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# The Determinants of Participation in Volunteer Activities in Japan

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## Abstract

This paper reveals the determinants of Japanese people's participation in volunteer activities.  Multiple linear regression analysis is conducted employing dependent variables concerning volunteer activities.  The data sets for volunteer activities come from the results of a nationwide survey that the Ministry of Internal Affairs and Communications conducted in 2011. The independent variables represent the numbers of elderly people and children, financial conditions of the prefectural and municipal governments, environments for forming social networks, and the numbers of semi-public/semi-private individuals and organizations concerned with community welfare.  The results of the analysis show that people tend to participate in volunteer activities aiding the elderly in rural areas or in areas governed by prefectural or municipal governments with poor financial conditions.  However, the analysis cannot disclose what promotes people's participation in volunteer activities involving children.

## I.  Introduction

The period since the 1990s can be regarded as the prolific years of community welfare activities.  The Gold Plan (*Kōreisha hoken fukushi suishin jukkanen senryaku*), which was established in December 1989, aimed to secure a sufficient number of qualified caregivers to work at the personal homes and short-term care facilities of the elderly.  The purposes of the plan were to enable elderly people to live in their communities by providing aid from qualified caregivers and short-term care facility services as well as to prevent their staying in welfare facilities for lengthy periods of time.

In 1994, the central government announced the Angel Plan (*Kongo no kosodate shien no tame no shisaku no kihonteki hōkō ni tsuite*), which included several methodologies of public aid for parents rearing young children and

welfare programs for children. One strategy of the plan was to construct networks for rearing children in communities by utilizing cooperation from volunteers. The plan presumed that not only the parents but also various community members should be involved in rearing young children.

Side-by-side and lively salons (*fureai ikiiki saron*) and childcare spaces (*kosodate hiroba*), which residents establish and manage in their communities, have increased in number, primarily since the 1990s. The elderly residents enjoy their hobbies, have lunch, and chat with each other at side-by-side and lively salons. Childcare spaces are places where infants play with other infants and volunteers. Childcare spaces also function as places where parents of infants converse with other parents, volunteers, and qualified childcare providers (*hoikushi*) and relax. Residents living in communities contribute to the establishment and management of these salons and spaces.

The Social Welfare Act (*Shakai fukushi hō*) was enacted in 2000. Article 4 of the Act states that residents in communities should endeavor to advance welfare for people requiring services. Article 107 stipulates that municipal governments should incorporate their residents' opinions into plans that are established for the furtherance of community welfare.

These circumstances, since the 1990s, appear to have caused community welfare and resident volunteer activities to evolve, especially those for the elderly, children, and parents. Although Japanese residents seem active in volunteer activities in and after the 1990s, there may exist an imbalance among various areas within Japan regarding the degree of their activity. While some parts of Japan may witness plentiful resident participation in volunteer activities, other areas lack a sufficient number of willing volunteers. What are the determinants of resident participation in volunteer activities? This study aims to reveal what factors promote the volunteer activities of residents.

## II. Methodology

This study employs data sets to reveal the determinants of residents' participation in volunteer activities that aid the elderly and children. The unit of the data sets is the prefecture. A prefectural government and a prefectural

council of social welfare (*shakai fukushi kyōgikai*) can influence municipal governments and municipal councils of social welfare that are located within the prefectural area, respectively. The policies of a prefectural government and a prefectural council of social welfare can bring about certain tendencies in volunteer programs conducted by municipal governments and municipal councils of social welfare. The data sets regarding the residents' volunteer activities that aid the elderly and children come from *The 2011 Survey on Time Use and Leisure Activities* (*Heisei 23 nen shakai seikatsu kihon chōsa hōkoku*), edited by the Ministry of Internal Affairs and Communications (MIC, *Sōmu shō*). The survey of volunteer activities that MIC conducted in 2011 was the most recent survey with published results. The respondents to this survey were individuals aged ten years or older.

This study conducts linear multiple regression analysis. The dependent variables are the percentages of individuals who had participated in volunteer activities that aid the elderly and children in the past year. The individuals are classified into several brackets: individuals aged ten years or older, individuals aged fifteen to twenty-four years, individuals aged sixty-five years or older, and students attending schools or universities. Hiromoto (2015) examines the results of several nationwide and local surveys on volunteer activities. He indicates that while elderly people tend to be more willing to participate in volunteer activities than are younger people, there exist variations among areas within Japan in young people and students' intentions to participate in volunteer activities. Although some areas enjoy sufficient young people or students who are willing to participate in volunteer activities, other areas do not. These findings signify that elderly people, young people, and students are noteworthy subjects for studies of volunteer activities in Japan. Therefore, this paper selects as the dependent variables the percentages of individuals aged sixty-five years or older, of individuals aged fifteen to twenty-four years, and of students attending schools or universities. The respondents to the 2011 survey conducted by MIC were individuals aged ten years or older. This paper employs the dependent variable of the percentage of individuals aged ten years or older in order to understand the determinants of all respondents' participation in volunteer activities. Table 1 displays the dependent variables.

