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Is Prevention of Suicide Less Important than Prevention of Other Fatalities?

A Comparison of The Value of a Statistical Life for Suicide vs Traffic Fatality Reduction

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Abstract

The aim of this paper is to compare the value of statistical life (VSL) in the context of suicide prevention to that of prevention of traffic fatalities. We conducted a contingent valuation survey with a web questionnaire to 1038 individuals in the age of 18 to 80. We conjectured that the willingness to pay (WTP) for a given impact on the number of fatalities would be lower for suicide prevention since suicide in some sense is the result of a voluntary decision. However, our results show no statistical significant difference in WTP, which suggests that the same VSL should be used in economic evaluations of suicide prevention as for other risk-reducing programs, such as in traffic safety.

Key words: Value of statistical life, Willingness to pay, Mental health, Cost-benefit, Altruism

JEL code:

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1. Introduction

Each year over 0.8 million individuals worldwide commit suicide and several more make suicide attempts (World Health Organisation, 2014). Suicide is a source of large grief among friends and relatives to the victims but does also give rise to large costs for the society in several other ways (e.g. O'Dea and Tucker 2005, Kennelly 2007, Ryen 2015). The World Health Organization (WHO) member states have committed themselves to work towards the goal of reducing the suicide rate by ten percent by 2020 (WHO 2013). However, prevention programs are costly and tradeoffs have to made with alternative expenditure items, such as for instance reduction of traffic accidents (killing 1.25 million annually, WHO (2014). The aim of this study is to compare the value of suicide prevention to the value of preventing fatalities caused by traffic accidents.

The core parameter in economic evaluations of programs that affect the risk of pre-mature fatalities is the Value of a Statistical Life (VSL). VSL is used in benefit-cost assessment of investments and programs within a wide range of policy areas, such as traffic, health, environment and social work.[1] Economic evaluations of suicide prevention programs have until recently been uncommon and have been based on VSL-levels derived in another policy context (i.e., Hegerl et al. 2009). However, since suicide, in some sense, is the result of a voluntary decision it could be that society is not willing to spend as much resources per life saved through suicide prevention programs as for programs that target pre-mature non-voluntary fatalities. Therefore, one can argue that VSL for suicide should be lower than for other causes of pre-mature death.

To our knowledge this is the first study to compare WTP for suicide prevention and WTP for prevention of traffic fatalities based on data collected within the same survey. It is also the first study to estimate WTP for suicide reduction outside of Japan

For this aim we have conducted a contingent valuation study. A survey was carried out as a web questionnaire sent to a representative web panel of Swedish residents, aged 18-80. The 1038 individuals who participated were asked to state their WTP for interventions that are expected to save 100 (200) lives by prevention of traffic accidents or suicides, respectively. Respondents were also asked whether they think it is more important to reduce the number of deaths due to traffic accidents or due to suicides. About 69 percent of the respondents stated that it is equally important to save lives by prevention of suicides as by reduction of traffic accidents, while the shares having a preference for one prevention program over the other were quite similar (17 percent and 13

[1] For reviews of previous studies, see de Blaeij et al. (2003), OECD 2012). A number of Swedish VSL studies are reviewed in Hultkrantz and Svensson (2012), and some more recent Swedish VSL studies are Olofsson et al. (2016; 2018a; 2018b; 2018c).

percent, respectively, stated that suicide prevention or traffic safety is more important). No support was given to the hypothesis that the willingness to pay for suicide prevention is lower than the willingness to pay for risk reducing programs in the context of traffic safety. For policy, this suggests that funds for prevention of fatalities should be directed to the program with the lowest cost per saved life.

2. Background

2.1 Economic theory

In a society with only purely self-interested individuals, the VSL is determined by the marginal rate of substitution between own health and own risk (Jones-Lee 1976). The same holds for the valuation of a private good that only has effects on the individual risk. However, when the good being valued is public and the individual has preferences for the wellbeing of others, the VSL will incorporate altruistic preferences. These preferences can further be divided into pure altruism and paternalistic altruism. In the case of pure altruism, the individual cares about the wellbeing of others and respects their preferences, i.e., the utility of individual *i* depends on the *utility* of individual *j*. In the case of paternalistic altruism, the individual cares about the wellbeing of others but does not believe that these individuals are the best judges of their own utility, i.e., the utility of individual *i* depends instead on some argument in the utility function of individual *j*. If individual *i,* for example, only cares about the safety of individual *j*, individual *i* is said to have safety-focused altruism (Jones- Lee 1991). The form of such possible altruistic preferences will affect the WTP for suicide prevention, since a positive WTP means that the respondent is willing to pay to prevent another individual from taking a certain action.

