Measuring the harm of illicit drug use on friends and family

HANS OLAV MELBERG & PEKKA HAKKARAINEN & ESSEN HOUBOURG & MARKE JÄÄSKELÄINEN & ASTRID SKRETTING & MATS RAMSTEDT & PIA ROSENQVIST

ABSTRACT
AIMS – This paper explores different approaches to quantify the human costs related to drug use. DATA AND METHODS – The data come from a representative survey of 3092 respondents above the age of 18 in four Nordic capitals: Copenhagen, Helsinki, Oslo and Stockholm. RESULTS – The results show that in most Nordic capitals more than half of the respondents at some time have known and worried about the drug use of somebody they know personally. Moreover, while the average reported harm was about 2 on a scale from 0 to 10, a significant minority (10%) of those knowing drug users indicated that the harm was above 5. CONCLUSIONS – Many persons have at some time personally known somebody who uses drugs. This causes significant human harm and should be included in the estimate of the social cost of illegal drugs. These results are relevant in the debate on the size of the drug problem as well as for targeting groups that experience the highest costs.

Introduction
Mark Kleiman (1999) has argued that the standard method of estimating the economic cost of illicit drugs "ignores the profound day-to-day harm living with addiction imposes on addicts and their intimates.” To illustrate the importance of this he employed a back-of-the envelope analysis, which suggested that including human harm would increase the estimated cost of drugs in the study presented in Harwood et al. (1998) by more than 80%. This estimate assumes that the drug user, family and friends together are willing to pay 10 000 USD for a year’s remission. The purpose of this article is to follow up on Kleiman’s suggestion about designing measures of harm that are wide enough to include not only economic harm, but also what we define as human harm i.e. the emotional pain and suffering inflicted on friends and relatives by the consumption of illegal drugs. We do so, by using the results from a large survey in the Nordic capitals in which we explore different ways of estimating how many individuals are affected, in what ways, and the extent to which drug use among friends and family affects them.

The quantification of human harm is important in itself, but it also has important policy implications. The immediate consequence of leaving out human harm is to

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underestimate the cost of drugs use. Studies of the social cost of drugs often quantify costs born by society at large – health costs, crime costs, lost income – but not the human consequences felt by those who are close to the user (See, for instance, French & Martin 1996; Single et al. 1998; Culyer et al. 2002). This underestimation may in turn lead to under-prioritization of the drug area as a whole. Moreover, if the success of a policy is measured by its ability to reduce the costs associated with drugs, then leaving out important cost categories will lead to skewed policies. We will get policies aimed at indicators that happen to be easily available, instead of policies that focus on the overall problem. For both of these reasons, to avoid under-prioritization and misguided policy aims, it is important to gain a better understanding of the human harm associated with drug use.

Previous empirical research on the human harm related to illicit drug use is sparse. There is a related literature on the empirical and conceptual problems of the cost-of-illness approach (Reuter 1999; Moore & Caulkins 2006; Melberg 2010), but the literature on the human harm of drug use is small. A key reference is Zarkin et al. (2000) who present a pilot survey that quantifies society’s willingness to pay for treatment of drug users. On average people indicated that they were willing to pay 37 USD for a program that successfully treated 100 drug addicts. They also found that the willingness to pay for treatment did not change when the number of successfully treated addicts in the proposed program increased from 100 to 500. This reveals a common problem facing such studies. Many people have not thought about the problem and when asked to put a monetary value on something, they tend to give answers that reflect an underlying opinion more than a true quantification (“Drug treatment is a good thing, I will support it”) or an answer that is largely influenced by random factors. These problems imply that in addition to asking about monetary valuations, one should also explore quantifications which may be easier for respondents to understand.