The independent variables for the linear multiple regression analysis are principal components consisting of the numbers of elderly people and children, the financial conditions of the prefectural and municipal governments, the environments for shaping social networks, and the numbers of semi-public/semi-private individuals and organizations laboring for community welfare.　This study models itself upon Hiromoto (2014, 650–53) in selecting variables that are connected with volunteer activities.　He presumes that welfare activities in communities are affected by the numbers of people who require services, the prefectural and municipal governments' financial conditions, the conditions for forming solid social networks among residents in communities, the numbers of the commissioned welfare volunteers (*minsei iin*) and the municipal councils of social welfare, which are regarded as semi-public/semi-private individuals and organizations promoting community welfare.　Data for these variables should refer to circumstances in fiscal year (FY) 2011 because data for the dependent variables of volunteer activities were collected in 2011.　A few variables do not have data for FY 2011.　These variables employ data for FY 2010, instead.　Table 2 shows the details of the data for the variables.

This study supposes that the diverse variables showed in the previous paragraph may affect the volunteer activities of residents.　However, employment of many independent variables in one multiple regression analysis is not suitable because the analysis brings about a problem of multicollinearity.　Therefore, the variables that may influence residents' volunteer activities are integrated into fewer factors by principal component analysis.　The principal component scores are employed as the dependent variables for the linear multiple regression analysis.　The principal component analysis and the regression analysis are conducted with IBM SPSS Statistics Version 22.

The principal components are extracted if their eigenvalues are higher than 1.　The principal component analysis obtains five principal components with eigenvalues higher than 1.　Each principal component is entitled according to its principal component loadings.　Tables 3 and 4 show the eigenvalues and principal component loadings of each principal component, respectively.

The first principal component (PC1) holds a positive and high principal component loading of the percentage of elderly people.　While the loadings of the prefectural and municipal taxes are negative, the loadings of the prefectural and municipal governments' bonds and debt services are positive and high.　Although the loading of removal is negative, the loadings of owned houses and self-employed individuals are positive.　Moreover, the loadings of commissioned welfare volunteers and municipal councils of social welfare are positive and high.　These principal component analysis results enable PC1 to be designated as representing "many elderly people and ruralism."　It is discernible that the second principal component (PC2) possesses the negative principal component loadings of family members and owned houses and the positive loading of removal.　PC2 can be regarded as a component of "urbanism."　The absolute value of the principal component loading of the percentage of children is the highest among the loadings of the third principal component (PC3).　The loading of the percentage of children is negative.　Hence, PC3 is designated as "a few children."　The fourth principal component (PC4) holds the positive principal component loadings of family members and owned houses and the negative loading of removal.　The loadings of the prefectural taxes and municipal taxes are positive.　These results signify that PC4 represents the solid social networks and healthy financial conditions of prefectural and municipal governments.　Therefore, PC4 is regarded as a component of the "stable area."　While the fifth principal component's (PC5) principal component loading of municipal expenses for child welfare is positive, the loading of prefectural expenses for child welfare is negative.　The loading of the percentage of children is positive and relatively high.　These loadings signify that municipal governments vigorously deal with welfare for children.　PC5 denotes "municipal governments tackling child welfare."　The independent variables for the linear multiple regression analysis are concerned with "many elderly people and ruralism," "urbanism," "a few children," "stable area," and "municipal governments tackling child welfare."

## III.　Results of Linear Multiple Regression Analysis

Table 5 displays the results of the linear multiple regression analysis.

None of the analyses of individuals who had participated in volunteer activities aiding children obtains regression equations with significance probabilities lower than .05.　Three analyses of the volunteers aiding elderly people reach regression equations significant at the 5 percent level.　The regression equations significant at the 5 percent level are obtained in the analyses employing the dependent variables of individuals aged ten years or older, of individuals aged fifteen to twenty-four years, and of students attending schools or universities.　However, the analysis of individuals aged sixty-five years or older does not lead to a regression equation significant at the 5 percent level.

