THE UNIVERSITY OF MEDICINE AND DENTISTRY OF NEW JERSEY
Robert Wood Johnson Medical School

and

OAS - CICAD

METHODOLOGICAL GUIDELINES FOR ECONOMIC IMPACT STUDIES ON ILLEGAL PSYCHOACTIVE SUBSTANCE ABUSE BASED ON INDIRECT INDICATORS

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INTRODUCTION

The abusive consumption of psychoactive substances (PAS) exerts adverse impacts on the user's health and capacity to perform in society. Furthermore, many persons surrounding the abusive user are also affected, that is, members of his/her immediate family environment, friends, neighbors, colleagues and fellow workers, and by extension the entire community.

When society is considered as a whole, that is, the entire national economy, the adverse individual impacts stemming from the abusive consumption of psychoactive substances spread and accumulate not only in terms of human well-being but also in social and economic terms. These negative consequences primarily manifest themselves by means of the following impacts:

Primary

- Conduct: Problems stemming from abnormal behavior induced by the abuse: accidents, brawls, material damages by action or omission, crime, personal costs, and costs for the health system.
- Family environment: Family problems stemming from the PAS use, such as domestic violence, sexual abuse, neglect and abandonment, frequent conflicts, poor communication.
- Productivity: Problems stemming from lower productivity of the user and his/her fellow workers who are affected by his behavior or absence, meaning economic costs.
- Health: Health problems not only for the user but also for other persons, as well as medical costs, and costs for the health system.
- Legal: Arrests, prosecutions, imprisonment, customs, airport controls; destruction of crops, deaths from combating criminal organizations.

Secondary

There are the social consequences of abuse that become apparent when the community has to appropriate additional resources (over and above those that might be needed under circumstances where there is no abuse) to tackle the accumulation of individual consequences and to limit the extent of present and future damage, to meet needs in various areas such as the following, which involve a cost for the health system:

- The provision of specialized treatment services to eliminate or reduce abuse.
- The provision of health care services for the user and for other persons affected as a result of accidents or aggression or as a result of congenital defects that can be attributed to substance abuse by the biological parents.
- Community protection by means of actions aimed at preventing accidents and limiting damages.
- Compensation for the loss of productivity.

When the predictable consequences of PAS abuse are considered, it is easy to understand that, when the impacts on individuals and the health system throughout the health system of a nation are added up, the resulting amounts, regardless of the origin of each one of them, are high. They definitely are high no matter how difficult it is to estimate accurately the magnitudes that might be involved. Because of this, it is very important, in any economic system, to control the social problem represented by the abusive use of PAS. It is indispensable, however, to learn about its characteristics to be able to determine the courses of action to be taken.

Frequently the reasons for which it is important to undertake studies on the costs of PAS abuse are neglected. It should therefore be recalled here that the resulting estimates, even when they are only rough estimates regarding the real magnitude of the problem, in addition to being indispensable for controlling resources and programs, mainly serve the following purposes:

- Justify the priority that should be given to the social problem of PAS abuse on the government's agenda because without any information about its economic impact, it is easy to postpone tackling the problem and allow it to be poorly managed.
- Identify with greater precision priority intervention areas, as well as concomitant policies to secure greater cost-effectiveness in the decision making.
- Detect gaps in statistical information and research needs in relevant areas for a greater/better understanding of the social problem, which in turn is indispensable to propose solutions in line with changing or emerging problems.

Cost studies can offer guidelines to measure the effectiveness of policies and programs aimed at controlling the social problem of PAS abuse and, to the extent that they manage to define some minimum standards permitting international comparisons, the results of the studies can make it easier to compare the effectiveness of the national policies of various countries. Thus, for example, comparative studies can provide useful information about whether, in terms of penalizing production and consumption, a more restrictive line of action might not be preferable to a more liberal one or whether, assuming identical other conditions, there might not be lesser abuse in those countries where a high share of the costs are borne by individuals than in those where more public funding is appropriated for this purpose.

In any country, studies on the costs of PAS abuse can contribute to building social cost functions that can help to determine the policy objectives aimed at improving the living conditions of the population as a whole. This is the origin and justification of studies on the social and economic costs of PAS abuse.

The present document intends to bring together, in the form of a practical methodological guide, the principal conclusions drawn by researchers in developed countries (mainly, Australia, Canada, Great Britain, and the United States) after many years of experience in this area of study. It should be kept in mind, however, that the methods developed for these countries are not directly and entirely applicable to Caribbean and Latin American nations, since we lack a tradition of careful gathering and maintenance of many data series that are indispensable for the

immediate application of their models. Nevertheless, it is suggested here that it is possible to indirectly come close to characterizing the social phenomenon and measuring its implications for our respective national economies by using indicators. The raw material for calculating these indicators are the data that each country should be gathering periodically; its adequate use will permit not only the development of a culture of organizing databases but will also open up the possibility of making increasingly accurate cost calculations.

After reading the present Guide, it should be clear that what is being proposed here is a way to achieve the common objective of acquiring knowledge about a pertinent social problem that, to a greater or lesser degree and with different characteristics, is affecting all nations of the world. On the basis of the methods already developed by researchers in developed countries (the international guidelines developed in Canada and the United States were essential in this activity) and the experience in the field of the members of the technical advisory team in charge of the preparation of this document, what is being proposed here is the hypothesis that it is possible to come up with mechanisms to come close to characterizing the phenomenon of abuse of psychoactive substances within the framework of our own conditions in Latin America and the Caribbean, and instructions are provided on how to proceed.[1]

The result that is expected from the careful application of the guidelines proposed herein is a better knowledge of the problem, capable of being fine-tuned as more and better indirect indicators on the problem's evolution become available and on which public policy decisions regarding social security, fixed budgets and citizen welfare can be based.

The aim is not to examining the topic exhaustively; rather it is only a preliminary attempt, in the conviction that any serious approach to the study of a problem that is as important as the consequences of the abuse of psychoactive substances is a step in the right direction to find practical and verifiable solutions.

[1] As a practical way to initiate cost studies, the authors of this manual suggest that before they submit a project each country conduct a basic inventory of the relevant information available. This task could be simplified by using the list of indicators proposed and their respective description for reference purposes (see the Section 2 of this manual).

Section One

COSTS

1. COST-OF-ILLNESS STUDIES AND ECONOMIC IMPACT OF ILLNESS

Cost-of-illness studies pertain to a specific type of economic impact studies. They are aimed at increasing the degree of understanding about the nature and environment of a given disease, as well as its foreseeable consequences for society as a whole.

In the specific case of studies on the economic impact of psychoactive substance abuse, it essentially involves estimating the social costs that are incurred by a collectivity at a given time, compared to the hypothetical situation where there is no such abuse. This hypothetical situation is usually called “counterfactual” precisely because it is contrary to the facts of reality.

Social costs consist mainly of the sum of all the resources aimed at providing specialized treatment, general health care, and prevention, investigation, and the law enforcement and justice system. To all of the above should be added production losses as a result of disease and some monetary equivalent of the quality of life that has been sacrificed.

To make the necessary estimates, cost-of-illness studies should combine epidemiological data that make it possible to learn about the characteristics of the problem, with financial information about the costs involved in its treatment and prevention, as well as the repair of the social damage coming from the same illness. The measurement can be conducted by having the analyst focus on the past (prevalence-based studies) or on the future (incidence-based studies)

The terms prevalence and incidence are drawn from the field of epidemiology. Prevalence is aimed at determining the total number of cases of a disease or disorder in the population at a given time (for example, how many marijuana addicts there are in a given year in a country, regardless of when they became addicts). Incidence, however, is interested in determining the number of new cases of a disease or disorder appearing in a given period (typically one year) for the purpose of determining the trend of its course of evolution.

From the above, it can be concluded that prevalence-based cost-of-illness studies attempt to estimate the social costs incurred, for any given year, by all the cases of abuse that are presumably found among the population, regardless of their time of onset. Incidence-based studies, however, estimate the costs incurred as a result of new cases appearing in any given year as of that time and in the future. Thus, it can be said that prevalence-based studies measure the costs of present and past abuse, whereas incidence-based studies measure the costs of present and future abuse.

Theoretically, it is to be expected that studies based on one or the other approach will yield approximately equivalent findings in those societies where the illness (in this case PAS abuse and its consequences) remains more or less stable in terms of general levels of persons affected by it.

In any case, the difficulty of obtaining the information that is indispensable for undertaking PAS abuse cost studies satisfactorily explains why only a few developed countries have actually undertaken these studies. Among these studies, the great majority are prevalence-based cost studies.

Cost-of-illness studies conducted to date in Australia, Canada, Great Britain, and the United States, among the pioneer countries in this field, have come up with notable differences in their estimates of resulting costs, which are evident not only when comparisons are made among the different countries but also when comparing the results obtained for the same countries in different years and by different research teams. Efforts have been made to explain that these differences are largely due to the use of different methodologies, not only for classifying costs but also for estimating them; this introduces external disruptive factors in characterizing a problem that is very complex to resolve without them.

In an effort to minimize distortions attributable to factors that are external to the problem, once the complexity of the topic of the study and the difficulty in obtaining basic statistical information have been accepted, for several decades now, the advisability of introducing some degree of standardization in terms of concepts and categories has been identified. In addition to contributing to the small achievement of having the analysts at least speak the same language, it facilitates direct comparisons between studies. As a result, in 1978 the U.S. Government, through its U.S. Public Health Service, set up a task force in charge of establishing methodological guidelines for the development of cost-of-illness (COI) studies, carried out or funded by this Service. The prominent expert Dorothy Rice headed the task force. Later, in 1994, the Canadian Centre on Substance Abuse (CCSA) convened the First International Symposium on Estimating the Economic and Social Costs of Substance Abuse, which was held in Banff, Alberta. At that time it was agreed that a working group comprised of analysts from various nationalities and led by the Canadian expert Eric Single would be delegated to propose international guidelines. The first version of these guidelines appeared in 1995, and they were revised in 2001.

In order to contribute to filling a gap prevailing in the field of cost-of-illness studies among the nations of the Americas other than Canada and the United States and on the basis of the mandate issued at the Summit of the Americas held in April 2001 in Quebec City, which instructed it “to develop a long-term strategy that includes a three-year program to establish a basic and standardized mechanism to estimate the social, human and economic costs of the drug problem in the Americas and support the countries by providing them with the necessary technical assistance,” the Organization of American States, through its Inter-American Drug Abuse Control Commission (CICAD), has proposed drawing up a methodology to help the continent’s countries to estimate the economic impact of psychoactive substance (PAS) abuse

For this purpose, the task of drawing up a simplified version of the Canadian and U.S. models has been accepted in the hope that it can offer credible and useful results on the basis of information that is more limited and less accurate than that which the countries that created these models have at their disposal. According to OAS-CICAD plans, in a first stage, we will develop, on the basis of simplified guidelines, cost-of-illness studies on psychoactive substance abuse in a synchronized fashion in four pilot countries (Barbados, Costa Rica, Mexico, and Uruguay). These countries have expressed their interest in testing the simplified methodology before their widespread use is recommended in the other countries.

The present document tries to summarize and adapt the methodological proposals for cost-of-illness studies on psychoactive substance abuse contained in the NIDA document entitled *"The Economic Costs of Alcohol and Drug Abuse in the United States - 1992"* whose complete version can be consulted at http://www.drugabuse.gov/EconomicCosts/Index.htm, as well as in the *International Guidelines for Estimating the Costs of Substance Abuse-Second Edition* published by the CSSA in http://www.ccsa.ca/Costs/Guidelines/intguid.htm (this is a suitable occasion to express appreciation to both institutions for their efforts to define a common basic

methodology that is generally valid). As indicated, this is the point of departure for this Guide, which is also expected to contribute to facilitating the adoption of the international methodology to establish PAS abuse costs in developing countries that have notable deficiencies in the quality and quantity of information available. This means that all the participating countries should start a permanent effort to systematically obtain relevant data to carry out cost calculations..

2. PSYCHOACTIVE SUBSTANCES (PAS)

The countries that have conducted cost-of-illness studies on psychoactive substance abuse have usually acquired their investigative experience from studies about the consequences of alcohol and tobacco abuse. These two substances share the characteristics of being legally approved for consumption by the public and enjoying preference by the largest number of users in a wide universe of PAS consumers. Usually, studies about the abuse of other PAS that are not legal and therefore not as widespread do not make any major effort to differentiate between the different substances, in view of the lack of differentiated basic information. The substances that are different from alcohol and tobacco are usually grouped under "illicit drugs," and information related to them is obtained indirectly on the basis of indicators.

Therefore, it is probably the lesser comparative difficulty of gaining access to indispensable basic information rather than the relative importance of the problem represented by the abusive consumption that explains why most countries have started their cost-of-illness studies with alcohol and tobacco. Nevertheless, it is an incontrovertible fact that costs related to the two substances that can be consumed legally represent by far largest social costs resulting from abuse of psychoactive substances in all the economies where studies have been conducted.

It is important to bear in mind that each one of the PAS groups has its particularities, which can determine different strategies of approach to the problem of estimating the costs related to their abuse. For example, the fact that both tobacco and alcohol are taxed in many countries means that it is easy to find an indicator for the size of the market in the registers of tax authorities (the problem of smuggling these substances in some countries should also be taken into account). Furthermore, regarding both substances, it is also expected that there are records about the morbidity and mortality associated to their consumption and/or abuse, because the treatment of the disease and its consequences are legally admissible in social security systems.

The fact that alcohol is much more susceptible to being produced illegally than tobacco means there are difficulties in making estimates (although the figures for both substances are subject to adjustments to take smuggling into account). Moreover, because drunkenness triggers behaviors that tend to foster accidents with consequences in terms of damage to persons and things, the costs usually arising from its abuse are the highest; with tobacco, however, the situation is totally different.

Understandably, the illegal drug group is the hardest for which to calculate the cost, because its illegality makes it difficult to determine the size of the market for production or consumption. There are no tax, production or retail trade records. Moreover, producers, sellers, and consumers are not willing to identify themselves and provide information. Those who abuse illicit substances do not resort easily to specialized treatment nor do they admit they have consumed even when they have to be admitted to hospital for the consequences of abuse. The treatments required by such patients are not usually included in basic social security programs.

As a result of this situation, the basic information that can be obtained on illicit PAS may very well suffer from inevitable flaws that constrain their reliability, which requires careful management by investigators. The greater the stringency used in handling data, the higher the quality of the resulting product. Obviously, the factors of causality between abuse and consequences (also referred to as *attributable factors* or *etiologic factors*) that can be obtained in such circumstances will always be the result of inferences that are more or less plausible,

based on indirect indicators affected by the same constraints and flaws as those of the basic information.

Despite its constraints, this kind of study is indispensable, because without these studies there can be no convincing overview of the magnitude of the problem. Even when its accuracy value is debatable, this information will be very valuable when it is time to take certain decisions; this may be obvious, but it is much better to have “some information” than “no information.” Because of this, it is suggested that each country should explore this terrain with small projects that can gradually increase their scope and complexity.

3. STAGES OF A COST-OF-ILLNESS STUDY

The conceptual structure of a COST-OF-ILLNESS STUDY on PAS does not involve any major difficulty. Part of the definition of PAS abuse, as a situation where private use by individuals leads to social costs for the entire collectivity, follows a three-step process:

1. Identification of the adverse consequences of abuse.
2. Documentation and quantification of the degree of causality between abuse and adverse consequences.
3. Assigning costs to the adverse consequences.

1. However simple this process may appear to be, successfully getting around each one of these steps is a veritable challenge. That explains why there are so few studies in a field where it is indispensable, not to say imperative, to have relevant, reliable information.

The adverse consequences of PAS abuse are evident, first of all, in the health of those who abuse the psychoactive substances, as well as of the persons surrounding them, but their impacts extend to, and have ramifications for, the entire social fabric. It is possible that the long list of negative consequences are universally valid, which is an assumption that at least makes it possible to take advantage of the efforts of researchers who have conducted their studies in societies that are more aware of the importance of carefully gathering relevant statistical information. But it may also happen that the circumstances and conditions prevailing in the various cultures lead to different lists. It is therefore advisable to start by analyzing the lists of the studies undertaken (and the new research, as they become public) in order to take the most suitable decisions for each country.