There is also a relevant literature on measuring harm in general and using harm reduction as a policy goal (Nutt et al. 2010). This research has stimulated several attempts to create a harm index such as the UK Drug Harm Index, the Australian Drug Harm Index and New Zealand Drug Harm Index (Ritter 2007; MacDonald et al. 2005; McFadden 2006). These indices quantify some of the human harm associated with drugs, but with the exception of Nutt et al. (2010) they do not include harm experienced by family and friends of drug users. For instance, the authors behind the UK Drug Harm Index explicitly stated, “it does not capture all the harms that illegal drug use generates, but rather a subset of harms for which robust data (or information) are available” (MacDonald et al. 2005). This leaves the research community with a challenge: Is it possible to develop measurement methods that include emotional pain and suffering related to illicit drug use?

**Design and method**

In order to quantify the human harm on friends and relatives of drug users, it is first necessary to determine how many are affected. Second, we need to know in what ways they are harmed. The third and most difficult challenge is to convert the various
harms into a single unit so it can be aggregated and provide an indication of total harm, which may, but does not need to be measured monetarily.

The questions were designed to test several different ways of measuring harm. Given the problems associated with direct monetary questions used in different types of contingent valuation studies (Klose 1999; Diener et al. 1998; Smith 2003), we decided not to focus exclusively on measuring harm in monetary values but also to explore three different quantifications of harms. First, after determining how many people were affected, we asked about the prevalence of specific types of harm such as fear of violence, having to call the police and seeking professional help. Second, moving one step closer to measuring aggregate harm, we also asked the respondents to indicate how much they had been affected on a scale from 0 (no negative impact) to 10 (my life has been destroyed). In these questions the respondents gave answers both in terms of life experiences as well as during the past 12 months.

In order to better interpret the reported harm we asked the respondents to compare drug addiction to several other illnesses or events such as being paralyzed, becoming blind, or suffer a severe burn injury. Finally, we also asked about monetary valuation. In these questions we distinguished between willingness to pay in general and willingness to pay for a friend or relative. In this way the survey was designed to explore different methods, to compare the consistency of the answers and to explore which method seemed to generate the most valid and reliable answers.

Before completing the survey each respondent was informed about the aim of the study as well as the definition of key phrases. Of special importance is the phrase "a drug user you personally know." This was explicitly defined in the instructions as "a person who is close to you, a relative or a friend, or a person you at least know the name of and have talked to." The aim of this design was to avoid exaggerating the share of the populations that was affected as well as making sure that the respondents interpreted the question in the same way.

In addition to standard cross-tables and figures, we used hurdle regression models to analyze to what extent gender, age, education, and nationality could explain the observed differences in reported harm (Jones 2007). Some answers contained responses that seemed to reflect misunderstandings or unwillingness to confront the difficult choices presented in the questions. For instance, a few respondents reported a willingness to pay more than 999 million Norwegian krone (more than 100 million euro). The survey format required a response before progressing to the next question, which may have encouraged some respondents to enter a very large sum in order to indicate either a refusal to answer, or more likely, to express an infinite value – that no amount of money would be too high. These extreme observations imply that taking averages could be very misleading. We addressed this problem by focusing on median values in the questions discussing monetary values.

The results in this paper are based on a representative survey of 3092 respondents above age 18 in four Nordic capitals: Copenhagen, Helsinki, Oslo and Stockholm. The survey consisted of 34 questions and was conducted by the opinion research
company Synovate, which maintains a survey panel of a representative sample of the population. Members of this panel received an e-mail invitation to participate in the survey. The respondents responded anonymously using a web-based interface. Web-based surveys raise the possibility of selection bias (Couper 2000), but it has also been shown that web-surveys based on pre-selected panels perform well compared to telephone surveys (Braunsberger et al. 2007).

As seen in Table 1 the samples differ from the whole country or capitals with respect to the level of education of the population. More than half of our respondents had completed a university degree. Men and women seem to be accurately represented and the average age is also fairly representative considering that the survey only targeted the population above age 18.

Although the participants were recruited from a representative panel, there is still the quite likely possibility that those who were more interested in the topic of drugs than the average panel member agreed to participate. However, more than 50% of those who were invited accepted and responded. This means that although there may be some selection effects, the respondents do not represent a small minority of the representative panel.