　The regression equations significant at the 5 percent level are investigated by examining the regression coefficients displayed in Table 6.　The analysis of the volunteers aiding elderly people reveals that the regression coefficient of the independent variable of "many elderly people and ruralism" is significant at the 5 percent level and that its sign is positive.　The dependent variable of "many elderly people and ruralism" is also significant and positive in the analysis of students attending schools or universities.　These results signify that many people tend to participate in volunteer activities aiding the elderly in prefectures where the percentage of elderly people is high and in rural prefectures.

　The analysis of individuals aged fifteen to twenty-four years obtains two regression coefficients significant at the 5 percent level.　The dependent variables of "many elderly people and ruralism" and "municipal expenses for child welfare" hold significant regression coefficients.　These regression coefficients' signs differ.　While the sign of the coefficient of "many elderly people and ruralism" is positive, the sign of the coefficient of "municipal expenses for child welfare" is negative.　In common with people aged ten years or older and students attending schools or universities, people aged fifteen to twenty-four years tend to be willing to participate in volunteer activities aiding the elderly if they live in rural areas or in areas where the population percentage of elderly people is high.

　The linear multiple regression analysis cannot reveal what determines elderly people's participation in volunteer activities that aid the elderly.　Moreover, the regression analyses cannot disclose the determinants of

participation in volunteer activities aiding children.　None of the four regression analyses of volunteer activities aiding children obtains a statistically significant regression equation.　These results signify that there are no independent variables that are adequately related to the dependent variables.

## IV.　Discussion

The regression analyses of volunteer activities aiding children cannot obtain statistically significant regression equations.　The results of the analyses signify that the independent variables are not sufficiently related to participation in volunteer activities aiding children.　Research on participation in such volunteer activities requires consideration of phenomena other than the numbers of elderly people and children, the prefectural and municipal governments' financial conditions, the environments for forming social networks, and the semi-public/semi-private individuals and organizations laboring for community welfare.

The regression analyses of volunteer activities aiding the elderly reveal that the number of elderly people and the degree of ruralism are determinants of participation in volunteer activities aiding the elderly.　There tend to exist sufficient volunteers for the elderly in areas where many elderly people live, where prefectural or municipal governments hold fragile financial conditions, where residents shape solid social networks in their communities, or where there are sufficient commissioned welfare volunteers and municipal councils of social welfare.　These results are obtained in the analyses of people aged ten years or older, of people aged fifteen to twenty-four years, and of students attending schools or universities.

As explained above, Hiromoto (2015) indicates that elderly people tend to be more willing to participate in volunteer activities than are younger people. This finding emphasizes the significance of research on elderly people's volunteer activities.　However, this paper cannot identify the determinants of elderly people's participation in volunteer activities aiding the elderly.

One plausible interpretation of this result is that elderly people's volunteer activities are not sufficiently related to any of the independent variables addressed in this study.　Another conceivable interpretation is that there is not considerable disparity among prefectures in elderly people's participa-

tion in volunteer activities.　Table 1 shows the means and the standard deviations of the dependent variables.　While the mean of the percentage of elderly individuals who had participated in volunteer activities aiding the elderly is higher than the means of the percentages of young respondents and students who had participated in volunteer activities aiding the elderly, the standard deviation of the percentage of elderly volunteers aiding the elderly is lower than the standard deviations of the percentages of young volunteers and student volunteers for the same.　The small standard deviation of the percentage of elderly people who had participated in volunteer activities aiding the elderly enables us to presume that there is no conspicuous disparity among the prefectures.

## V.　Conclusion

This study attempts to disclose the determinants of participation in volunteer activities aiding the elderly and children.　The regression analyses of volunteer activities aiding the elderly reveal that the number of elderly people and the degree of ruralism promote the volunteer activities of people aged ten years or older, of people aged fifteen to twenty-four years, and of students attending schools or universities.

　However, the regression analysis of elderly people's participation in volunteer activities aiding the elderly does not obtain a regression equation significant at the 5 percent level.　Moreover, the regression analyses of volunteer activities aiding children cannot clarify the determinants of people's participation.　The task remains to ascertain what induces elderly people's participation in volunteer activities aiding the elderly and people's general participation in volunteer activities aiding children.

