Final Report of the CICAD Pilot Program to estimate the social and economic costs of drugs in the Americas

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Inter-American Drug Abuse Control Commission
CICAD

Inter-American Observatory on Drugs
OID

University of Medicine and Dentistry of New Jersey
UMDNJ

Organization of American States – OAS

The Pilot Study on the Human, Social and Economic Costs of Drugs in the Americas: Final Report

Inter-American Drug Abuse Control Commission (CICAD)

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1.   INTRODUCTION

The following report details the results from the Inter-American Drug Abuse Control Commission's pilot study on the human, social and economic costs of drugs in the Americas. This program is unique, representing the first time that a group of countries in the hemisphere has embarked jointly on common cost impact studies. Although the participating countries shared a common methodology the differences in size, availability of data, and drug use patterns make comparisons between countries extremely difficult. Nevertheless, the results from this study demonstrate that it is feasible to carry out at least partial cost studies in a broad range of countries in the hemisphere, and that most countries are capable of carrying out reasonably complete studies covering a broad range of themes. The participating pilot countries exceeded the original goals and expectations of the program at almost every level. Through their experience in this program, the pilot countries made great leaps forward, not only in the quality of research information they produced, but their progression through the program came hand in hand with an evolution in thinking about drug research.

This report presents principal elements of the pilot study, the results obtained, and their significance. It describes the experience of nearly four years of work among six countries in the American Hemisphere, Barbados, Chile, Costa Rica, El Salvador, México and Uruguay. Under the auspices of CICAD, and with the support of the research team contracted through the Robert Wood Johnson Medical School at the University of Medicine and Dentistry of New Jersey (UMDNJ/ RWJMS), and with financial support from the United States and Canada; these countries were tasked with developing a strategy that would permit the evaluation of the economic and social impact of psychoactive substances (PSA) on developing countries in the hemisphere.

The original goals and expectations of this program were surpassed thanks to the deep commitment from the participating countries, the

corresponding national drug commissions, the UMDNJ consultant team, CICAD, and the constant open communication between all parties.

This program is of particular importance to both CICAD and the member states, representing a great leap forward in the quality of drug research that is carried out in the hemisphere. Previous drug research in Latin America has been characterized by specific studies with the singular goal of measuring particular drug related problems such as drug use prevalence, or gathering basic statistics on drug supply. This is the first hemisphere wide program that pushes the boundaries of drug research beyond basic epidemiology and statistics gathering into an arena where estimates can be made regarding the impact and further implications of the drug problem.

The six countries that participated and successfully carried out studies to measure the social and economic impact of the drug problem have, by doing so, further strengthened their internal research infrastructure, built lasting collaborative relationships with a variety of governmental and nongovernmental organizations and entities, and launched themselves into a realm of research that has more profound implications for anti-drug policy than previously existed in their countries.

2. BACKGROUND AND HISTORY

In 1999 CICAD implemented the first round of the Multilateral Evaluation Mechanism, creating an Inter-American forum to evaluate the progress of the member states in their fight against drugs. Within this forum, interest arose to create a methodology to calculate the economic impact of the drug problem on society. The MEM hemispheric report for 1999-2000 included a recommendation to develop a mechanism that would permit the member states to measure the human, economic and social costs of the drug problem in any country in the hemisphere. This language was later reflected in the declaration and plan of action of the Summit of the Americas in Quebec City in May 2001, transforming this recommendation into a mandate for CICAD[1].

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[1]: "[Develop], within the framework of CICAD, a long-term strategy that includes a three-year program to establish a basic and homogeneous mechanism to estimate the human, social and economic costs of the drug problem in the Americas, and to support countries through the necessary technical assistance;" Plan

Based on this mandate, CICAD began in 2001 to develop a strategy to estimate the costs of the drug problem. In 2002 CICAD obtained the assistance of UMDNJ by contracting a team of researchers who would help CICAD to develop this methodology. CICAD selected Barbados, Costa Rica, Mexico and Uruguay as the four pilot countries based on criteria demonstrating geographic balance, size of the country, infrastructural development, and demonstrated political support for carrying out the project to completion.   Chile and El Salvador joined the group of pilot countries in 2004. Specific project goals were developed based on the broad range of capabilities of the four countries. The final objective was to develop and test a basic methodology over the next two years.

