

**THE ECONOMIC OF SUICIDE: AN EMPIRICAL STUDY OF WORLD
FORTY COUNTRIES WITH THE HIGHEST SUICIDE RATE**

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THE ECONOMIC OF SUICIDE: AN EMPIRICAL STUDY OF WORLD FORTY COUNTRIES WITH THE HIGHEST SUICIDE RATE

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ABSTRACT

Though sociologists and economists have developed and tested numerous theories about suicide, still very many professionals especially in Indonesia remain unaware about the economics of suicide phenomenon. We derive an economic theory of suicide and test its implications using: (1) data by suicide number as, income (GNI), population over the age of sixty-five, population of density, and unemployment rate as in forty countries in the world with the highest suicide rate; (2) a panel data in 2000 until 2015; (3) multiple regression analysis; (4) EViews 9 software. Most of our predictions are verified. In particular, the result shows that population over the age of sixty-five, income, and population density significantly affect suicide number, while unemployment rate does not. The implied effect of income on suicide number is positive, as is the positive relationship between population density to suicide number. While population over the age of sixty-five give a negative impact to suicide number.

Keywords: Suicide, Suicide number, Income, Population over the age of sixtyfive, Population of density, and Unemployment rate

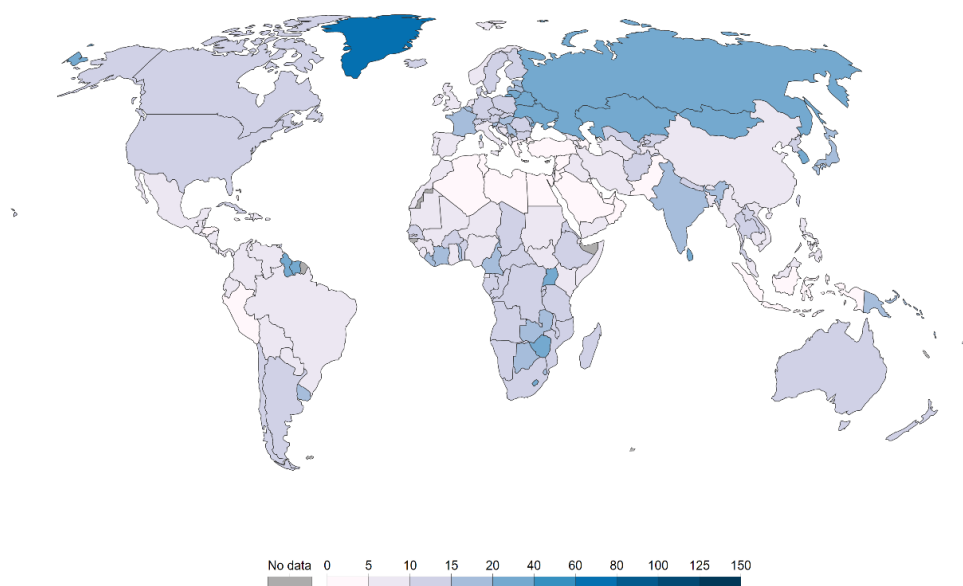
INTRODUCTION

Background of Study

Suicide is the 2nd leading cause of death in the world for those aged 15-29 years according to World Health Organization (WHO). Close to 800.000 people die due to suicide every year, which is one person every 40 seconds. Suicide is a global phenomenon; in fact, 78% of suicides occurred in low- and middle-income countries in 2015. Suicide accounted for 1.4% of all deaths worldwide, making it the 17th leading cause of death in 2015. Effective and evidence-based interventions can be implemented at population, sub-population and individual levels to prevent suicide and suicide attempts. There are indications that for each adult who died of suicide there may have been more than 20 others attempting suicide.

In Indonesia, according to average of statistic in Badan Pusat Statistik (BPS), in one day at least two until three people commit suicide. BPS noted at least there are 812 suicide cases in the region of Indonesia in 2015. Based on WHO's estimation, death rate resulting from suicide in Indonesia in 2012 is 10.000. The

amount of trend increases from the amount that occurs in 2010 in Indonesia which is only half of it, 5.000. In 2015, WHO also listed that Indonesia is in 172th country with highest suicide rate, in which the rate is 3.0 per 100.000 people. No wonder if by 2020, WHO predicts that the suicide rate in Indonesia will reach 3.4 percent per 100,000 inhabitants. This figure is fantastic. If concluded, there are more than one million people die each year due to suicide. If narrowed down, approximately every 40 seconds fell one victim caused by suicide. This prediction is not merely without any fundamental, the number of suicides in Indonesia continues to increase every year. Still based on WHO, at least 50,000 Indonesians have committed suicide during the past three years. Thus, there are 46 deaths every day.



