

Social Capital and Health: Empirical Evidence from Indonesia

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Abstract

Through the Indonesian Family Life Survey (IFLS4 and IFLS5), this paper examined effects of individuals' social capital on various health outcomes, analyzing specifically whether generalized trust, bridging social capital (trust in many ethnic groups, trust in many religious beliefs), and social isolation had effects on various health outcomes. Estimated results for fixed-effects models did not show significance in any health outcome variables, except for social isolation, which had a positive effect on self-perceived health. Moreover, estimated results for random-effect probit models showed that generalized trust had weak negative effect on self-perceived health, while trust in many ethnic groups had negative association. Meanwhile, trust in many religions had no effect on health outcomes. In addition, social isolation had negative effects on most self-rated health and mental health outcomes.

Modal Sosial dan Kesehatan: Bukti penelitian dari Indonesia

Abstrak

Artikel ini meneliti pengaruh modal sosial seseorang terhadap berbagai hasil kesehatan orang tersebut menggunakan data IFLS (IFLS 4 dan IFLS 5). Artikel ini menganalisis apakah percaya secara umum, "bridging" modal sosial (dalam hal ini percaya pada banyak etnis suku dan percaya terhadap berbagai agama), dan isolasi sosial mempunyai efek terhadap dampak berbagai kesehatan. Hasil penelitian menunjukkan bahwa model efek tetap tidak menunjukkan hasil yang signifikan terhadap hasil berbagai kesehatan, kecuali isolasi secara sosial, yang mana mempunyai dampak yang positif terhadap kesehatan yang disadari. Hasil penelitian untuk model "probit" efek tidak tetap menunjukkan bahwa percaya secara umum mempunyai dampak yang lemah terhadap kesehatan yang dinilai sendiri, sementara itu percaya pada banyak etnis suku memiliki hubungan negatif. Lalu, percaya kepada banyak agama tidak menunjukkan efek terhadap berbagai kesehatan. Lebih lanjut lagi, isolasi secara sosial memiliki efek negatif terhadap berbagai macam kesehatan yang dinilai sendiri dan kesehatan mental.

Keywords: social capital indicators, chronic illness, mental health, fixed-effect methods, Indonesian Family Life Survey (IFLS)

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1. Introduction

Originating from sociology, the concept of social capital has grown rapidly through various disciplines, for instance economics, education, politics, and so on, and therefore, social capital's definition is multi-dimensional. With emphasis on trust, Guiso, Sapienza, and Zingales (2008) argued that social capital is a set of beliefs and values that facilitate cooperation among members of a community. This research, then, focuses on a micro dimension of the social capital concept to which Guiso et al. (2008) refer.

Additionally, in both public health and economics, social capital's effects on health have recently attracted increased attention. Some studies have investigated roles of various aspects of bonding, bridging, and linking social capital. Examining effects of these three dimensions of social capital in building community resilience and health, for example, Poortinga (2012) found in secondary analysis of 2007 and 2009 Citizenship Surveys that most indicators of bonding, bridging, and linking social capital were significantly associated with better community health. Thus social capital seems to benefit health.

As economic growth becomes strong, health outcomes seem to indicate improvement in welfare, while low income has been argued to contribute to poor health, especially in developing countries. Pritchett and Summers (1996) found that higher income inequality was often associated with poorer population health. Moreover, Kawachi, Kennedy, and Wilkinson (1999) stated that income inequality is a reason for society not to communicate well across income barriers, and thus it reduces opportunities to build social capital. However, social capital is needed for promoting economic growth through accessing external assets and sharing information (Putnam, 2000). Poor health, then, links to poverty because of lower social capital. Therefore, this paper examined social capital's impact on individual health in Indonesia.

Meanwhile, with its diversity of cultures and religions, Indonesia has many activities reflecting cooperation, which could stimulate social capital as measured by trust. Unfortunately, social cohesiveness is not likely to exist in Indonesia these days because people have become distrustful of each other and created conflict across ethnic and religious groups. Baum's (1999) observations about the negative impact of bonding social capital has shown that the Indonesian people still have strong bonds within the same ethnicity and religion (bonding social capital), which might not be healthy for those who disagree with the majority. Therefore, this study focused on bridging social capital since it seems appropriate to Indonesian characteristics.