### References

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Table 1.   Dependent Variables for Linear Multiple Regression Analysis

| Dependent Variable | Source | Mean | Standard Deviation |
|---|---|---|---|
| Percentage of individuals who have participated in a volunteer activity aiding the elderly for the past year in the population aged ten years or older | Sōmu shō. ed. *Heisei 23 nen shakai seikatsu kihon chōsa hōkoku.* (October 20, 2011) | 4.1 | 0.83 |
| Percentage of individuals who have participated in a volunteer activity aiding the elderly for the past year in the population aged fifteen to twenty-four years | | 3.7 | 1.63 |
| Percentage of individuals who have participated in a volunteer activity aiding the elderly for the past year in the population aged sixty-five years or older | | 6.4 | 1.58 |
| Percentage of individuals who have participated in a volunteer activity aiding the elderly for the past year in the population attending schools or universities | | 4.4 | 2.43 |
| Percentage of individuals who have participated in a volunteer activity aiding children for the past year in the population aged ten years or older | | 8.5 | 1.17 |
| Percentage of individuals who have participated in a volunteer activity aiding children for the past year in the population aged fifteen to twenty-four years | | 6.4 | 1.86 |
| Percentage of individuals who have participated in a volunteer activity aiding children for the past year in the population aged sixty-five years or older | | 3.6 | 0.96 |
| Percentage of individuals who have participated in a volunteer activity aiding children for the past year in the population attending schools or universities | | 8.2 | 2.85 |

Table 2.　Variables for Principal Component Analysis

| Variable | | Source | Mean | Standard Deviation |
|---|---|---|---|---|
| The elderly and children | Percentage of elderly people in the population | Population aged sixty-five years and older: Sōmu shō. ed. *Jinkō suikei: Heisei 23 nen 10 gatsu 1 nichi genzai.* (October 1, 2011) | 24.8 | 2.6 |
| | | Population: Sōmu shō. ed. *Jinkō suikei: Heisei 23 nen 10 gatsu 1 nichi genzai.* (October 1, 2011) | | |
| | Percentage of children in the population | Population aged nineteen years and younger: Sōmu shō. ed. *Jinkō suikei: Heisei 23 nen 10 gatsu 1 nichi genzai.* (October 1, 2011) | 18.1 | 1.2 |
| | | Population: Sōmu shō. ed. *Jinkō suikei: Heisei 23 nen 10 gatsu 1 nichi genzai.* (October 1, 2011) | | |
| | Average number of elderly people in a municipality | Population aged sixty-five years and older: Sōmu shō. ed. *Jinkō suikei: Heisei 23 nen 10 gatsu 1 nichi genzai.* (October 1, 2011) | 17,207 | 10,603 |
| | | The number of municipalities: Seifu tōkei no sōgō madoguchi. [https://www.e-stat.go.jp/SG1/hyoujun/initialize.do] (October 1, 2011) | | |
| | Average number of children in a municipality | Population aged nineteen years and younger: Sōmu shō. ed. *Jinkō suikei: Heisei 23 nen 10 gatsu 1 nichi genzai.* (October 1, 2011) | 13,009 | 8,892 |
| | | The number of municipalities: Seifu tōkei no sōgō madoguchi. [https://www.e-stat.go.jp/SG1/hyoujun/initialize.do] (October 1, 2011) | | |

| Variable | | Source | Mean | Standard Deviation |
|---|---|---|---|---|
| The elderly and children | Density of elderly population (per square kilometer) | Population aged sixty-five years and older: Sōmu shō. ed. *Jinkō suikei: Heisei 23 nen 10 gatsu 1 nichi genzai.* (October 1, 2011) | 151.3 | 249.3 |
| | | Area: Kokudokōtsū shō. *Heisei 23 nen zenkoku todōfuken shikuchōson betsu menseki shirabe.* (October 1, 2011) | | |
| | Density of children in the population (per square kilometer) | Population aged nineteen years and younger: Sōmu shō. ed. *Jinkō suikei: Heisei 23 nen 10 gatsu 1 nichi genzai.* (October 1, 2011) | 118.8 | 196.5 |
| | | Area: Kokudokōtsū shō. *Heisei 23 nen zenkoku todōfuken shikuchōson betsu menseki shirabe.* (October 1, 2011) | | |
| Financial conditions of prefectural and municipal governments | Prefectural taxes per capita (yen) | Prefectural taxes: Sōmu shō. *Heisei 23 nendo chihō zaisei tōkei nempō.* [http://www.soumu.go.jp/iken/zaisei/toukei23.html] (FY 2011) | 101,409 | 33,365 |
| | | Population: Sōmu shō. ed. *Jinkō suikei: Heisei 23 nen 10 gatsu 1 nichi genzai.* (October 1, 2011) | | |
| | Prefectural general revenue resources (prefectural taxes, prefectural transfer tax, and prefectural allocation tax) per capita (yen) | Prefectural taxes, prefectural transfer tax, and prefectural allocation tax: Sōmu shō. *Heisei 23 nendo chihō zaisei tōkei nempō.* [http://www.soumu.go.jp/iken/zaisei/toukei23.html] (FY 2011) | 238,808 | 60,986 |
| | | Population: Sōmu shō. ed. *Jinkō suikei: Heisei 23 nen 10 gatsu 1 nichi genzai.* (October 1, 2011) | | |