Source: Institute of Health Metrics and Evaluation (IHME), Global Burden of Disease (GDB).

The visualisation above shows the IHME estimates of age-standardized death rates from suicide/self-harm, measured as the number of deaths per 100,000 people. Greenland is the country with highest suicide rate in 2016, which is 79.75 rate.

Suicide is most often discussed in psychological terms, but it is certainly not the only way view to such a social phenomenon. Ignoring any judgments regarding the morality of taking one's life, quantitatively, suicide may be seen as a reasonable act. This study will not argue for, or against, the right to commit suicide, it will simply analyze empirical data regarding suicides in the context of economic theory.

As stated by Cameron (2005), there are three major reasons why economics should be applied to suicide; 1) microeconomic theory is founded upon rational choice models, 2) suicide statistics could benefit from analysis through economic techniques, and 3) the tools in economic theory may help determine policy actions

to combat increasing suicide. This integration of sociological and economic perspectives on the suicide rate has been a point of interest for decades.

Thus, based on ideas and explanation above, this study looks at the relationship between the number of suicide per country and four independent variables, which are per capita income, percent of the population over the age of sixty-five, population density, unemployment rate, and urban population. The data used is every five years of 2000 until 2015 and collected from World Bank and World Health Organization official website. The model that will be used is multiple regression model with panel data method.

LITERATURE REVIEW

Durkheim Approach (1897)

Emile Durkheim is the first person who analyze about suicide beyond psychology, but adding another variables that can affect suicide. Perhaps some people have stronger suicide tendencies than the others, however, Durkheim believes that suicide does not influenced by mental condition alone. It is added by Durkheim, some factors or external variables potentially trigger people to commit suicide. He calls this factors as a “cosmic factor”, whether it be social demands, economic crises, or changing of era. At the time of Durkheim’s writing, suicide was primarily an urban phenomenon and in fact he used this as evidence that traditional agrarian society played an important role in fostering awell-functioning social environment.

An Economic Theory of Suicide by Daniel Hamermesh and Neal Soss (1974)

Hamermesh and Soss develop the microeconomics of suicide and explain that suicide rises with age and falls with income. The core economic model of suicide stand on consumption and the basic premise is an individual maximizing total discounted lifetime utility. Utility is a function of consumption, which in due time is a function of age and income, and the individual has a given discount rate is further assumed by Hamermesh and Soss that, which is known over a person’s lifetime. A negative discounted utility is the point where any further existence brought that is must have been reached by the individual, in order for suicide to be a welfare improvement, although it is crucial to record that this does not necessarily mean that all future periods have negative net utility. In case a person’s permanent income increases then, *ceteris paribus*, the value of life increases and continuing to live is preferable to committing suicide. Age appears in the lifetime utility function as a negative component, however. This is due to an individual gets older, a person’s most valuable asset (life) has decreased in duration and therefore must have a lower total discounted value.

Religion, Religious Attitudes and Suicide by Dinesh Bhugra (2010)

Religion can play a key role in protecting individuals. Suicidal attempts among depressed patients were less likely in patients who had religious affiliations compared with those who did not. Religious affiliations per se may mean many

things, and thus need to be differentiated from beliefs, rituals and attitudes as well as from religiosity (Dervic, et al). Religiosity has been seen as a normal constituent of human behavioural repertoire.

Dark Contrasts: The Paradox of High Rates of Suicide in Happy Places by Mary C. Daly, et al (2011)

The research confirmed a little known and seemingly puzzling fact: many happy countries have unusually high rates of suicide. This observation has been made from time to time about individual nations, especially in the case of Denmark. This new research found that a range of nations -- including: Canada, the United States, Iceland, Ireland and Switzerland, display relatively high happiness levels and yet also have high suicide rates.

