



Comparison of Social Trust's effect on suicide ideation between urban and non-urban areas: The Case of Japanese Adults in 2006



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ABSTRACT

An increasing number of studies have addressed the determinants of suicide. Social capital is a key factor in preventing suicide. However, little is known about the experience of suicide ideation using subjective values. From the viewpoint of suicide prevention, it is worth examining how people think of suicide. This paper attempts to examine the effect of social capital on suicide ideation. Furthermore, the paper compares the effect of social capital between urban and non-urban areas. In this paper, urban areas are equivalent to mega-cities with populations over one million. Non-urban areas are cities with populations of less than one million, towns and villages. Individual-level data from the Japanese General Social Surveys (JGSSs) are used. The survey, which was conducted in 2006, provides information about the subjective value of suicide ideation. The survey was answered by 1413 subjects with a mean age of 54.5. Of the subjects, 49% were male. Social trust is used to measure the degree of social capital, and the outcome of interest is suicide ideation within the past 5 years. After controlling for various factors, the major findings are that both individual-level social trust and social trust accumulated in one's residential administrative district reduce the probability that one will consider suicide. After dividing the sample into urban and non-urban residents, particularized trust plays a role in deterring suicide ideation in urban areas, while generalized trust plays a role in deterring suicide ideation in non-urban areas. The effect of each type of trust depends on its scarcity in residential areas.

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1. Introduction

The seminal work of Durkheim (1951) was the first to analyze suicide in the 19th century from the viewpoint of social science. According to Durkheim (1951), suicide is a predictable consequence of the degree to which one is integrated into society. Hence, the relation between individuals and society should be analyzed when we explore how and why individuals commit suicide. The factors that influence suicide can be divided roughly into non-material human relations, regarded as social factors, and material wealth, regarded as an economic factor. In terms of social factors, to analyze suicide, previous works consider the extent to which suicide is accounted for by social capital (e.g., Putnam, 2000; Yamamura, 2010; Smith and Kawachi, 2014), the sex ratio (Kuroki, 2014), the fertility rate (Okada and Samreth, 2013), divorce, and marriage (e.g., Kunce and Anderson, 2002; Neumayer, 2003; Andrés et al., 2011). In contrast, many works consider economic factors, such as public

spending (Minoiu and Andrés, 2008), inequality (Andrés, 2005), and unemployment (e.g., Platt, 1984; Yang et al., 1992; Yang and Lester, 1995; Breuer, 2015).

Japan experienced a remarkable increase in the suicide rate in the mid-1990s. According to the OECD (2013), even though the rates have remained stable since then, the age-standardized rate per 100,000 population of Japan in 2011 was 20.7, remarkably higher than that of the United States in 2011 (12.5). During the mid-1990s, coinciding with the Asian financial crisis, economic stagnation had a detrimental influence on the society of Japan. Hence, it is crucial to implement measures to prevent suicide. Economic researchers have provided evidence that the increase in the suicide rate was caused partly by the economic conditions (e.g., Koo and Cox, 2008; Chen et al., 2009; Inagaki, 2010; Kuroki, 2010; Sugano and Matsuki, 2014; Suzuki et al., 2013, 2014). However, consistent with Durkheim's view, social factors are also significantly related to the suicide rate in Japan (e.g., Yamamura, 2010; Andrés et al., 2011; Sugano and Matsuki, 2014). Okamoto et al. (2013) attempted to clarify the association between area-based social capital and suicide rates in 20 administrative municipalities of Tokyo. They found

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a significant negative association between social trust and the suicide rate for males, implying that area-based social trust may be associated with decreased suicide rates for males.

Even though existing works analyzing suicide have referred to suicide rates, there seems to be a large gap between the act of suicide and suicide ideation. The number of completed suicides was larger for males than for females, while the number of attempted suicides is larger for females than for males (e.g., Andrews and Lewinsohn, 1992; Garrison et al., 1993; Moscicki et al., 1988; Moscicki, 2001). Furthermore, diagnoses of depressive disorders are also more frequently found for females than for males even though females account for a much smaller proportion of completed suicides (e.g., Rich et al., 1986, 1988; Henriksson et al., 1995). This can lead to an inference that females' mental state is more inclined toward sensitivity and fluctuation. It should be noted that information bias may exist when suicide ideation is used as the outcome variable instead of completed suicide. Derived from the inference above, for instance, females are thought to exhibit greater suicide ideation than males, even though they do not actually intend to commit suicide. Therefore, the difference in the estimation results between males and females is considered to reflect the information bias. An incident of suicide is regarded as an extreme case. Therefore, existing works have dealt only with the committing of suicide and do not take into account the intermediate condition between committing suicide and a sound mental condition. To prevent suicide, it is worth investigating how and why individuals consider suicide, even if they do not actually commit suicide. To analyze the intermediate situation, the current paper uses survey data from Japan that provide information on individual-level perceptions of suicide. Furthermore, residential area-level data, such as the degree of social capital, the Gini coefficient of income, and the Gini coefficient of education level in a residential area, are matched with the individual-level data. Then, the association between social and economic factors in a residential area and individuals' suicide ideation is investigated.