It is not reasonable to expect that the degree of causality between PAS abuse and concomitant adverse consequences remain unchanged across cultures, since many factors that do not exist everywhere contribute to the form and magnitude of their impact, and when they do exist they do not necessarily exert it to the same extent. This holds true to such a degree that it is generally felt that it is not even true that any series of causal factors between abuse and consequences (or *etiologic fractions,* as they are also called) can be applicable to the same society over time or in its entire geography.

But the determination of these causal factors takes for granted conditions that do not exist in the majority, much less in all, of the Caribbean and Latin American countries mainly in terms of the careful and systematic gathering of statistics by our hospital institutions and health professionals in their private practice. The lack of information prevents epidemiological studies from being made, and the absence of these studies hampers even a rough estimation of the costs associated to the illness.

Tackling the difficulties arising from the absence of statistical information about the characteristics of morbidity and mortality in a social cluster is not an easy task. Nor are the results of any effort aimed at improving matters going to be apparent immediately. Nor is it possible to overcome overnight a mentality that can probably be explained, at least in part, by the chronic shortage of resources to address needs considered to be more pressing and that has made us view any effort to gather information as superfluous. Something will have to be

done about the matter, but meanwhile there is no other course but to support the initial studies on the economic impact of PAS abuse in the Caribbean and Latin America in the causal factors determined for other countries that are very different in so many ways.

Under the circumstances that have been noted, the first effort to estimate the social cost of PAS abuse in our countries, which is why the present Manual is being drawn up, will have to focus exclusively on the assignment of costs to the adverse consequences of abuse.

4. COSTS OF A COST-OF-ILLNESS STUDY

Most of the cost-of-illness studies are based on the economic notion of **opportunity cost**. This concept, which is essential for economists, arises from how all human societies throughout history have addressed, either consciously or unconsciously, the problem of the constraint of common resources available to meet the needs of the collectivity. It means that any resource allocation for a given purpose must necessarily represent an equivalent sacrifice in social investment for another sector or other sectors. In other words, any use of resources has a sacrificed opportunity cost of use for other purposes. Thus, for example, building a dam would imply postponing the enlargement of an airport, or in other sector the need for further outlays to ensure law and order may affect the quality of education, health, and other basic services.

Another concept that helps analysts of cost-of-illness studies to orient their research is that of a **counterfactual proposition**, which was mentioned earlier. This points to the entirely hypothetical and impossible situation that would prevail in real life if there were no illness. The comparison of the circumstances of the economy in one or the other case (the real or evident case, compared to the hypothetical or counterfactual case) permits a rough estimate of the economic impact of the illness.

For any domestic economy as a whole, public costs from PAS abuse have their origin in efforts to control supply and demand. On the **supply** side, it involves estimating the cost of preventing psychoactive substances from reaching the consumer. On the **demand** side, the efforts focus on quantifying the costs of medical and hospital treatment for the abusers to restore their physical and psychological conditions and, to the extent possible, limit a relapse of the abuse; costs associated to the prevention of consumption are also included here.

But the problem of estimating costs from PAS abuse in an economy does not stop there. As a consequence of abuse, what happens is that persons who reach this point of excess in consumption are not only undermining their own health but also, as a result of **lower productivity** (associated to lateness, absenteeism, lesser capacity to concentrate on work, and in extreme cases death), reducing the economy's general capacity to produce goods and services. It is well known that this production capacity, when defining a country's possibilities of adequately meeting the basic needs of the population, turns out in the final analysis to be a determining factor of the relative social welfare of the collectivity.

It can be inferred without difficulty from the above that, depending on the origin of the money covering the costs incurred, it is possible to differentiate between **personal** (private) costs and **social** (public) costs. In addition, to estimate the costs stemming from PAS abuse whether from the perspective of supply or from the perspective of demand, usually differences are made among various major cost categories. Therefore there are differences between private costs and social costs, direct costs and indirect costs, core costs (health) and non-core costs (non-health), and tangible costs and intangible costs. Some of these cost categories coexist, and this makes them more difficult to interpret and, as a result, more complicated to estimate. Because of this, to avoid confusion, it is advisable to provide, once and for all, the meanings of the most usual groups:

Types of Cost in Cost-of-Illness Studies

- Personal Costs (Private)

They come from a rational and wholly voluntary decision by the individual, who decides to accept them, aware of the impacts of his/her decisions and exercising his sovereign will to choose. Ordinarily, personal costs are not borne in mind when estimating the economic costs of the abuse of psychoactive substances because, in the framework of price formation theory, it is assumed that the personal benefits or satisfaction stemming from consuming the good or from enjoying the service exactly offsets these costs.

- Social Costs (Public)

They involve public policy decisions about the best way to use the resources of the collectivity for the common good. Although occasionally they can be a consequence of the decisions of individuals (as in the case of health care for abusers and victims), they are never optional for governments and they always compete with the social group's other pressing needs for attention.

- Direct Costs

In the context of PAS abuse cost studies, this refers to the value of the goods and services that are effectively aimed at mitigating consequences, such as the costs of specialized care for addiction and health care for its sequela.

- Indirect costs

They consist of the value of personal productive services that are no longer provided as a result of PAS abuse.

- Core Costs

Health care costs and the costs of other health-related consequences stemming from the abuse of psychoactive substances.

- Noncore Costs

Costs that do not appear in the health impact but rather in other dimensions: family, education, labor, etc.

- Tangible Costs

Tangible costs are those costs that, when reduced or eliminated, produce resources that then become available for other uses. All costs included in the PAS abuse cost studies belong to this category.

- Intangible Costs

In contrast to tangible costs, intangible costs do not produce resources that become available for other uses as a result of their reduction or elimination. Death, human suffering, and pain are typical examples of these costs. No one can deny that they do exist and that they are considerable, but it is virtually impossible to express them in monetary terms. Because of this, they are normally not included in PAS abuse cost studies.

- Avoidable Costs

Abuse-related costs that can decline or disappear as a result of government policy initiatives or changes in the behavior of persons.

- Unavoidable costs

Present and future costs stemming from current and past abusive consumption that would not disappear even if PAS use were to be dropped.

Types of Costs in Studies on PAS Abuse

The Annexes at the end of the document provide the cost classifications proposed by the Canadian and U.S. methodological models for studying the illness of psychoactive substance abuse. Annex B presents the proposal of the Canadian Centre on Substance Abuse (CCSA), and Annex C presents the model followed by the U.S. National Institute on Drug Abuse (NIDA). In both cases, the methodological guidelines try to systematize the experience of those who have conducted existing studies, but they are aimed at offering support rather than providing precise standards, whose rigorous application would, in any case, be very difficult in view of the differences between countries.

Regardless of their more or less precise terminology, it can be concluded from the models that costs stemming from the abuse of PAS are apparent in the following:

- Direct government costs aimed at reducing PAS supply and demand, which focus largely on outlays for law enforcement and functioning of the justice system.

- Direct public and private costs related to caring for the health of the abusive consumers and their victims.

- Direct public and private costs from the destruction of property.

- Indirect public and private costs from the loss of productivity as a result of PAS abuse: absenteeism (lateness, incapacity, institutionalization, death).

Beyond the notable differences in the resulting estimates, most PAS abuse cost studies agree on the order of importance of the largest types of costs, that is, first productivity costs, then health care expenses, followed by those costs relating to law enforcement and the criminal justice system, and various other costs (research, prevention, damages). In the studies, the first type, that is, the social costs from loss of productivity, usually appears to be more substantial than the others. This seems obvious when one realizes that, for any given individual case (the sum of all individual cases determines the overall results for the social conglomerate), health and legal problems have an average duration over time that is less (and therefore account for a comparatively lower cost) than the number of quality life years affected or lost with the resulting decline or disappearance of the productivity that is expected because of the impact of abuse. This holds especially true for addiction to illicit drugs, which usually affects the youngest sector of the population more frequently, whose ruined lives entail a comparatively larger social cost.

A more detailed description of the cost elements that usually stand out in each one of these groups is provided below. In any case, it is worth while to recall here that what was said earlier about the costs from PAS abuse does not only arise from the consequences for the abusive user himself/herself, but that it also extends to broad groups of persons surrounding the abuser, mainly but not exclusively, his/her family, neighbors, and fellow workers. The observation that the negative consequences of abuse lead to social costs even when they affect persons who are not on the labor force should be underscored, because to the extent that these persons carry out activities, albeit free of charge, they exert a social impact. This is the case of homemakers or many handicapped, unemployed or retired relatives who contribute to the household's economy by performing chores that someone would have to do (even sometimes by paying for them) if they did not perform them.

- Costs from the Loss of Productivity

It has just been said that this type of cost accounts for the largest among those attributed to PAS abuse in the studies that have been conducted. The loss of productivity stems from a combination of premature mortality and morbidity (illness).

- Premature Mortality

Abusive PAS consumption may lead to the death of the user either directly or indirectly. Regarding cases of direct death, the International Statistical Classification of Diseases (ICD) identifies causes of death associated to with the abuse of certain PAS (alcohol, tobacco and heroin). It is more difficult to detect deaths that are an indirect consequence of abuse (for example, death due to cirrhosis of the liver, nutritional or metabolic disorders, catching viral infections such as hepatitis or HIV/AIDS, injuries from traffic accidents, other accidents or assaults on persons, mental disorders, etc.)

- Morbidity (disease)

This subtype of costs includes, first of all, losses stemming from lateness at work and absences from one's job because of outpatient consultations, treatment, and hospitalization. According to studies, in addition to absenteeism, the most important cause of low productivity stemming from PAS abuse is lower job performance, not only of the PAS-abusing worker but also of those around him/her, who become the victims of his/her abnormal conduct.

Health Care Expenses

- Treatment for substance abuse

The International Classification of Diseases referred to earlier defines the diagnoses associated to the abuse of alcohol and/or drugs, which include states of dependence, abuse, psychosis, poisoning, and overdose.

- Treatment for comorbidities and trauma

In addition to the health problem from substance abuse in itself, the abuse has indirect adverse consequences for the person (for example, death from cirrhosis of the liver, nutritional or metabolic disorders, viral infections such as hepatitis or HIV/AIDS, injuries from traffic accidents, other accidents, or assaults on persons, mental disorders, etc.) that may require one or various medical or paramedical consultations, outpatient care, or hospitalization.

Law Enforcement and Justice System Expenditures

- Cost of the law enforcement and justice system

Similar to what occurs with health care expenditures, some law enforcement and justice system services have been established exclusively to control PAS trafficking, in which case they can be identified directly. In other cases, it is necessary to establish proportions for allocating expenditures that are only partially related to PAS abuse. This is not any easy task, not only because breaking down the action of authorities into their many components on the basis of their effects (surveillance, arrests, prosecution, incarceration and jail) is already very complicated, but also because it is not always clear what role is being played by substance use and abuse in the criminal conduct to make it easy to determine which cases have to be counted to determine the proportionality.

- Loss of productivity of the victims

Under this concept, an attempt is made to estimate the cost of the time that persons other than the abusive PAS user or the drug trafficking chain spend in, or because of, police procedures, legal proceedings of all kinds, ranging from preventive detention to unjustified incarceration, as well as the taking of depositions, the admittance of evidence and reports by experts, including participation as sworn jury members or the provision of other citizen services. All of these

activities, which usually take persons away from their occupations and which on occasion have severe consequences, turn them into victims of a situation that they did nothing to create.

- Costs of the prison system

The first economic consequence of the arrest, incarceration, and jailing of lawbreakers related to the use and abuse of PAS is their temporary (sometimes for long periods of time) removal from the productive system. Sometimes there is some minimum compensation because of the work done by prison inmates, but there is probably no way to generalize this circumstance.

But the prison system also involves costs inherent to their establishment and operation. Although at first sight it would not appear that obtaining relevant information for estimating total costs for this item might involve major difficulties, the attribution of proportions for crimes related to PAS use indeed does involve difficulties. On this score, what was said earlier about the law enforcement and justice system also holds true.

- Crime careers

Not all criminals involved in PAS use and abuse end up in the hands of the justice system (in fact, there are countries where those who are subject to legal proceedings account for only a very small minority). It should also be kept in mind that these individuals also drop out of the national economy's production system to focus on illicit activities, which from the personal point of view may become hugely productive. Because of their informal nature, however, they do not contribute anything to the collectivity in terms of fiscal revenues or added value to the formal production of goods and services.

Various costs

- Expenditures for reducing abuse

They are usually the outcome of government social policymaking decisions. They are aimed at educating the public and obtaining better knowledge about the social problem involved in abusive use of PAS, and usually they consists of use prevention campaigns, as well as the funding of research by public and private institutions. Expenditures of this type are not viewed as direct costs because, although they do have a connection with the abuse and do have an evident incidence on the levels of abuse over the long term, for governments they are discretionary because they always have the option of not following up on the actions that are recommended.

- Property destruction

Usually, material property (installations and their contents, motor vehicles, etc.) is affected as a result of PAS abuse because of accidents or crimes. The degree of damage ranges from a defect or depreciation to total loss. The most frequent accidents are motor vehicle collisions or traffic accidents in general, and fires. The most frequent crimes are robbery with or without

assault.

- Social security

This refers to payments charged to the public treasury, such as disability pensions, as a result of PAS abuse and which are for the benefit not only of the abusive users but also those who take care of them, as well as economically dependent relatives.

The administrative costs of the social security system, proportional to what is specifically dedicated to the operation of the system of benefits for abusive consumers, are also included here.

Section Two

INDIRECT INDICATORS

INDIRECT INDICATORS

The virtual impossibility of learning directly about the characteristics of a social phenomenon makes it necessary to use **indicators** as a source of indirect information to obtain an idea of the magnitude of the problem. Characterizing any social problem is a difficult task; however, the fact that the social problem with which these Guidelines are concerned originates from an illegal activity, namely PAS abuse,[2] makes the task well nigh impossible, given the complete absence of any records other than those that catalogue some of their effects (health service needs, police cases, etc.), which, when they do exist, are invariable limited, incomplete or sporadic.

It should be made quite clear that the aim is not to replace precise information with indicators. What is proposed is a reasonable alternative to overcome the various practical obstacles that make it even more difficult for our countries than for developed nations to appraise a social problem directly. That alternative seeks, through of a small number of indicators, to collect approximate information on which to base policy decisions to tackle the problem.

The use of indirect indicators tends to reduce significantly the difficulty and cost of obtaining a minimum of relevant basic information needed to institute or select social policies. However, contrary to what the unsuspecting observer might think, the important thing is not the selection of indicators so much as the logic of inference process for drawing reasonable conclusions on the basis of those indicators. It should be borne in mind that there is a host of indirect indicators we can sue to characterize any social problem (consider, for instance, the countless manifestations of poverty). It is undeniable that for every social problem there will be as many indirect indicators of its presence and characteristics as there are analysts of that problem. The distinction between these indicators is based on their descriptive capacity and/or the relative difficulty involved in their collection. Therefore, any initial selection of indicators should always be regarded as tentative and provisional, to the extent that it is arbitrary and, therefore, subject to adjustment and change. Furthermore, the selection will depend on the nature of the problem under investigation, the characteristics of the social and economic environment in which it arises, the experience of the analysts, and the particular circumstances -in terms of time and resources- in which the investigation evolves.

In these circumstances, the main contribution of the Advisory Team from UMDNJ - RWJMS entrusted by the OAS/CICAD with the preparation of this Manual - which crystallizes an effort, as mentioned initially, to adapt to the particular circumstances of Third-World countries the methodological guidelines developed for countries with more advanced economies - consists not of prescribing a set of specific indirect indicators (because they are believed to be available in many of our countries, or able to be obtained without too much effort in those where they do not exist), but of trying to provide an alternative (with indirect indicators) to the sum of statistical series and specific studies available in developed countries that the International Guidelines take for granted.[3] It is a given that the quality of the results will not be the same from one

[2] PAS abuse is not illegal in all the countries in the hemisphere; however, the production, distribution and sale of such substances is. Therefore, any user who buys or produces PAS is breaking the law in some way or another.