In their seminal paper on the economics of suicide, Hamermesh and Soss (1974) argue that a utility-maximizing individual commits suicide if the present value of his expected lifetime utility becomes zero. Therefore, if an individual has pure altruistic preferences, i.e., respects the other individual's utility function, the WTP to prevent other individuals from committing suicide would be zero.[2] In the same way, if the individual respects the preferences of her future self, the WTP to reduce the own probability of committing suicide would also be zero. If, on the other hand, the respondent does not view a suicidal individual as a rational decision maker, the WTP to prevent suicide could be positive, meaning that the individual have paternalistic altruistic preferences. Similarly, if the individual thinks

[2] We can think of situations when an individual with pure altruistic preferences, or purely self-interested individuals have a positive WTP for suicide prevention. This can for example be the case if the individual want to decrease the probability that someone close to them commit suicide and thereby induce negative stress for the person. However, for simplicity we ignore that for now.

that there is a possibility that her future self is not the best judge of her own utility, then she would be willing to pay to reduce the own risk of committing suicide in the future (i.e., the individual has paternalistic altruistic preference also towards herself).

We conjectured that WTP for a given impact on the number of fatalities is lower for suicide prevention if individuals have self-centered or pure altruistic preferences and see suicide as the outcome of a (in some sense) rational decisions. Traffic accidents are as a rule involuntary (if not caused by a suicide attempt). In contrast, the decision to commit suicide can be seen as either a voluntary decision by a, in some sense, rational individual or as an irrational decision by an individual that is not able to decide what is best for herself. In the former case, individuals with self-centered or pure altruistic preferences have no reason to pay for suicide prevention. In the latter case, people may have paternalistic preferences that result in a positive WTP for suicide prevention that may be lower, equal or higher than the WTP for prevention of fatalities caused by traffic accidents.

2.2 Earlier literature

To our knowledge the previous literature of WTP for suicide prevention is a series of studies in Japan by Sueki (2015, 2016a, 2016b, 2017).[3] In the first two of these, VSL for suicide prevention was estimated with two different samples (university students and Japanese tax payers) and different methods (open ended questions and double bounded dichotomous choice). This resulted in VSL estimates of USD 0.2 million and USD 0.27 million. This can be compared previous studies in Japan which has estimated this value to be around USD 2 million for traffic accidents.

Sueki (2016b) investigated how the WTP for suicide prevention is influenced by the respondents' attitude towards suicide. He found that respondents who think that suicide *can happen to anyone* and that *suicides can be prevented* have higher WTP than respondents stating otherwise, while respondents who believed committing suicide to be *a induvidual right* have lower WTP. Furthermore, (Sueki 2017) found that WTP can be changed by, for example, giving the respondents a series of lectures about suicide before answering the questionnaire.

Our study differs from these previous studies in several important ways. First, Sueki (2015, 2016a) framed the good as a as a reduction of *the respondents own* probability to die from suicide.

> "By implementing the countermeasure, the death risk by suicide for 1 year can be decreased from 20/100,000 to 15/100,000, meaning that your death risk from suicide decreases by 25%.

[3] The Sueki 2015 paper is only available in Japanese, therefore all information regarding this study comes from the Sueki 2016a paper.

> Imagine national and local governments were to launch the new countermeasure against suicide and collect specific contributions for it.
>
> Do you approve or disapprove of JPY XXX (500; 1,000; 2,000; 4,000; or 8,000) tax increase per year to implement the countermeasure against suicide?"

The task given to respondents in this way is a cognitively complex one since she has to think of herself as a current "planner" restricting herself future "doer". If the individual views herself as a rational utility maximizing person, the WTP to reduce her own risk to die from suicide would be zero.

Furthermore, Sueki (2015, 2016a) compare the VSL estimates to VSL estimates in other contexts (i.e., traffic) from other studies. Given the large variation in previous estimates it is difficult to determine which part of the difference that is due to difference in study design and which part that is due to difference in context.

Previous VSL research has shown that estimates are dependent on context. For example, individuals are often willing to pay a higher premium for reducing the risk of dying from cancer than from other causes (Viscusi et al. 2014). Johansson-Stenman and Martinsson (2008) found that respondents give a higher value on saving pedestrians then car drivers. In the same manner, Carlsson et al. (2010a) found that VSL in fire and drowning accidents seems to be lower than the value for traffic. However, Carlsson et al. (2010b) found no difference with regard to cause of accident. The authors argue that this might be due to the fact that in the first study (2010a) the respondent was asked to value a reduction in her own risk, while in the second study the respondent was asked to choose between different projects influencing the risk of others.

More close to the subject field of our study, studies show that individuals seem to be willing to pay less for different health care programs targeting mental health compared to both elderly care and cancer programs (O'Shea, Gannon, & Kennelly, 2008). Also, even though individuals viewed mental illness as more burdensome than general medical illness, their WTP was lower for mental health illness (Smith et al 2012).

3.2 Swedish policy context

In 2008, the Swedish Parliament decided on a "vision zero" long-term target for suicides. This policy was inspired by a similar policy from 1997 targeting fatalities and severe injuries caused by traffic accidents. While the policy for traffic has been very successful, resulted in a slimming of the number of traffic fatalities by close to a 50 percentages, the number of suicides has been more or less constant since the decision was made (figure 1).