### How many are affected?

In Copenhagen, Oslo and Stockholm more than half of the respondents had at some point in their lives been concerned about the drug use of somebody they knew personally.

<table>
<thead>
<tr>
<th>City</th>
<th>Percentage female</th>
<th>Average age</th>
<th>Percentage with education above high school (university or polytechnic)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sample</td>
<td>Capital</td>
<td>Country</td>
</tr>
<tr>
<td>Denmark</td>
<td>54</td>
<td>51</td>
<td>51</td>
</tr>
<tr>
<td>Finland</td>
<td>52</td>
<td>53</td>
<td>51</td>
</tr>
<tr>
<td>Norway</td>
<td>51</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Sweden</td>
<td>50</td>
<td>50</td>
<td>49</td>
</tr>
</tbody>
</table>

* Sources: Organization for Economic Cooperation and Development (OECD) and The Nordic national statistical databases. Information about educational level in the capital was available for the sample and the country, not the capitals.

** In Norway and Sweden the average age in the capital relates to the population above 18 only.

### Table 2.

“Have you ever felt worried about the drug use of a person you know personally?” and “Do you personally know somebody who has been treated for addiction to illegal drugs?”

<table>
<thead>
<tr>
<th>City</th>
<th>Yes, know &amp; worried</th>
<th>Yes, know treated</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Life</td>
<td>12</td>
</tr>
<tr>
<td>Copenhagen</td>
<td>67 %</td>
<td>27 %</td>
</tr>
<tr>
<td>Helsinki</td>
<td>45 %</td>
<td>13 %</td>
</tr>
<tr>
<td>Oslo</td>
<td>61 %</td>
<td>22 %</td>
</tr>
<tr>
<td>Stockholm</td>
<td>56 %</td>
<td>28 %</td>
</tr>
</tbody>
</table>
sonally (see Table 2). In Helsinki the share of such persons was 45%. The share of respondents worried within the past 12 months was over 20% for Copenhagen, Oslo and Stockholm, and 13% for Helsinki. A large share of the population, a majority in Stockholm and more than one third in other capital cities, personally knew somebody who had been treated for addiction to illegal drugs. More than 10% reported that they knew somebody who had received treatment within the past 12 months.

These numbers indicate, first of all, that drug problems are not isolated to a small minority. In most capitals more than half of the respondents had personally known and been worried about somebody with a drug problem. This is perhaps a better and more easily understood measure of how large the problem is, compared to an abstract and inaccurate monetary estimate of the social cost of drugs.

The second striking fact is that a significantly smaller share of the Helsinki population personally knows a drug user with a worrisome consumption. If we are to believe the numbers and take them as indicators of the size of the drug problem, this deviation needs an explanation. One way of examining whether the pattern in the table is accurate, is to compare the results with prevalence numbers (Table 3). The survey results are mostly consistent with drug use prevalence. Denmark has both the highest drug prevalence as well as the largest share of people who personally know and feel concern for a drug user. Finnish prevalence rates are significantly lower than those in Denmark, but the difference between Finland and the other Nordic countries in terms of lifetime cannabis prevalence is not very large and cannot explain the differences in the share of respondents who know and worry about another person’s drug use. To do so, one might focus more on the consumption of hard drugs since this is often a cause of more concern. In agreement with the pattern of know/worry, the prevalence is higher in Norway and Denmark and lower in Sweden and Finland. Thus, the general direction of the answers is in agreement with prevalence numbers, but size of the difference between Finland and some of the other countries is still large. A partial explanation could be that the number of heavy drug users has historically been higher in Sweden than in Finland (Olsson.