[3] Originally 17 indirect indicators were proposed: nine at Level 1 (relatively easy access) and eight at Level 2 (high difficulty). However, at the suggestion of the Scientific Advisory Committee (SAC) of CICAD, it was decided to eliminate Level 2 indicator #3 (follow-up on persons undergoing treatment) because it does not furnish information for aggregate cost studies. However, it should be mentioned that this indicator is of pivotal importance for **Avoidable cost studies**, the logical next step from aggregate costs studies.

scenario to another. However, in our opinion, that does not invalidate the capacity of indirect indicators to shed light on high-impact social problems that, by their nature, warrant immediate action by governments because their urgency precludes waiting for complex information gathering systems to be designed and put in place. While such a solution is always desirable, its implementation cannot take priority over the urgency of solving the social problem in question.

Consequently, this Manual sets out guidelines to enable Latin American and Caribbean countries interested in conducting studies of this type to test the hypothesis that it is possible, based on a small number of indirect indicators, to obtain, in a short time and at a low cost, relevant results for making a preliminary estimate of the economic impact of PAS abuse on a country.

In order to obtain a first estimate of the characteristics of the problem of PAS abuse in Caribbean and Latin American countries, six pilot countries have been requested to test separately a number of the indirect indicators mentioned below on their social situation.[4] It is worth recalling what was said above regarding the fact that any selection of indirect indicators is necessarily arbitrary and mention again that the ones proposed here are not the only ones, or perhaps even the best suited. By the same premise, it would likely not be worthwhile discussing their merits or drawbacks before taking the opportunity to demonstrate the viability of the hypothesis that the analysis of a few indirect indicators, such as the ones proposed for collection here, could help to prepare a sketch of the reality to support an approximate estimate of the economic impact in each country.

The indirect indicators proposed were selected on the basis of criteria such as prior experience of technical advisors and presuppose the existence of (or the relative ease of obtaining) the information in most of our countries; that said, it is also anticipated that a broad variety of research structures and scenarios exist in the various countries. The 16 indicators ultimately adopted for this cost study were selected for the following reasons:

a. All are indicators commonly found in drug studies and almost appear in literature on the issue. Therefore, the vast majority are available in at least some of the countries.

b. The authors of this manual have evidence that the necessary information on these indicators, though disperse, is available for collection, or is accessible and its collection would not be overly complex or costly.

c. The last four indicators (Level 2, #13-16) are difficult to obtain and would be an objective for the future. Therefore, barring exceptions, it is not expected that they would be obtained in the first phase.

d. Several indicators are interlinked, making it possible to create a self-supporting “mesh” of indicators; however, they are not in any strict order or hierarchy, nor indeed is such an order essential. That said, indicators must be arranged into groups for cost analyses. To that end, the authors designed a form that contains four main headings: Health Costs, Labor Productivity Losses, Direct Government Expenditure, and Other.

[4] Barbados, Chile, Costa Rica, El Salvador, Mexico, and Uruguay

e. As mentioned, the aim of this manual is not to make exact assessments or evaluations designed to substitute the studies based on longstanding series of statistics available in developed countries. It should be recalled that D. Collins *et al*. (2000) showed that even with supposedly highly accurate data different researchers in industrialized countries can reach sharply contrasting conclusions.[5] It should be clearly understood that the end result ***would not be a cost study***, but an estimate that would need constant refinements.

f. The selection of the 16 indicators does not mean that the methodology proposed is the only way to conduct the analyses.

The indirect indicators have been grouped into two levels of increasing complexity (that is, the indicators in the second level are more complex or difficult to access than those in the first level), and in some cases are cumulative (in other words, the indicators on the first level may be a prior step for obtaining those on the second level).

To ensure a high degree of relevance and timeliness in study conclusions, all information collected should pertain to the same year, and, if possible, to the most recent year for which reliable information is available. However, it is always advisable to conserve data from other years, if available, as that permits comparisons that can help to monitor the quality of the information compiled and, at the same time, help to determine trends in the evolution of statistical series.

In light of the foregoing, to explain what type of information is intended for collection and ensure a minimum of uniformity that would make the results of the effort comparable over time, following we describe in greater detail each of the indirect indicators proposed, mention the most likely sources of information, and comment on how the indicator can be used in the overall analysis process.

On the latter point, the technical advisors are explicit that it is impossible to get more out of an indicator than its possibilities can offer, in that its ability to reflect reality --of which, as its name makes clear, it is simply one indication among many-- depends on the context (in other words, on its relative importance in the interplay with other indicators) as well as on the training and experience of the analyst. With that in mind, the formulas that were used in the first phase of the work to draw information from indirect indicators should be approached with caution. This is due, in first place, to the fact that there is always the risk that data resulting from the application of a mathematical formula might be mistaken despite the impression of exactness that it gives. (Thus, for example, the multiplication of an estimated number of patients by an estimated daily cost produces a mathematically unique and undeniable result; however, its degree of uncertainty is clearly exponentially magnified). And, second, because any formula proposed for processing information provided by one or several should always be regarded as no more than one of a host of possible formulas. Therefore, we reiterate that, ultimately, the only guide for the most appropriate use of indicators, when it comes to determining the approximate shape of a social reality that is essentially impossible to see in its true dimension, are the experience and instinct of the analyst.[6]

[5] Collins, D., Lapsley, H., Lecavalier, J. y Single, E. Improving economic data to inform decisions in drug control. Bulletin on Narcotics, LII (1-2), 1-20.

[6] It is highly recommended for any country choosing to undertake studies of this type to select qualified economists and drug experts to implement them.

It is essential for all researchers to bear in mind that without proper evaluation there is a risk that data will lead to conclusions that do not make any sense; this is precisely what is meant by terms like “validity” and “reliability”. The validity of a test or of data is judged on the basis of evidence of how well they measure what they are designed to measure. That validity is often expressed in terms such as “acceptable” or “weak”. Thus, the health of an individual may be measured on the basis of diagnostic or laboratory tests, or on indications from which an assessment is formed. These examinations or tests constitute measurement instruments.

Broadly speaking, all measurement instruments should meet the following requirements:

- Validity: This indicates if the result of the measurement corresponds to the reality of the phenomenon measured. For example, a test that seeks to determine if a patient uses PAS would not be valid if it showed that a person has never used them when, in reality, he or she does so on a regular basis. One could say that an instrument is invalid when “I measure one thing and it tells me another”.
- Reliability: This means that immediately successive measurements of a stable phenomenon should produce similar results. For example, an instrument would not be reliable if it yielded very different results when used twice in a very short space of time on a patient whose disorder remained stable and without them undergoing any treatment or intervention. In other words, “every time I measure something I get a different result”.
- Scope: This refers to the capacity of an instrument to measure all the relevant features of a phenomenon. For example, a test to measure the existence of PAS abuse that only takes account of characteristics to demonstrate the disorder, would only serve for PAS abuse and not to demonstrate or diagnose other disorders.
- Sensitivity to change: This refers to the capacity to produce different measurements in line with changes in the phenomenon under observation. For example, a scale that measures the symptoms of PAS abusers should show progressive changes in scores as the patient responds to treatment or medical intervention.
- Usefulness: This refers to the applicability of a measurement instrument in real conditions. An instrument that requires a lengthy application time, can only be applied by highly trained staff, or is very difficult to interpret, is not very useful.

The validity of a test is a core component that cannot be separated from the other characteristics mentioned. Therefore, validity must be established through one of the following approaches:

- An in-depth examination of the test contents.
- Comparison of the test results with the results of other tests or measurements.
- A comprehensive analysis not only of the way in which the test results or the value of the data relate to other test results or measurements, but also of how they can be interpreted in a particular theoretical framework to better understand the system that includes the variable which the test is designed to measure.

The above-mentioned evaluation approaches are not mutually exclusive. Each should be regarded as a form of evidence that contributes to a judgment on the validity of the test or the data collected. Together, they offer a unified overview of a test's validity; however, depending on the use that the person who administers the test or the analyst gives them, it is possible to establish levels of relative relevance among them.

Since we thought it would be useful and illustrative to do so, we have included in Annex D at the end of this document --by a way of a case study-- a review of the data submitted by Chile at the end of 2004. We wish to point out in advance, as the study explains, that it is not intended as a "revelation of the truth", but merely as a guide in the application of this Manual of Methodological Guidelines. In that sense, it should be regarded as a working document that is subject to discussion and as a guide in a long process of which that review is merely the beginning...

Level 1 Low-Level Complexity Indicators

1. Number of requests for treatment in public and private institutions

Description: This involves recording all cases where there is a request for treatment.

Source: In theory, this information should be very easy to come by in most countries because institutions normally keep a record of persons who request treatment, whether or not they continue and complete it, or even if they formally commence it. As always, the reality is somewhat different: while institutions do keep records, sometimes that information is not reported to a body that consolidates and publishes it. Therefore, in practice, initially some countries would not be able to produce this information. Accordingly, it is recommended that all countries ensure that they have rules, regulations, and procedures in place to guarantee that this information becomes available in the near future from an accessible central agency.

Use: The number of treatment requests is important for two reasons:

- First, because it permits comparison of the data with results from epidemiological studies. For example, it would not be consistent if, on one hand, a country had a very high a number of treatment requests while, on the other, abuse studies that showed that the problem was not significant; or, alternatively, that abuse studies showed that the problem was very serious but very few people requested treatment or, indeed, there was a very limited number of institutions.

- Furthermore, the information for this indicator ties in with the information for indicator 7 in Level 1 (Number of persons undergoing treatment, type of treatment, and length of treatment). Comparison of results would produce an approximate image that could facilitate decision making. Thus, if, for example, there is a marked discrepancy between the number of requests for treatment and the number of persons who actually enroll in the process, it would be necessary to examine the reasons for that discrepancy: such as accessibility of treatment, types of treatment offered, requirements for prospective patients, excessive cost, excessive duration, residential versus ambulatory nature of the treatment offered, medicinal drugs used in the treatment, mixing of different age groups and sexes, religious affiliation of institutions, among others. In turn, this information would make it possible to design studies to identify the most effective treatments that have the lowest incidences of relapse and are best suited to particular conditions.

2. Number of drug-related deaths or serious injuries

Description: An important source of information to begin estimating the costs of illegal PAS abuse for a country is the number of deaths or injuries in drug-related accidents. For the purposes of this study it is important to bear in mind that information on deaths should be separated into three categories: a) accidents of any kind, including overdose; b) suicide; and, c) homicide associated with brawls or fights. In the case of serious injuries, generally those resulting in disability, it is necessary to include all cases examined by the Coroner's Office or reported to the police that originated in violence or an accident of any kind.

Source: Most countries in Latin America and the Caribbean have at least partial information on accidents of this type. The main source is usually the Coroner's Office (which, of course, is called something different in each country) where injuries and deaths are routinely examined.[7] In recent years nearly all countries in the hemisphere have introduced screening for alcohol and other substances, for at least a significant portion of the cases that come to their attention, because it is a requisite in judicial proceedings. The results are usually published periodically in official reports. If this is not the case, reports may be formally requested from the institution, which normally supplies data cumulative data for periods of weeks or months, with information distinguished according to sex, age, cause of death, type of injury, presence or not PAS, and circumstances (traffic accident, assault in the street or in the home, suicide, etc.). Police, investigation agencies, and fire departments sometimes also have supplementary information available in this area.

Use: Initially this study would only take deaths into account because injuries and the permanent consequences thereof are harder to evaluate. Several of our countries are not in the practice of keeping records on the association between injuries and PAS abuse. Nevertheless, attempts should be made to encourage the keeping of such records because they are essential for estimating more accurately the economic impact of substance abuse in the framework of overall morbidity.

Records on such cases make it possible to estimate the number of productivity years lost to premature death as well as the morbidity cost (period in which a person is incapacitated or their ability to work is seriously curtailed).

Inasmuch as they account for a proportion of the overall causes of mortality and morbidity, identifying the association between violent deaths or serious injuries and PAS abuse would make it possible in later studies to begin to estimate **attributable fractions** (also known as etiological fractions). Based on the total deaths and serious injuries for any reason in a given country and the year, it would be possible to determine how many are related to substance abuse as a basis for estimating the cost.

[7] The methodology pilot tests revealed that in some countries official statistics do not include the average age of people who die from illegal PAS overdose. Figures from several countries show that the average age is approximately 30; in the absence of more precise information, it is suggested that 33 be used as the average age to estimate, for example, permanent absenteeism.

3. Number of convictions and length of sentence for drug trafficking

Description: This indicator compiles penitentiary system costs and should refer exclusively to persons who have been convicted for crimes connected with distribution, sale, processing, and production of substances. Persons arrested or prosecuted should not be included so as to have a more conservative estimate of the costs associated with these offenses.

Source: The official entity responsible for administration of the national penitentiary system.

Use: This indicator is crucial for estimating the cost actually incurred and the cost that would be incurred if all the criminals who should have been convicted for these offenses were actually in prison. To that end, in the absence of other indicia, a hypothetical factor could be applied (for example, it could be assumed that the number of persons actually convicted represents only 10% of those who should be convicted), which would no doubt be different for each country.

It should be borne in mind that the social cost of a conviction has two main components: on one hand, the actual cost of maintaining the prisoner (which corresponds to the average value of the expenditures connected with that, which the state incurs through the prison authority; and, on the other hand, the lost productivity that it represents for the economy to keep a person away from their workplace (which loss is usually determined, in the absence of a better method, based on the average minimum wage in effect in the year of the estimate). It should be pointed out that in estimating associated costs of PAS abuse, criminal proceeds from illegal activities are not included for the purposes of determining productivity.

As in the previous case, this indicator will help to estimate the drug-crime attributable fractions because drug-related offenses constitute a core part of that ratio.

4. Substance use studies in the general population, among students, or in the workplace

Description: This refers exclusively to quantitative studies. In the countries where there are no such studies, data gathering strategies can be adopted that are inexpensive and easy to implement. The most useful studies are those conducted in the general population and the work place; studies among students would make it possible in the future to evaluate the costs of dropping out and lost educational opportunities.[8]

Population studies on PAS abuse (also known as epidemiological studies) provide the core reference framework for countries to design prevention and treatment policies. The data from

[8] There is an agreement among the countries taking part in this pilot program that coincides with the guidelines of the World Health Organization (WHO) and the Pan American Health Organization (PAHO): it is advisable to collect and present information on alcohol and tobacco use separately. The foregoing would make it possible in the short term to begin to estimate the economic impact of legal substances in Latin America and the Caribbean. The Scientific Advisory Committee (SAC) of CICAD also advises this. The pilot phase of the cost study was only concerned with illegal substances.

these studies should offer some indication as to the number and characteristics of people who have used drugs ('*prevalence*'), types of use (occasional, habitual, excessive to the point of creating serious problems associated with highly frequent use, use in large quantities binge, or use in situations that place the user and those around them at risk, due to operation of vehicles or working under the influence, for example). These studies also seek to identify the mean age of first use for each substance, the number of new cases ('*incidence*') each year, frequency of use, and the substances or combinations of substances used (mono- or poly-use).

There are many methodologies for conducting such studies; however, they all entail a problem of some description. Among the most well-known are so-called household surveys, school-based studies, telephone surveys, estimates based on the number of people who seek treatment at specialized institutions, general population surveys, studies on specific populations, and qualitative studies. Opinion polls make it possible to know what people think, but tend not to be an accurate reflection of the reality.

1. Household surveys are the preferred method of epidemiologists and they generally employ sophisticated sampling techniques (such as those that make it possible to select the survey sample so that findings are broadly applicable to the population at large) and statistical analysis methods. Ideally, such surveys should provide a kind of x-ray image of the current situation. However, such conditions rarely occur, in particular in developing countries, *inter alia*, for the foregoing reasons:

    - By definition, these surveys leave out excluded persons (the homeless, prostitutes, prison population, members of the security forces stationed in barracks) and it is common knowledge that PAS abuse in those populations can be much higher than in the general population;
    - Second, having to explain face-to-face a conduct frowned upon by society (and in some places constitutes a criminal offense) encourages a high level of duplicity and concealment;
    - Third, these studies are very costly. Frequently the effect of this is to encourage researchers to include an excessive number of questions (some of which ultimately prove redundant, not to say pointless) in an effort to get the most out of a survey, with the undesirable result that its application and the ensuing processes of results tabulation and analysis are made difficult.