Cynthia Marie Roden (2008)

Roden (2008) uses five variables that determine suicide amount in a country, from her research, she is able to explain the validity of the economic theory of suicide. She found that population density give positive impact to suicide. She stated high population densities are a natural part of urban environments, in which many people do not have the privacy or personal space they may desire. Therefore, the relationship between population density and suicide is predicted to be positive.

Yong-Hwan Noh (2009)

Unemployment rate only affects suicide positively in countries with high per-capita GDP levels. In other words, unemployment rates are not universally linked to an increasing suicide rate. Instead, the countries with higher income face a higher degree of suicide with a rising unemployment rate, whereas lower-income countries actually showed a negative relationship between unemployment rate and suicide. The intuition behind this is that if one loses his or her job when most of the people surrounding them are employed, this will have a much more detrimental effect than if the individual loses his or her job in an environment where seemingly everyone else is also jobless.

Kowalski, Faupel, and Starr (1987)

The finding of Kowalski, Faupel, and Starr (1987) predict suicide rate of a country with many variables, but we can conclude that his research is to find out the relation between urbanization and suicide. They found that urbanization increasing give a higher probability for suicide rate to increase, variables in the most urban counties tend to have a much stronger explanatory power than in the rural or middle urban counties.

Hypothesis

- 1) H0: Population over the age of sixty-five does not significantly affect suicide

- H1: Population over the age of sixty-five significantly affects suicide
- 2) H0: Per capita income does not significantly affect suicide
H1: Per capita income significantly affects suicide
- 3) H0: Population density does not significantly affect suicide
H1: Population density significantly affects suicide
- 4) H0: Unemployment rate does not significantly affect suicide
H1: Unemployment rate significantly affects suicide
- 5) H0: Urban population does not significantly affect suicide
H1: Urban population significantly affects suicide

RESEARCH METHODOLOGY

The Type of Research

This type of research is a quantitative, a method that is more emphasis on the objective measurement of the social phenomenon. To be able to perform measurements, every social phenomenon is elaborated into several components of the problem, variables and indicators.

Location, Time, Population, and Sampling

Our data population sample is a panel data formed in every five years from 2000 until 2015 of fourty countries with highest suicide rate in the world which located in Sri Lanka, Cote d'Ivoire, Equatorial Guinea, Lithuania, Angola, South Korea, Sierra Leone, Belarus, Poland, Zimbabwe, Swaziland, Cameroon, Latvia, Ukraine, Burkina Faso, Belgium, India, Hungary, Japan, Togo, Uruguay, North Korea, Nigeria, Slovenia, Benin, Estonia, Finland, Laos, Argentina, Lesotho, Trinidad and Tobago, Burundi, Mozambique, Ethiopia, Cambodia, Thailand, Sweden, Uganda, United States, and Rwanda.

Method of Data Collection

The data used in this research is secondary data shaped form of panel data every five years of the year 2000-2015. We get all of our data from World Bank and World Health Organization (WHO) website data.

Estimating Panel Data Regression Equation

Panel data equation is a combination from cross section and time series data. Hence, our panel data regression equation is:

$$S_{it} = \alpha + \beta_1 I_{1it} + \beta_2 A_{2it} + \beta_3 D_{3it} + \beta_4 U_{4it} + \beta_5 B_{5it} + \mu_i + \varepsilon_{it}$$

Where:

α : Regression constant

β : Regression slope

S_{it} : Suicide number

I_{it}	: Income
A_{it}	: Percent of population over the age of sixty-five
D_{it}	: Population density
U_{it}	: Unemployment rate
B_{5it}	: Urban Population
i	: entity number i
t	: period number t
μ_i	: individual residual
ε_{it}	: Regression error

Dependent Variable

The dependent variable is a variable that affected by independent variable. The dependent variable in this research is suicide number (S) instead of suicide rate. This will help limit some errors that may arise from converting real numbers to potentially less accurate percentages.

Independent Variable

- Per Capita Income
- Percent of Population Over the Age of Sixty-Five
- Population Density
- Unemployment Rate
- Urban Population

Method of Data Analysis

This study will examine suicides per country in relation to demographic and economic variables to construct a multiple regression model with panel data method. This regression model will predict the suicide rate using panel data in every five years of the year 2000 until 2015. All of the procedures will use Eviews 9 software.