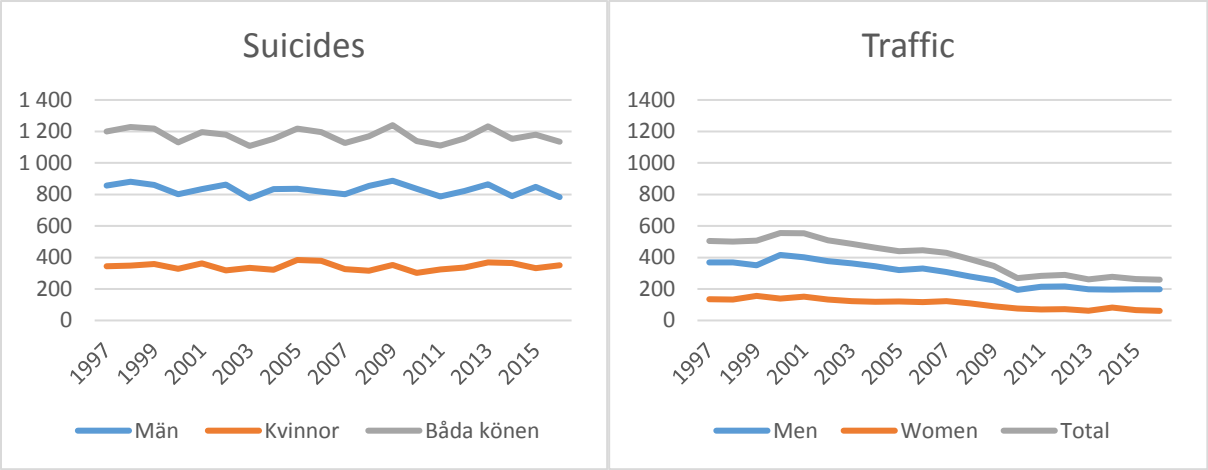

Figure 1. Number of deaths, suicide and traffic.

Source: The National Board of Health and Welfare, statistical database, Causes of Death 2018-04-23

In 2016, 1134 individuals committed suicide and 259 died in traffic. More men than women die both in traffic and from suicides. Even so, more women than men try to take their life (ref). Both suicides and deaths due to traffic accidents are present in all age categories (table 1).

Table 1, Number of deaths 2016, by age, suicide and traffic.

Age	Suicids		Traffic	
	(%)	n	(%)	n
0-29	17	195	22	56
30-49	29	334	20	52
50-69	33	378	30	78
70-	20	227	28	73
Total	100	1134	100	259

Source: The National Board of Health and Welfare, statistical database, Causes of Death 2018-04-23

Within traffic policy there is a long tradition of conducting cost-benefit analysis and the VSL have become a core parameter in this context. The current recommendation by the Swedish Transport Administration is to use a VSL of 40.5 million SEK. Hultkrantz and Svensson (2012) summarized twelve different studies, including 48 VSL estimates, conducted in Sweden between 1996 and 2010. Most of these (39/48) were based on traffic safety, but this review also included studies from other policy context such as health care, air travel, fire and drowning. Some more recent Swedish VSL studies are Olofsson et al. (2016; 2018a; 2018b; 2018c), which are some of the studies that the latest recommendation for VSL by the Swedish Transport Administration is based on.

5. Modelling approach

5.1 Study design

To estimate the VSL we conducted a contingent valuation study. Since traffic is the policy area where most previous VSL studies has been conducted, estimating the WTP for traffic safety and suicide prevention within the same study can provide important insight into how and why these values might diverge from each other. Since a goal of this research is to give guidance on how governments should allocate resources between policy areas, respondents were besides being asked to about their WTP for these two interventions also directly asked about in which area they think prevention is most important.

5.2 The questionnaire

The survey started with an introduction explaining the purpose and giving some practical information (for questionnaire se appendix A1). After this followed some background questions, i.e. age, gender, marital status, country of birth, number of persons in the household (total and under 18), education, occupation, and life satisfaction. This section ended with a question regarding the respondent's perception about the importance of interventions that could save lives within traffic safety and suicide prevention. The survey consisted of two WTP-sections, one about traffic and one about suicide. To control for **scale sensitivity** both parts included two levels of risk reduction (100 and 200 saved lives). After a short introduction to the WTP concept both of these sections initially showed some information on the number of people that die in traffic/of suicide each year, by age and gender. About 80 percent of the respondents started with the questions about traffic and 20 percent started with the questions about suicide.

The respondents were asked whether or not they think the government should spend money on an intervention that would save 100/200 lives within the specific policy context. Since previous studies have shown that respondent have a hard time to understand a reduction in small probabilities (Hammit and Graham 1999), the risk reduction was presented as the absolute number of lives saved. However, information was also provided about the risk reduction expressed as the change in probability for a random individual.

