

# Overview

# To Settle In Young People In The Agricultural Diversification In Wakayama Prefecture

This is one Japanese policy proposal in Japan. In Wakayama prefecture of Japan, established an agricultural diversification school where young people can comprehensively learn all primary, secondary and tertiary industries. Youths outside the prefecture acquire know-how an agricultural diversification through training at the school. Ultimately, the young people also do a tertiary industry in Wakayama prefecture with strong support for existing farmers in Wakayama prefecture, acquire a high level of profits, increase the number of young people in Wakayama Prefecture, and increase agriculture as the prefecture's main industry It aims to make it excitement.

## Motivation for research

In Japan, **the declining birth rate** and **the aging of agriculture in the rural areas** have become a major social problem in recent years. Behind the problem It is possible to think of aggregation of industries in the urban areas and mechanisms that can not earn agriculture. It is now required to solve the two social problems in Japan. We propose a agricultural diversification school that solves these problems from data and data analysis this time.

## Present data analysis

### Depopulation in Wakayama

This graph shows the population change rate by prefecture in 2015. In Japan, centralization of population in urban areas and depopulation in rural areas are issues. Wakayama is one of the foremost prefectures in Japan in their rate of depopulation.

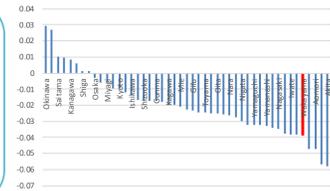


Figure1: Population change late

### Fresh fruits in Wakayama

Wakayama prefecture has the strength of the fruits industry, because it has a mild climate and the hillside along the river. Especially, Wakayama Prefecture has a high share of mandarin orange, plum, persimmon and peach production.

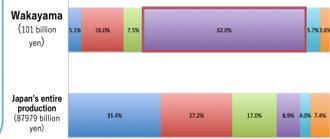


Figure2: Agricultural output value

### Aging of agriculture

This graph shows the composition ratio of population of farmers in Wakayama. More than 50% of farmers are aged 65 or over, so the farmer population is estimated to be decreasing to about 10,000!! Although the number of young people interested in agriculture is increasing, they are worried about income.

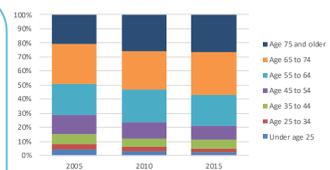


Figure3: Composition ratio of population of farmers in Wakayama

## SWOT

### Strengths

- Already has established systems for the cultivation of high quantities of citrus fruits
- In close proximity to airports and seaports (e.g. Kansai International Airport)
- Industry receives strong support from local government
- Has many parcels of spacious land available for agriculture processing

### Weaknesses

- The agricultural workforce on the decline, along with the number of companies operating in the industry
- Aging population of farmers
- Farmers receive a very low income

### Opportunities

- Fruits grown in the Prefecture are highly valued in overseas markets
- More consumers are placing value on the quality of the food they purchase, and the process of production
- The number of the young workers entering the industry as farmers is gradually increasing

- Branding fruits
- High quality and high price fruits
- Exporting fruits
- Promoting citrus fruits to young people

### Threats

- Declining population in Japan will lead decreasing numbers of consumers
- Depopulation in country side
- Strong negative images towards the agricultural industry

- Agricultural diversification
- Implement policies for targeting younger consumers
- Attract foreign workers
- Promotion to reduce the negative image of the industry

**Generate profitability in the agricultural industry by agricultural diversification & the production of high quality fruits**

**By utilizing the strengths and opportunities, business can take measures against threats and weaknesses**

## Analysis

Table1: Standardized Statistical Data Set for Education (SSDSE)

Region code	Prefecture	City	Population	Population(ma)	Data overview
R01100	Hokkaido	Sapporo	1952356	910614	•1741City
R01202	Hokkaido	Hakodate	265979	120376	•114Variables
R01203	Hokkaido	Ota	121924	54985	example: Population,
R01204	Hokkaido	Asahikawa	339605	156402	Number of employees
R01205	Hokkaido	Muroran	85564	43143	
R01206	Hokkaido	Kusiro	174742	82185	92557 174120
R01207	Hokkaido	Obihiro	169327	80994	88333 168800
R01208	Hokkaido	Kitami	121226	58020	63206 120936
R01209	Hokkaido	Yubari	9843	4092	4751 8755
R01210	Hokkaido	Iwamizawa	84499	39319	45180 84215
R01211	Hokkaido	Abashiri	39077	19819	19258 38807

