4
21st	Marumori Town	51.9
21st	Watari Town	51.9
23rd	Osaki City	46.9
24th	Kesennuma City	41.9
25th	Shibata Town	40.5
26th	Tagajo City	38.7
27th	Ogawara Town	37.8
27th	Murata Town	37.8
27th	Kawasaki Town	37.8
30th	Iwanuma City	36.8
31st	Shikama Town	36.0
31st	Kami Town	36.0
33rd	Wakuya Town	28.1
33rd	Misato Town	28.1
35th	Shichigahama Town	28.0



2 Self-fulfillment

In the national survey conducted in August 2018 as part of the process of developing Human Security Indicators for Japan, the percentage of respondents who were satisfied with their lives (5.7%), fairly satisfied (37.2%), and undecided (20.3%) totaled 63.2%, while the percentage of those who were unsatisfied with their lives was 26.7%, suggesting that one in four of the nation's population is not satisfied with their lives. Among all of the prefectures in Japan, the prefectures in the Tohoku region had the highest rates of people who were dissatisfied with their lives, with 31.7% of Miyagi residents reporting dissatisfaction. Also, at the national level, almost twice as many respondents thought their lives would not get better in the future (35.5%) compared to those who thought they would (20.9%), indicating that people who are pessimistic about the future are more dissatisfied with their lives so far. The percentage of respondents who thought their lives would not improve was particularly high in the prefectures in the Tohoku region, including Miyagi Prefecture at 42.0%.

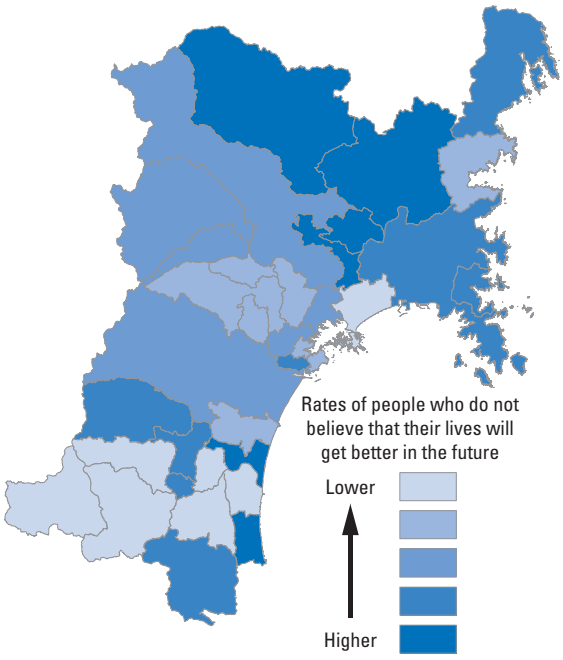
In the municipality-based survey conducted across Miyagi Prefecture (September–December 2020), the percentage of respondents who answered "Somewhat dissatisfied" or "Strongly dissatisfied" to the question "Are you satisfied with your life?" was 6.7%, which is lower than in the national survey. This percentage was the same for both men and women, indicating there is little difference between men and women in their assessment of the current state of their lives. The fact that the survey was conducted with the cooperation of the Miyagi Co-op, whose members are mostly middle-aged or older and who tend to be socially conscious, may have been a contributing factor to this result.

On the other hand, 18.3% of respondents answered "No, it probably will not" or "No, it definitely will not" to the question "Do you think your life will be better in the future?," a rate three times higher than that of those who evaluated their present circumstances negatively. This indicates that many people are anxious and pessimistic about the future, even if not about their current situation (see **Figure 3-24**). Looking at the responses by gender, women tended to be slightly more pessimistic about the future (18.8% of women and 16.9% of men).

By protecting people's dignity, the human security approach aims to help people to be proud of themselves, to have a sense of purpose in life, to have hope for the future,

Figure 3-24: **Rate of people who do not believe that their lives will get better in the future (Indicator K2)**

Ranking	Municipalities	%
1st	Watari Town	9.6
2nd	Shibata Town	10.8
3rd	Shiroishi City	11.5
3rd	Zao Town	11.5
3rd	Shichikashuku Town	11.5
6th	Higashi-Matsushima City	12.2
7th	Kakuda City	12.5
8th	Shiogama City	12.8
9th	Natori City	13.1
10th	Taiwa Town	14.3
10th	Osato Town	14.3
10th	Ohira Village	14.3
13th	Tomiya City	15.6
14th	Shichigahama Town	16.0
14th	Minami-Sanriku Town	16.0
16th	Sendai City	16.3
17th	Matsushima Town	17.9
18th	Rifu Town	18.0
19th	Osaki City	18.8
20th	Shikama Town	20.0
20th	Kami Town	20.0
22nd	Kesennuma City	20.9
23rd	Ishinomaki City	21.3
23rd	Onagawa Town	21.3
25th	Marumori Town	25.9
26th	Tagajo City	26.4
27th	Ogawara Town	26.7
27th	Murata Town	26.7
27th	Kawasaki Town	26.7
30th	Tome City	27.5
31st	Iwanuma City	27.6
32nd	Kurihara City	28.3
33rd	Wakuya Town	31.2
33rd	Misato Town	31.2
35th	Yamamoto Town	41.2