2. School-based surveys skirt several of the shortcomings of household surveys because they guarantee anonymity and are carried out in a 'captive' population. However, the latter advantage is also their weakness: they only yield estimates on the youth population, not the general population. Furthermore, in countries with high early school dropout rates they leave out the young people who represent the highest abuse risk.

3. Telephone surveys are very popular in Europe but not very reliable (they have a very high margin of error). Despite being much more economical they are not regarded as a meaningful form of research in developing countries.

4. Estimates based on persons in treatment institutions. Even in countries where the State bears the full cost of treatment, most addicts never go to such institutions; and, in any event, those who seek treatment are persons with a long history of abuse, who have experienced serious family, health and economic problems. In short, the population in treatment institutions only represents a small percentage of drug users.

This shortcoming is much more serious in countries such as ours, where most treatment centers are privately run and, worse still, there are no laws that require such facilities to report their statistics to the state. The best that could be hoped for would be for such studies to offer an idea of the general situation as regards addiction but not of the dimensions of substance use in a country.

5. Polls, a widely used technique in marketing and advertising, provide a snapshot of what the public thinks (or does). They have a very high margin of error as samples are selected in a very imprecise manner and too many factors are outside the control of researchers. They are inexpensive and easy to carry out but are not really a scientific research option.

6. Studies on specific populations (prisons, street children, workplace) can combine quantitative and qualitative methodologies and serve a twin purpose: complement studies of other types, or make it possible to decide where, when and how to target a particular population for intervention.

7. Qualitative research makes it possible to examine in depth the 'what', 'how' and 'why' of a problem but are not designed to evaluate its dimensions. In that sense, given that they can generate new hypotheses and suggest explanations, they are an invaluable complement to quantitative studies but cannot substitute them in the context of cost studies.

In sum, despite their many limitations, household surveys on the general population should be regarded as the best option in countries where drug use is not a criminal offense. Their high implementation and processing cost can be substantially reduced if support can be harnessed from multiple public and private bodies (political authorities, regional or local councils, community leaders, civil authorities, educational associations), as well as the general public; and if the number of questions is kept to a minimum. Technologies, such as optical reading of questionnaires, can also reduce costs.

In any event, it is essential to conduct supplementary studies on marginal groups and design strategies to ensure confidentiality. In developing countries where drug use is an offense the above tends not to be the most advisable option. In the absence of financial resources to conduct prior publicity campaigns to dissipate fears of reprisal for responding truthfully, which rarely occurs, in such cases it is preferable to carry out partial studies with local community support.

Source: Government agencies, nongovernmental organizations.

Use: This is one of the core indicators for conducting a cost study as it makes it possible to determine the extent of the social problem with considerable accuracy. Once historical series are available it is possible to determine trends and predict the future characteristics of substance use and the associated costs.

To avoid duplication in information gathering processes, **it is recommended that, where possible, national drug use surveys include questions on drug-related absenteeism, accidents in the workplace, and crime.** This suggestion may be easier to carry out in small countries with a limited history of drug research. At all events, it is very important for authorities to coordinate efforts in the early stages of development of instruments.

5. Direct government expenditure

Description: Annex A provides a description in some detail of the form initially proposed for -- and duly processed by-- the pilot countries to estimate direct government expenditure as a first step in a cost study. This indicator groups direct government expenditures under two broad headings: Supply Reduction and Demand Reduction. In turn, Supply Reduction includes all expenditures connected, *inter alia*, with the Judicial System, Penitentiary System, Military and Police, Customs, and Crop Substitution Subsidies. Expenditure in Demand Reduction covers Prevention and Treatment; in countries where the deprivation of liberty of PAS users is considered a "deterrent", the costs incurred by such measures should be included under demand reduction.

Source: Government agencies. An important suggestion in this regard is that the persons responsible in each country for providing information to CICAD clarify if the data they supply are supported by specific studies or if they are rough estimates based on extrapolation or other methods. Where possible, as a basic indication of their validity, it would be desirable for information to be officially certified to avoid the risk of only having estimates whose accuracy is highly suspect.

Use: With the growth of PAS abuse at different rates in each country, governments have been compelled to increase spending on reduction of drug supply and demand. The information provided in the proposed form makes it possible to form an idea of the nature of the country (that is, if it is mainly a producer or a consumer) and of the scale and orientation of government efforts to curb the problem.

6. Number of substance-use induced hospital admissions and length of stay

Description: Concretely this means emergencies caused by overdose or intoxication from PAS use, and includes details on the type of illness (ideally in accordance with the ICD classification, indicating which version is used) and length of hospitalization.

PAS abuse progresses through different stages in which users encounter increasing problems on multiple levels. As drug use increases (in terms of quantity, frequency and range of substances used), so does the risk of a health impairment and accidental overdose. However, it should not be overlooked that accidents may occur at an early stage of the process and even after a small number of experiences.

Hospitals and emergency centers in economically advanced countries have kept admission and discharge records in cases of alcohol and heroin abuse for many years, and in cases of cocaine abuse since the 1970's. In those countries blood and urine tests on patients to screen for the presence of different substances were quickly adopted as routine, on the premise that either error or ignorance could lead to serious and potentially irreversible or fatal consequences. The resulting statistical information was made public and began to be used to estimate costs. Given that these situations usually concerned emergencies that entailed the application of a number of relatively precise intervention protocols over comparatively stable periods of hospitalization, it was quite straightforward to determine the associated costs. Initial approximations were also possible for estimating etiological fractions based on that information, to the extent that it was possible to tell within the hospital total how many cases were attributable to substance abuse and to determine which substances were involved. It was found that discharge, rather than admission, records were a better indicator because patients tended to have received a more accurate diagnosis by the time they left the facility than when they were admitted.

The situation for developing countries is quite different. In first place, generally speaking, their hospital and clinic record systems are plagued with chronic shortcomings as well as a conspicuous lack of agreement and consistency in disease classification guidelines. In second place, the drug problem appeared (or was recognized by the authorities) late in those countries and was not considered important from a clinical viewpoint. Third, the conditions of health care along with perennial under funding in that area have led health care staff to the view that their first duty is to care for the patient as best as possible, rather than concern themselves with the reasons that led to their condition. And, fourth, the various domestic legislations often obstruct accurate record keeping. The reason is that sometimes the patient may be liable to prosecution if the presence of PAS is detected in their system; at other times they could disqualified from treatment under the social security system for the same reason, with the result that they would have to bear all the expenses arising from the emergency. In such cases it is not uncommon for health staff to try to avoid further problems by using ambiguous expressions in records, such as "intoxication due to external causes", or innocuous observations such as a "the patient appears to have consumed alcohol". Indeed, it is not unheard of for many cases to go unrecorded.

Source: It is expected that many countries will have difficulties with this indicator. Ideally, a government agency at the national level (for instance, the Ministry of Public Health or its equivalent) should compile the relevant statistics. However, it is unlikely that things will function that way in the majority of our countries. Indeed, even in those cases where such records are kept, they will no doubt be confined to compilations of data from public institutions and not include private ones. The fact is that in most of our countries services that are genuinely public in developed nations (such as health and education) are mainly provided privately.

In these circumstances, until reliable information gathering systems with a national scope are created, it will be necessary presumably to resort to estimates based on the records of just some of the main public and private institutions that provide health services. At the same time, it would be possible to carry out specific studies in this area that already receive financial support from CICAD in several countries.[9]

Use: This indicator is of paramount importance since it makes it possible to determine the amount of resources allocated to emergency care and, when contrasted with information from

[9] The authors of this manual have carried out a thorough review of the SIDUC proposal to conduct studies on drug-related hospital emergencies. Furthermore, this protocol was approved in Colombia in 2004.

other indicators, the extent of health service coverage. It also supplies data that can be compared with epidemiological research findings, as well as providing empirical reference as to what might be happening in the world of substance users. Thus, in the United States and Canada records disclosed trends in substance use patterns over different periods and made it possible to adopt emergency management decisions and preventive measures.

It is hoped that the OAS - CICAD/UMDNJ - RWJMS Project, which is designed to stimulate the development of cost study methodologies, will lead to an improvement in record keeping, adoption of common classification systems, and production of information that enables policy decision makers on health and investment in that area throughout the Latin American and Caribbean region to adopt the most appropriate decisions for their respective populations.

7. Number of persons undergoing treatment, type of treatment, and length of treatment

Description: This concerns concrete information on treatments to limit or contain PAS abuse, and includes details on type of institution and treatment, as well as its duration. It is expected that most of our countries will encounter difficulties with this indicator, even without including private consultation.

Unlike the records for indicator 1 in this Level, which refers exclusively to requests for treatment, this indicator should take account only of **persons** who have formally undergone treatment.[10] It should include all cases (both where treatment was completed and where it was interrupted for whatever reason, which should be mentioned in the clinical history). This is a core indicator for subsequent estimates of the cost-effectiveness of different treatments (Indicator 3, Level 2).

Source: Most countries are expected to have difficulty with this indicator. Its determination is a complex process for a variety of reasons

- In most countries care providing institutions do not regularly report the number of persons to whom they provide assistance (and sometimes never do so at all). Worse still, most institutions keep poor and badly organized records, and, in a few extreme cases, none at all due to the absence of state regulation and control.
- Some users go to different health care centers during the same year, which leads to multiple records on the same person.
- Each country tends to have its own classifications for forms of treatment, and institutions do not always define precisely what they mean by each name.

Despite all the shortcomings, these obstacles are far from insurmountable. Inevitably, inaccuracies will continue for a number of years; however, if the persons responsible for PAS abuse prevention programs in each country understand the importance of collecting this information properly, ultimately institutions will be happy to cooperate. All parties involved stand to benefit from doing so: there will be greater clarity as regards what is being done, it would be

[10] It should be mentioned that the information requested refers to persons, not number of treatments, since the same person might go for several treatments.

possible to make corrections to treatment procedures, and institutions would be able to apply for funding with the support of empirical evidence.

The following strategies are proposed to begin to solve the aforementioned problems:

- Entities responsible for implementing studies on the economic impact of PAS abuse in each country must be dogged in encouraging proper record keeping on care provided at all public and private institutions. They must stipulate what information must be reported at least on an annual basis, and protect the right to anonymity of patients. Bearing in mind the importance of this information for public health, there is no reason why such reporting should not be mandatory. This is the system in force in the majority of industrialized countries, where records have been kept for many years, and it could be gradually implemented in our developing countries.

- The fact that there are multiple records on persons who seek assistance at different treatment centers is unlikely to cause significant errors. To ensure greater accuracy, institutions could mention in their records if the person has been previously to other facilities and, if so, for what length of time. In that way, it would be possible by means of a computer program to determine how many individuals have undergone several treatments and adjust estimates accordingly. In initially tackling the problem it would be sufficient to establish what percentage of patients have received care at different institutions.

- A form will be designed for submitting data grouped according to treatment categories. This would undergo careful examination by expert clinicians and the participating countries since there could be large differences from one nation to another. In some countries the preferred form of treatment is at therapeutic communities, which involves very long periods of treatment; in others the same is true of outpatient centers, and in still others, internment for up to a month. Furthermore, interventions may go by different names and, therefore, it is essential to establish appropriate definitions for them at the outset.

- Initially the information would refer only to institutions because data on individual private treatments are difficult to access.

Use: This indicator makes it possible to determine the amount of resources allocated to treatment of PAS abuse and, when contrasted with information from other indicators, the extent of health service coverage.

8. Destruction of physical assets

Description: This refers basically to property damage triggered by PAS abuse that manifests itself in two ways:

- Accidents that take place under the influence of the substance, in which the most common are traffic accidents that culminate in the destruction of vehicles or public or private property;

and fires as a result of smoking under the influence of alcohol, or neglecting to turn off electrical appliances or heaters.

- Criminal offenses that occur when the substance user loses control of his or her aggression, resulting in reprisals or brawls under the influence of, or in connection with, PAS.

Source: Estimates on destruction of assets resulting from accidents can be made based on information contained in records kept by the police, the Coroner's Office, or agencies that prosecute cases of this type; insurance company archives; as well as fire department records. None of these sources provides accurate information because they usually concern accidents whose origin can be very difficult to demonstrate, and the parties concerned (in particular those who caused the accident) have every conceivable reason to deny their responsibility in the events. Exceptions to these cases are accidents that result in serious injury or death, which are situations on which one would expect the authorities to keep records.

With respect to destruction of assets resulting from criminal acts, the sources are, again, the police, fire department, and judicial authorities; and, in serious cases that involve prison sentences, the prisoners themselves.

Again, this is information that it is difficult to access and collect, and any estimates based on that information will almost certainly fall short of the reality. However, until more accurate and systematic methods are found to evaluate these costs, the progressive accumulation of information in a database will lead to a better definition of part of Indicator 7, Level 2 (Social impact of property loss).

Use: The inherent difficulties of collecting information in this area notwithstanding, given that this is one of the most conspicuous and, in social terms, costliest manifestations of PAS abuse, it is a particularly valuable indicator in any economic impact analysis.

9. Premature death costs in terms of productivity

This indicator determines the overall loss to the economy in terms of lost productivity, based on the number of deaths as a result of substance abuse determined by indicator 2 in Level 1 (Number of drug-related deaths or serious injuries) above. This is one of the indicators whose quantification rouses the most heated debate because it entails placing a value on a human life based on extremely precarious foundations and as a function of a single dimension. For the same reason, a few differences in basic assumptions are liable to produce considerable deviations in total cost estimates, in that they depend on which evaluation system is chosen.

There is no universal agreement on the issue, in spite of the fact that there is consensus with regard to the notion that a human life carries a high value. In the economic sphere, where the essential aim is to make the best possible use of limited resources, either consciously or unconsciously a value is placed on human life whenever alternative social investment options are evaluated.

For our purposes, the value of a human life is usually determined as a function of the effect that the premature and permanent absence of a production agent has on the economy as a whole. In the absence of a better measurement instrument, that value is estimated on the basis of assumptions (admittedly of debatable validity) on productive capacity and length of absence.

Individual productive capacity is determined according to the average minimum wage in effect when the indicator is estimated.[11] While we accept as given that this a very general measurement, in that it fails to take into account the particular characteristics of the deceased person (who may or may not have been employed, who may or may not have been earning that salary, etc.), for the purposes of widespread estimates there appears to be no better alternative. One can also picture how, if we had individual information on each person who died from PAS abuse (which is not the case, even in developed countries), estimating the indicator would become so laborious as to be impractical.

Length of absence, for its part, is determined by the difference between prevailing life expectancy at birth in the country when the indicator is estimated and estimated average age at death. Again, this estimate is extremely general in that it overlooks individual peculiarities (state of health, professional risks, etc.). However, as in the previous case, there seems to be no better alternative.

Source: Indicator 2, Level 1 (Number of deaths associated with substance abuse), general parameters (current minimum wage, life expectancy at birth)

Use: Given that it is reflective of the most regrettable consequences of PAS abuse, of all the tangible costs it is the single largest component of the total social cost.

Level 2 High-Level Complexity Indicators

1. Arrests for possession and use of PAS

Description: This indicator includes people arrested and under prosecution for possession and use of PAS. It does not include convictions (recorded in Indicator 3, Level 1). This includes three aspects:

- Number of persons arrested for possession and use in the last year.
- Average number of persons involved in an arrest (policemen and para-policemen).
- Average duration of the arrest for these reasons.

[11] International standards prefer the average wage (AW), and for that reason countries are recommended to use that indicator if they have it available. The monthly minimum wage (MMW) exists in all countries, unlike the average wage. The situation is complicated by the fact that in many countries unemployment rates are very high because a substantial portion of the population earns less than the MMW, and because a small portion earns exorbitant sums. Some countries have several "average wages" for different professions or trades. Finally, insofar as the discount rate is concerned, it is not applicable in most cases because the MMW is adjusted annually for inflation by law.