Panel Data Regression is a combination of cross section data and time series data, where the same cross section unit is measured at different times (Hidayat, 2012).

According to Widarjono, the method of estimating regression model using panel data can be done through three approaches, which are Common Effect Model, Fixed Effect Model, and Random Effect Model. The determination of of method estimation is done by running several tests which are Chow test, Durbin–Wu–Hausman test, and Lagrange Multiplier test, in order to know the best method to be used in the study.

Classical Assumptions Test

Panel data does not need classical assumption tests according to many researchers such as (Verbeek, 2004, Gujarati, 2006, Wibisono, 2005, Aulia, 2004, in Shochrul R, Ajija, et al., 2011). However, some studies said that panel data only need two classical assumption tests, which are multicollinearity and heteroscedasticity. That is because the other error such as abnormal, autocorrelation, and linearity data are never happened in a panel data (Iqbal 2017).

Statistic Test

A statistical test provides a mechanism for making quantitative decisions about a process or processes. The intent is to determine whether there is enough evidence to "reject" a conjecture or hypothesis about the process. The conjecture is called the null hypothesis. Not rejecting may be a good result if we want to continue to act as if we "believe" the null hypothesis is true. Or it may be a disappointing result, possibly indicating we may not yet have enough data to "prove" something by rejecting the null hypothesis. The statistic tests are done in this study are R-squared, F-test, and t-test.

RESULT AND DISCUSSION

Regression Estimation Result

This study will look at the relationship between five independent variables and one dependent variable. The dependent variable is the number of suicide per country (S), as we are learning and researching about what factors that influence suicide in this whole study. And then the independent variables are percent of population over the age of sixty-five (A), Per capita income (I), population density (D), unemployment rate (U), and urban population (B).

First test that have to run is the tests to determine the best method estimation used in the study.

Table 1: Chow Test

Redundant Fixed Effects Tests			
Equation: Untitled			
Test cross-section fixed effects			
Effects Test	Statistic	d.f.	Prob.
Cross-section F	295.839382	(39,114)	0.0000
Cross-section Chi-square	735.694909	39	0.0000

H0 : Common Effect Model

H1 : Fixed Effect Model

α : 5%

H0 will be accepted if the Chi-square value is smaller than α . It means that the table above shows the result that H0 is rejected and H1 is accepted, meaning that it shall choose Fixed Effect Model.

Table 2: Durbin-Wu Hausman Test

Correlated Random Effects - Hausman Test Equation: Untitled Test cross-section random effects			
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	114.777938	5	0.0000

H0 : Random Effect Model

H1 : Fixed Effect Model

α : 5%

The result from Hausman Test above indicates that probability value is lower than α . It means that H1 is accepted, however, H0 must be denied. Therefore, Fixed Effect Effect is chosen, while the other is not.

Eventually in this regression, the Fixed Effect Model is the best method to show the most accurate regression, therefore, it shall be used.

Multicollinearity Test

Table 3: Multicollinearity Test

	Suicide	Age 65+	Income_per	Population density	Unemployment	Urban_pop
Suicide	1.000 .000	-.0599 62	-.024951	0.368705	-0.121022	0.7849 86
Age 65+	-.0599 962	1.000.0 00	0.726562	0.011093	0.071919	0.0775 91

Income_per	0.024951	0.726562	1.000.000	0.087532	-0.003695	0.226761
Population density	0.368705	0.011093	0.087532	1.000.000	-0.270687	0.315227
Unemployment	-0.121022	0.071919	-0.003695	-0.270687	1.000.000	-0.132028
Urban_pop	0.784986	0.77591	0.226761	0.315227	-0.132028	1.000.000

The test result above shows that there is no multicollinearity between independent variable since there is no number in the table which exceeds 0,8.