3.   GOALS OF THE PROGRAM

General Goals

1. Develop, test and document a complete cost methodology that can reasonably be applied in any country in the hemisphere.
2. Create the necessary foundation and instruments to develop cost estimates that are increasingly accurate over time.

Specific Goals:

1. Carry out a series of inter-related projects of increasing complexity in each of the pilot countries to obtain the information that will serve as the building blocks for cost estimates in each social area or sector. [2]
2. Complete a set of coherent cost estimates in each of the pilot countries based both on direct and indirect costs in at least one sector or one social area.
3. Produce deliverables over time in order to demonstrate the continuous productivity of the project.

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of Action of the Third Summit of the Americas in Québec City, May 2001
http://www.oas.org/main/main.asp?sLang=E&sLink=../../documents/eng/structure.asp
[2] Refers to both direct costs, and indirect costs. The four major social cost areas studied were: 1) health care costs, 2) criminality (crime and law enforcement costs), 3) productivity costs, and 4) costs due to damage to property and other costs. See also the Cost Program Research Manual for details.

4.   THE USEFULNESS OF COST STUDIES

It is important to keep in mind that cost studies, even when they produce only approximations of the magnitude of the problem, are not only essential for controlling resources but they also have the following purposes.

- Provide justification for the prioritization that drug programs should receive within the government agenda. Without information on economic impact programs are often not given the attention they deserve or are inappropriately managed.

- Encourage more effective decision making by identifying with greater precision the most important interventions and their policies

- Identify information gaps and research needs in aspects relevant to improving our understanding of the problem. This in turn is indispensable to proposing solutions to emerging problems in a timely manner.

- Develop comparisons that provide the basis for a dynamic view of the magnitude of the problem.

Cost studies can provide the basis for measuring the efficiency of policies and programs for controlling the drug problem, inasmuch as it helps to define some minimum standard by which international comparisons can be made. The results of cost studies can facilitate comparison between national policies in different countries. For example, comparative studies can offer useful information on whether a more restrictive versus more liberal line of action should be taken regarding penalizing drug consumption and production, or whether, there is less drug use in countries where a large portion of the costs of drug use are assumed by individuals as opposed to the general public.

Given their multidisciplinary nature, cost studies strengthen research infrastructure and open the doors to collaboration between agencies that previously worked separately. This contributes not only to the development of a culture of data collection, but also contributes to the development of good research practices in general.

In conclusion, cost studies on drug use can build the bases by which more economic and social impact can be measured, and can inform policy as we

work toward improving the standard of living for society as a whole.

5. COST STUDIES: METHODOLOGICAL ASPECTS

The methodology employed in the CICAD program to estimate the costs of drugs in the Americas is based upon the experience developed in countries that were pioneers in costing research: The United States, Office of Drug Control Policy (ONDCP), 2001, Australian Institute on Health and Welfare (AIHW), 2001, and The Canadian Centre on Substance Abuse (CCSA), 2001, with particular emphasis on the International Guidelines for Estimating Drug Costs developed by the CCSA)[3] These experiences have been gathered together in the CICAD Cost Program Research Manual by CICAD's team of consultants[4].

There are a variety of approaches to calculating costs[5]; this program applied a *Cost of Illness Study* (COI), which compares current drug use to the hypothetical scenario in which no illicit drug use exists in society. Within the context of the COI methodology, the development of Indirect indicators constituted an intermediate step to reach this objective in the framework of a strategy specifically designed for developing countries. All cost estimates developed through the CICAD program are based exclusively on information that was available in each country corresponding to the indicators laid out in the Cost Program Research Manual.