Table2: P principal component scores for each prefecture and Attractiveness of each prefecture

Prefecture	Factor1	Factor2	Factor3	Factor4	Factor5	Factor6	Factor7	Factor8	Factor9	Factor10	Attractiveness
Aichi	19.3	-0.2	-10.7	40.9	0.9	3.7	-11.2	-48.3	-11.8	-20.5	23.2
Chiba	-1.2	-1.2	8.2	-0.4	8.3	19.0	-6.1	3.2	-4.7	0.7	15.7
Ibama	-2.3	-2.6	4.8	4.7	10.1	-8.4	8.1	-5.8	-0.5	-14.5	8.0
Okayama	0.1	-2.4	-0.6	0.8	15.5	13.4	-0.3	8.3	-5.1	5.0	14.4
Okinawa	-3.4	-1.2	-17.2	-12.6	0.5	-8.7	-8.2	0.9	-4.9	-15.1	41.2
Iwate	-9.0	-1.5	17.8	-2.7	18.4	-21.2	-3.2	16.4	53.2	4.2	15.8
Gifu	-4.7	-2.9	-3.3	11.5	-7.7	2.9	-13.1	-4.8	-4.4	13.0	13.0
Miyazaki	-5.4	-3.6	24.8	-4.5	-3.4	-14.4	-0.7	-1.3	-3.3	-19.4	18.8
Miyagi	-1.4	0.0	-1.8	-8.2	18.7	3.1	4.9	6.4	56.0	-14.7	23.5
Kyoto	4.7	-0.2	-8.7	5.1	3.6	-2.1	20.9	0.7	1.0	6.0	52.2
Kumamoto	-6.9	-2.0	1.7	-9.2	5.8	-2.8	3.3	7.6	-2.5	-17.0	18.7
Gumma	-3.6	-1.5	1.6	9.1	-3.6	-3.6	11.4	-7.4	-6.1	-4.4	11.8

Table3: principal component regression

Variable	Estimate	Standard error	T value	Pr>  t
Intercept	20.898	1.197	17.453	0.000
Population	0.515	0.198	2.600	0.013
Tertiary industry	0.347	0.167	2.081	0.045
Primary industry	-0.173	0.106	-1.632	0.111
Secondary industry	-0.112	0.130	-0.863	0.394
Undrained population	-0.053	0.101	-0.524	0.603
Public Facility	-0.157	0.091	-1.732	0.092
Finance	-0.246	0.088	-2.808	0.008
Disaster management	0.253	0.103	2.457	0.019
Disaster expenses	-0.075	0.090	-0.839	0.407
Resident area	-0.117	0.122	-0.963	0.342

According to results of regression, Factor1, Factor2, Factor6, Factor7, Factor8 is thought that these factors affect the attractiveness of the prefecture.

The figure on the right is a plot of the principal component scores for each prefecture in the principal component analysis. The horizontal axis represents the service industry, the vertical axis represents fiscal budget, and the red arrow is the selection vector, which is plotted in the direction to increase the appeal of the prefecture based on the result of principal component regression analysis. For Wakayama prefecture as a whole, we need a mechanism to focus on the service industry and create a mechanism to earn money.

Here we conducted a series of analyzes to find out what factors enhance the attractiveness of the prefecture. Principal component analysis (10 elements) was performed on the data set having 114 variables such as Japan's 1741 municipalities and population called SSDSE in Japan and subjected to dimensional compression. After that, the principal component score of each prefecture was obtained, combined with the attractiveness degree of each prefecture of prefecture's attractiveness ranking conducted in 2018. Regression analysis was carried out by analyzing whether the elements increase the attractiveness of prefectures, using 10 elements of dimensionally compressing SSDSE by principal component analysis and the target variable as the attractiveness of each prefecture.