It is anticipated that there will be difficulties in obtaining information for this indicator, chiefly owing to the characteristics of our reality in Latin America and the Caribbean:

- In first place, because most countries in the hemispheric do not have systematized information on police activities. Information may vary enormously in the same country from one region to another, in terms of quality and accuracy, which makes it impossible to consolidate. Thus, for example, in one city the police may carefully catalogue the different reasons and circumstances of arrests and keep daily statistics, while in another the police may perhaps submit monthly data and may or may not mention the law or provision whose violation prompted the arrest. In turn, that law or provision might encompass a whole range of offenses, from international drug trafficking to an individual caught smoking cannabis in a park. Furthermore, periods of detention may run from a few hours to several months (for reasons to do with the legal framework, administrative inefficiency, absence of legal controls, etc.), and very often the appropriate records will not even be kept. Situations like these make an accurate estimate of the government costs involved impossible.

- In second place, the legal standards surrounding these matters are amazingly varied, making it virtually necessary to interpret the indicator differently for each country. Thus, in some countries in the region personal use is not a criminal offense, even in public places; in others, the law provides some restrictions and places relatively permissive limits on amounts recognized for personal use; in others, any use or possession is severely penalized; and, at the other end of the legislative continuum, there are countries where the mere possession of "paraphernalia" --in other words, objects associated with the use of illegal substances-- can result in prison sentences for anyone found in possession of them, even if they are not using them.

Source: Law enforcement

Use: The above-mentioned constraints and difficulties notwithstanding, this indicator complements the information on penitentiary system costs supplied by Indicators 3 in Level 1 (Number of convictions and length of sentence for drug trafficking) and Indicator 2 in Level 2 (Number of persons imprisoned for crimes or offenses connected with substance abuse).

2. Number of persons imprisoned for crimes or offenses connected with substance abuse

Description: Offenses associated with substance use fall into several categories:

- The range of legally recognized offenses tends to vary greatly among countries. In some it is an offense to use or possess any quantity of PAS; in others it is an offense to use them in a public place; and, in almost all countries it is against the law to drive under the influence of

PAS. In addition to these offenses are the myriad crimes associated with drug trafficking, including illicit cultivation, retail distribution (sale on the street or from special premises), smuggling, money laundering, trafficking in chemical substances, and sale of arms.

- Offenses committed under the influence of PAS, in particular larceny and robbery, verbal or physical assault on persons, damage to private property, traffic violations, etc.

- Offenses committed for the purpose of obtaining PAS. Generally these are crimes against property and damage to private property (which may occur in combination, for instance, when a person breaks the window of a car to steal something inside it). However, these offenses may also be connected with prostitution and crimes against public morality.

- Offenses associated with involvement in illicit PAS trafficking. Typically, these are connected with "turf wars" between rival gangs, settling of scores, retaliations, conflicts with the authorities.

Evidently, there is a considerable diversity of crimes associated with PAS use. And record-keeping varies substantially among, as well as within, countries. In many countries one offense prevails over another and the second one is not recorded. For instance, in most of our countries an investigation of a PAS user accused of robbery would not concern itself with the intended use of the criminal proceeds. Accordingly, the incident would probably be written up as a robbery and the connection with PAS abuse ignored. In other cases, persons imprisoned for crimes connected with drug trafficking would be highly unlikely to confess their motives. And in other instances, in an attempt at a plea bargain based on extenuating circumstances, there is no shortage of people who would attribute their inappropriate behavior to the influence of PAS (for example alcohol consumption prior to brawls and violence).

Source: Authorities of the penitentiary system

Use: This indicator, together with indicator 3 in Level 1 (Number of convictions and length of sentence for drug trafficking) accounts for a significant portion of the information necessary to estimate **attributable fractions** (or etiological fractions) for crime and drugs.[12] However, while information for the Level 1 indicator is relatively easy to obtain in most countries in the world, the situation is quite different for abuse-related offenses. Nevertheless, it is a priority to design strategies to move gradually toward collection of these data.

3. Absenteeism costs

Description: Nearly 450 million people in the world today suffer from neuropsychiatric disorders related to four of the top 10 causes of overall disability. After heart disease, severe depression is becoming once of the chief causes of morbi-mortality and, according to the WHO, by 2020 it

[12] The authors regard these as two core concepts for conducting future studies on aggregate costs as well as avoidable costs. Therefore, they have included a more detailed explanation of them in Annex.

will be the main cause of incapacity for work in developing countries. The same sources found that PAS abuse is a very widespread problem in society and notes that rates of abuse are higher in the labor force than in the general population.

Prevalence studies on alcohol use and accidents in the workplace carried out in different countries over the last 10 years have found that 15% to 30% of fatal accidents in the workplace are associated with alcohol use; 20% to 25% of industrial accidents involve persons who are intoxicated; and drinkers suffer 2 to 4 times more accidents, while absenteeism from the workplace is 2 to 3 times higher among drinkers than among other employees. Broadly speaking, the percentage of workers who abuse alcohol ranges from 40% to 70%.

The foregoing information is cited purely for reference reasons. Unfortunately there is no recent mental health review of the Latin American or Caribbean working population, nor is there precise knowledge of the frequency of PAS use and abuse in our countries. However, based on studies such as those mentioned, which examine the link between alcohol use and accidents, absenteeism, and low performance in the workplace, and considering, moreover, the presence of numerous additional 'stressors' connected with our regional reality (social inequality, chronic poverty, lack of sanitation, etc.), it would be fair to assume that our labor force is even more exposed than that of developed countries to conditions likely to be harmful to mental health and undermine work performance.

Source: Public or private social security entities, professional risk managers, insurance companies.

Use: For many Latin American and Caribbean countries this will probably remain a hidden cost for a long time to come given the insuperable practical difficulties involved in estimating temporary absenteeism (delays, momentary absences, reiterated distractions); however, it is the most evident manifestation and possible one of the most costly consequences of PAS abuse.

The widespread practice of deducting the wages of less skilled workers because of delays could lead to the consideration that absenteeism is a private cost; however, in our reality it is still too difficult at the national level to determine categories of absenteeism, in order to make the necessary adjustments to estimates.

4. Labor productivity loss

Description: The economic impact of legal and illegal PAS abuse on a country is undeniable. In contrast to other fields, where it is difficult to establish cause-effect relationships (for example, the link between tobacco use and crime is not as straightforward), in the workplace there is sufficient evidence to show clearly that any PAS abuse impairs performance and productivity.

Indeed, PAS abuse by employees not only reduces the amount of time they devote to work (absenteeism and delays, as mentioned in the preceding indicator), but also adversely affects

their productivity in the workplace (lower quality, less effort, higher frequency of errors, etc). Furthermore, abuse-related problems of employees can may affect the productivity of co-workers, supervisors and subordinates.

In a perfect market, any decline in a worker's productivity would give rise to a reduction in salary, which is the argument that supports the position that PAS abuse costs incurred by some workers should be borne by them in the form of salary deductions, and therefore these costs should be considered private. Though correct in principle, this line of reasoning implicitly assumes that workers have taken rational and fully informed decisions before becoming PAS abusers; and that with respect to patterns, for their part, in all cases there are mechanisms for accurate and timely detection of productivity slumps so that the appropriate deductions can be made. Obviously, none of these assumptions is broadly applicable among our countries.

The principal ways in which PAS abuse affects productivity in the workplace are as follows:

- At the most elementary level, small time losses (that can add up to several hours a day in the case of tobacco users) or unwarranted absences or delays when individuals use times like meal breaks to use or acquire substances;

- Accidents associated with work performed under the influence of a PAS. The range of possible situations is very broad, and includes cases such as long-distance drivers who use stimulants to stay awake, persons who operate machinery or are exposed to risk while under the effects of alcohol or cannabis; or persons who take medicinal drugs without medical prescription or supervision.

- Decline in work quality due to working under the influence of PAS;

- Conflicts with subordinates, co-workers and superiors as a result of PAS use or its sequela.

Source: As things stand, it is unlikely that many Latin American and Caribbean countries have ways to determine productivity losses other than those arising from absenteeism for whole days (and it would not be out of the question for some of our countries not to have mechanisms even for those). It is necessary to develop information gathering strategies in this respect, starting with the creation of guidelines to enable the countries concerned to carry out specific studies as a first approach to solving the problem.

Use: This indicator probably represents one of the greatest social costs of PAS abuse that, despite its tangibility, for the moment remains hidden until an approach can be found for its quantification.

5. Economic loss due to morbidity.

Description: The social impact of morbidity has several components, including health care costs, administrative expenses connected with processing work incapacity claims, and sickness

disability benefits. Tackling the problems arising from morbidity creates a greater or lesser burden for the State, depending on the particular characteristics of each country: level of economic development, production structures, degree of privatization and availability of health care, social security schemes, etc.

It is foreseeable that economic problems associated with public health will exist in one country but not in others; or the treatment and priority accorded to common problems may vary from country to country, and even among regions, economic sectors and industries within a particular country. It is unusual in our region to find studies on the economic impact of work incapacity due to morbidity for a particular company or plant. Naturally, the absence of relevant information is not confined to the micro economic sphere but extends nation-wide.

Source: Professional risk managers, health service providers, insurance companies.

Use: All health and social security systems are designed to provide protection to citizens through mechanisms to meet their essential needs. Morbidity studies constitute a necessary prerequisite to design government policies for reducing its incidence and increasing well-being and quality of life.

6. Social impact of property loss

Description: This indicator constitutes a follow-on and refinement of Indicator 8 in Level 1.
While that indicator estimates the loss of tangible assets (also known as property or fixed assets), here the aim is to include their replacement value based on the reasonable assumption that in economies such as ours, where local currencies are weak and inflation rates high, it is very probable that restoring things to their original state will entail cost higher than those on which the above-mentioned estimates were made. Ideally, assuming it were made possible by advances in economic theory specifically concerned with the problems of valuing intangible goods, it would be desirable also to be able to estimate the cost attributable to the loss of intangible goods (that is, goods that are not expressed in monetary units, such as the potentially devastating impact on a person's morale of a job loss, the loss of the opportunity to study, and other effects).

Estimating the former is already hard enough for the reasons given (see Indicator 8, Level 1). However, estimating intangible costs is so difficult that it has never been attempted, even in the most developed countries.

The reason is that while we acknowledge that they unquestionably exist, no generally accepted theory has yet been developed for the treatment of costs whose reduction or elimination does not free up resources that can be allocated to other purposes (such is the economic definition of intangible costs; which stem, in turn, from the deterioration or loss of intangible goods). Put another way, intangible costs do not have an opportunity cost. Thus, for example, the pain and suffering of a family --destroyed by the unchecked and uncontrollable addiction of one of its members-- indubitably carries an immense cost that does not diminish (on the contrary it may even increase) with death. However, that cost is not quantifiable because the alleviation of suffering (if it can be alleviated) or its nonexistence (in the counterfactual scenario) does not produce an impact that can be expressed in monetary units.

There is no doubt that putting a price on the vacuum left by the loss of a life, pain and suffering, and the diminished quality of life associated with a loved one with serious PAS abuse problems, is an exceptionally difficult task. Possibly, having accepted as given that it is impossible to address the problem globally, one way of making it less difficult to reach a solution would be to approach the problem in two different phases with different levels of complexity.

- The first phase could begin with the acceptance that pain and suffering are human experiences that can be measured (a task that has been taken up by psychologists, psychiatrists, and other experts on human behavior); and that that measurement should mainly center on the fundamental unit of human social organization: the family.

- In a second phase it would be necessary to resolve the problem of assigning a tangible value to different degrees or levels of pain, suffering, or sense of loss. This task, which mainly falls to economists, starts with the assumption that if suffering has no impact on the behavior of a person then, economically speaking, it is irrelevant; however, if suffering does have an impact (and we know that it does!), then it must have a value. There seems to be no logical reason why it should not be possible to determine that value, which in no way means that it will be a simple task, or that determining the guidelines and approach for doing so will be straightforward.

However, the complexity of the problem does not end there; the family is merely the unit most directly affected by the situation but it is not the only one: neighbors, friends, co-workers -- to cite a few figures in the immediate circle-- also suffer to varying degrees. Perhaps it is not even possible to imagine how to calculate those costs, but experience has taught us that even the longest journey starts with one initial step.

Unquestionably, estimating intangible costs is like trying to give substance to a ghost. However, despite the practical obstacles to their quantification, we know instinctively that intangible costs are too important not to take into account.

Source: Estimates on PAS abuse prevalence and incidence; specific studies on overall loss of quality of life for families of PAS users; development of economic theory for the treatment of intangible cost of (not yet available).

Use: Digression on the issue of intangible costs is justified when we consider, intuitively until the practical problems that defy their estimation are resolved, that such costs are enormous in comparison to tangible costs, if for no other reason than the fact that they affect not only the user, but also their entire circle.

7. Opportunity cost due to PAS abuse

Description: Estimating the opportunity cost of PAS abuse is the final step in the economic impact study on this social problem. It is the final figure put on the sacrifice that PAS abuse represents for the national economy based on the social costs estimated from indirect indicators. In the terminology of cost-of-illness studies, which, as explained in the section on Costs at

beginning of this manual, is the branch to which this study belongings, the idea of opportunity cost stems from the consideration that the resources allocated to counter PAS abuse (prevention, treatment, research) could have been put to alternative uses of interest to society: making health care more effective, education, leisure, etc.

Usually, in order to facilitate direct comparison with results of studies carried out in other parts of the world, or in the same country at other moments in time, the resulting cost is divided by the population size to determine the cost per capita.

Source: Indirect indicators

Use: The cost (whether total or per capita) condenses and concludes the economic impact study on PAS abuse. It enables comparisons with other countries for the same year and permits identification of trends by comparing it with figures for the country from other years.

It goes without saying that some countries will have fewer problems than others obtaining the information requested. However, even if all the countries acquire all the information, the data breakdown will probably vary in each case. Nevertheless, as mentioned in other parts of the manual, the exercise as a whole is useful for defining basic parameters for the development of a common methodology that would make it possible to have consistent estimates across different geographic regions, as well as drawing up a first inventory that reflects the availability of statistical information.

The countries are advised to proceed slowly but steadily. The first task will be to obtain the indicators for level 1, an analysis of which would be presented in a preliminary report. The inclusion of level 2 indicators in each country would precede the preparation of the final report, which entails combining the information collected for the preceding level with additional demographic data and average wage figures, with a view to producing tentative estimates on the magnitude and nature of the economic impact of PAS abuse in each nation.

It follows from the foregoing that the results of the respective studies would be comparable only if the nations all adopt a common model for estimating costs based on a standard set of indicators. If that were achieved, in other words, if there were determined cooperation on the part of each and every pilot country in the joint effort to develop a universally applicable methodology, it would enable them to reap the added benefit of being in a position to ensure, on one hand, that the system is transferable to any country in the region and, on the other, that a comparative analysis would be able to detect without too much difficulty any indicators that were clearly "out of step" for whatever reason. The last point would serve as a basic quality control for the information provided, which is no mean thing, given the difficulty of its compilation and the scant and doubtful possibilities for its verification *in situ*.

CONCLUSION

Psychoactive substance abuse is a serious social problem whose incidence has increased worldwide in recent years. However, very few countries have even an approximate estimate of its economic impact, mainly due to the absence of an appropriate methodology to carry out the necessary cost studies.

In order to contribute to filling a gap prevailing in the field of cost-of-illness studies among the nations of the Americas other than Canada and the United States and on the basis of the mandate issued at the Summit of the Americas held in April 2001 in Quebec City, which instructed it "to develop a long-term strategy that includes a three-year program to establish a basic and standardized mechanism to estimate the social, human and economic costs of the drug problem in the Americas and support the countries by providing them with the necessary technical assistance," the Organization of American States, through its Inter-American Drug Abuse Control Commission (CICAD) with technical assistance provided by The University of Medicine and Dentistry of New Jersey - Robert Wood Johnson Medical School, has proposed drawing up a methodology to help the continent's countries to estimate the economic impact of psychoactive substance (PAS) abuse.

Researchers in developed countries (mainly, Australia, Canada, Great Britain, and the United States) after many years of experience in this area of study have opened a way forward. The present document intends to bring together, in the form of a practical methodological guide, the principal conclusions they have drawn. Bearing in mind that the methods developed for these countries are not directly and entirely applicable to Caribbean and Latin American nations, since we lack a tradition of careful gathering and maintenance of many data series that are indispensable for the immediate application of their models, it is suggested here that it is possible to indirectly come close to characterizing the social phenomenon and measuring its implications for our respective national economies by using indicators.