The WTP questions followed a variation of the bidding game method. The respondent was asked a maximum of four different payment levels from a three structure (Appendix A2). To control for starting point bias, the respondents were divided into three groups starting at different values. The respondents were informed that the payments should be assumed to be collected through a uniform

tax, and the respondent was shown both the total payment by all tax payers and the cost per tax payer.

To reduce hypothetical bias respondents were asked to specify how sure they were that they in reality would vote yes to a proposal to run the intervention, using a 0-10 Likert scale. Further, the respondent were asked if they would be willing to donate the money they get for answering the survey to support intervention to improve traffic safety or to support mental-health programs.

To make sure that the final answer was consistent with her own preferences, each respondent was shown a comparison of her stated WTP for save 100 lives in both contexts and was then asked if she wanted to change her answer. A feedback was given by a text stating for instance "*this indicates that you think it is worth more to save a life within traffic than by suicide reduction*", and then asked whether this statement was correct. If the stated WTP for one area was larger than the WTP in another area, the respondents was asked why. Since this may lead to warm glow effects, i.e., individuals stating the same WTP since they think this is the right thing to do, the analysis of the responses was done both with the responses to the first open ended question and the (potentially changed) final answers.

A final section of the survey consisted of questions regarding the respondents own experience from traffic accidents and mental health problems. The respondent were also asked questions regarding their attitude to mental health problems in general, and suicide in particular. Finally, the respondents were asked to evaluate their own quality of life on a Likert scale.

5.3 Pilot study

To test the questionnaire the survey was sent out to 50 respondents in November 2017. In addition, we conducted a focus group consisting of five students. The pilot resulted in unrealistic high VSL values. We believe that one reason for this could be that the respondent did not consider the opportunity cost of public funds. Therefore in the final survey a sentence was included describing what the same amount of money could buy in terms of numbers of kindergarten teachers, doctors, nurses, and police officers, respectively. Also, the outline was changed, starting with the total societal cost and showing the payment per individual in parenthesis. Apart from this, only minor changes were made.

5.4 Empirical strategy

Since the WTP is censored below zero, when analyzing the determinants of WTP a standard Tobit model was estimated.

$$y_i^* = x_i'\beta + \varepsilon_i$$

$$y_i = y_i^* \; if \; y_i^* > 0$$

$$y_i = 0 \; if \; y_i^* \leq 0$$

where y_i is the stated WTP of individual *i* and ε_i is assumed to be NID(0,σ^2) and independent of x_i.

To analyze the size of the difference in WTP in the two contexts a variable for this difference (i.e $WTP_{suicide} - WTP_{traffic}$) was generated. This was analyzed using a standard OLS.

The same set of explanatory variables was used in all analysis. In the baseline specifications only age (and age squared), gender and education (higher education or not) was included. The effect of income was analyzed separately, since this variable contained a lot of missing values. In the next step variables capturing the respondents experience and attitude were included. For suicide, a dummy variable indicated whether the individual knew someone who have tried to commit, or had committed, suicide. Also, a variable indicating if the respondent ever has search help for depression was included. Two other variables indicated whether the respondent think she has control over her probability of getting a depression and whether she thinks that it should be up to an individual's own decision to end her own life. As for experience from traffic accidents a variable indicated whether the respondent knew anyone who had died from a traffic accident and another whether she herself had ever been in a traffic accident was included. Furthermore there was a variable showing on a scale 1-10 whether the respondent thinks that her risk of being in a traffic accident is higher or lower than that of the general population, and a variable showing (on a scale 1-10) how worried the respondent was about the risk of being in an traffic accident. Finally a set of dummy variables were included indicating how often the respondent travel by car, as a driver and as a passenger.

5.5 The sample

In total 3,908 individuals were invited to participate in the survey all of which were participants in the Norstat panel, a telephone recruited web panel consisting of 67,000 individuals. Out of these 1,197 (31%) started the survey and 1,038 (27%) completed the full survey. All participants got a small reward (points which corresponds to money), which they could choose to donate to charity. The sample was drawn to be representative in relation to the total population when it comes to age, gender and region (Table 2). About 50 percent were married and about 23 percent were born in a country other than Sweden. 78 percent had at least one person under the age of 18 living in the household. 54 percent had some form of higher education (at least some education from a university). When it comes to employment, about 52 percent were employed and 32 were retired.

Table 2, Descriptive statistics, full sample, n=1038

	(%)
Gender	
Men	50.39
Women	49.42
Age (mean)	50.43
Marital status	
Not married	37.57
Married/partnership	50.96
Widow/widower	3.95
Divorced	7.51
Country of birth	
Sweden	75.82
Outside of Sweden	23.41
Highest level of education	
Primary education	8.09
Some secondary education	38.24
Some university or more	53.66
Employment status	
Employed	51.73
Self-employed	4.91
Retired	31.50
Student	6.94
Searching for job	2.31
Other	2.60

Compared to the general population our sample seems that we have a higher proportion of individuals born outside of Sweden and a higher proportion of retired individuals.