### Table 3. Life time prevalence of drug use in the Nordic countries

<table>
<thead>
<tr>
<th>Country</th>
<th>Year</th>
<th>Age range all adults</th>
<th>Sample size all adults</th>
<th>Cannabis</th>
<th>Cocaine</th>
<th>Amphetamines</th>
<th>Ecstasy</th>
<th>LSD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denmark</td>
<td>2005</td>
<td>16–64</td>
<td>13310</td>
<td>36.5 %</td>
<td>4.0 %</td>
<td>6.9 %</td>
<td>1.8 %</td>
<td>1.7 %</td>
</tr>
<tr>
<td>Finland</td>
<td>2006</td>
<td>15–64</td>
<td>2802</td>
<td>14.3 %</td>
<td>1.1 %</td>
<td>2.2 %</td>
<td>1.6 %</td>
<td>1.1 %</td>
</tr>
<tr>
<td>Norway</td>
<td>2004</td>
<td>15–64</td>
<td>2669</td>
<td>16.2 %</td>
<td>2.7 %</td>
<td>3.6 %</td>
<td>1.8 %</td>
<td>1.1 %</td>
</tr>
<tr>
<td>Sweden</td>
<td>2000</td>
<td>16–64</td>
<td>1750</td>
<td>12.5 %</td>
<td>0.7 %</td>
<td>1.9 %</td>
<td>0.2 %</td>
<td>0.3 %</td>
</tr>
</tbody>
</table>

Source: EMCDDA (http://www.emcdda.europa.eu/stats08/gpstab1a)
et al. 1997). Historically, drug use in Helsinki was lower than in the other Nordic capitals and only changed in the second half of 1990s, a fact that may be reflected in the lifetime figures of knowing and worrying (Hakkarainen et al. 2007).

**Affected in what way?**

In all capitals more than 20% of respondents answered that during their lifetime they had experienced fear of violence from a drug user they knew personally, with between 5% and 9% having experienced this during the past 12 months (see Table 4). Approximately 10% had sought professional help for themselves as a result of their relationship with the drug user, and 3% had done so during the last year. With the exception of Finland few had called the police because of the illegal drug use of somebody they knew personally – between 3% and 11% had ever done so and between 1% and 3% had done so during the last year.

One of the interesting facts about the results in Table 4, is that despite having the lowest prevalence and lowest share of people who know and worry about a drug user, Helsinki ranks highest on several indicators on how severely affected those who know drug users are. In Helsinki, those who know drug users have a higher fear of violence and a much higher tendency to call the police. This is internally consistent in the sense that fear of violence is expected to be correlated with contacting the police. It is less obvious why the Helsinki respondents should respond more to this than the respondents in the other capitals given that they know fewer drug users. One possible explanation for this could be that the less common drug use is, the more frightening it is for those who are close to a drug user. Moreover, the smaller the group, the more marginalized they may be. Denmark, for instance, has traditionally de-mystified drug use and although the prevalence numbers are high, they score low in terms of how severely people are affected. On the other hand, until the end of the 1990s drug policy in Finland was based mainly on police control, and it is possible that people still relied on police authorities as their first reaction (Tammi 2007). However, it is also possible that the measured categories do not capture all of the main dimensions of harm to others. A broader measure of harm is addressed in the next question, which encouraged the respondents to reflect on the overall impact they had experienced as a result of knowing a drug user.

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**Table 4.** "Have you ever feared violence/sought professional help/called the police because of the use of drugs among somebody you know personally?" (Percent of respondents answering yes)

<table>
<thead>
<tr>
<th>City</th>
<th>Feared violence</th>
<th>Sought professional help</th>
<th>Called police</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Life</td>
<td>Last 12 months</td>
<td>Life</td>
</tr>
<tr>
<td>Copenhagen</td>
<td>21</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>Helsinki</td>
<td>30</td>
<td>9</td>
<td>12</td>
</tr>
<tr>
<td>Oslo</td>
<td>20</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>Stockholm</td>
<td>23</td>
<td>7</td>
<td>13</td>
</tr>
</tbody>
</table>
When those who knew drug users were asked to what extent the drug use had affected them on a scale from 0 (no harm) to 10 ("it has ruined my life"), the average answer was between 2 and 2.6 in a life perspective and slightly higher than 1 during the past year in all capitals (see Table 5). This time the respondents in Helsinki reported the lowest average, indicating that this question captured the different dimensions of harm better than the one-dimensional questions about fear of violence, calling the police and seeking professional help.