The manual is divided into two sections. The first provides a general overview of the costs that are usually included in a study of this nature; the second section proposes and provides a detailed explanation of a number of indirect indicators (Levels 1 and 2). It is hoped that, through careful application of the methodological guidelines suggested, many Latin American and Caribbean countries would be able at least to formulate a plan for an initial approach to estimating that impact and, at the same time, identify primary sources of relevant information.

It is impossible to underscore enough that a cost study on PAS abuse is a complex task, given that the basic information is unlikely to be readily available in any of the countries. Therefore this manual of methodological guidelines should not to be seen as a compendium of instructions, procedures, and formulas that need only be followed to magically bring about the desired results.

With that in mind, it should be mentioned that the conceptual framework for cost-of-illness studies is misleadingly simple and prescribes a three-step process: a) Determine the adverse consequences of the illness; b) Determine the factors of causality; and, c) Quantify the results. However, in the reality of each Latin American and Caribbean domestic economy a truly Herculean effort is needed to complete each of these steps, due to the shortage, scant reliability, or complete absence of the basic information required. That is why it has been

proposed --for an initial coordinated attempt among the pilot countries, which would be extended subsequently to other countries in the region-- to rely initially on studies on adverse consequences and factors of causality conducted in other countries, and to limit the exercise for to step c) the time being; in other words, to determine, at least approximately, the order of magnitude of PAS abuse as a starting point to tentatively estimate its economic impact in each pilot country. It should be mentioned that even in these circumstances, the study will not be as simple and as quick to carry out as one would want.

The first objective, therefore, is to try to determine the magnitude of PAS abuse during the most recent year for which statistics have been published or are available for consultation.

As mentioned there are two categories of psychoactive substances: the legal kind, which include alcohol and tobacco; and the illegal kind, which are all the other substances generically referred to as "drugs". Studies conducted to date in other countries have centered either exclusively on alcohol, tobacco, or illicit drugs (as a group), or different combinations of groups of PAS.

In this connection it is necessary to establish an initial parameter: a definition of PAS for the purposes of the proposed study. One option would be to try to assess the magnitude of abuse of alcohol, tobacco, and illicit drugs (as a group) separately, and to consider possible mechanisms to break down the data in these three groups, given the manner in which data would probably be collected. Once this first obstacle has been overcome it may be that we would have better information available with which to redefine the scope of ensuing stages.

In the absence of an accurate census of PAS users, and there is certainly none in any of our countries, it will be necessary to use indirect indicators to provide an approximate idea of the national scale of the problem.

Whatever the case, it should be borne in mind that the indirect indicators proposed, as well as any others that might be compiled, tend to offer a partial view of the whole image or a comprehensive view of a given part, in much the same way as the pieces of a jigsaw puzzle. It will always be necessary to try to reconstruct a full image with those pieces based, for want of more precise criteria, on the distribution of the national population. There is no single way to do this, nor is there a single answer to the problem. However, whatever the case, steps must be taken to ensure that the inevitable processes of inference and interpolation have a logical foundation, however much a particular procedure might appear questionable compared to other approaches or possibilities. Perhaps the most important thing is to keep an open mind to any contradiction that is supported by logical technical reasoning, and to be always willing to share concerns, mechanisms, and findings.

The foregoing reasons underscore the advisability of proceeding in an orderly manner in the context of a joint effort in which each pilot country tries to maintain the same pace as the rest and focuses on the task set for each stage or level of the study. We believe that this is the only way to ensure steady progress and to prevent us from losing sight of the overall objective.

ANNEX A

ESTIMATION OF DIRECT GOVERNMENT EXPENDITURE

The form designed by Jeffrey Merrill, which was forwarded to the pilot countries prior to publication of the first version Methodological Guidelines, details the areas where direct outlays are usually made by the government aimed at reducing the production, distribution, smuggling, and use of PAS. This table provides a framework that includes expenditure areas and types of information that should be included. It is simply a guideline to help the countries ensure that they have included all the relevant information. It includes the principal areas (drug supply and demand), related activities, and the agencies that carry out the activities.

This table only includes expenditures directly related to the reduction of illegal drug supply or demand. Although there are many private-sector not-for-profit agencies that spend money on these activities, they should only be included if their services are paid for or bought by the government.

Definitions

1. Government Outlays only refer to direct payments by the government for their own activities and to pay for those services through an entity that works directly for the government. It should not include services that receive funds from charitable sources, payments by patients or health insurance, or private sources.

2. Direct Expenditures are defined as only those expenditures that, in each area, contribute to reducing drug supply or demand. Note 1 in the form provides examples of direct and indirect expenditures.

3. Indirect Expenditures (not included in the table) refer to expenditures such as those incurred for the treatment of an illness caused by PAS use (for example, HIV/AIDS, caused by the use of intravenous drugs). Indirect expenditures do not include the costs related to social welfare payments or disability payments for persons who do not work because of their drug problems.

The table is comprised of two principal areas: Supply Reduction and Demand Reduction. It also includes the principal activities of governments and the direct outlays related to these areas. The demand category is subdivided into treatment and prevention activities. In each one of the categories, the form specifies series of activities that might be considered relevant. The activities are suggestions, that is, the countries do not necessarily have to include all the activities. Moreover, the countries can include additional government outlays they believe are important for their country. As a rule, it is always better to include all possible activities and then eliminate those that are redundant or mainly insignificant during the process of revising them.

Details of individual expenditure categories

Penitentiary system: Under Prevention, this category refers only to those expenditures related to the incarceration of persons for production and distribution of PAS. Under Treatment, this category refers the expenditures related to incarceration of drug users. If it is not possible to differentiate between these two categories, they should simply be included in one single category. During the revision process, we can examine the potential of estimating the proportions of the two categories.

Crop Subsidies: This includes to money paid to farmers so that they will not grow coca or other illicit plants, financing for alternative crops, and subsidies, usually in the form of support prices.

Military Expenditures. This category could include a variety of different activities, although it might be difficult to differentiate them in detail. The outlays made for the armed forces to search and destroy crops could be included. In urban areas, armed forces may be involved in keeping the peace and ensuring the security of public places and leaders. Since classification of spending may be difficult, it should be borne in mind that the important thing is to ensure that the proportion of the military budget assigned to supply reduction activities is fully represented.

Treatment Services. Only the services that are contracted, or provided or purchased directly by the government must be taken into account. Drug abuse treatment paid for by health insurance or any national or international charitable organization should not be included.

Prevention Activities. It is easier to estimate the cost of these activities in public schools. In some cases, governments also hire NGOs, religious organizations, and other agencies to provide prevention services. These activities may be didactic or take the form of extracurricular activities after school or on weekends. Likewise, they should only be included if the government pays for these services directly.

It is important to try to identify and include all the agencies involved in each activity to ensure that all relevant sectors are included in the estimation of total expenditures. The goal is to produce one single figure for all expenditures. Therefore, the greater the detail, the greater the capacity to produce a useful estimate and facilitate future comparisons. Nevertheless, we hope that we can at least separate supply from demand expenditures.

ANNEX D

INFORMATION GATHERING

Ideally, the indirect indicators proposed and explained different sections of the Guidelines should be reported so as to avoid confusion. For that reason it is very important that, in each case, the additional information that later makes it possible to track the sources, at least in terms of the institutions that were at the origin of the indicator, at the moment or period referred to and at the date that the form was processed, be recorded. These data are especially useful in those cases where the indicators have to be validated or updated at any time in the future.

As a result, it is always advisable make certain that, as a minimum, any report referring to an indicator explicitly contains the following information:

- Country
- Period or date referred to
- Date of gathering or recording
- Identity of person recording
- Identity of person reporting or institutional contact
- Telephone number, postal address, or e-mail
- Agency
- Office
- Information gathering method
- Indicator

CHILE 2003
An exercise in interpretation of indirect indicators

By way of a prologue...

The *"Manual of Methodological Guidelines for Economic Impact Studies on Illegal Psychoactive Substance Abuse based on Indirect indicators"*, prepared in the framework of the OAS - CICAD/UMDNJ - RWJMS Project, in the shadow of the *International Guidelines* compiled by a multidisciplinary group of international experts meeting under the auspices of the Canadian Center on Substance Abuse (CCSA), explains in its introduction how it proposes to put together in the form of practical methodological guidelines, the principal conclusions reached by researchers in more developed countries (mainly, Australia, Canada, Great Britain, and the United States) after many years of experience in this area of study. It clarifies, however, that the methods developed for these countries are not directly and entirely applicable to Caribbean and Latin American nations, since we lack a tradition of careful gathering and maintenance of many data series that are indispensable for the immediate application of their models. Nevertheless, the Manual posits that it is possible to indirectly come close to characterizing the social phenomenon and measuring its implications for our respective national economies by using indicators. The 'raw material' for calculating these indicators are the data that each country

should be gathering periodically; its adequate use will permit not only the development of a culture of organizing databases but will also open up the possibility of making increasingly accurate cost calculations.

In keeping with this appropriate use of indirect indicators and as a guide for the pilot countries taking part in the Project, this working document contains what should be considered a preliminary economic impact study. In the manner of a case study, it is based on the indirect indicators supplied by Chile for the years 2001, 2002 and 2003, in accordance with the proposal contained in the Manual (end of Annex 3). Following the methodology proposed there, the present analysis examines two successive levels of estimates. In first place, it gathers the inferences from the Level 1 indicators, and then refines them with information derived from the Level 2 indicators.

In the spirit of an exercise, which, where appropriate, includes comments and explanations with the express didactic purpose of identifying a way in which very little information can be used to determine the approximate dimension of a social problem and its possible impact on the national economy, for the time being two patent flaws in the information provided on this occasion by Chile have been overlooked. However, it is important to mention that the indicators used here need to be revised in order to be considered suitable for a more accurate estimate. That is because, on one hand, the fact that the data pertain to different years means that they are not homogeneous and, technically speaking, that their processing would be inadvisable at best, insofar as they are not strictly comparable; and, on the other hand, the absence of some of the indicators requested has made it necessary to replace them with hypothetical assumptions in addition to the many that are inevitably included in studies of this nature. Clearly, then, the above-mentioned flaws introduce additional factors of inaccuracy to broad inferences that, for the same reason, should always be taken merely as indicative.

When using indirect indicators it is essential not to forget that, however careful their collection, they are nothing more than reflections of reality (and at times rather pale ones). By the same token, the quality of the analysis made on the basis of those indicators always depends on the skill and experience of the analyst. Therefore, it is impossible overstate that there is no single way to reach conclusions, nor will different analysts necessarily draw the same ones. However, it certainly should be kept in mind that, while it is impossible to guarantee the precision of the analysis, it must always be possible to defend the reasonableness of assumptions and the logic of the inference process.

General information

[Indicators Chile 2003 / Encyclopedia Britannica, ALMANAC 2004]

The Republic of Chile, a country located in the southwest of South America, occupies an area of 757,000 km2 and has a population of 15,116,435. Birth rate: 1.70%; Mortality rate: 0.54%. Life expectancy (years): 72.9 M / 78.9 F. Currency: Chilean peso (CLP 691.54 = US$ 1). Monthly minimum wage: CLP 115,248. Unemployment rate: 8.7%. Labor force: 5.8 million. Gross domestic product: CLP 38,900,435 million (US$ 56,251.9 million)

First Impact Estimate

(Level 1 Indicators)

Preliminary analysis

The statistics on illegal substance use in the general population reveal a prevalence rate for the last year of 6.4% (3.1% for the last month). The respective rates for workers and students were 4.1% (1.5%) and 13.7% (7.2%)

In the absence of data on population totals among students and workers, the rates for these particular groups serve to weigh up the prevalence proportions. Thus, in this case, the relationships between monthly and annual prevalences are, respectively, 48.4%, 36.6% and 52.6% for the general population, workers and students. There is approximate consistency between students and the general population, but not between workers and the other groups. That could suggest that, broadly speaking, workers have a lesser propensity to abuse than students and the general population.

A projection of the general prevalence rates on to a population of 15.1 million shows 967,000 users in the last year and 468,000 in the last month.

It would be logical to associate abuse with frequent use and different epidemiological studies have led to the conclusion that typically and in broad terms, abuse correlates strongly with last-month use. However, abuse does not always give rise to visible social costs because a very significant proportion of it occurs as so-called "weekend abuse", which, owing to its characteristics, does not affect the normal performance of persons has production agents.

In order to examine the reasonableness of the figures let us now consider the indices connected with health care:

Requests for admission for treatment	38,100
Hospital admissions	22,962
Outpatient treatments	11,120
Residential treatments	765
Abuse-related deaths	466

These data call for a number of observations:

- Of all the indicators in this group, requests for admission for treatment represent the highest estimate of overall abuse, insofar as it would be logical to believe that the mere need to seek treatment is a clear sign of abuse. However, bearing in mind that not everyone who needs treatment seeks it, and that not everyone who seeks treatment is recorded, it would be fair to conclude that any reported figure is likely lower than the actual figure.

- There may be multiple registrations in different records. On one hand, one would expect the seekers to be included among a sizable proportion, if not all, of the persons who are admitted for treatment or hospitalized; and, on the other hand, in the same way that a seeker may request treatment on several occasions, more than one patient may undergo several types of treatment.

- As regards types of treatment, the behavior of the figures provided seems reasonable, in that it is logical that they should follow the descending numerical order that they do. Indeed, it would be expected for the number of requests to exceed the number of treatments; and, as regards the various types of treatment, for outpatient treatments to outnumber residential treatments.

- Owing to a variety of factors, probably not least among which is a shortage or lack of resources, in many Latin American and Caribbean countries the number of substance use-related deaths on recorded should be regarded has highly inaccurate and certainly lower than the reality.

Up to this point, we have reason to believe that the number of cases of abuse could lie somewhere between the distant extremes of 468,000 (projected prevalence in the general population for the month to date) and 38,100 (requests for admission for treatment). It would be reasonable to assume that the probable extent of the problem is perhaps nearer the lower limit than the higher limit since, while, based on the findings of different epidemiological studies, it would seem reasonable to think that all of the users in the month to date could display abuse characteristics, a very high proportion of this abuse does not give rise to any social costs. For the purposes of the preliminary estimates of this exercise, and in the absence of further information in that regard, it will be assumed that 10 percent of projected prevalence cases for the month to date presented abuse characteristics with an economic impact (which includes persons who sought treatment).

Direct government outlay indicators could help in the effort to obtain a more accurate estimate of the scale of abuse:

Expenditure on supply reduction (CLP mn)	41,632.7
Expenditure on demand reduction (CLP mn)	15,148.6

These figures can be compared with a number of available indicators of a similar or the same nature, in order to obtain a better idea of what they mean and to determine their reasonableness plausibility.

For example, the number of people convicted of drug trafficking (3,913) should bear some proportion to other indicators on the magnitude of the problem, such as the number of requests for treatment (in this case, 9.7 requests per conviction) or the number of abuse-related deaths (here equivalent to 0.12 deaths per conviction). Similarly, government outlays in proportion to

the same number of drug trafficking convictions should be within the parameters established by the figure for daily prison cost (CLP 6,832) on one hand, and by the indicator for total penitentiary system cost (CLP 17,082.9 million) on the other. Thus, as is the case in this instance, the total annual cost of maintaining convicted prisoners (3,913 x CLP 6,832 x 360 = CLP 9,624.1 million) should be within the total penitentiary system cost.

In turn, total government outlay on supply and demand reduction (which here amounts to CLP 56,781.3 million) can be expressed as a fraction of gross domestic product (in this case, 1.5/1,000). Very indirectly, this proportion provides an idea of the overall scale of the problem (and of the attention that the government gives to it).

In comparison to the monetary figures, the proportion of abuse-related deaths (466) to the total expected deaths of 81,500 (resulting from applying the mortality rate of 0.54% to the total population of 15. 1 million), is 5.7/1,000.