Individuals better connected with their community, i.e., having high social capital, have positive health outcomes because of their sense of belonging. For people with chronic illnesses, social capital can be a potential supportive resource that encourages them to cope with frail conditions (Waverijn, Wolfe, Mohnen, Rijken, Spreeuwenberg, & Groenewegen, 2014). However, mechanisms by which social capital affect health differ, depending on the specific dimension of social capital.

Previous literature on the relationship between social capital and health showed an estimation of potential endogeneity that stems from unobservable heterogeneity and reverse causality (Rocco, Fumagalli, & Suhrcke, 2014). For example, Ho (2016) estimated the model using a number of friends as a proxy of social capital and warned of the possibility of unobservable factors that affect individuals' decisions in selecting their friends and perhaps influencing their health. Previous literature used an instrumental variable estimate to tackle the endogeneity problem (Hollard & Sene, 2016). Following Rocco and colleagues (2014), however, this research estimated by using individual fixed effects in health production to control unobservable heterogeneity.

Empirical studies on social capital and health are still limited to two in Indonesia (Miller, Scheffler, Lam,

Rosenberg & Rupp, 2006; Sujarwoto & Tampubolon, 2013). However, these studies were cross-sectional and did not account for unobserved heterogeneity among individuals. Thus, this study estimated a fixed-effects model using the Indonesian Family Life Survey (IFLS) 2007 and 2014 to examine social capital's effect on health. Moreover, social capital variables in this study were generalized trust and trust in different ethnic groups and in different religions. To the author's knowledge, these proxies have not been discussed in the social capital field. For health outcome variables, two aspects of self-reported health were examined, self-rated health and mental health.

This study's aim was twofold: first, after controlling sociodemographic determinants, to investigate strength association (ordinary least squares [OLS] and fixed effects) among four proxies (generalized trust, trust in different ethnicities, trust in different religions, and social isolation) as bridging social capital on individual self-perceived health; second, to examine how these proxies relate to self-rated health based on occurrence of five chronic diseases and psychological health, together with other health outcomes, using pooled probit and random-effects probit methods.

Estimated results for fixed-effects models have not shown significance in any health outcome variables except for social isolation, which had a positive effect. Moreover, estimated results for random-effect probit models showed that generalized trust had weak positive impacts on self-rated health, while trust in many ethnic groups had negative association. Meanwhile, trust in many religions did not have an effect on different health outcomes.

The remainder of this paper is structured as follows. The second section reviews previous literature on social capital and health. The third section describes the methodology and data, and then the fourth section presents empirical results and the discussion. The final section provides concluding remarks and some policy implications.

Social Capital. Social capital includes multi-dimensional concepts differentiated by Putnam (2000): bonding social capital and bridging social capital. Bonding social capital refers to connections among people who have similar social identity (family, neighbors, members of a church), while bridging social capital refers to relations between individuals dissimilar in social identity and power, including level of education, possession of wealth/material resources, social status, gender, generation, religious beliefs, and ethnic background (Boehm, Eisenberg, & Lampel, 2011). In addition, social capital's third dimension is linking social capital, suggested by Szreter and Woolcock (2004) as relationships related to differences in power or resource bases and status, for

instance, the government and the police. This distinction is crucial since people live in heterogeneous societies.

Meanwhile, Guiso et al. (2008) defined social capital as an individual belief about others' willingness to cooperate. Charles and Kline (2006) also mentioned that trust makes cooperation easier, with more trust network is associated with bigger return for individuals. When defined in this way, social capital can be considered a form of capital, achieved from durable social relations among individuals, which they can accumulate, transfer, and access for their particular interests. However, social capital is not the same as human capital because its returns depend on other community members' norms and beliefs. Production of capital requires opportunity costs, and, clearly, social capital has opportunity cost, for example, in time and effort, to maintain relationships and to build trust with community members (Folland & Rocco, 2014).