The current paper is organized as follows: Section 2 presents a concise explanation of the data and specifies the regression functions. In Section 3, I discuss the results of the estimations. The final section offers concluding observations.

2. Data and estimation framework

2.1. Data

In the current paper, Japanese General Social Survey (JGSS) data are used. These are individual-level data. Data for this secondary analysis, "Japanese General Social Surveys (JGSS), Ichiro Tanioka," were provided by the Social Science Japan Data Archive, Information Center for Social Science Research on Japan, Institute of Social Science, The University of Tokyo. The JGSS used a two-stage stratified sampling method and was conducted from 2000 to 2012. For the JGSS, random sampling of adults has been used throughout Japan, suggesting that the data used in this paper can be considered representative of the general Japanese population. The paper uses only the data collected in 2006 because this was the only survey to include a question about suicide ideation. Table 1, which shows the number of observations, indicates that there are 2105 respondents and that, among them, 1413 respondents answered the questions used in the estimation of the model exhibited in column 2 of Table 5. As 67.1% of the respondents answered the questions, the selection bias is not serious. Fig. 1 shows the real composition of the Japanese adult population, whereas Fig. 2 illustrates the composition of the population in the JGSS data used in this analysis. Compared with the real composition, a low percentage of the population is 20–29 years old. Among those over 70 years old, the

Table 1
Data structure.

Total observations = 2105			
Observations used for estimations.			
Model 1 = 1262		(903)	
Model 2 = 1413		(1013)	
Urban		Non-urban	
Model 1 = 267	(161)	Model 1 = 995	(742)
Model 2 = 330	(199)	Model 2 = 1083	(814)

Notes: Numbers in parentheses are the numbers of observations if migrants are excluded.

percentage of females is higher than that of males in the real composition, while there is no distinct difference between the percentages of males and females in the JGSS data. However, as a whole, the JGSS data represent the general Japanese population.

The JGSS questionnaire includes standard questions concerning an individual's characteristics via face-to-face interviews. The data cover information related to marital status and demographic (age and sex), annual household income, years of schooling, age, prefecture of current residence, prefecture of residence at 15 years of age, and the size of the residential area. A Japanese prefecture is the equivalent to a state in the United States or a province in Canada. There are 47 prefectures in Japan. Furthermore, a prefecture consists of cities, towns, and villages. In other words, various local governments, such as those of cities, towns, and villages, exist in each prefecture. In the data, residential areas can be divided into: (1) mega cities with a population over one million, (2) cities with a population between one million and 0.2 million, (3) cities with a population below 0.2 million, and (4) towns and villages.¹ To compare the role of trust in suicide ideation between urban and non-urban areas, all parts of Japan are divided into urban and non-urban areas. In the current paper, an urban area is equivalent to a mega-city with a population of over one million. The remaining urban areas include medium-sized cities and so are defined as non-urban areas rather than as rural areas. Table 1 presents the data structure showing the number of observations used for the estimations.

Key variables included in the JGSS 2006 are experience of suicide ideation and social capital-related variables. With regards to perceptions of suicide, one of the survey questions asked, "In the past 5 years, have you thought of committing suicide at least once?" Respondents could choose one of three responses: 1 (Never), 2 (Not in the past 5 years but have before that), or 3 (Yes). The responses allow me to quantify the experience of suicide ideation even if suicide has not been committed. The percentage of suicides in Japan was 0.02% (OECD, 2013). Roughly, this means that the number of potential suicides was 300 times larger than the number of those who actually committed suicide in Japan.

As a proxy for social capital, one of the survey questions asked, "Generally speaking, would you say that most people can be trusted?" Respondents could choose one of three responses: 3 (Yes), 2 (Depends), or 1 (No).² According to Putnam (2000), social capital is defined as the features of a social organization, such as networks and norms, and social trust facilitates coordination and cooperation. In the current paper, social trust is used to measure the degree of social capital. As argued by Uslaner (2002), trust is categorized into generalized trust (trust in most people) and particularized trust (trust in members of the group to which one belongs), which

¹ In Japan, local governments with populations over 50,000 are defined as cities.

² Kuroki (2011) used the JGSS data to examine the relation between generalized trust and happiness levels.

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