A total score of 1 or 2 may not seem like a large harm on a scale of 10, but the average conceals a minority who report higher harms. Figure 1 shows the share of respondents who report a harm of 5 or higher. In Copenhagen and Oslo more than 20% of those who have known drug users for a longer time reported a harm of 5 or higher.

![Bar chart showing percentages for different cities]

**Table 5.** "If you know somebody who use drugs regularly, how would you say it has it affected you on a scale from 0 to 10 (0 is "no negative effect" and 10 is "it has ruined my life")"

<table>
<thead>
<tr>
<th></th>
<th>Life perspective</th>
<th>Last 12 months</th>
<th>Expected (if friend started to use)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Copenhagen</td>
<td>2,6</td>
<td>1,2</td>
<td>3,9</td>
</tr>
<tr>
<td>Helsinki</td>
<td>2,0</td>
<td>1,1</td>
<td>5,7</td>
</tr>
<tr>
<td>Oslo</td>
<td>2,6</td>
<td>1,4</td>
<td>6,1</td>
</tr>
<tr>
<td>Stockholm</td>
<td>2,5</td>
<td>1,2</td>
<td>6,2</td>
</tr>
</tbody>
</table>

**Figure 1.** "How has it affected you during the last 12 months?" Percentage responding with 5 or more on a scale where 0 is no negative effect and 10 is "it has ruined my life"
or higher. In Stockholm the corresponding rate was close to 20%, while it in Helsinki was about 15%. Even when limiting the period to the past year, almost 10% reported a harm of 5 or higher. This gives some indication that although the average impact may be low, and most people who know drug users are only moderately affected, there is a significant minority – about 10% – who report a harm of 5 or higher on a scale from 0 to 10.

The answers about harm also contain a significant gender imbalance. As illustrated in Figure 2, females reported more negative harm as a result of knowing drug users than males. The tendency was the same in all the capitals and it shows a gender dimension of human harm that estimates of social costs often overlook. When using reported harm as an indicator of drug problems, it

![Figure 2. Gender differences in harm. If you know somebody who use drugs regularly, how would you say it has it affected your life on a scale from 0 to 10 (0 is no negative consequences and 10 is “it has ruined my life”)](image)

Table 6. "If you know somebody who uses drugs regularly, how would you say it has it affected you on a scale from 0 to 10 (0 is “no negative consequences” and 10 is “it has ruined my life”)

<table>
<thead>
<tr>
<th>Life perspective</th>
<th>Close family member</th>
<th>Other relations</th>
<th>Close family member</th>
<th>Other relations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Copenhagen</td>
<td>3.7</td>
<td>2.3</td>
<td>2.3</td>
<td>1.0</td>
</tr>
<tr>
<td>Helsinki</td>
<td>2.0</td>
<td>1.0</td>
<td>4.2</td>
<td>1.8</td>
</tr>
<tr>
<td>Oslo</td>
<td>3.6</td>
<td>2.4</td>
<td>2.4</td>
<td>1.2</td>
</tr>
<tr>
<td>Stockholm</td>
<td>3.8</td>
<td>2.2</td>
<td>2.2</td>
<td>1.0</td>
</tr>
</tbody>
</table>
is easy to identify groups that suffer more than others and to quantify exactly how much more they are affected.

Finally, the nature of the relationship to the drug user is of great importance. As expected, persons who have drug users as close family members report on average the highest levels of harms while those with other acquaintances such as friends, neighbours or colleagues report significantly less harm (Table 6).

To measure the relative contribution of the various factors that could influence the amount of harm, we use multiple regression. Since the dependent variable – reported harm – is a count variable with many zero values, ordinary least squares may give misleading results and a hurdle model is more appropriate. The first stage is a logistic regression in which we investigate the association between reporting any harm at all and the independent variables. The second stage consists of a regression that measures the extent to which the variables can explain the size of the reported harm. As shown in Table 7, being female, on average, increased the probability of reporting harm from other’s drug use by 0.13 and being a close family member of the drug user increased it by 0.19. Age and having a university education were not important, while the number of drug users known was positively associated with increased harm.