6. Results

6.1 Attitude and preferences

Respondents answers to the question on which in policy area, traffic safety or suicide prevention, they thought was most important to allocate resources are shown in Table 3. Most respondents stated that they perceived both areas is equally important. However, even though the difference was small, more respondents answered that suicide reduction was more important than to reduce the number of deaths due to traffic accidents.

Table 3. What do you think is most important?

	Frequency	Percentage
To reduce the number deaths due to traffic accidents	140	13.5
To reduce the number of suicides	181	17.4
I think both policy areas is equally important	717	69.1
Total	1038	100

As regards previous experience, 19 percent stated that they had been in a traffic accident which required them to go to the hospital and 14 percent know someone who died in a traffic accident. 19 percent stated that they were worried that they would get hurt in a traffic accident.[4]

For suicide, 54 percent knew someone who had tried to commit suicide or who had committed suicide. Furthermore, 63 percent stated that they think the society should take vigorous action to reduce the number of suicides,[5] while 23 percentages agreed to the statement that each individual should be allowed to decide if they would like to end their life or not.[6]

Among those who had stated a higher WTP for suicide prevention then traffic safety (n= 180), the main reason was "I think the society does too little in this area" (n = 89) followed by "I think there is more possibilities for reducing the number of deaths within this area". Those who stated a higher WTP for traffic then suicide prevention (n=157) did instead state "I think it is more important to prevent an involuntary death then a voluntary" (n = 62) and "I think there are more possibilities for reducing the number of deaths within this area" (n= 58).

Each respondent get a small monetary reward for answering the survey. When asked if they would be willing to donate this to support different types of interventions about 54 percent would be willing to do so.[7] 13 percent stated that they would be willing to donate the money to interventions to support the mental health in the society, 5 percent stated that they would be willing to donate the money to intervention to increase the traffic safety, 30 percent would be willing to donate to both type of interventions and 7 percent would donate to other types of interventions.

6.2 Willingness to pay

In the WTP section, the respondent is, for each scenario, asked a maximum of four different cost alternatives from a three structure. Which cost proposal the respondent gets depends on the answer to the previous bid. After this the respondent gets an open ended question asking about the specific WTP. The distribution of the WTP for both suicide and traffic is presented in Figure 3.[8]

[4] Defined as answering higher than six on the question, *How worried are you that you will be hurt in a traffic accident* (scale 0-10).
[5] Defined as answering more than six on the statement, "*I think the society sound take vigorous actions to reduce the number of suicides*" (scale 0-10).
[6] Defined as answering more than six on the statement "*Each individual should get to decide if they would like to end their own life, this is no one else business*" (scale 0-10)
[7] This was a hypothetical question and no actual donation was made.
[8] 5 outliers have been excluded, 4 stating a WTP> 800000, 1 stating a WTP>100 000.

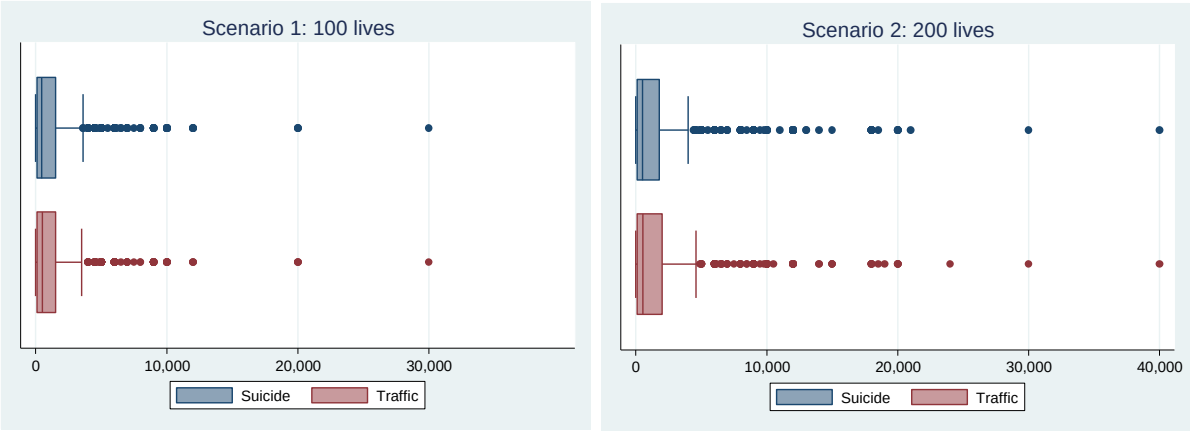

Figure 3. Willingness to pay to save 100 and 200 lives

Figure 4 shows the difference between the WTP to save 100 live from a reduction in the number of suicides and the WTP to save 100 lives form a reduction in the number of death from traffic accidents.