Heteroscedasticity Test

Table 4: Glejser Test

Dependent Variable: ARESID				
Method: Panel EGLS (Cross-section random effects)				
Date: 02/18/18 Time: 20:43				
Sample (adjusted): 2000 2015				
Periods included: 4				
Cross-sections included: 40				
Total panel (unbalanced) observations: 159				
Wansbeek and Kapteyn estimator of component variances				
Cross-section SUR (PCSE) standard errors & covariance (no d.f. correction)				
Variable	Slope	Std. Error	t-Statistic	Prob.
INCOME_PER_CAPITA	-0.091809	0.026330	-3.486851	0.2396
AGE_65_	67.24230	44.31570	1.517347	0.1319
POPULATION_DENSITY	-1.170771	1.741714	-0.672195	0.5028
UNEMPLOYMENT	-16.87397	18.21671	-0.926291	0.3563
URBAN_POPULATION	3.85E-05	2.91E-06	13.24020	0.5693
C	291.1759	917.7761	0.317262	0.7516

H0 : Homoscedasticity

H1 : Heteroscedasticity

α : 5%

The table above points that all independent variables probability value are higher than α , which means H0 is accepted and H1 is denied. Therefore, our data is homoscedasticity, means it is free from heteroscedasticity.

Econometrics of Panel Data Regression

Table 5: F-test and R-squared

Cross-section fixed (dummy variables)			
R-squared	0.998542	Mean dependent var	10040.10
Adjusted R-squared	0.997979	S.D. dependent var	32969.04
S.E. of regression	1482.027	Akaike info criterion	17.67354
Sum squared resid	250.E+08	Schwarz criterion	18.54210
Log likelihood	-1360.046	Hannan-Quinn criter.	18.02625
F-statistic	1774.481	Durbin-Watson stat	1.813088
Prob(F-statistic)	0.000000		

H0 : Simultaneously affect Suicide

H1 : Do not simultaneously affect Suicide

From table above, it can be seen that the P-value of F-statistic is less than 5% and the F-statistic value is higher than the P-value of F-statistic. It means that H0 is accepted, hence, all independent variables simultaneously explain dependent variable.

t-test

Table 6: t-test

Dependent Variable: SUICIDE				
Method: Panel Least Squares				
Date: 02/18/18 Time: 21:50				
Sample (adjusted): 2000 2015				
Periods included: 4				
Cross-sections included: 40				
Total panel (unbalanced) observations: 159				
Cross-section SUR (PCSE) standard errors & covariance (no d.f. correction)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
AGE_65_	-312.9294	116.8145	-2.678857	0.0085

INCOME_PERCAPITA	0.206709	0.086310	2.394947	0.0183
POPULATION_DENSITY	9.193515	2.270308	4.049456	0.0001
UNEMPLOYMENT	59.63287	33.71138	1.768924	0.0796
URBAN_POP	9.49E-05	4.55E-05	2.086793	0.0391
C	6363.726	1182.442	5.381849	0.0000

H0 : Does not significantly influence Suicide

H1 : Significantly influences Suicide

α : 5%

H0 is rejected if the P-value is higher than α . Also, the coefficient can explain the positive-negative relation from independent variables to dependent variable. But it does not need to explain the coefficient of insignificant independent variables. The result from the table above is:

- Population over the age of sixty-five significantly explains Suicide. It has a negative relationship and every additional 1 unit in Population above the age of sixty-five, Suicide will decrease by 312.9294
- Per capita income significantly explains Suicide. It has a positive relationship and every additional 1 unit in per capita income, Suicide will increase by 0.206709
- Population density significantly explains Suicide. It has a positive relationship and every additional 1 unit in Population Density, Suicide will increase by 9.193515
- Unemployment rate does not significantly explain Suicide
- Urban Population significantly explains Suicide. It has a positive relationship and every additional 1 unit in Urban Population, Suicide will increase by 0.0000949

Coefficient of Determination

One of a key for goodness fit test is coefficient of determination which is denoted with R-squared, an important measurement of regression. That is because R-squared can inform if the estimated regression model is good or bad. The R-squared of the estimated regression model is 0.998542. It means that the independent variables affect dependent variable as 99% fit.

Testing Hypothesis

As been discussed in Chapter II, the hypothesis of this study as below:

1. H0 : Population of the age over sixty five does not affect suicide number
H1 : Population of the age over sixty five affects suicide number

As obtained by the result, the population of age over sixty five significantly influences suicide number. Therefore H1 is accepted, while H0 is rejected.