Strictly speaking, there is no reason why the above-mentioned proportions should be equal. However, each in its way provides some sense of perspective to the dimension of this social problem. Indeed, the disproportion, determined separately and in comparison to the relevant national totals, between government outlay and abuse-related deaths could mean that public efforts to tackle the problem have fallen short of the mark, or, as seems more likely (given that various items in the breakdown of government outlays are blank), that there is a high level of under-reporting for the indicator.

Estimating costs

As regards estimating the total costs attributable to PAS abuse in Chile in 2003, we should recall that according to the Manual of Methodological Guidelines, such costs are usually grouped as follows:

- Health Care Costs
- Labor consequences
- Other costs (destruction of property, etc.)
- Direct government expenditure

Using the same structure, Annex 1 presents the estimates based on information drawn from the indirect indicators supplied by the country, as well as on a number of hypothetical assumptions that were indispensable for making the estimates, as mentioned below.

Health Care Costs

The estimate is based exclusively on the data supplied, which was not modified. As mentioned, it is likely that in most Latin American and Caribbean countries these indicators are under-reported.

Labor consequences (Lost productivity)

PAS abuse affects performance in the workplace through at least three distinct (and, one could almost say, sequential) consequences: under performance, frequent delays, and absenteeism.

In our countries, the lack of accurate information in this regard makes it virtually impossible to measure the impact of the first two consequences. At the same time, some argue, no doubt with reason, that whenever an employer notices an excessive drop in performance or delay, they normally require the employee to make up the time lost; therefore, in theory at least, the lost productivity is recovered. The same is not true of absenteeism, which makes this consequence of abuse the only one susceptible to quantification in order to estimate its impact in the work place.

There are at least three scenarios in which PAS abuse stops users from going to their place of work: persons who are hospitalized or seek and receive treatment (excluding ambulatory treatment, which is arranged precisely to avoid absenteeism); persons who do not seek hospitalization or treatment, or who, having sought it, fail to obtain it, but, nevertheless, stay at home or somewhere other than their work place; and persons involved in judicial problems that temporarily keep them away from the workplace: persons sentenced to imprisonment, held in custody awaiting trial, fugitives of justice. All of these people cease regular work attendance for different lengths of time. Accordingly, the main objective in estimating the economic impact of abuse is to quantify the lost productivity resulting from non-attendance. (We must leave aside, again because it is impossible to quantify, the effects that the PAS abuse of a family member has on other persons in their household, who very often have to absent themselves from their jobs to accompany or care for the substance abuser.)

Finally, in extreme cases, abuse leads to the death of the user (overdose, side effects) or people around them (accidents, brawls), resulting in permanent absenteeism. Determining the cost of permanent absence, which is usually very high regardless of the measurement system used, entails a problem that it is very hotly debated by experts in these matters in different countries, for which a universal solution has yet to be found.

For the purposes of the estimates shown in Annex 1, mentioned at the beginning of this section, the labor consequences are separated into four components:

Absenteeism due to illness - Patients

This is based on the information supplied by the country in the indirect indicators on number, average length of hospitalization, and treatment. The same information is used to estimate health care costs and, as mentioned, there is quite possibly concealed under reporting in this area. The daily cost used here for the estimate is the minimum wage since the aim is to measure lost productivity.

It is worth recording in this connection that the minimum wage is considered a valid parameter for estimating productivity, in that it is assumed to be a reflection of the average labor cost which, in some measure, is expected, in itself, to reflect the opposing effects of two circumstances in the market: not every worker is paid a minimum wage (even though a large proportion probably are); and not everyone who is able to work is employed (Latin American and Caribbean countries suffer from chronically high unemployment rates).

Absenteeism due to illness - Non-patients

It would be entirely reasonable to surmise that anyone who is hospitalized or undergoing treatment (except ambulatory treatment) must, necessarily, also be absent from work; however, it is equally logical to consider that there is no reason why PAS abuse-related absenteeism

should be confined only to that group of persons. Many people are too sick to go to work but do not requiring hospitalization or treatment; or they might require it but are not in a position to request it. The latter is especially probable in the case of illegal PAS abuse.

There are no records for such cases, nor is there a practical way to implement a registration system for them. As a reasonable way to determine the number of cases, we propose starting with an abuse estimate (measured, for example, as a percentage --in this exercise, 10%-- of the abuse prevalence indicator for the month to date applied to the total population) and to deduct from the result the number of patients reported as hospitalized or undergoing treatment. We have assumed the length of an episode to be one day per month, or 12 days in a year. Again, the daily cost is the minimum wage.

Absenteeism due to judicial problems

Sooner or later PAS abuse leads to judicial problems. The number of people involved in problems of this type is too difficult to determine with any accuracy. The most reliable figure, and perhaps the one that is least difficult to come by, is usually that of number of convictions for drug-related offenses (which includes trafficking and abuse). It is necessary to start from this indicator to try to estimate, by means of more or less plausible projections, the total number of persons who have problems with the justice system as a result of their unlawful activities in connection with PAS. For this exercise we have assumed that the number of drug trafficking convictions accounts for 5 percent of the total; in other words, the population with judicial problems is 20 times greater than that. We have limited the length of sentence to one year for convicted persons (since, even though the average sentence is longer, the aim here is to estimate the annual cost); the duration of arrests is set at five days, which in several countries is the maximum amount of time permitted by law to detain a member of the public. Again, the cost of absenteeism is equal to the minimum wage, in proportion to the appropriate periods.

Permanent absenteeism - Death

The impact is estimated as the equivalent of lost productivity or earnings, as a function of the minimum wage in force at the time (which is why estimates are not made at current values), based on the indirect indicators for PAS abuse-related death and life expectancy, grouped according to sex, and assuming an average age at death of thirty-three years (there is no basis for this assumption other than that it was our intention to establish a mean age for the average person, neither very young nor very old).

Other consequences (property damage)

Typically, PAS abuse produces effects that extend beyond the injuries to users or those around them. This is the case of damage caused, either intentionally or unintentionally to the property of others. The emergency services (police, fire department, ambulance service) normally keep records of events, usually accidents, to which they are called for assistance. Due to the fact that such situations are usually emergencies a record is not always made in official reports of the circumstances in which the accidents occurred, or of the causes that might have triggered them. Furthermore, in the kind of events that interest us, it is inevitable and understandable if the persons involved are anxious to conceal the fact that they use illegal substances, which explains why it is so difficult to access complete and absolutely reliable information in this area.

For want of better data, the estimate is based here on the indicator for PAS abuse-related deaths as a result of accidents. We have attributed a unit cost randomly expressed in monthly minimum wages (arbitrarily set here at 20) to quantify the estimate. Furthermore, and again in the absence of information in that regard, we have presumed here that for each fatal accident there are 10 non-fatal accidents and that the average cost of the latter is half that of the former.

Direct government expenditure

We have used the (incomplete) figures reported by the country in the appropriate form. As mentioned, an examination of the proportion between expenditure and abuse-related deaths led us to surmise that there is a high level of under-reporting for this indicator. Based on the figures involved, the impact of this, if indeed the case, is very significant.

The sum of the four components of economic impact, as shown in Annex 1, is the estimated total cost to the country, in this case Chile, of PAS abuse in 2003. For the purposes of international comparison, in keeping with customary practice the figures are also expressed in U.S. dollars and units per capita.

In conclusion, we cannot understate what the Manual of Methodological Guidelines says about the care that should be exercised in interpreting estimates. It should not be overlooked that, quite aside from the deceptive notion of accuracy created by mathematical formulas and operations, implicit in each of the components of the total cost is a collection of generalizations and assumptions that at times have no other foundation than the more unless informed opinion of the analyst.

It is expected that successive levels of indirect indicators that are increasingly difficult to obtain and interpret will yield new information that will, in some cases replace, and in others support, the assumptions included in each step of the calculations]; or, more feasible still, that successive annual studies performed on the basis of the same indicators will make it possible to validate or discard the information that they provide.

Whatever the case, provided the above-mentioned warnings are kept in mind, the effort to estimate the economic impact of a social problems such as this is a useful task, in that it helps to enhance the knowledge of an ever-complex and -changing reality.

Second Impact Estimate
(Levels 1 and 2 Indicators)

Preliminary analysis

As mentioned, and in accordance with the Manual of Methodological Guidelines, the Level 2 Indicators should help to refine, if not replace, the conclusions of the preliminary estimate of the economic costs of illegal PAS abuse based on Level 1 indicators. Consequently, it is expected that the additional information furnished by the Level 2 indicators would make it possible, in some parts, to confirm or discard a number of the aforementioned hypothetical assumptions, and in other parts, to determine the plausibility of certain Level 1 indicators. Whatever the case, the analysis based on an examination of the indicators included in both levels would be expected to be less inaccurate but not substantially different to the original analysis based on the inferences drawn from the Level 1 indicators alone.

Estimating costs

Annex 2 (which is based on Annex 1) contains the estimates based on the new information furnished by the indirect indicators in the Level 2, as the following comments show.

The additional information has to do in this case with illegal PAS abuse-related arrests and convictions (Indicators 1 and 2); dropout rate for persons undergoing treatment for addiction (indicators 3); and morbidity, reflected in terms of overall incapacity (indicator 6). This new information serves to review the estimates listed under the corresponding headings in Annex 1.

Persons undergoing treatment

In the absence of other information (or when that information is confirmed by other indicators), a higher treatment dropout rates could be broadly interpreted as meaning a smaller abuse problem.

For example, a treatment dropout rate of 42%, as Chile reports, would be grounds to conclude that the actual number of patients in any type of treatment could be less then the number suggested by the corresponding level 1 indicators, in that it would be fair to assume that the average patient could have sought and received care more than once.

Thus, for example, one could conclude, based on the new information, that the figure of 38,100 admission requests (indicator 1, Level 1) actually corresponds to only 26,831 (i.e., 38,100 divided by 1.42) different individuals. However, the indicators for hospitalization and treatment (which add up to 34,847 cases) would make such an adjustment inadvisable.

Prosecution for possession or use

The indicators for prosecution of persons charged with offenses also afford additional information on the scale of illegal PAS abuse, to the extent that a degree of proportionality (different for each country and even for regions within each country, at different junctures) would be expected between judicial proceedings and abuse. Put another way, it would be reasonable

to expect that a large number of judicial proceedings in connection with illegal PAS trafficking is indicative of a high level of abuse of those substances in the population.

The effect of the new information on the estimates contained in the Annex 1, could be reflected in Direct government expenditure (Demand reduction) and in Labor consequences (Absenteeism due to judicial problems).

As regards the former, the fact that the sum of convictions for drug trafficking (indicator 3, Level 1) and abuse-related offenses (indicator 2, Level 2) (8,679) substantially exceeds the figure for total penitentiary system costs, leads to the conclusion that the two indicators probably refer to the same circumstance. That conclusion is strengthened if we consider that the indicators correspond to different years.

As to labor consequences, the second effect of the new information, Annex 2 changes the convictions figure (from 3,913 to 4,766) and therefore increases the estimated cost. The number of reported arrests, which also corresponds to two different years (which raises uncertainty as to whether the indicator measures two separate offenses, namely possession and abuse, or the same offense at two different times) seems very low, even when combined, when compared with the number of convictions. However, that could be a reflection of a judicial system that is more efficient than that of most other nations in the region.

Morbidity

The morbidity indicator, expressed in terms of months of incapacity, could serve to validate the estimated cost of absenteeism due to illness determined via another route.

Here, 12,634 months of incapacity at CLP 155,248 per month (corresponding to the minimum wage) produce a total of CLP 1,961 million. This figure is very close to the estimates based on the Level 1 indicators for absenteeism due to illness of patients and non-patients (CLP 2,006 million). The surprising coincidence aside, this would indicate that the estimated cost of absenteeism due to illness is reasonable.

Annex 1

CHILE 2003
ESTIMATED TOTAL COSTS ASSOCIATED WITH ILLEGAL PAS ABUSE
Source: Level 1 Indirect Indicators, provided by the country; hypothetical parameters; Design and Estimates: Nuevos Rumbos
Bogotá, December 2004

Health Care Costs							**$ 8,247**
	Param.	Number	Dur.	Daily	Total (mn)		
Hospital admissions		22,962	6.5	$ 19,770	$ 2,951		
Outpatient treatments		11,120	105.0	$ 2,388	$ 2,788		
Residential treatments		765	300.0	$ 10,930	$ 2,509		

Labor consequences (Productivity)							**$ 35,25**
Absenteeism due to illness - Patients	Param.	Number	Dur.	Daily	Total (mn)		
Hospitalized patients	1	22,962	6.5	$ 3,842	$ 573		
Outpatients	1	11,120	0.0	$ 3,842	$ 0		
Residential treatment patients	1	765	300.0	$ 3,842	$ 882	$ 1,455	
Absenteeism due to illness - Non-patients	Param.	Number	Dur.	Daily	Total (mn)		
Estimated abuse less Patients	10.0%	11,953	12.0	$ 3,842	$ 551	$ 551	
Absenteeism due to judicial problems	Param.	Number	Dur.	Daily	Total (mn)		
Convictions for trafficking-related offenses		3,913	360.0	$ 3,842	$ 5,412		
Summonsed (arrested or fugitives)	20	78,260	5.0	$ 3,842	$ 1,503	$ 6,915	
Permanent absenteeism - Deaths	Age	Number	Dur.	Annual (mn)	Total (mn)		
Men	33	391	40.0	$ 1.4	$21,630		
Women	33	74	46.0	$ 1.4	$ 4,708	$26,337	
Other consequences (Property damage)							**$ 3,499**
	MW each	Number		Each (mn)	Total (mn)		
Fatal accidents	20	253		$ 2.3	$ 583		
Non-fatal accidents	10	2,530		$ 1.2	$ 2,916	$ 3,499	
Direct government expenditure							**$ 56,78**
Supply reduction					$41,633		
Demand reduction					$15,149	$56,781	
ESTIMATED TOTAL COST							**$ 103,7**
Estimated total cost, US$ million	691.54						$ 150
Estimated cost per capita, US$	15.1						$ 10

* Unless otherwise stated, the symbol $ indicates Chilean pesos (CLP)

Annex 2

CHILE 2003

ESTIMATED TOTAL COSTS ASSOCIATED WITH ILLEGAL PAS ABUSE
Source: Levels 1 and 2 Indirect Indicators, provided by the country; hypothetical parameters; Design and Estimates: Nuevos Rumbos
Bogotá, December 2004

Health Care Costs							**$ 8,247**
	Param.	Number	Dur.	Daily	Total (mn)		
Hospital admissions		22,962	6.5	$ 19,770	$ 2,951		
Outpatient treatments		11,120	105.0	$ 2,388	$ 2,788		
Residential treatments		765	300.0	$ 10,930	$ 2,509		
		34,847					
Labor consequences (Productivity)							**$ 35,18**
Absenteeism due to illness - Patients	Param.	Number	Dur.	Daily	Total (mn)		
Hospitalized patients	1	22,962	6.5	$ 3,842	$ 573		
Outpatients	1	11,120	0.0	$ 3,842	$ 0		
Residential treatment patients	1	765	300.0	$ 3,842	$ 882	$ 1,455	
Absenteeism due to illness – Non-patients	Param.	Number	Dur.	Daily	Total (mn)		
Estimated abuse less Patients	10,0%	11,953	12.0	$ 3,842	$ 551	$ 551	
Absenteeism due to judicial problems	Param.	Number	Dur.	Daily	Total (mn)		
Convictions for trafficking-related offenses		4,766	360.0	$ 3,842	$ 6,591		
Arrests for possession and abuse		12,843	5.0	$ 3,842	$ 247	$ 6,838	
Permanent absenteeism - Deaths	Age	Number	Dur.	Annual (mn)	Total (mn)		
Men	33	391	40.0	$ 1.4	$ 21,630		
Women	33	74	46.0	$ 1.4	$ 4,708	$26,337	
Other consequences (Property damage)							**$ 3,499**
	MW each	Number		Each (mn)	Total (mn)		
Fatal accidents	20	253		$ 2.3	$ 583		
Non-fatal accidents	10	2,530		$ 1.2	$ 2,916	$ 3,499	
Direct government expenditure							**$ 56,78**

Supply reduction					$ 41,633		
Demand reduction					$15,149	$56,781	
ESTIMATED TOTAL COST							**$103,7**
Estimated total cost (US$ mn)	691.54						$ 150
Estimated cost per capita (US$)	15.1						$ 10

* Unless otherwise stated, the symbol $ indicates Chilean pesos (CLP)

ANNEX E

GLOSSARY OF FREQUENTLY USED TERMS

Abuse

There are many definitions of abuse. From a medical point of view, abuse exists whenever the etiological fraction associated with use is greater than zero; in other words, whenever use gives rise to negative consequences for the health of the consumer. For the purposes of the Manual, in a definition that is also compatible with economic theory, it is deemed that there is abusive consumption of psychoactive substances when their use has consequences entailing social (external) costs; that is, costs that go beyond the private (internal) costs individually assumed by.