and to feel that their existence is meaningful. Even though possible responses to the question "What are you most proud of?" include family and relatives, work, hobbies, friends, community service, talents, and one's hometown, 14.6% of respondents answered "nothing." It is noteworthy that the proportion of respondents who answered that they have nothing to be proud of is about twice as high for women, as for men (16.5% to 9.3%), indicating lower levels of self-affirmation among women. By municipality, Tagajo and Natori, both adjacent to Sendai, and Marumori in the southern part of the prefecture, had the highest rates of people responding that they had "nothing" to be proud of.

Furthermore, 5.9% of respondents answered that they had "nothing" that gave them a reason to live (out of the choices of family and relatives, work, hobbies, friends, community service, talents, or other). By gender, women were slightly more likely than men to report having nothing to live for (6.6% to 3.8%), suggesting that gender issues play a significant role.

By municipality, Higashi-Matsushima, Tagajo, and Natori (in that order) had the highest percentages of respondents who answered "nothing."

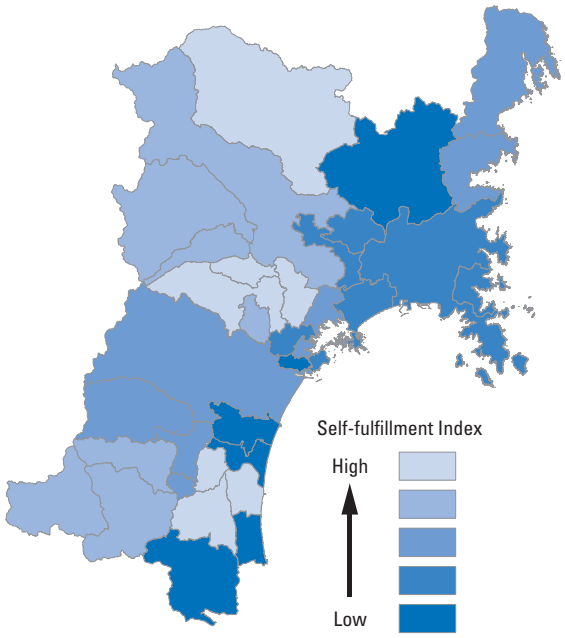
The percentage of respondents who answered "I am not satisfied with my life," "I do not think my life will be better in the future," "I have nothing to be proud of," and "I have nothing to live for" were averaged by municipality and then used to calculate an index, with lower values ranking higher (i.e., the lower the percentage of these responses, the closer the index is to the maximum value of 1, and the higher the percentage, the closer the index is to the minimum value of 0). In the prefecture as a whole, self-fulfillment tends to be lower in the coastal areas affected by the Great East Japan Earthquake. By region, in the southern part of the prefecture, self-affirmation was high in Kakuda, Watari, Shibata, and Shiroishi, and low in Marumori and Yamamoto. Self-affirmation was high in the Taiwa, Osato, and Ohira areas of Senpoku and Kurihara City, and low in Tagajo, Ishinomaki, Higashi-Matsushima, and Tome City in the north (see Figure 3-25).

3 Isolation and Social Connectivity

Isolation and the erosion of social connections is a nationwide problem. According to a recent Cabinet Office survey, single and elderly men in particular tend to be more isolated (Cabinet Office, "Survey on the Health of the Elderly," 2017). When asked "When do you feel lonely?," a total of 25.5% of the respondents in the Miyagi survey answered that they feel lonely when they are alone,