The differences between the countries are also evident in the regression results, with “living in Helsinki” leading to a score that is lower on the subjective harm index compared to the benchmark country (Sweden). The regression results confirm that the patterns found when examining one factor at a time in a cross-table also hold when we consider the factors collectively.
In order to better understand the harms reported on the harm scale the respondents were also asked to rank some other illnesses and situations on a scale from 0 to 10 (Figure 3). In this way one may find a reference point for how bad a harm of 2 or 5 is interpreted to be. For instance, the respondents indicated, with a harm score of about 7.5 that for a young adult becoming addicted to drugs was about as bad as turning blind. Becoming paralyzed or getting lymph cancer was ranked as slightly worse than drug addiction while having diabetes or asthma was given a value of about half that of becoming a drug addict.

Although the numbers are interesting, one needs to be careful when interpreting these results. In addition to the unavoidable problem of how different people interpret "becoming addicted to drugs", "cancer" and so on, there is a problem of determining the validity of the scores. People who have not experienced something themselves often have misconceptions about how bad or good something is. This means that one should not simply use the results to argue, "becoming addicted to drugs is about as bad as turning blind." Or that "people reporting 4 on the harm scale when asked about how they have been affected by drug use among friends means that they suffer a harm equivalent to getting diabetes."

The problem is well illustrated by comparing answers about experienced level of harm among those who know drug users to expected level of harm among those who do not know drug users (Table 5). Those who do not personally know a drug user believe they would experience very high levels of harm if they had a friend who used drugs. The expected harm was more than twice as large as the experienced harm reported among those who actually knew a drug user. This shows that it is difficult to use expected harm to assess the actual level of harm. It also suggests that an important part of the harm of drugs is related to fear and that the fear itself is not well founded. Finally, since fear is reduced by experience and closeness, the results imply that one important element in the overall cost of drug use – social fear – may fall if drug use becomes more common in a society.

The fact that there are several problems with the ability of people to give answers to the question of how much harm they believe drug addiction or illnesses would cause does not imply that the answers have no meaning. If the answers were random, we would not expect the pattern to vary systematically. In fact, Figure 3 illustrates that the answers about harm caused by various illnesses and situations are similar across countries. This is consistent with the interpretation that the question captures a stable perception and that the question of experienced harm on a scale between 0 and 10 provides useful information.

The information could be useful, for example, in providing an indication on how drug use affects the quality of life for relatives. This is a policy relevant measure since health officials sometimes use quality adjusted life years as an aid when allocating funds. Previous surveys have reported that diabetes is associated with a relative loss of between 12% and 20% on a quality of life health scale from 0 to 1 (depending on age, see van Praag & Ferrer-i-Carbonell 2001). Diabetes corresponds to a harm of four in the survey in this paper. If one extrapolates based on this, it implies
that those reporting harm of five or more as a result of being close to an illicit drug user, experience a harm that is higher than having diabetes and that the loss can be quantified as larger than 12% in terms of life quality. This extrapolation is based on only one disease and it assumes that both conditions are measured accurately. As noted above there are many practical problems associated with this, but the example still illustrates how reported harm in principle can be transformed into Quality Adjusted Life Years which can be used in policy formulation. Decisions about the allocation of resources to drug treatment could then be based on a more accurate measurement of benefits which includes the change in the quality of life of relatives (Davidson & Levin 2010).

**Harm measured in money?**

Social costs are often measured in money. Is it possible to quantify the harm suffered by friends and family in monetary terms in order to include it in the overall measure of the social cost of drugs? One way of doing so would be to explore individuals’ willingness to pay for the treatment of drug addicts, but the willingness to pay is a problematic question (Smith 2003). It is, for instance, difficult to know whether the answers reveal a true willingness or if they are influenced by the wording of the question or if there are other mechanisms that may distort the answer. In order to examine the effect of this, we asked several questions. Firstly, we asked about willingness to pay for a friend. Secondly, we asked about willingness to pay for treatment for a drug addict in general by way of increasing taxes. Thirdly, we asked more open ended

![Figure 3](image-url)
questions in which the respondents could state the amount of money they were willing to pay for treatment of their children, their spouses, and their friends.