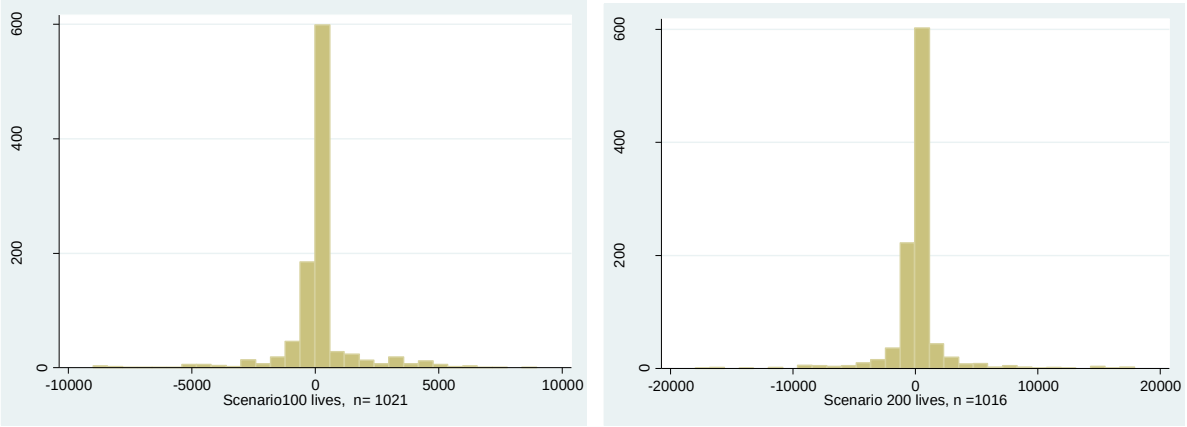

Figure 4. WTP suicide-WTP traffic

The hypothesis that the WTP for suicide prevention is larger than or equal to WTP for traffic safety cannot be rejected in a t-test when using the full sample. As a robustness test, the test was re-run including all respondents, and then excluding outliers[9], respondents who stated a higher WTP to save 100 lives than to save 200 lives, and unsure[10] step by step for 100 and 200 lives (Table 4).

[9] Same as note 8

[10] Respondent are defined as unsure if they answer <5 on the question regarding how sure they are that they actually would wot yes to the proposed increase in tax.

Table 4, test H_0 = mean (WTPs-WTPt) ≥ 0 (p-value in parenthesis)

	Scenario 1: 100 lives	Scenario 2: 200 lives
Full sample (n=1019)	Cannot reject H0 (0.137)	Cannot reject H0 (0.205)
Without outliers (n=1014)	Cannot reject H0 (0.907)	Cannot reject H0 (0.801)
Without irrational (n =750)	Cannot reject H0 (0.996)	Cannot reject H0 (0.821)
Without unsure (n = 675)	Cannot reject H0 (0.998)	Cannot reject H0 (0.865)

In none of the specifications support was found for the hypothesis that the WTP from suicide prevention is lower than the WTP for saving a life in traffic. On the contrary, when using the lower risk reduction (100 lives) and after cleaning the data for outliers we found that the WTP for suicide prevention is statistical significant higher the WTP for preventing fatal traffic accidents (appendix A4).

However, it could be that the respondents state the same WTP for both contexts, since this may seem "the right thing to do". Therefore we also tested our hypothesis using the WTP values stated before the respondents got the chance to change their answer.[11] In none of these specifications support was found for the hypothesis that the WTP for suicide prevention should be lower than the WTP for saving a life within traffic. Furthermore, a test was made of the difference between those who started with different scenarios, using only the first scenario, showing no significance.

6.3 VSL

To test the comparability of our results with other studies VSL was computed. This is done according to equation 1, based on the assumption that there are 8 000 000 taxpayers in Sweden.

$$VSL_{total} = \frac{WTP}{\Delta deaths} \times 8\,000\,000 \qquad \text{(equation 1)}$$

Where Δdeaths is 100 in the first scenario and 200 in the second.

To be able to compare our results with results from previous studies the data was cleaned from unrealistic answers following the same procedure for cleaning the data as in Olofsson et al. (2016).[12]

[11] Results available upon request

[12] This is s the study underlying the most current revision of the VSL by the Swedish Transport Administration.

Responses from respondents who stated a higher willingness to pay to save 100 lives than to save 200 lives (269 respondents) were dropped, while those stating the same amount for both scenarios were kept. The data was also cleaned from responses from protesters[13] and outliers[14] .

Untrimmed answers are provided in appendix (A3). Descriptive statistics for the trimmed answers are presented in Table 5.

Table 5, Median and Mean for VSL

	Suicide n = 745 , n = 738		Traffic n = 758, n =737	
	Median	Mean	Median	Mean
Δdeaths = 100	20 000 000	51 000 000	22 200 000	51 200 000
Δdeaths = 200	16 000 000	34 500 000	20 000 000	35 300 000

The estimated VSL is in line with the result from previous studies conducted in Sweden and can for example be compared to the latest recommendation by the Swedish Transport Administration which is 40.5 Msek. As expected we got a lower VSL when using the larger risk reduction.