2. H0 : Per capita income does not affect suicide number
H1 : Per capita income affects suicide number
The result explains that per capita income also significantly influences suicide number. Hence, H1 must be accepted and H0 is rejected.
3. H0 : Population density does not affect suicide number
H1 : Population density affects suicide number
As well as per capita income and population of age over sixty five, the result states that population density significantly explains suicide number. Therefore, H1 is accepted, while H0 is rejected.
4. H0 : Unemployment rate does not affect suicide number
H1 : Unemployment rate affects suicide number
The result shows that unemployment rate has no significant effect toward suicide number. Therefore, H1 is rejected, while on the other side, H0 is accepted.
5. H0 : Urban population does not affect suicide number
H1 : Urban population affects suicide number

As known from the result, urban population significantly affects suicide number. Therefore, H1 is accepted, while H0 is rejected.

Discussion

1. The results are rather surprising about the negative relationship between the population with age over sixty-five and suicide number. Na, et al (2017) state from their result that “A total of 1200 people in the general public responded to the survey. Older people expressed less favorable attitudes toward suicide than did younger people. According the multiple linear regression analysis, age was the most influential factor with regard to attitudes toward suicide.” Na, et al (2017) also conclude that “Contrary to our a priori hypothesis, people in the older age groups had more negative attitudes toward suicide than did those in the younger age groups. The results suggest that negative attitudes toward suicide in the general population may interfere with the help-seeking behaviour of people at high risk for suicide.”

Another related study is by Roden (2008), *communities with a high percent of persons aged sixty-five and older may have one or more nursing homes or housing communities for retired persons. In such cases, perhaps the abundance of other elderly people in the area is a positive externality for other elderly people.*

Friendship and social integration is more likely to occur amongst people of similar ages. Neighbors in such communities may serve as inspiration for others who struggle.

From several studies that relate to this research, therefore, it is reasonable that population over sixty-five has a positive effect toward suicide number because the elderly people may have lower depression potential due to its

help-seeking behaviour such as going to nursing homes where elderly people can get a good treatment as an old person and will also meet many people with same age.

2. The positive relationship between per capita income and suicide number is another unexpected result, per capita income influences significantly but has a positive relationship toward suicide number

Instead of considering the dissimilar in opportunity cost between a wealthy and poor person, perhaps the concept of marginal benefit versus marginal cost shall be used.

The marginal benefit of attempting suicide when one earns more income may be higher than the marginal cost because the remaining family members (if in existence) have the benefit of the assets and life insurance associated with the death of a wealthier person.

In terms of marginal benefit and cost, one should also consider the stress involved in some of the country's highest paying jobs (Roden, 2008)

Another research that can support the positive relationship of income per capita towards suicide number is by Daly, et al (2011) which use life satisfaction and happiness data that include income and well-being in it. It shows that many happy countries have unusually high rates of suicide. The researchers (Professor Andrew Oswald from the University of Warwick, Associate Professor of Economics Stephen Wu of Hamilton College and Mary C. Daly and Daniel Wilson both from the Federal Reserve Bank of San Francisco) believe the key explanation that may explain this counterintuitive link between happiness and suicide rates draws on ideas about the way that human beings rely on relative comparisons between each other. University of Warwick researcher Professor Andrew Oswald said: "Discontented people in a happy place may feel particularly harshly treated by life. Those dark contrasts may in turn increase the risk of suicide. If humans are subject to mood swings, the lows of life may thus be most tolerable in an environment in which other humans are unhappy."

Professor Stephen Wu of Hamilton College said: "This result is consistent with other research that shows that people judge their well-being in comparison to others around them. These types of comparison effects have also been shown with regards to income, unemployment, crime, and obesity."

3. Population density significantly influences suicide number and also has positive relationship toward suicide number. As the previous studies explains, population density causes many negative externalities such as many kinds of pollution and garbage. People who lives in high population density may experience a bad surrounding that can give negative effects to their health and life. As well as high population growth, in which gives rapid alteration to the society that forcing them to have cultural change. Their norm might be very different to the 'new society' which probably causes one cannot adapt to the new circumstances.

Roden (2008) says that "High population densities are a natural part of urban environments, in which many people do not have the privacy or personal

space they may desire. Therefore, the relationship between population density and suicide is predicted to be positive.”