Attributable Factors

See **Etiological fractions**

Avoidable Costs

Abuse-related costs that can decline or disappear as a result of government policy initiatives or changes in the behavior of persons.

Causal Factors

See **Etiological Fractions**

Counterfactual proposition

The entirely hypothetical —and, therefore, in practice, impossible— situation in which illness does not occur. A comparison of the position of the economy in either case (actual or factual versus hypothetical or counterfactual) provides an approximate estimate of the economic consequences of an illness.

Core costs

Health care costs and the costs of other health-related consequences stemming from the abuse of psychoactive substances.

Cost effectiveness

Ratio indicating the proportion or difference between the cost of an action aimed at producing a positive social effect and the effectiveness of that action, usually measured in terms of the saving stemming from having opted for that action.

Cost-of-Illness Studies

They correspond to a specific type of economic impact study. Therefore, they are aimed at increasing understanding about the nature and environment of a given illness, as well as their predictable consequences for society as a whole. In the specific case of studies on the economic impact of psychoactive substance abuse, it essentially involves estimating the social costs incurred by any collectivity at a given time in comparison with a hypothetical situation in which the abuse does not exist. This hypothetical situation is usually called "counterfactual" precisely because it is contrary to the facts of reality.

Counterfactual

See **Counterfactual proposition**

Demand Reduction Costs

The estimated costs of medical and hospital treatment for persons who abuse psychoactive substances, in order to restore their physical and psychological health, and, where possible, to limit or prevent recurrence of drug abuse. This concept also includes the costs associated with abuse prevention.

Direct costs

In the context of PAS abuse cost studies, it refers to the value of the goods and services that are effectively aimed at mitigating consequences, such as the costs of specialized care for addiction and health care for its sequela.

Drugs

See **Psychoactive Substances (PAS)**

Etiological fractions

This term comes from the field of epidemiology. On the basis of the adverse consequences attributable to psychoactive substance abuse, the etiologic fractions represent the degree of causality between abuse and a given illness that can be statistically derived from the observation of numerous cases.

Incidence

This term comes from the field of epidemiology. Incidence is interested in the number of new cases of a disease or disorder occurring in a given period (typically one year) for the purpose of determining a trend in the course of its evolution.

Indicators

In the terms of this Manual and given the absence or inaccessibility of statistical information that would provide a more accurate description of the characteristics of a social phenomenon, indicators are attempts at indirectly estimating the phenomenon by resorting to a measurement of its manifestations or consequences.

Indirect costs

They consist of the value of personal productive services that are no longer provided as a result of PAS abuse.

Intangible costs

In contrast to tangible costs, intangible costs do not produce resources that become available for other uses as a result of their reduction or elimination. Death, human suffering, and pain are typical examples of these costs. No one can deny that they do exist and that they are considerable, but it is virtually impossible to express them in monetary terms. Because of this, they are normally not included in PAS abuse cost studies.

International Guidelines

This refers specifically to the document prepared by a team of international experts on the initiative and under the auspices of the Canadian Centre on Substance Abuse (CCSA), entitled *"International Guidelines for Estimating the Costs of Substance Abuse - Second Edition 2001"*, available at http://www.ccsa.ca/Costs/Guidelines/intguid.htm. Readers interested in investigating these subjects further are suggested also to consult the document of the US National Institute on Drug Abuse (NIDA) entitled *"The Economic Costs of Alcohol and Drug Abuse in the United States - 1992"*, a complete version of which can be found at http://www.nida.nih.gov/EconomicCosts/Index.html. These documents were the foundations and point of departure for this Manual.

Loss of productivity

Sufferers are less productive because of their inferior performance at, or absence from, work. Cost-of-Illness Studies seek to measure that reduced productivity in terms of what it would cost to regain it. Accordingly, a value is assigned to the work of those who are outside the labor market, such as homemakers or pensioners.

Lost Productivity

See **Loss of productivity**

Morbidity

Synonym of disease or illness corresponding to any objective or subjective deviation in the physiological or psychological wellbeing of a person. In the context of the Manual it is associated with psychoactive substance abuse.

Mortality

Synonym of death. In the context of the Manual it is associated with psychoactive substance abuse.

Noncore costs

Costs that do not appear in the health impact but rather in other dimensions: family, education, labor, etc.

Opportunity Cost

This concept, which is essential for economists, arises from how all human societies throughout history have addressed, either consciously or unconsciously, the problem of the constraint of common resources available to meet the needs of the collectivity. It means that any resource allocation for a given purpose must necessarily represent an equivalent sacrifice in social investment for another sector or other sectors. In other words, any use of resources has a sacrificed opportunity cost of use for other purposes. Thus, for example, building a dam would imply postponing the enlargement of an airport, or in other sector the need for further outlays to ensure law and order may affect the quality of education, health, and other basic services.

Personal Costs (Private)

They come from a rational and wholly voluntary decision by the individual, who decides to accept them, aware of the impacts of his/her decisions and exercising his sovereign will to choose. Ordinarily, personal costs are not borne in mind when estimating the economic costs of the abuse of psychoactive substances because, in the framework of price formation theory, it is assumed that the personal benefits or satisfaction stemming from consuming the good or from enjoying the service exactly offsets these costs.

Pilots

See **Pilot countries**

Pilot countries

In the terms of this Manual, these are the nations representing the Caribbean and Latin America that have accepted an invitation by OAS-CICAD to attempt to adapt, under the coordination of an advisory team, the methodological guidelines proposed by researchers from developed countries (Canada, United States, Australia) and to undertake economic cost studies of psychoactive substance abuse. In alphabetical order, these nations are Barbados, Costa Rica, Mexico, and Uruguay.

Prevalence

This term comes from the field of epidemiology. Prevalence is aimed at determining the total number of cases of an illness or disorder in the population at a given time (for example, how many marijuana addicts there are in a given year in a country, regardless of when they became addicts).

Productivity

This can be defined as the capacity that each person has to produce value added through their work. The salary scale ranges from unskilled work, the cost of which is equivalent to the minimum wage, to highly skilled work, which can be expressed as a multiple (which varies in different countries) of that minimum wage.

Psychoactive substances (PAS)

Substances whose consumption produces effects on the central nervous system and which have the capacity to modify its functioning and alter the field of consciousness. By generally accepted international convention, a distinction is drawn between **legal** or **licit** psychoactive substances (alcohol, tobacco, prescription drugs) and **illegal** or **illicit** psychoactive substances (all other drugs, including prescription drugs when acquired without a prescription or when used improperly).

Social Costs (Public)

They involve public policy decisions about the best way to use the resources of the collectivity for the common good. Although occasionally they can be a consequence of the decisions of individuals (as in the case of health care for abusers and victims), they are never optional for governments and they always compete with the social group's other pressing needs for attention.

Supply Reduction Costs

The estimated costs of preventing psychoactive substances from reaching the consumer: illicit crop eradication, anti-drug trafficking efforts, etc.

Tangible costs

Tangible costs are those costs that, when reduced or eliminated, produce resources that then become available for other uses. All costs included in the PAS abuse cost studies belong to this category.

Unavoidable costs

Present and future costs stemming from current and past abusive consumption that would not disappear even if PAS use were to be dropped.

ANNEX F

COUNTRY-YEAR ESTIMATED TOTAL COSTS ASSOCIATED WITH ILLEGAL PAS ABUSE Source: Level 1 and 2 Indirect Indicators									
* Insert data first in column L, then in cells highlighted in pink.									
					Local Currency	USD	Percentage		
Health Care Costs		**Number**	**Days duration**	**Daily**	**Total (mn)**	**Total (mn)**			
Hospital admissions		0	0,0	$ 0	0,00	#¡DIV/0!			
			Total Health Care Costs		**0,00**	**#¡DIV/0!**	**#¡DIV/0!**		
Nongovernmental Demand Reduction		Number	Days duration	Daily	**Total (mn)**	**Total (mn)**			
Outpatient treatments		0	0,0	$ 0	0,00	#¡DIV/0!			
Residential treatments		0	0,0	$ 0	0,00	#¡DIV/0!			
Other		0	0,0	$ 0	0,00	#¡DIV/0!			
			Total Nongovernmental Demand Reduction		**0,00**	**#¡DIV/0!**	**#¡DIV/0!**		
Labor Consequences (Productivity)		**Number**	**Days duration**	**Daily**	**Total (mn)**	**Total (mn)**			
Absenteeism due to illness - Patients									
Hospitalized patients		0	0,0	#¡VALOR!	#¡VALOR!	#¡VALOR!			
Outpatients		0	0,0	#¡VALOR!	#¡VALOR!	#¡VALOR!			
Residential treatment patients		0	0,0	#¡VALOR!	#¡VALOR!	#¡VALOR!			
Other		0	0,0	#¡VALOR!	#¡VALOR!	#¡VALOR!			
				Subtotal	**#¡VALOR!**	**#¡VALOR!**	**#¡VALOR!**		
Absenteeism due to illness – Non patients	**Parameter**	**Number**	**Days duration**	**Daily**	**Total (mn)**	**Total (mn)**			
Morbidity			0,0	#¡VALOR!	#¡VALOR!	#¡VALOR!			
Absenteeism				#¡VALOR!	#¡VALOR!	#¡VALOR!			
Estimated abuse less Patients -ILLEGAL SUBSTS-	20,0%	0	12,0	#¡VALOR!	#¡VALOR!	#¡VALOR!			
				Subtotal	**#¡VALOR!**	**#¡VALOR!**	**#¡VALOR!**		
Absenteeism due to judicial problems	Percentage reduction of sent (put 0 if no data available)	Number	Days duration	**Daily**	**Total (mn)**	**Total (mn)**			
Convictions for trafficking-related offenses	0	0	0	#¡VALOR!	#¡VALOR!	#¡VALOR!			
Convictions for abuse-related offenses	0	0	0	#¡VALOR!	#¡VALOR!	#¡VALOR!			
Arrests for possession and use	0	0	0	#¡VALOR!	#¡VALOR!	#¡VALOR!			
				Subtotal	**#¡VALOR!**	**#¡VALOR!**	**#¡VALOR!**		
Permanent absenteeism - Deaths	Age in years	Number	Days duration	**Daily**	**Total (mn)**	**Total (mn)**			
Men	33	0	# ¿NOMBRE?	#¡VALOR!	# ¿NOMBRE?	# ¿NOMBRE?			
Women	33	0	# ¿NOMBRE?	#¡VALOR!	# ¿NOMBRE?	# ¿NOMBRE?			
				Subtotal	**# ¿NOMBRE?**	# ¿NOMBRE?	**# ¿NOMBRE?**		
		Total Cost of Labor Consequences			**#¡VALOR!**	**#¡VALOR!**	**#¡VALOR!**		
Other consequences (Property damage)	**Parameter**	**Number**	**Property damage in monthly salaries**	**Unit Cost (mn)**	**Total (mn)**	**Total (mn)**			
Fatal accidents	1	0	20	#¡VALOR!	#¡VALOR!	#¡VALOR!			
Non-fatal accidents	10	0	10	#¡VALOR!	#¡VALOR!	#¡VALOR!			
			Total Property Damage		#¡VALOR!	**#¡VALOR!**	**#¡VALOR!**		
Direct government expenditure					Total (mn	**Total (mn)**			
Supply reduction					0,00	#¡DIV/0!	**#¡DIV/0!**		
Demand reduction					0,00	#¡DIV/0!	**#¡DIV/0!**	**% of Total Demand**	**% of Total Estimated Cost**
Demand reduction in Treatment					0,00	#¡DIV/0!		**#¡DIV/0!**	**#¡DIV/0!**
Demand reduction in Prevention					0,00	#¡DIV/0!		**#¡DIV/0!**	**#¡DIV/0!**
Demand reduction in Punishment					0,00	#¡DIV/0!		**#¡DIV/0!**	**#¡DIV/0!**
			Total Supply and Demand Reduction		**0,00**	**#¡DIV/0!**	**#¡DIV/0!**		
		TOTAL ESTIMATED COST			**#¡VALOR!**	**#¡VALOR!**	**#¡VALOR!**		
		COST PER CAPITA			**#¡VALOR!**	**#¡VALOR!**			

ANNEX G

RELATIVE RISK AND ATTRIBUTABLE FRACTIONS

Risk is defined as the likelihood of the appearance of a negative effect; in the area of health it is defined as the probability that healthy persons exposed to a risk factor would contract a particular illness.

A risk estimate, in other words, the probability that an undesirable event will occur, may be expressed in the following ways:

1. Total Risk
2. Specific Risk
3. Risk in exposed persons
4. Risk in unexposed persons
5. Relative Risk
6. Attributable Risk

Relative Risk is one of the most important measurements for evaluating the strength of association between two variables as cause and effect. The term relative risk refers to the risk ratio for persons who engage in a particular behavior compared with persons who do not engage in that behavior; a simple example that applies to psychoactive substances is that of smokers versus non-smokers. For example, if in a study on 1,000 smokers and 1,000 non-smokers, 400 smokers had lung cancer, compared with only 80 non-smokers who did so, it could be said that the relative risk for smokers versus non-smokers is 400/1,000 (risk of lung cancer among smokers) to 80/1,000 (risk for non-smokers), or 0.40/0.080, or a proportion of five to one. Thus, the relative risk of lung cancer is five times higher for smokers than for non-smokers.
Accordingly, when the relative risk is equal to 1, no association is considered to exist, while the further away it is from one (because it is greater than 1), the stronger the association. Furthermore, we know that not everyone smokes, not everyone who smokes gets lung cancer, and non-smokers are not immune to lung cancer. Therefore, there are two important factors in estimating the percentage of persons who have lung cancer and can attribute the cause to smoking:
1. The relative risk between the two groups (smokers and controls) of contracting the disease; and,
2. Prevalence, in this case of smoking, in that population.

The proportion in which the cause is attributable is another important factor in analyzing the behavior of causality; in epidemiology it is estimated by means of Attributable Risk (AR), also termed Attributable Fraction (FA) or etiological fraction. Attributable Risk can be defined as the proportion in which the effect among exposed persons can be attributed to the presence of that factor. The foregoing is hugely important for the application of knowledge in decision making and as a guideline for preventive interventions.

Estimating the attributable fraction will give us the percentage of cases of an illness that can be considered to have been caused by a specific etiological factor (in this case, smoking). In order to determine this, Lilienfeld and Lilienfeld calculate Attributable Risk by the following formula:

$$P^*(R-1)$$

$$\frac{P*(R-1)}{P*(R-1) + 1}$$

Where P is prevalence (in this case, the proportion of smokers) and R is Relative Risk.

If we take the above-mentioned example, in which 40% of the group of smokers had lung cancer, the Attributable Fraction (AF) is calculated as follows:

$$\frac{0.4 * (5 - 1)}{0.4 * (5 - 1) + 1}$$

Therefore, we would have the following: (0.4*4) / ([0.4*4] + 1) o 1.6 / 2.6 ≈ 0.615. Thus, the AF would be approximately 0.615 or 61.5%. In other words, based on the relative risk of lung cancer for smokers and the prevalence of smokers in the population, the AF or AR is 61.5%. In other words, approximately 61.5% of cases of lung cancer can be attributed to smokers.

Some countries use a particular form of the International Statistical Classification of Diseases (ICD9 or ICD10) to catalog their Attributable Fractions and this could be the first step in estimating those fractions in developing countries.