| Variable | | Source | Mean | Standard Deviation |
|---|---|---|---|---|
| Financial conditions of prefectural and municipal governments | Prefectural bonds per capita (yen) | Prefectural bonds:<br>Sōmu shō. *Heisei 23 nendo chihō zaisei tōkei nempō.* [http://www.soumu.go.jp/iken/zaisei/toukei23.html] (FY 2011) | 65,991 | 17,873 |
| | | Population:<br>Sōmu shō. ed. *Jinkō suikei: Heisei 23 nen 10 gatsu 1 nichi genzai.* (October 1, 2011) | | |
| | Prefectural elderly welfare expenses (classified by purpose) per capita (yen) | Prefectural elderly welfare expenses classified by purpose:<br>Sōmu shō. *Heisei 23 nendo chihō zaisei tōkei nempō.* [http://www.soumu.go.jp/iken/zaisei/toukei23.html] (FY 2011) | 25,883 | 5,003 |
| | | Population:<br>Sōmu shō. ed. *Jinkō suikei: Heisei 23 nen 10 gatsu 1 nichi genzai.* (October 1, 2011) | | |
| | Prefectural child welfare expenses (classified by purpose) per capita (yen) | Prefectural child welfare expenses classified by purpose:<br>Sōmu shō. *Heisei 23 nendo chihō zaisei tōkei nempō.* [http://www.soumu.go.jp/iken/zaisei/toukei23.html] (FY 2011) | 12,645 | 3,530 |
| | | Population:<br>Sōmu shō. ed. *Jinkō suikei: Heisei 23 nen 10 gatsu 1 nichi genzai.* (October 1, 2011) | | |
| | Prefectural debt service (classified by purpose) per capita (yen) | Prefectural debt service classified by purpose:<br>Sōmu shō. *Heisei 23 nendo chihō zaisei tōkei nempō.* [http://www.soumu.go.jp/iken/zaisei/toukei23.html] (FY 2011) | 68,775 | 26,547 |
| | | Population:<br>Sōmu shō. ed. *Jinkō suikei: Heisei 23 nen 10 gatsu 1 nichi genzai.* (October 1, 2011) | | |

| Variable | | Source | Mean | Standard Deviation |
|---|---|---|---|---|
| Financial conditions of prefectural and municipal governments | Municipal taxes per capita (yen) | Municipal taxes: Sōmu shō. *Heisei 23 nendo chihō zaisei tōkei nempō.* [http://www.soumu.go.jp/iken/zaisei/toukei23.html] (FY 2011) | 134,985 | 20,523 |
| | | Population: Sōmu shō. ed. *Jinkō suikei: Heisei 23 nen 10 gatsu 1 nichi genzai.* (October 1, 2011) | | |
| | Municipal general revenue resources (municipal taxes, municipal transfer tax, and municipal allocation tax) per capita (yen) | Municipal taxes, municipal transfer tax, and municipal allocation tax: Sōmu shō. *Heisei 23 nendo chihō zaisei tōkei nempō.* [http://www.soumu.go.jp/iken/zaisei/toukei23.html] (FY 2011) | 247,008 | 39,380 |
| | | Population: Sōmu shō. ed. *Jinkō suikei: Heisei 23 nen 10 gatsu 1 nichi genzai.* (October 1, 2011) | | |
| | Municipal bonds per capita (yen) | Municipal bonds: Sōmu shō. *Heisei 23 nendo chihō zaisei tōkei nempō.* [http://www.soumu.go.jp/iken/zaisei/toukei23.html] (FY 2011) | 43,122 | 10,589 |
| | | Population: Sōmu shō. ed. *Jinkō suikei: Heisei 23 nen 10 gatsu 1 nichi genzai.* (October 1, 2011) | | |
| | Municipal elderly welfare expenses (classified by purpose) per capita (yen) | Municipal elderly welfare expenses classified by purpose: Sōmu shō. *Heisei 23 nendo chihō zaisei tōkei nempō.* [http://www.soumu.go.jp/iken/zaisei/toukei23.html] (FY 2011) | 29,454 | 5,725 |
| | | Population: Sōmu shō. ed. *Jinkō suikei: Heisei 23 nen 10 gatsu 1 nichi genzai.* (October 1, 2011) | | |