6.3 Determinants of WTP and the difference

Women seem to have a higher WTP for suicide prevention than men and respondents with higher education have a lower WTP for both scenarios (Table 6). Apart from this, the attitude to mental health in general and suicide in particular seems to be important. Those who think that it is possible to control your own risk of getting a depression have a lower WTP for suicide prevention, the same holds true for individual who state that they think it should be up to the individual when she wants to end her own life. This is in line with Sueki (2016b) who showed that the respondents' attitudes to suicide is important for their WTP. When it comes to traffic even though most coefficients have the expected sign only few are statistical significant.

[13] A protester was defined as

[14] A outlier was defined as …

Table 6, determinants of WTP, Tobit regression.

	WTP suicide		WTP traffic		WTP suicide		WTP traffic	
Constant	319.39		332.32		591.71		284.20	
	(727.98)		(701.90)		(737.37)		(854.67)	
Age	43.21		42.02		43.52		44.19	
	(30.94)		(29.79)		(30.91)		(30.67)	
Age^2	-0.45 (0.30)		-0.38		-0.44		-0.40	
			(0.29)		(0.30)		(0.30)	
Women	566.21	***	127.51		526.75	***	119.93	
	(171.32)		(164.76)		(175.49)		(177.68)	
Higher education	-343.79	**	-290.06	*	-357.62	**	-291.68	*
	(171.73)		(165.11)		(171.92)		(168.01)	
Experience of suicide					95.81			
					(174.18)			
Depression					-5.81			
					(209.22)			
Control					-365.92	**		
					(179.48)			
Attitude –own choice					-400.59	**		
					(192.53)			
Traffic accident/death							200.39	
							(234.83)	
Experience own traffic							-46.83	
accident							(211.71)	
Worry traffic risk							16.87	
							(35.24)	
Subjective risk							-2.79	
							(47.39)	
n	1023		1023		1023		1023	
Censored observations	91		72		91		69	
Pseudo R^2	0.0010		0.0003		0.0015		0.0013	

Standard errors in parentheses. ***p<0.01, ** p < 0.05, * p<0.1

The second specification about wtp for traffic also include dummy variables capturing how often the respondent travels by car as a driver or as a passengers, none of these was statistical significant.

Controlling for the size of the first bid shows that individuals who started with the highest bid have a statistically significant higher WTP than respondents who started with the lowest bid.[15] Dropping irrational respondents makes the coefficient for age statistically significant in all specifications.

Analyzing the size of the difference ($wtp_{suicide}$-$wtpt_{traffic}$), the only statistically significant results are that the coefficient for women has a positive effect and the belief that individuals should have the right to decide when to end their own life has a negative effect.[16]

[15] Results avaible upon request

[16] Results avaible upon request

5. Discussion and conclusions

In this paper we conducted a contingent valuations study to compare the WTP for suicide prevention with the WTP to save a life from a traffic accident. Our hypothesis is that the WTP for a given impact on the number of fatalities for suicide prevention is lower since suicide in some sense is the result of a voluntary decision. Contrary to our hypothesis, we do not find that individuals have a lower WTP for suicide prevention compared to a reduction in the number of fatalities from traffic accidents.

Thus the WTP responses would reveal paternalistic altruism, i.e., that individuals are willing to pay to change the behavior of others, and/or their future selves. One interpretation of the results is that many individuals do not believe suicide to be a rational decision. This means that a respondent accepts that there could be a state in the future where she does not know her own best. This can for example be because many suicides are connected to mental illness such as depression and schizophrenia and that individuals with these conditions are not seen upon as rational decision makers. If the respondent thinks there is a risk that she in the future gets a mental illness, she may want to pay today to prevent herself from making bad decisions in that state.

Our result diverges from the previous studies conducted in Japan by Sueki (2015, 2016a) who's results indicated that the VSL in the context of suicide prevention was lower than the respective value for traffic accidents. One explanation can be that Sueki (2015, 2016a) focuses on the individuals risk while we frame our intervention as a public good reducing the risk of all individuals.

Another aspect that could have an influence on the WTP is the fact that more people (in Sweden) die from suicide than in traffic accidents. The respondents were informed about the number of deaths in the two cases and that may have influence the answers.

A possible policy conclusion from this study is that the same VSL should be used for interventions to reduce the number of suicides as for life-saving interventions in other policy areas, such as traffic. This implies that funds for prevention of fatalities should be directed to the area with the lowest cost per saved life.

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Appendix A1 (TBW)

Example from the questionnaire

There is different types of interventions that could be used to reducet he number of suicides. We will ask you to take a stand regarding several scenarious. We ask you to assume that if one person is hinderd from commiting suicide, this induvidual will not commite suicide at a later stage. If no intervention is made, about 1200 induviduals are expected to commit suicide each year. Assume that there exist an intervention that can reduce the number of suicides by 100 induviduals.