The methodology developed in the CICAD program has some limitations that should be carefully considered in order to appropriately interpret the data:

- Cost estimation provides a "static picture" of the prior structural causal components. This "picture" does not impart explanations on the causal structure of the drug phenomenon, and does not tell us how the present situation is or how it will be in the future. It provides information only on the situation at the moment at which the measure was taken. A

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[3] Single et.al, The International Guidelines for Estimating the Costs of Substance Abuse, 2001 ed.; Canadian Centre on Substance Abuse
[4] Pérez. A, Wilson, E. y Valencia, J.E. (2005)
[5] Other methods include the "Human Capital" approach, "Willingness to pay" among others.

complementary element is that the drug problem has certain characteristics that can change very suddenly, (such as the price or quality of drugs, type of drugs available, circumstances under which drugs are used), which can radically affect the situation. Figure 1 provides an illustration of the theoretical structure of the adverse effects of psychoactive substance abuse and the responses to mitigate those effects.

Figure 1: Structure of Adverse Effects of PAS Consumption -Adverse Effects and Palliative Actions
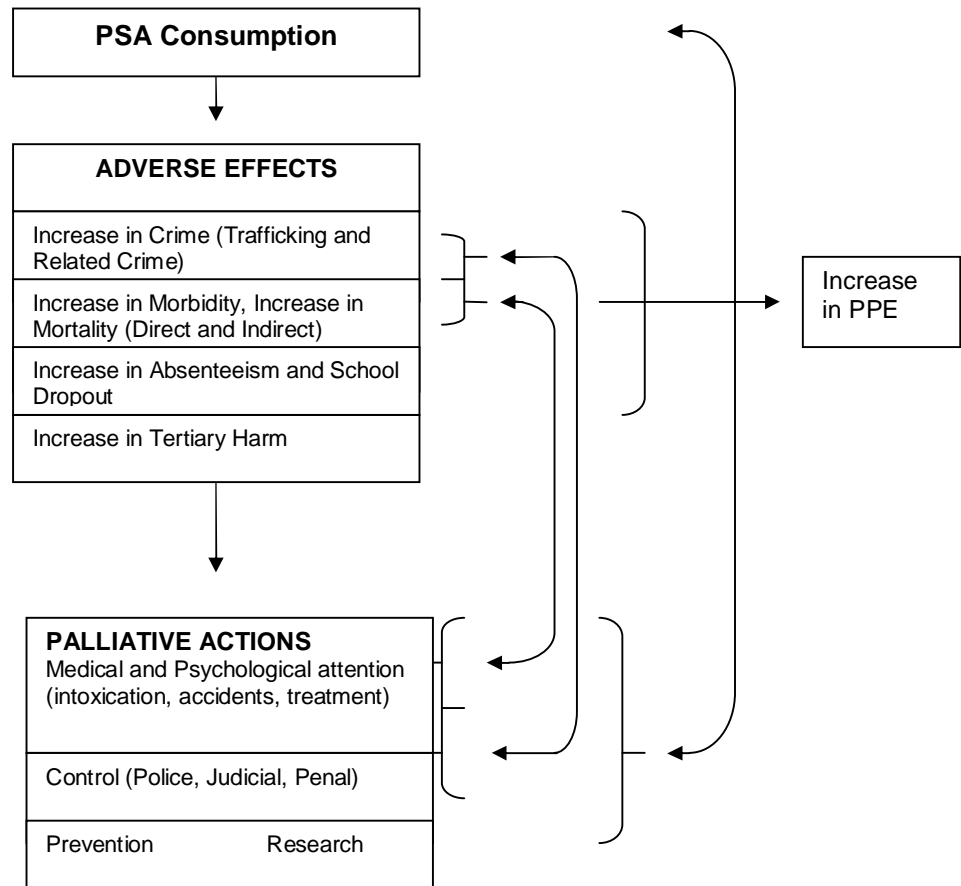
PPE= Loss of economic productivity

    The diagram above demonstrates the complex interaction between consumption, adverse effects and actions taken. As can be seen from its structure, both adverse and palliative actions generate costs. It is important to keep in mind that that we cannot arbitrarily intervene in a cost area without considering the potential impact on another area. For example, *reducing the costs of control reduces total costs, but may cause future increases in the probability of consumption, or an increase in criminality, leading back to a net increase in total costs.*

- As is the case with all research studies, the quality of the results will depend fundamentally on the quality of information provided. In the case of the CICAD Cost Program, every effort was made to guarantee that each country had the opportunity to guarantee that the information they supplied was adequate. The use of indirect indicators implied working with information that was less processed, further increasing the need to certify the reliability of the data.