Moreover, selection of social capital's proxy is based on the study area's characteristics (Grootaert & Bastelaer, 2001). Since Indonesia has many traditional activities involving communities rich in social ties, with a diversity of ethnic groups and religious beliefs, bridging social capital is the most suitable for Indonesia's characteristics, but with focus on the individual through cognitive assessments.

Social Capital and Health. Villalonga-Olives and Kawachi (2015) explained how bridging social capital is linked to health, by: (1) improving access to valuable resources such as health-relevant information; (2) improving access to instrumental and emotional social support that have been widely reported to affect health behaviors and outcomes; (3) social reinforcement of identity and mutual influence; and (4) fostering stronger connections across social divisions within the community—thereby strengthening collective ability to voice demands or to undertake coordinated action. These mechanisms are then pictured as “opportunity based,” rather than having a psychological and behavioral nature.

Bridging social capital can be illustrated by a poor man obtaining a cash loan from a person who possesses valued resources and trusts the poor man. Trust helps the disadvantaged man gain access to a resource (cash loan) so that he also gains from his relationship with the other person. Bridging social capital might generate health benefits because actors can access valuable assets and information related to health via connections with heterogeneous individuals. Therefore, bridging social capital can play an important role in overcoming health inequalities in Indonesia, since people trapped in poverty often lack bridging social capital (Villalonga-Olives & Kawachi, 2015).

2. Methods

Empirical Model. Using panel data from 2007 to 2014, this study employed a simple specification following Ronconi, Brown, and Scheffler (2012) to model the relationship between individual-level social capital and health:

$$H_{it} = \beta [SC]_{it} + X_{it} \delta + u_{it} \quad (1)$$

where $u_{it} = \alpha_{it} + \varepsilon_{it}$

H_{it} is self-perceived health for individual i , a categorical variable that takes values from 1 to 4 (1 = very healthy, 4 = unhealthy); SC_{it} is a set social capital for individual i ; X_{it} is a set of exogenous controls including age, education, marital status, household income, micro criminality, area, homeownership, and children under 17 years old; β is the parameter of interest and captures the effect of trust (generalized trust, trust in many ethnic groups, and trust in many religions) and social isolation from health problems. u_{it} contains time invariant fixed effects α_{it} and ε_{it} , which follows *independent and identically distributed random variables*. Self-assessed health was treated as a continuous variable and estimated with Eq. (1) using pooled OLS and fixed-effects estimation.

Moreover, self-rated health was observed based on occurrence of five chronic diseases as a binary choice that had the value of 1 if the respondent had no health problems, and 0 otherwise. This study also did the same for mental health. Since the dependent variable was limited, the following equation was estimated by pooled probit and random-effect probit.

$$\Pr(H_i = 1) = \Phi(\gamma SC_i + X_i' \beta_i), \quad (2)$$

where $\Phi(\cdot)$ is the cumulative distribution function of a normal standard.

Data. This study's data was drawn from the Indonesian Family Life Survey (IFLS), 2007 (IFLS4) and 2014 (IFLS5). IFLS is the only large-scale longitudinal survey available for Indonesian individuals.

Sample Selection. IFLS contains a unique identity number for each individual, represented as PIDLINK, enabling researchers to track individuals from year to year, thus ensuring that the same individuals have responded to the same questions in both time periods. For this reason, there is no duplicate of an individual's number in the same year. Additionally, a unique household ID is required, for example, HHID14_9 (2014), when the dataset is merged at the individual level. For IFLS4, the number of individuals with complete responses used for this research was 4,865

and in IFLS5, 10,466. The two datasets are appended, so the number of observations was 15,331.

Dependent variables. Self-perceived health was measured by asking “In general, how is your health?” This variable was considered continuous. Both time periods had the same pattern.

Self-rated health was assessed based on occurrence or absence of five chronic conditions (hypertension, diabetes, respiratory disease, heart disease, neurological disease). Respondents who answered that they did not suffer from any of the diseases had a value of 1; those with at least one chronic condition had a value of 0. The dataset for 2007 and 2014 were the same.