Figure 3-25: Self-fulfillment Index by municipality

Ranking	Municipalities	Index
1st	Kakuda City	0.058
2nd	Ohira Village	0.122
2nd	Taiwa Town	0.122
2nd	Osato Town	0.122
5th	Watari Town	0.228
6th	Kurihara City	0.253
7th	Shibata Town	0.275
8th	Shichikashuku Town	0.284
8th	Shiroishi City	0.284
8th	Zao Town	0.284
11th	Osaki City	0.308
12th	Shikama Town	0.323
12th	Kami Town	0.323
14th	Tomiya City	0.330
15th	Minami-Sanriku Town	0.395
16th	Shiogama City	0.400
17th	Matsushima Town	0.403
18th	Sendai City	0.411
19th	Ogawara Town	0.416
19th	Kawasaki Town	0.416
19th	Kesennuma City	0.416
19th	Murata Town	0.416
23rd	Shichigahama Town	0.459
24th	Rifu Town	0.464
25th	Misato Town	0.465
25th	Wakuya Town	0.465
27th	Higashi-Matsushima City	0.477
28th	Onagawa Town	0.527
28th	Ishinomaki City	0.527
30th	Iwanuma City	0.530
31st	Natori City	0.535
32nd	Tome City	0.545
33rd	Yamamoto Town	0.566
34th	Marumori Town	0.583
35th	Tagajo City	0.727



The mean values of the index, based on the percentage of respondents who answered "I am not satisfied with my life," "I do not think my life will be better in the future," "I have nothing to be proud of," and "I have nothing to live for," are ranked in ascending order. The higher the ranking, the higher the self-fulfillment of the residents of that municipality.

with their family, with friends, or at work, indicating that one in four people has feelings of isolation. There was no gender gap in these responses (25.7% for women, 24.7% for men). The municipalities with the most respondents reporting loneliness were Tome and Kurihara in the north, and Kakuda and Watari in the south.

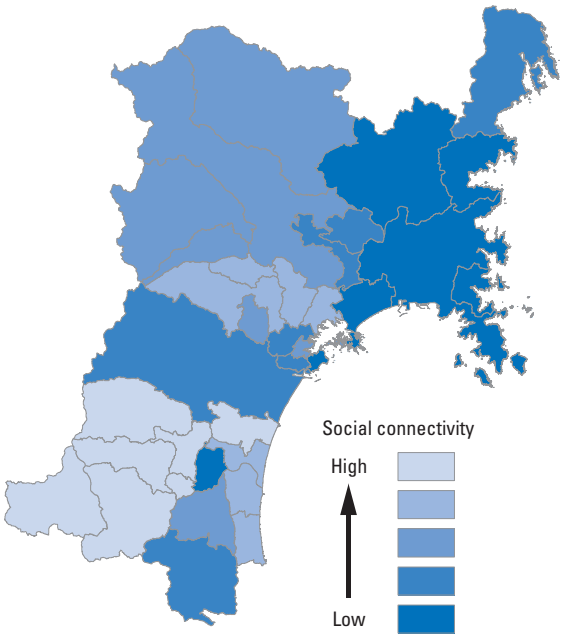
To the question "Do you have someone to talk to when you're having trouble?," only 1.2% of respondents replied "No one." By gender, the proportion of respondents who had no one to talk to was about twice as high for men (2.0%) as for women (0.9%). Men show a tendency not to talk to anyone about their troubles, or only with family if they do. Conversely, women have a wider range of people to talk to about their concerns than men do. The municipalities with the most respondents reporting that they had no one to talk to were Higashi-Matsushima and Minami-Sanriku on the coast, and Marumori in the south.

To the question "In what situations have you helped someone in need?," 10.6% of respondents said that they had never done so in any of the following situations: work and the workplace, money, illness, worries about life, everyday chores, nursing care, or other. By gender, men (12.3%) were more likely than women (10.0 %) to have never helped someone, while women were more likely to have provided advice in various situations. Shibata, Yamamoto, and Marumori in the southern part of the prefecture had the highest rates of respondents who answered they had never helped anyone.

The percentage of respondents who answered "I am lonely," "I have no one to talk to when I'm having trouble," and "I have never helped anyone" were averaged by municipality and used to calculate an index, with lower values ranking higher (i.e., the lower the percentage of these responses, the closer the index is to the maximum value of 1, and the higher the percentage, the closer the index is to the minimum value of 0). By region, Natori, Ogawara, Murata, and Kawasaki in the Sendai Metropolitan Zone, and Shiroishi and Zao in the south, had high self-evaluations regarding social connectivity, while Ishinomaki, Higashi-Matsushima, and Shichigahama on the coast, Tome City in the north, and Onagawa, Minami-Sanriku, and Kesennuma in the northern coastal area scored lower (see **Figure 3-26**).