| Variable | | Source | Mean | Standard Deviation |
|---|---|---|---|---|
| Financial conditions of prefectural and municipal governments | Municipal child welfare expenses (classified by purpose) per capita (yen) | Municipal child welfare expenses classified by purpose: Sōmu shō. *Heisei 23 nendo chihō zaisei tōkei nempō.* [http://www.soumu.go.jp/iken/zaisei/toukei23.html] (FY 2011) | 52,800 | 5,890 |
| | | Population: Sōmu shō. ed. *Jinkō suikei: Heisei 23 nen 10 gatsu 1 nichi genzai.* (October 1, 2011) | | |
| | Municipal debt service (classified by purpose) per capita (yen) | Municipal debt service classified by purpose: Sōmu shō. *Heisei 23 nendo chihō zaisei tōkei nempō.* [http://www.soumu.go.jp/iken/zaisei/toukei23.html] (FY 2011) | 56,399 | 15,472 |
| | | Population: Sōmu shō. ed. *Jinkō suikei: Heisei 23 nen 10 gatsu 1 nichi genzai.* (October 1, 2011) | | |
| | Outstanding prefectural bonds per capita (yen) | Outstanding prefectural bonds: Asahi shimbun shuppan. ed. *Minryoku: 2014.* (March 31, 2012) | 822,186 | 240,088 |
| | | Population: Sōmu shō. ed. *Jinkō suikei: Heisei 23 nen 10 gatsu 1 nichi genzai.* (October 1, 2011) | | |
| | Outstanding municipal bonds per capita (yen) | Outstanding municipal bonds: Asahi shimbun shuppan. ed. *Minryoku: 2014.* (March 31, 2012) | 477,520 | 121,198 |
| | | Population: Sōmu shō. ed. *Jinkō suikei: Heisei 23 nen 10 gatsu 1 nichi genzai.* (October 1, 2011) | | |

| Variable | | Source | Mean | Standard Deviation |
|---|---|---|---|---|
| Social network | Average number of family members | Population: Kokudo chiri kyōkai. *Jūmin kihon daichō jinkō yōran: Heisei 24 nen ban.* (March 31, 2012) | 2.5 | 0.2 |
| | | The number of households: Kokudo chiri kyōkai. *Jūmin kihon daichō jinkō yōran: Heisei 24 nen ban.* (March 31, 2012) | | |
| | Percentage of individuals who moved in and moved out in the population | The number of individuals who moved in within the prefecture, who moved out within the prefecture, who moved in from other prefectures or other countries, and who moved out to other prefectures or other countries: Sōmu shō. ed. *Jūmin kihon daichō jinkō idō hōkoku nempō: Heisei 23 nen.* (April to December, 2011) Sōmu shō. ed. *Jūmin kihon daichō jinkō idō hōkoku nempō: Heisei 24 nen.* (January to March, 2012) | 6.8 | 1.7 |
| | | Population: Kokudo chiri kyōkai. *Jūmin kihon daichō jinkō yōran: Heisei 24 nen ban.* (March 31, 2012) | | |
| | Percentage of households owning their houses in all the households | The number of households living in their own houses: Sōmu shō. ed. *Heisei 22 nen kokusei chōsa hōkoku.* (October 1, 2010) | 66.1 | 6.8 |
| | | The number of all the households: Sōmu shō. ed. *Heisei 22 nen kokusei chōsa hōkoku.* (October 1, 2010) | | |