Mental health was established by asking respondents “Have you felt happy, anxious, restless, bothered, fearful, or depressed in the past week?” For 2007, the answer was: “Yes” or “No” (discrete variable). For 2014, the answer was respondents’ frequency of feelings. It was a categorical variable. Responses were: “Rarely or none (≤ 1 day),” “Some days (1–2 days),” “Occasionally (3–4 days),” or “Most of the time (5–7 days).”

For 2007, mental health had a value of 1 if respondents reported they did not feel any of those conditions, except happy, and 0 otherwise. Those who felt happy had a value of 1, and 0 otherwise. Moreover, for 2014, mental health had a value of 1 if respondents reported “none” or “rarely” for all those feelings, except happy; the rest had a value of 0, except for happy. Moreover, respondents who reported being happy on “some days,” “occasionally,” or “most of the time” equaled 1, and the rest, 0.

Independent variable: “Bridging social capital” variables. Generalized trust was measured by respondents’ ranking of the statement “In this village, I have to be alert, or someone is likely to take advantage of me.” This variable was treated as continuous.

Trust in many ethnicities was assessed by respondents’ ranking of the statement “Taking into account the diversity of ethnicities in the village, I trust people with the same ethnicity as mine more.” This was also treated as continuous.

The question about trust in many religions was similar, and questions and answers for the independent variable above were the same for both periods.

Social isolation was measured by respondents’ answer to the question “Do you feel lonely,” and the answers for 2007 and 2014 differed, but they were the same as those for mental health. For 2007, social isolation had the value of 1 if respondents felt lonely, and 0 otherwise. For 2014, social isolation had the value of 1 if they answered, “some

days,” “occasionally,” or “most of the time”; the rest were zero.

Control Variables. To account for other phenomena that might influence health and social capital, following Fiorillo and Sabatini (2015), a set of individual and household control variables were included in the analysis.

At the individual level, gender (female), marital status (married), age, education (higher education), and quality of the surrounding social environment according to an indicator of subjective perception of its safety (how safe respondents considered the village) were considered.

At the household level, following previous literature, for household income (sum of labor income, capital income, and pensions) were considered. In addition, the number of children less than 17 years old, home ownership (binary variable) and area (urban) were considered.

Variable Measurement. Appendix Table A1 (presents a statistical summary of all variables. On average, the final sample’s average age was 43. About 79% of respondents reported good health, whereas only 38% of people did not suffer from mental health problems. Moreover, only 8% of Indonesian people felt sad. Almost half the respondents were female, and more than half were married. Almost half reported higher education. Only 21% of respondents had children less than 17 years old, and over half were homeowners.

3. Results and Discussions

Determinants of Self-perceived Health

Table 2 presents estimates of the health equation (1) in the empirical model, to compare relative magnitude of effects of independent variables; their marginal effects for effects are reported in all tables. Column 1 reports the linear estimation using pooled OLS, and Column 2 presents fixed-effects estimation.

Column 1 displays the estimated result of pooled OLS with the coefficient of trust in many ethnic groups having the expected sign and being statistically significant. After controlling for time invariant fixed effects, the coefficient becomes insignificant in Column 2. This finding is not supported by previous studies (Rocco et al., 2014). The Hausman test shows that it cannot reject the null hypothesis with a p-value < 0.1796. This suggests random effects can be used to estimate the equation (1). However, I used the fixed-effects method for equation (1) because some time invariant effects correlated with social capital variables. For example, sociable personal traits can affect both health and social capital. Even though the Hausman test chooses random effects, to rule out potential omitted variable bias, it is safe to choose fixed-effects models since fixed effects have consistency.