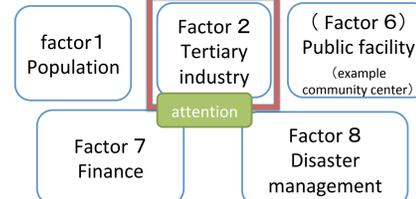


Figure4: Significant factor from analysis

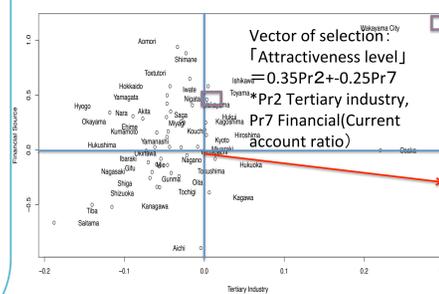


Figure5: Prefectures Principal component scoring plot

As for the keys to increase the charm of the prefecture, to focus on the tertiary industry (main component2), in order to increase the charm of Wakayama, I would say that it would be better to mix the agriculture which is the main strength of the prefecture with the tertiary industry.

## Proposal

### Agricultural diversification education school *increasing of the youth in wakayama.*

**And to liven up agriculture of the main industry in Wakayama**

- ① Provision of Agricultural diversification know-how**  
The ways to make money, make a proposition of Agricultural diversification. However, the knowledge to start agriculture is almost to the primary industry.  
➔ The system is practiced in Wakayama, and the sales route is acquired.  
The wisdom, the network, and the route become possible to continue independence after it graduates.
- ② Provision of residence for three years**  
The second concern for young people who want to start agriculture is to secure housing.  
➔ Providing a house for free!  
• Take advantage of a vacant house  
• a house rent fee  
Are coming from by the funds which is earned in Wakayama brand.
- ③ The grant of brand**  
The weakness of young people who want to start agriculture is that they have no brand.  
➔ Alumni were approved to use brand name.  
It is one of brand to graduate from this school.  
◦ If nothing else, It can guarantee trust.

**3 years later** By acquiring expertise of agricultural diversification, a network of connections, the net work of logistics, you can settle for a high level of income!!

## KPI

1. Number of farmers under the age of 49 in Wakayama
2. Changes in the number of participants in the training of Agricultural diversification school
3. Population of young people in Wakayama
4. Income and expenditure in Wakayama
5. Wakayama Export Statistics

## Conclusion

1. By our proposal, **young people can acquire know-how of agricultural diversification.**
2. **Young people can earn high standards of income** by using proposal and producing added value crops / products through agricultural diversification.
3. By increasing the settlers of young people who start agriculture, **we achieved the current state of agricultural population as shown on the left!!**
4. **Develop agriculture in Wakayama prefecture**, revitalize the whole prefecture and promote settlement of young people!!

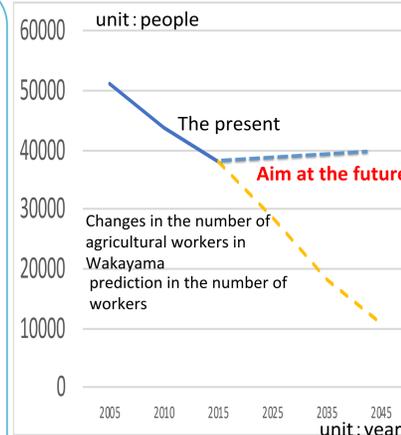


Figure6: Changes and prediction in the number of agricultural workers in Wakayama  
RESAS Industrial Structure Map Agriculture Analysis Prefecture

## Reference

- Regional Economy and Society Analyzing System <https://resas.go.jp/h/30/30201> .Data provided : Ministry of Agriculture, Forestry and Fisheries <http://www.maff.go.jp/>
- Data provided : Ministry of Health, Labour and Welfare <https://www.mhlw.go.jp/index.html> • e-stat (Portal Site of Official Statistics of Japan) <https://www.e-stat.go.jp/>
- Wakayama website: For those who want to start agriculture • Standardized Statistical Data Set for Education) <https://www.nstac.go.jp/SSDSE/>
- Regional brand Survey2018 Attractiveness Prefecture ranking

Acknowledgements I'd like to thank a organizer and Co-organizer for giving me the chance to speak here today.