| Variable | | Source | Mean | Standard Deviation |
|---|---|---|---|---|
| Social network | Percentage of self-employed individuals, family workers, and pieceworkers at home in the population | The number of self-employed individuals, family workers, and pieceworkers at home: Sōmu shō. ed. *Heisei 22 nen kokusei chōsa hōkoku*. (October 1, 2010) | 7.2 | 1.5 |
| | | Population: Sōmu shō. ed. *Heisei 22 nen kokusei chōsa hōkoku*. (October 1, 2010) | | |
| | Percentage of housewives and house-husbands in the population | The number of housewives and househusbands: Sōmu shō. ed. *Heisei 22 nen kokusei chōsa hōkoku*. (October 1, 2010) | 13.9 | 1.1 |
| | | Population: Sōmu shō. ed. *Heisei 22 nen kokusei chōsa hōkoku*. (October 1, 2010) | | |
| | Percentage of children attending kindergartens in the population | The number of children attending kindergartens: Mombukagaku shō. *Heisei 23 nendo gakkō kihon chōsa hōkokusho*. (May 1, 2011) | 1.1 | 0.3 |
| | | Population: Sōmu shō. ed. *Jinkō suikei: Heisei 23 nen 10 gatsu 1 nichi genzai*. (October 1, 2011) | | |
| Community welfare | Commissioned welfare volunteers per 10,000 residents | The number of commissioned welfare volunteers: Kōseirōdō shō. ed. *Heisei 23 nendo fukushi gyōsei hōkoku rei*. (March 31, 2012) | 22.0 | 5.1 |
| | | Population: Sōmu shō. ed. *Jinkō suikei: Heisei 23 nen 10 gatsu 1 nichi genzai*. (October 1, 2011) | | |

| Variable | | Source | Mean | Standard Deviation |
|---|---|---|---|---|
| Community welfare | Municipal councils of social welfare (excluding prefectural councils of social welfare and social welfare councils of government ordinance designated cities) per one million residents | The number of all the councils of social welfare: Kōseirōdō shō. ed. *Heisei 23 nendo fukushi gyōsei hōkoku rei.* (March 31, 2012) | 19.5 | 9.1 |
| | | The number of ordinance designated cities: Seifu tōkei no sōgō madoguchi. [https://www.e-stat.go.jp/SG1/hyoujun/initialize.do] (October 1, 2011) | | |
| | | Population: Sōmu shō. ed. *Jinkō suikei: Heisei 23 nen 10 gatsu 1 nichi genzai.* (October 1, 2011) | | |

Table 3.　Eigenvalues of Principal Components

| Component | Initial Eigenvalue | | | Extraction Sum of Squared Loadings | | |
|---|---|---|---|---|---|---|
| | Total | % of Variance | Cumulative % | Total | % of Vaiance | Cumulative % |
| 1 | 14.430 | 51.536 | 51.536 | 14.430 | 51.536 | 51.536 |
| 2 | 3.206 | 11.449 | 62.986 | 3.206 | 11.449 | 62.986 |
| 3 | 2.991 | 10.684 | 73.669 | 2.991 | 10.684 | 73.669 |
| 4 | 1.910 | 6.822 | 80.491 | 1.910 | 6.822 | 80.491 |
| 5 | 1.713 | 6.119 | 86.610 | 1.713 | 6.119 | 86.610 |
| 6 | .697 | 2.490 | 89.101 | | | |
| 7 | .494 | 1.766 | 90.866 | | | |
| 8 | .451 | 1.609 | 92.476 | | | |
| 9 | .442 | 1.580 | 94.056 | | | |
| 10 | .349 | 1.245 | 95.301 | | | |
| 11 | .227 | .812 | 96.113 | | | |
| 12 | .184 | .658 | 96.772 | | | |
| 13 | .152 | .542 | 97.314 | | | |
| 14 | .146 | .523 | 97.836 | | | |
| 15 | .113 | .404 | 98.241 | | | |
| 16 | .094 | .334 | 98.575 | | | |
| 17 | .082 | .293 | 98.868 | | | |
| 18 | .061 | .218 | 99.085 | | | |
| 19 | .056 | .201 | 99.287 | | | |
| 20 | .050 | .178 | 99.465 | | | |
| 21 | .047 | .167 | 99.632 | | | |
| 22 | .033 | .119 | 99.751 | | | |
| 23 | .027 | .098 | 99.849 | | | |
| 24 | .018 | .064 | 99.913 | | | |
| 25 | .013 | .047 | 99.960 | | | |
| 26 | .010 | .035 | 99.996 | | | |
| 27 | .001 | .004 | 99.999 | | | |
| 28 | .000 | .001 | 100.000 | | | |