Table 2. Social Capital's Impact on Self-Perceived Health, 2007–2014

Dependent variables: Self-assessment of health		
	OLS	Fixed effects
Generalized trust	–0.0046 [0.010]	–0.0320 [0.026]
Trust in many ethnic groups	0.0267*** [0.009]	0.0168 [0.024]
Trust in many religions	0.0010 [0.007]	–0.0254 [0.018]
Social isolation	0.1742*** [0.017]	0.0972* [0.052]
Dummy year 2007	0.0006 [0.013]	0.1375 [0.122]
Female	0.0924*** [0.014]	
Married	–0.0430*** [0.015]	–0.0528 [0.069]
Higher education	–0.0298** [0.012]	–0.1399 [0.091]
Log household income	–0.0111** [0.004]	–0.0026 [0.014]
Homeowner status	–0.0450*** [0.014]	–0.0600 [0.061]
Micro criminality	–0.1809*** [0.028]	–0.0720 [0.088]
Urban	0.0178 [0.012]	–0.0904 [0.061]
Children less than 17 years old	–0.0124 [0.017]	–0.0298 [0.053]
Age	0.0072*** [0.001]	0.0301* [0.017]
Constant	2.0559*** [0.083]	1.1108 [0.845]
Observations	12,899	12,899
R-squared		0.027
Number of pidlink_n	11,379	11,379

Notes. (1) Robust standard errors in brackets; (2) *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Unexpectedly, social isolation was significantly and positively correlated with good health, with isolated individuals having self-perceived good health at 9.7%. In contrast, many Indonesian people like to interact with each other, but sometimes they enjoy talking about negative things; then, they become worried and rate themselves as

“not in good condition.” Furthermore, news in Indonesia has recently focused on negativity, to include corruption, crime and so on. As a result, the news audience becomes stressed and subsequently rates their health as poor.

Self-rated Health and Mental Health: Pooled Probit and Random Effects Probit. Table 2 shows results from estimation of social capital's effect on health from the nonlinear equation (2) in the empirical model. Column 1 reports estimation of the pooled probit and random-effects probit model for self-rated health based on occurrence of five chronic illnesses; Column 2 reports estimation of the pooled probit estimation and random-effect probit for mental health. Results, presented in Table 3, are transformed to probability derivatives.

The two results give the same direction of coefficients except for the dummy year 2007, although it is not significant. Interestingly, generalized trust becomes significant when using random-effect probit and has the expected sign. Thus, social capital, represented by generalized trust, increases the probability of reporting good health by 1%. Although this is weak evidence, the result aligns with our hypothesis. Similarly, trust of different religious beliefs reports a positive, but insignificant, coefficient. On the other hand, trust in many ethnic groups is strong and negatively associated with self-rated good health. Individuals who trust many ethnic groups are 1.6% more likely to report poor health. This finding supports Baum's (1999) suggestion that Indonesians might have a strong bond with the same ethnicity, thus causing them to be exclusionary and distrustful with dissimilar others, so this condition may not be healthy for outsiders. Furthermore, socially isolated individuals are about 5% less likely to consider themselves in self-rated good health. This result holds for both estimations. Isolated people appear to have less support and mutual respect for mitigating stress, and this circumstance affects their health. This also confirms d'Hombres, Rocco, Suhreke, and McKee (2010) that loneliness has a significantly negative impact. Lastly, no significant events affected self-rated health in 2007.

Furthermore, Column 2 presents the effect of bridging social capital on mental health. Both estimates also give the same direction on coefficients. Interpretation of results based on random-effect probit estimates shows that all trust variables were not significantly correlated with good mental health. Social isolation had a strong negative impact on the likelihood of good mental health.

Interestingly, the time dummy displays a significant association with good mental health. Indonesia faced a financial crisis, which was part of the Asian financial crisis, in 2007 and 2008. This 2007 - 2008 crisis was the second economic crisis since the first crisis in 1997 and 1998. Although Indonesian people were hit by the crisis, they were not greatly affected. Indonesia was more resilient than

Table 3. Social Capital's Impact on Indonesians' Self-Rated Health and Mental Health 2007–2014