This means that the risk that a random induvidual commites sucide during the next year is reduced from 0.012% to 0,011%

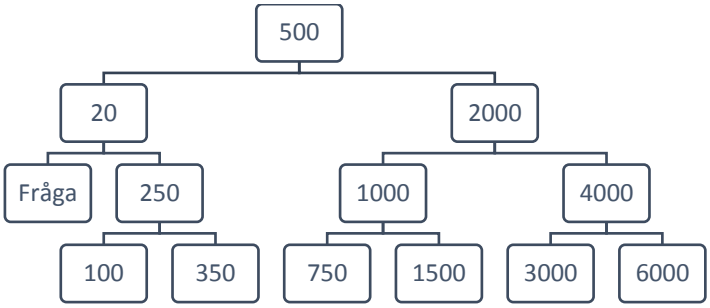
Scenario 1 – suicide, wtp question 1 of 4

Assumed number of suicides next year without intervention	1200
Expected reduction of number of suicides next year with intervention	100
Total cost each year	6 000 000 SEK
Total cost per taxpayer	750 SEK

We ask you to consider the alternative use of taxes. The same amount, i.e 6 000 000 (750kr/taxpayer) could instead be used to pay for 13161 pree-school teachers, 11780 schoolteachers in primary education, 15435 nurses, 9131 doctors or 15206 police officers.

Do you think that the intervention should be done?

Yes No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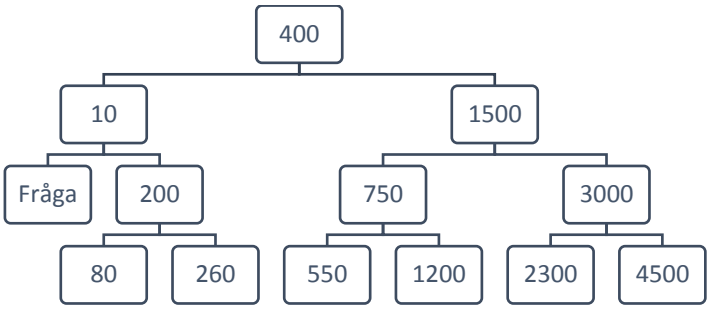
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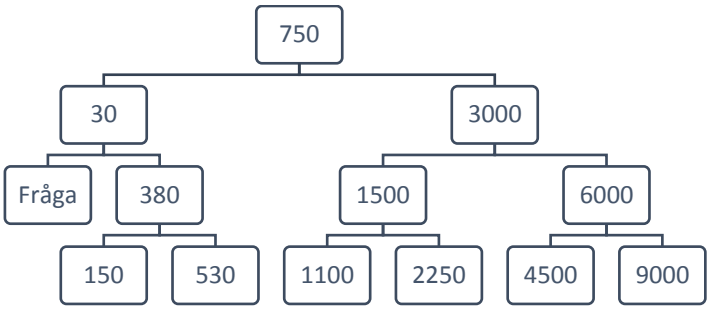
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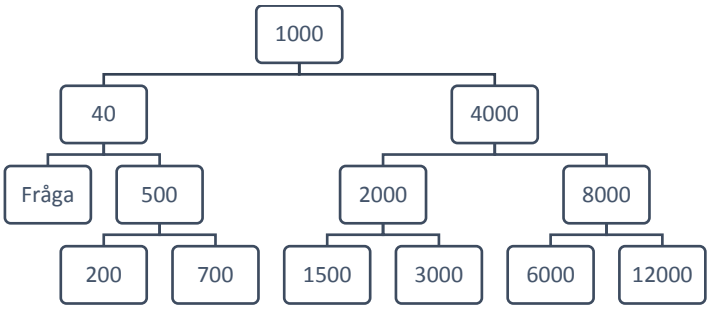
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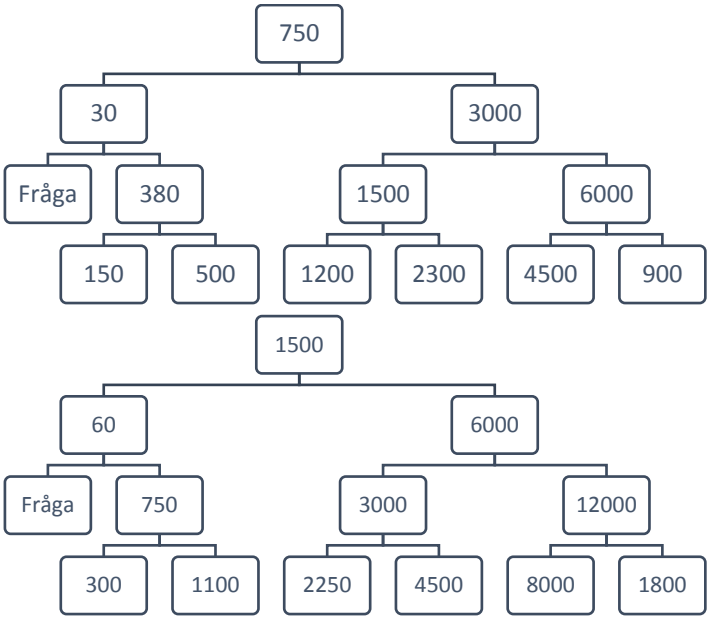
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