The results in Figure 4, show that in Norway and Denmark there was a small majority in favour of a tax increase of about 100 euro per taxpayer to finance the treatment of 800 additional addicts each year, while the corresponding rate in Sweden and Finland was about 40%. When asked whether they would contribute about 500 euro to help finance treatment for a friend, the respondents gave slightly more amenable answers in all countries, with the exception of Sweden where there was a significantly higher positive response (an increase of 12 percentage points to 52%).

These questions reveal some of the same problems and patterns discussed in Zar-kin et al. (2000). Willingness to pay was relatively insensitive to the sums used in the question. For instance, 100 euro per taxpayer for 800 treatments represent a different willingness to pay for each treatment in the different countries because the sum is larger in the country with the highest population. Despite this, there is a high correspondence between the tax question and the friend question (with the exception of Sweden) and this suggests that the answers reveal an underlying attitude of supporting more treatment rather than a precise consideration of the costs and benefits. This observed insensitivity underlines the problems related to using monetary measures when researching this particular field.

The results concerning willingness to pay for the treatment of individuals are highly dependent on the nature of the relationships (see Table 8). There is also a large
degree of variation between the respondents, with some individuals reporting very high sums. To avoid presenting averages that are heavily influenced by a few extreme observations, the table presents the median response.

In all capitals the highest median willingness to pay was observed for respondents’ children, followed by spouses, siblings and, lastly, friends. For friends and siblings, the answers are very similar in the different capitals with willingness to pay for friends being about half of the willingness to pay for siblings. In Helsinki, the absolute willingness to pay for spouses and children was substantially smaller than in the other countries, but the relative willingness to pay for children compared to spouses was highest in Helsinki.

When interpreting the responses it is important to keep in mind that the respondents were specifically asked about willingness to pay for treatment as opposed to “successful treatment” which was used in Zarkin’s pilot study. This means that the results can be interpreted as willingness to pay for treatment in general, even when the outcome is uncertain. It should also be noted that willingness to pay for treatment may be motivated by concerns other than to reduce the harm on family and friends. For this reason, adding it to already estimated external costs may lead to double-counting. The size of this problem depends on the wording of the question. The more focused the question is on close personal relationships, the more the respondent is likely to focus on personal harm as opposed to reducing crime in society in general and other motives that may inspire a willingness to pay for treatment. Because of this, the questions about willingness to pay for treatment in general or to accept a tax increase should not be interpreted as a measure of personal harm alone. The questions about willingness to pay for friends and family will capture more of this personal aspect.

**Human harm compared to other cost categories**

By combining the information in the various questions it is possible to get a picture of the human harm on friends and family caused by drug use compared to other costs commonly associated with drug use. Using Kleiman’s (1999) suggestion about measuring harm by the willingness of friends to pay for treatment, we first examine the number of respondents who have drug-using friends and are willing to pay at least 450 euro for the treatment of a friend. For instance, in Oslo 14% of the respondents fulfilled these two conditions. If 14% of the adult population in Norway are willing to pay at least 450 euro, this means

| Table 8. “About how much of your own money do you think you would be willing to pay for the treatment of your own…” (median answers converted to Euro) |
|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 | Friend          | Brother/sister  | Child           | Spouse          |
| Copenhagen      | 678             | 1,356           | 13,563          | 6,782           |
| Helsinki        | 500             | 1,000           | 5,000           | 2,000           |
| Oslo            | 575             | 1,149           | 11,494          | 5,747           |
| Stockholm       | 505             | 1,009           | 7,569           | 5,046           |
that human harm associated with drugs is at least 236 million euro or about 50 euro per capita. As a comparison, about 30% of jail inmates in Norway are convicted of drug offences and the cost of prison for this group amounts to about 17 euro per Norwegian each year. This illustrates that human harm represents a large component of the cost of drugs and that ignoring it can produce misleading estimates.