Dependent variables:	Self-rated health		Mental health	
	Probit	RE Probit	Probit	RE Probit
Generalized trust	0.0094 [0.006]	0.0103* [0.006]	0.0116 [0.007]	0.0126 [0.008]
Trust of many ethnic groups	-0.0179*** [0.006]	-0.0157*** [0.005]	-0.0124* [0.007]	-0.0129 [0.008]
Trust of many religions	0.0065 [0.005]	0.0056 [0.005]	0.0024 [0.006]	0.0030 [0.007]
Social isolation	-0.0558*** [0.012]	-0.0534*** [0.013]	-0.3154*** [0.009]	-0.3282*** [0.009]
Dummy year 2007	-0.0057 [0.009]	0.0025 [0.008]	0.1005*** [0.012]	0.1098*** [0.013]
Female	-0.0686*** [0.009]	-0.0655*** [0.009]	-0.0467*** [0.011]	-0.0507*** [0.012]
Married	0.0040 [0.010]	0.0027 [0.010]	0.0572*** [0.012]	0.0635*** [0.013]
Higher education	-0.0175** [0.008]	-0.0172** [0.008]	-0.0238** [0.010]	-0.0261** [0.011]
Log household income	-0.0090*** [0.003]	-0.0073*** [0.003]	0.0174*** [0.004]	0.0186*** [0.004]
Homeowner status	0.0033 [0.009]	0.0048 [0.009]	0.0336*** [0.011]	0.0360*** [0.012]
Micro criminality	0.0626*** [0.019]	0.0655*** [0.022]	0.0707*** [0.021]	0.0761*** [0.022]
Urban	-0.0224*** [0.008]	-0.0190*** [0.007]	-0.0240** [0.010]	-0.0266** [0.011]
Children less than 17 years old	-0.0097 [0.011]	-0.0056 [0.010]	0.0151 [0.014]	0.0167 [0.015]
Age	-0.0073*** [0.000]	-0.0072*** [0.000]	0.0041*** [0.000]	0.0045*** [0.000]
Observations	12,899	12,899	12,899	12,899
log likelihood	-6319	-6228	-7829	-7818
Number of pidlink_n		11,379		11,379

Notes. (1) Marginal effects are reported; (2) *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

in the first crisis in 1997 and 1998. Not only had the Indonesian economy performed well from 2005 to 2008 but also consumer prices remained stable because the Indonesian people learned from the first crisis; as a result, mental health was reported as good.

In summary, our findings provide little support for the hypothesis that social capital positively correlates with self-rated health. However, trust in many ethnic groups had significant negative effects for each mental health outcome. Sujarwoto and Tampubolon (2013) argued that

individuals who belong to the same ethnic group were more likely to have social relationships due to similarities of custom or language. Moreover, Alesina and La Ferrara (2002) found that, in more heterogeneous communities, trust was lower because interracial contacts were more frequent. For this reason, even though Indonesian people trust everyone (generalized trust), thereby leading to positive health effects, this does not mean trust in many ethnic groups will succeed in Indonesia because it is more sensitive and deeper than generalized trust, especially considering Indonesian characteristics. From Putnam's

(2007) insight, we can conclude that building trust and creating bonds might require more time among varied ethnic groups and might then affect their health. Therefore, further research is needed on this topic.

In addition, even trust in many religious beliefs did not significantly correlate with all health outcomes. The joint test of significance for four indicators of social capital strongly rejected the null hypothesis with $p\text{-value} < 0.0000$ (OLS, probit, random-effect probit estimations) and $p\text{-value} < 0.097$ (fixed-effect estimation).

4. Conclusion

This research is a reexamination of the five factors that construct the Five Love Languages (FLL), using a scale translated from the research by Polk and Egbert (2013). Based on the research conducted, the authors conclude that the new instrument yielded supportive data for the series of attempt to validate the construct of FLL. The adapted and modified instrument had a composition of items of which none was dropped due to low factor loading.

However, EFA findings indicated that the components constructing Receiving Gift and Acts of Service could be combined into one coherent component. This component was then termed “sacrificial love.” From the findings, the authors conclude that the love language components in the context of this research are comprised of four aspects. This is different from the initial concept by Chapman (2010), which stated that there were five aspects that make an individual feel loved. This research found that individuals who were part of the research sample feel loved when their partners perform an act of sacrifice. The four aspects as the findings of this research are 1) Sacrificial Love, 2) Words of Affirmation, 3) Physical Touch, and 4) Quality Time.

Ultimately, this research aims to become a reference for practitioners and couples to better understand the feelings and experiences of being loved by one’s partner. Validation on the concept of love languages has led the authors to conclude that individuals feel loved when they receive treatments from their partners in the form of praise or positive comments, physical touch, and the opportunity to spend time together. Additionally, treatments in the form of sacrifices of time and effort can also make individuals feel loved.