Table 4.　Principal Component Loadings

| Variable | Component | | | | |
|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 |
| Percentage of elderly people | .838 | −.051 | .400 | .144 | −.220 |
| Percentage of children | −.105 | −.183 | −.719 | −.323 | .454 |
| Elderly people per municipality | −.770 | .215 | .460 | .208 | .210 |
| Children per municipality | −.825 | .187 | .351 | .159 | .260 |
| Density of elderly population | −.719 | .547 | .225 | .215 | −.067 |
| Density of children in the population | −.745 | .525 | .197 | .184 | −.026 |
| Prefectural taxes | −.515 | .550 | .023 | .433 | −.312 |
| Prefectural general revenue resources | .708 | .493 | −.109 | .094 | −.285 |
| Prefectural bonds | .852 | .070 | .023 | .288 | .118 |
| Prefectural elderly welfare expenses | .892 | .255 | .181 | −.050 | −.106 |
| Prefectural child welfare expenses | .503 | .524 | −.545 | −.081 | −.041 |
| Prefectural debt service | .862 | .227 | .015 | .238 | .125 |
| Municipal taxes | −.621 | −.325 | .218 | .367 | .409 |
| Municipal general revenue resources | .916 | .005 | .148 | −.167 | .037 |
| Municipal bonds | .740 | .015 | .357 | −.079 | .404 |
| Municipal elderly welfare expenses | .840 | .198 | .306 | −.041 | −.114 |
| Municipal child welfare expenses | .200 | .652 | −.353 | .144 | .470 |
| Municipal debt service | .806 | .181 | .325 | −.222 | .289 |
| Outstanding prefectural bonds | .886 | .122 | .185 | .196 | .081 |
| Outstanding municipal bonds | .644 | .132 | .426 | −.297 | .493 |
| Family members | .327 | −.429 | −.469 | .515 | .172 |
| Removals | −.658 | .433 | .006 | −.492 | −.052 |
| Owned houses | .621 | −.533 | −.031 | .495 | −.081 |
| Self-employed individuals | .837 | .034 | −.190 | .058 | −.211 |
| Housewives/househusbands | −.004 | −.443 | .682 | −.238 | −.234 |
| Kindergartners | −.804 | −.257 | .011 | −.236 | −.171 |
| Commissioned welfare volunteers | .942 | −.096 | .118 | −.001 | −.043 |
| Municipal councils of social welfare | .748 | .095 | −.272 | −.235 | −.230 |

Table 5.　Linear Multiple Regression Models

| Dependent Variable | Adjusted R Square | Significance Probability for ANOVA |
|---|---|---|
| Individuals aged ten years or older aiding the elderly | .147 | .040 |
| Individuals aged fifteen to twenty-four years aiding the elderly | .216 | .009 |
| Individuals aged sixty-five years or older aiding the elderly | −.026 | .579 |
| Students aiding the elderly | .161 | .030 |
| Individuals aged ten years or older aiding children | .050 | .217 |
| Individuals aged fifteen to twenty-four years aiding children | −.057 | .771 |
| Individuals aged sixty-five years or older aiding children | .018 | .341 |
| Students aiding children | −.008 | .472 |

Table 6.   Coefficients of Linear Regression Equations Significant at the 5 Percent Level

| Dependent Variable | Independent Variable | Unstandardized Coefficient | | Standardized Coefficient | t-value | Significance Probability |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | |
| Individuals aged ten years or older aiding the elderly | (Constant) | 4.051 | .113 | | 35.716 | .000 |
| | PC1 | .410 | .115 | .487 | 3.579 | .001 |
| | PC2 | .033 | .115 | .039 | .289 | .774 |
| | PC3 | .012 | .115 | .014 | .103 | .919 |
| | PC4 | .001 | .115 | .001 | .004 | .997 |
| | PC5 | −.009 | .115 | −.011 | −.082 | .935 |
| Individuals aged fifteen to twenty-four years aiding the elderly | (Constant) | 3.655 | .213 | | 17.170 | .000 |
| | PC1 | .571 | .215 | .346 | 2.653 | .011 |
| | PC2 | −.076 | .215 | −.046 | −.352 | .727 |
| | PC3 | −.161 | .215 | −.098 | −.749 | .458 |
| | PC4 | −.346 | .215 | −.210 | −1.607 | .116 |
| | PC5 | −.586 | .215 | −.355 | −2.721 | .010 |
| Students aiding the elderly | (Constant) | 4.402 | .329 | | 13.396 | .000 |
| | PC1 | .925 | .332 | .376 | 2.785 | .008 |
| | PC2 | −.125 | .332 | −.051 | −.377 | .708 |
| | PC3 | .086 | .332 | .035 | .257 | .798 |
| | PC4 | −.510 | .332 | −.207 | −1.536 | .132 |
| | PC5 | −.623 | .332 | −.253 | −1.875 | .068 |