4. After all, it is not every variable is well explained toward the suicide number. While expecting unemployment rate to be significantly affect suicide number with positive relationship, nevertheless, it does not. However, it is rather not very surprising result from this study because some of the previous studies also state that unemployment rate might not affect suicide number in every area. As Noh states in his journal of Economic Psychology (2009), *Unemployment rate only affects suicide positively in countries with high per-capita GDP levels. In other words, unemployment rates are not universally linked to an increasing suicide rate.*

Instead, the countries with higher income face a higher degree of suicide with a rising unemployment rate, whereas lower-income countries actually showed a negative relationship between unemployment and suicide.

The intuition behind this is that if one loses his or her job when most of the people surrounding them are employed, this will have a much more detrimental effect than if the individual loses his or her job in an environment where seemingly everyone else is also jobless.

Areas with a high level of unemployment rate have a lower suicide rate. This could hypothetically be due to that people that are unemployed in high unemployment rate areas feel less stressed, are less socially stigmatized and are more socially integrated than for the people with a similar situation in low unemployment rate areas therefore the unemployment effect on suicide rates is more pronounced in low unemployment areas (Platt, 1992 op. cit. in Stack, 2000a).

In countries with high rate of unemployment, people probably assume that it is common and normal for them to lose a job or does not have a job at all. It is different with low rate of unemployment countries, in which losing a job is a very shameful and depressing thing to experience. While Yong-Hwan states that unemployment only happens in country with high level of per capita income. Since the data in this research is not obtained according to its income level, instead it is obtained according to suicide number level. Hence, the income level of each countries are not the same, some have high level of income and some have low level of income. Those are the main reason why unemployment rate can not relevantly explain suicide number in this study.

5. Urban population significantly affects suicide number and has a positive relationship towards it. The theory behind this is from Urbanism and Suicide by Kowalski, Faupel, & Starr (1987) which found out the relation between urbanization and suicide. They found that urbanization increasing give a higher probability for suicide rate to increase, variables in the most urban counties tend to have a much stronger explanatory power than in the rural or middle urban counties.

CONCLUSION AND SUGGESTION

Conclusions

1. Percent of population over the age of sixty-five significantly influences suicide number. However, its relationship towards suicide number against the grand theory by (Hamermesh and Neal Soss, 1974), it has a negative relationship instead of having positive relationship. However, it is supported by another researchers (Roden, 2008 and Association Between Age And Attitudes Toward Suicide, 2017) that percent of population over the age of sixty-five may has negative relationship due to the elderly can have the behaviour of help-seeking such as nursing homes where they can have the right treatments and meet many people with the same age.
2. As well as percent of population over the age of sixty-five, income also has a significant effect toward suicide number and against Hamermesh and Neal Soss theory, which has a positive relationship. However, many researchers also supports it, such as Roden (2008) states that, "The marginal benefit of attempting suicide when one earns more income may be higher than the marginal cost because the remaining family members (if in existence) have the benefit of the assets and life insurance associated with the death of a wealthier person.
3. Population density has meet the expected result of this study. It significantly affect suicide number and also has a positive relationship toward suicide number.
4. Unemployment rate, however, does not meet the expected result of this study. It has an insignificant effect toward suicide number. According to Noh in his journal of Economic Psychology (2009), "Unemployment rate only affects suicide positively in countries with high per-capita GDP levels. In other words, unemployment rates are not universally linked to an increasing suicide rate. Instead, the countries with higher income face a higher degree of suicide with a rising unemployment rate, whereas lower-income countries actually showed a negative relationship between unemployment and suicide."
5. Urban population also has the expected result of this study. It significantly affects suicide number and has a positive relationship towards it. It is supported by the theory of Kowalski, Faupel, & Starr, 1987, urbanization increasing give a higher probability for suicide rate to increase, variables in the most urban counties tend to have a much stronger explanatory power than in the rural or middle urban counties.

Suggestion

1. This study can be applied to a number of different factions and economic thought within the social sciences. Fresh perspective on ideas from the anthropology, sociology, and psychology fields may help better the understanding we have on the individual and the community

2. This study could also be the knowledge on understanding more about suicide number, especially for countries which have high level of suicide rate but lack of information regarding the suicide causes and motives, such as Indonesia. Because, this study proves that the cause and motives of suicide can be measured, both statistically and economically.
3. This research may also have a direct effect on suicide prevention programs. If suicide rates can be easily, and rather accurately, estimated using publicly accessible data, countries may be able to determine if their community is a high-risk area.

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