This study has a number of limitations. Because there are no appropriate instruments, the possibility of reverse causality was not considered, and thus, a fixed-effects instrumental variable method would be more appropriate. Second, we used only two time periods over a 7-year span. This potentially reduced the estimate’s precision. Third, this study relied on only one of two item scales of social capital; hence, a weak or inconsistent connection

with health was found. Moreover, this study examined only bridging social capital; however, future studies should consider other dimensions, i.e., bonding social capital and linking social capital, to discover which is the most appropriate for Indonesia. Finally, due to incidental parameter problems, the fixed-effects model for the limited dependent variable was not estimated. Further robustness checks are needed if our results for the random-effects model hold when controlled for fixed effects.

In sum, this study has shown empirically that, in social capital’s effect on health, generalized trust has positive impact, even though it is small. Meanwhile, trust in other religions and in ethnic groups did not produce a satisfactory result. Likely, Indonesians still have strong bonds within ethnic and religious groups. If, as Putnam (2000) states, bridging social capital is important for achieving economic growth, it would be advantageous for Indonesia, with its rich diversity, if this dimension could be attained and utilized. For this reason, the government, as policymaker, should stimulate development of social capital, especially bridging social capital, by funding projects that allow it to be easily formed and by triggering enthusiasm among communities and their leaders to develop social capital.

Declaration of Interest

The author reports no conflicts of interest in this work.

References

- Alesina, A. F., & La Ferrara, E. (2002). Who trusts others? *Journal of Public Economics*, 85(2), 207-234. doi: 10.1016/S0047-2727(01)00084-6
- Baum, F. (1999). Social capital: Is it good for your health? Issues for a public health agenda. *Journal of Epidemiology and Community Health*, 53(4), 195. Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1756864/pdf/v053p00195.pdf>
- Boehm, A., Eisenberg, E., & Lampel, S. (2011). The contribution of social capital and coping strategies to functioning and quality of life of patients with fibromyalgia. *The Clinical Journal of Pain*, 27(3), 233-239. doi: 10.1097/AJP.0b013e3181fdabcf
- Charles, K. K., & Kline, P. (2006). Relational costs and the production of social capital: Evidence from carpooling. *The Economic Journal*, 116(511), 581-604. doi: 10.1111/j.1468-0297.2006.01093.x
- d’Hombres, B., Rocco, L., Suhrcke, M., & McKee, M. (2010). Does social capital determine health? Evidence from eight transition countries. *Health Economics*, 19(1), 56-74. doi: 10.1002/hec.1445