Contrary to the conclusion above, one might argue actual willingness to pay is often lower than the reported willingness. Moreover, the capital may have a disproportionate number of drug users. Both arguments are valid, but it should also be noted that the estimate above is conservative for several reasons: Many of the respondents reported that they were willing to pay much more than the sum listed in the question and used in the calculation (450 euro), some have more than one friend for whom they would be willing to pay, the estimate does not include the much higher willingness to pay for spouses and children, and as shown in the tax question many are willing to pay for treatment even when they do not personally know people who use drugs. Taking into account all of these factors would most likely give larger estimated burden. However, to establish the importance of human harm compared to other cost categories, it is not necessary to make more complicated calculations. Even when conservatively estimated, human harm in monetary units is larger than the cost of prison, which is one of the other major cost components in traditional analysis of social costs of drugs.

Extensions and limitations
Illicit drug use is sometimes accompanied by the use of other substances such as alcohol. In this case it is difficult to distinguish between the harm caused by alcohol and the harm caused by the illicit drug. This is unavoidable given the nature of the consumption pattern. The survey also did not have an option in which respondents could report that the drug use of a friend or a relative had had an overall positive influence. At best the respondents could select the option “no negative impact” so to the extent a positive impact was present, the survey does not measure this. If drugs have positive impacts, such as reduced level of violence compared to the use of alcohol, the survey did not capture this aspect. The questions also specifically asked about “regular” drug use, not about whether the respondents knew individuals who were addicted. In this sense the survey measures the burden of drug use as felt by friends and relatives, not the cost of addiction. Finally the question about monetary
valuation could be improved by a more detailed description of the nature of the good (the extent to which treatment would work and for how long) as well as distinguishing between several different types of reasons for willingness to pay (see Smith 2007; 2008). This was avoided in the current survey in order to keep it simple for the respondents. For the same reasons the survey did not distinguish between different types of drugs. Future work in this area could explore these extensions.

Conclusions

Our results show that it is important to include human harm to get a more accurate picture of the overall cost of drugs in society. Even very conservatively measured, the cost of human harm among relatives outweighs other large costs that are often included when estimating the cost of drug use, such as the prison cost for drug offences. Ignoring human harm could lead to underestimation of the total costs, which in turn could result in under-prioritization of drug-related problems. For example, the results of the study suggest that there may not be enough support services for families and friends of drug users in the Nordic societies.

The survey also indicates that it may be more stable and useful not to measure harm in monetary terms since respondents often have difficulties answering these questions. Instead, simple questions about knowledge and harm on a 0–10 scale seemed to give more meaningful answers. These results show that every year about 25% of the population of the capital cities know and worry about drug users and that about 10% of those knowing drug users report a harm of more than 5. Finally, the results highlight the unequal distribution of the costs. The main costs were not born by the state or society at large, but by the females who were close to the drug user. Although the direction of this effect is not surprising, the results still document the surprisingly large difference between harm reported by males and friends on the one hand, and harm reported by females and relatives on the other.

Declaration of interest None.

Hans Olav Melberg, researcher
SIRUS & University of Oslo, Norway
E-mail: hans.melberg@gmail.com

Pekka Hakkarainen, researcher
THL, Helsinki, Finland
E-mail: Pekka.hakkarainen@thl.fi

Esben Houborg, researcher
Center for alcohol and drug research
Aarhus University, Denmark
E-mail: eh@crf.au.dk

Marke Jääskeläinen, researcher
THL, Helsinki, Finland
E-mail: marke.jaaskelainen@thl.fi

Astrid Skretting, researcher
SIRUS, Oslo, Norway
E-mail: as@sirus.no

Mats Ramstedt, researcher
SoRAD, Stockholm University
Stockholm, Sweden
E-mail: mats.ramstedt@sorad.su.se

Pia Rosenqvist, head of unit
Nordic Center for Welfare and Social Issues
Helsinki, Finland
E-mail: pia.rosenqvist@nordicwelfare.org
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