Figure 3-26: Social Connectivity Index by municipality

Ranking	Municipalities	Index
1st	Natori City	0.184
2nd	Shichikashuku Town	0.226
2nd	Shiroishi City	0.226
2nd	Zao Town	0.226
5th	Ogawara Town	0.230
5th	Kawasaki Town	0.230
5th	Murata Town	0.230
8th	Watari Town	0.262
9th	Ohira Village	0.272
9th	Taiwa Town	0.272
9th	Osato Town	0.272
12th	Yamamoto Town	0.293
13th	Matsushima Town	0.310
14th	Iwanuma City	0.327
15th	Kurihara City	0.333
16th	Kakuda City	0.344
17th	Osaki City	0.349
18th	Shiogama City	0.354
19th	Tomiya City	0.362
20th	Shikama Town	0.378
20th	Kami Town	0.378
22nd	Misato Town	0.397
22nd	Wakuya Town	0.397
24th	Sendai City	0.406
25th	Rifu Town	0.448
26th	Tagajo City	0.482
27th	Kesennuma City	0.491
28th	Marumori Town	0.514
29th	Minami-Sanriku Town	0.517
30th	Tome City	0.523
31st	Higashi-Matsushima City	0.530
32nd	Onagawa Town	0.561
32nd	Ishinomaki City	0.561
34th	Shichigahama Town	0.585
35th	Shibata Town	0.710



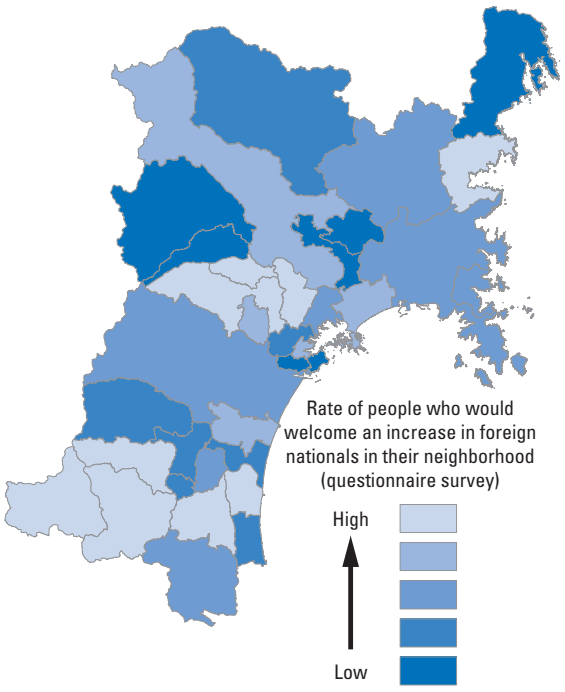
Municipalities with higher rankings and lower average values are considered to have relatively stronger self-assessments of social connectivity between residents. Conversely, residents of the low-ranking municipalities can be considered relatively isolated, or to be feeling particularly lonely. In order to create a society in which the lives, livelihoods, and dignity of all people are ensured, it is necessary to create a society in which people can build connections and partnerships with one another. As we can see, however, there are substantial challenges involved in doing this.

4 Proportion of People Who Would Welcome an Increase in Foreign Nationals

In the municipality-based survey, the percentage of respondents who answered "Yes, I definitely would" or "Yes, I probably would" to the question "Would you welcome an increase in foreigners in your neighborhood?" was 26.6%, with women tending to be slightly more welcoming (27.4% for women and 24.5% for men) (**Figure 3-27**, Indicator J11). The municipalities with the highest rates of these responses were Kakuda and Shiroishi in the south and Minami-Sanriku, whereas those with the lowest rates were Wakuya, Misato, Kami, Shikama, and Kesennuma in the north.

As shown previously, subjective evaluations of both "Self-fulfillment" and "Social connectivity" tend to be lower in the tsunami-affected areas, so it is hoped that more emphasis will be placed on people-centered recovery rather than physical rebuilding from now on.

Figure 3-27: Rate of people who would welcome an increase in foreign nationals in their neighborhood (Indicator J11)



Discrepancies between objective data and subjective evaluation (Self-fulfillment and Social connectivity) were also evident at the municipal level in Miyagi Prefecture, as shown in the municipality profiles in the Reference Materials. In the Sendai Metropolitan Zone, subjective evaluations tended to be fairly low, relative to the objective data (Tomiya, Sendai, Rifu, Tagajo, etc.). Meanwhile, there were also many examples where subjective evaluations were higher than the objective data (Osato and Ohira in Senpoku, as well as Wakuya, Shichikashuku, and Zao in the southern inland part of the prefecture).

When creating indicators for different regions of Japan, it is vital to conduct questionnaires, interviews, and community meetings to identify priority issues for each region, based on the subjective evaluations of residents. Taking the characteristics of the local area into account, we recommend that questions include whether residents have pride and confidence in themselves and the community in which they live, whether they feel fortunate to have been born in the community, and whether they have respect and consideration for others.

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