- Fiorillo, D., & Sabatini, F. (2015). Economics and Human biology structural social capital and health in Italy §. *Economics and Human Biology*, 17, 129-142. doi: 10.1016/j.ehb.2015.02.004
- Folland, S., & Rocco, L. (2014). Chapter 1: Introduction to the economics of social capital and health. In *The Economics of Social Capital and Health: A Conceptual and Empirical Roadmap* (pp. 1–7). World Scientific. doi: 10.1142/9789814293402_0001
- Grootaert, C., & Bastelaer, T. Van. (2001). Understanding and measuring social capital: A synthesis of findings and recommendations from the social capital initiative. *Social Capital Initiative Working Paper*, 24(24), 1-31. doi: 10.1227/00006123-197907010-00058
- Guiso, L., Sapienza, P., & Zingales, L. (2008). Social capital as good culture. *Journal of the European Economic Association*, 6(2–3), 295-320. doi: 10.1162/JEEA.2008.6.2-3.295
- Ho, C. Y. (2016). Ho, C. Y. (2016). Better health with more friends: the role of social capital in producing health. *Health economics*, 25(1), 91-100. doi: 10.1002/hec
- Hollard, G., & Sene, O. (2016). Social capital and access to primary health care in developing countries : Evidence from Sub-Saharan Africa. *Journal of Health Economics*, 45, 1-11. doi: 10.1016/j.jhealeco.2015.10.004
- Kawachi, I., Kennedy, B. P., & Wilkinson, R. G. (1999). *The society and population health reader: Income inequality and health* (Vol. 1). NY: New Press.
- Miller, D. L., Scheffler, R., Lam, S., Rosenberg, R., & Rupp, A. (2006). Social capital and health in Indonesia. *World Development*, 34(6), 1084-1098. doi: 10.1016/j.worlddev.2005.11.006
- Poortinga, W. (2012). Health & place community resilience and health : The role of bonding, bridging, and linking aspects of social capital. *Health & Place*, 18(2), 286-295. doi: 10.1016/j.healthplace.2011.09.017
- Pritchett, L., & Summers, L. H. (1996). Wealthier is healthier. *Journal of Human Resources*, 841-868. doi: 10.2307/146149
- Putnam, R. (2000). *Bowling alone, the collapse and revival of civic America*. NY: Simon & Schuster Paperbacks
- Putnam, R. D. (2007). E pluribus unum: Diversity and community in the twenty-first century the 2006 Johan Skytte Prize Lecture. *Scandinavian Political Studies*, 30(2), 137-174. 10.1111/j.1467-9477.2007.00176.x
- Rocco, L., Fumagalli, E., & Suhrcke, M. (2014). From social capital to health—and back. *Health economics*, 23(5), 586-605. doi: 10.1002/hec.2934
- Ronconi, L., Brown, T. T., & Scheffler, R. M. (2012). Social capital and self-rated health in Argentina. *Health economics*, 21(2), 201-208. doi: 10.1002/hec.1696
- Sujarwoto, S., & Tampubolon, G. (2013). Social science & medicine mother ' s social capital and child health in Indonesia. *Social Science & Medicine*, 91, 1–9. doi: 10.1016/j.socscimed.2013.04.032
- Szreter, S., & Woolcock, M. (2004). Health by association? *Social capital, social theory, and the political economy of public health*, 33(4), 650-667. doi: 10.1093/ije/dyh013
- Villalonga-olives, E., & Kawachi, I. (2015). The measurement of social capital. *Gaceta Sanitaria*, 29(1), 62-64. doi: 10.1016/j.gaceta.2014.09.006
- Waverijn, G., Wolfe, M. K., Mohnen, S., Rijken, M., Spreuwenberg, P., & Groenewegen, P. (2014). A prospective analysis of the effect of neighbourhood and individual social capital on changes in self-rated health of people with chronic illness. *BMC public health*, 14(1), 675. doi: 10.1186/1471-2458-14-675

APPENDIX

Table A1. Descriptive Statistics of Indonesian Health Outcomes, Social Capital, and Demographics

	N	mean	SD	min	max
Health outcomes					
Self-perceived health	12,899	2.055	0.611	1	4
Self-rated health	12,899	0.786	0.410	0	1
Mental health	12,899	0.381	0.486	0	1
Hypertension	12,899	0.144	0.351	0	1
Diabetes	12,899	0.0273	0.163	0	1
Respiratory disease	12,899	0.0525	0.223	0	1
Heart disease	12,899	0.0191	0.137	0	1
Neurological disease	12,899	0.00271	0.0520	0	1
Sadness	12,899	0.0810	0.273	0	1
Anxiety	12,899	0.438	0.496	0	1
Insomnia	12,899	0.348	0.477	0	1
Short temper	12,899	0.283	0.451	0	1
Bridging social capital					
Generalized trust	12,899	1.909	0.605	1	4
Trust of many ethnic groups	12,899	2.279	0.645	1	4
Trust of many religious beliefs	12,899	2.245	0.810	1	4
Social isolation	12,899	0.139	0.346	0	1
Demographic and socioeconomic characteristics					
Age	12,899	42.98	13.12	15	101
Female	12,899	0.459	0.498	0	1
Married	12,899	0.823	0.381	0	1
Higher education	12,899	0.425	0.494	0	1
Household income (ln)	12,899	16.39	1.343	8.517	21.19
Children less than 17 years	12,899	0.212	0.409	0	1
Homeowner status	12,899	0.798	0.402	0	1
Micro criminality	12,899	0.954	0.210	0	1
Urban	12,899	0.639	0.480	0	1
Dummy year 2007	12,899	0.322	0.467	0	1