- Ideally comparisons would only be made *internally* within a single country over a period of years. Comparisons between countries are possible, if and only if great precautions are taken. Firstly, differences in the type of information available must be taken into account; if one country does not have information on loss of productivity associated with absenteeism, then this must be taken into account when comparing aggregate costs with a country that does have loss of productivity information. Secondly, control factors should be taken into account, such as geographic, linguistic, cultural and ethnic similarities) that allow the sensible comparison of information.

- Difficulties accessing certain data: Each country had some data that was more difficult to access than others. For this reason no two countries have exactly the same sets of data. In addition there were occasions in which data from a particular country varied greatly from one year to another.

- Indirect indicators are the building blocks for complex cost calculations, but they can be used individually. This is one of the unexpected results of the study. For example, the outcome of persons in treatment as compared to the number of requests for treatment opens questions regarding public policies and their application. This constitutes a measure of unmet needs, and may

allow researchers to approximate potential future demand for treatment.

- The structure of information is laid out in four conceptual areas: costs to public health, loss of productivity (that includes different types of absenteeism), damage to property, and direct governmental costs.

- "The objective should be to construct the best indicator possible within the limits of the situation. This indicator can always be improved and will contribute to the development of new research projects." [6]

6. SUMMARY OF THE PRINCIPAL PRODUCTS AND RESULTS

A variety of tools and instruments were developed to train and provide guidance to the participating countries as they progressed in their cost studies. These instruments include the *Cost Program Research Manual*, which was edited a total of eight times until a version was produced that satisfied the needs of all the program participants. This manual documents the CICAD research methodology to estimate the social and economic impact of drugs, which can now be applied in nearly any country in the hemisphere. In addition, a website was developed to manage the information produced in the pilot study (http://www.cicadcostos.org), and the participating countries were trained in its use. Finally, an Excel template was created to permit countries to process certain information automatically transforming their raw data directly into cost estimates.

Each country participating in the program had slightly different data sets available. In order to fill the data gaps across countries twelve research projects were carried out in the six countries: four in health care costs, five on productivity losses, and three in law enforcement and criminal justice costs. Results of these studies are published in five articles covering a variety of areas in the cost program. In addition, approximately twenty-two reports of which sixteen provide yearly cost data, and six consolidated reports for each participating country (see annexes) were produced. The cost estimates

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[6] Dr. Hendrick Harwood, stated in the context of the 6th Cost Program Pilot Country meeting, Washington D.C., September 29, 2005. Communicating Substance Abuse Cost Estimates to Policy Makers; H. Harwood.

developed in each country were based exclusively on information available in each country corresponding to the program indicators.

Final Products

1. The Cost Program Research Manual, revised and edited
2. A total of twelve research projects were carried out in the pilot countries, with the following distribution: four in the area of health, five in lost productivity, and three in the area of criminality.
3. Five articles on a variety of subjects related to the program.
4. A web site to manage the data from the pilot countries.
5. A template to calculate aggregate data and convert it into cost estimates.
6. Twenty two cost reports: sixteen reports provide time series, and six consolidated reports on the pilot countries.

Overall, the goals of the Cost Program were exceeded. Not only were cost estimates developed by sector (health care, criminal and law enforcement, lost productivity, and other costs), but several countries were able to produce estimates across all sectors. Over the course of the study a positive change in the participating countries could be observed as they developed more rigorous and more regular research and data collection.

7. AN ATTEMPT AT INTEGRATION

In this section three tables and fourteen graphs are presented, which provide a general idea of some of the economic indicators from the pilot countries. However, we must keep clearly in mind that the comparisons between countries you will see in this section are very imprecise. They are being presented with the purpose of providing a general idea of the situation.

1. The countries being compared do not have the same indicators. In addition, they may have information pertaining to different indicators from one year to the next. While some countries may have information corresponding to eleven or twelve indicators, others have cost information for far fewer, or only on direct government costs. In one case the country only has information available on demand reduction indicators.

2. The epidemiological studies, on which many calculations are based, were carried out with different populations.   This could affect the precision of the calculations.
3. It was not possible in every case to completely guarantee the reliability of the information provided. These reports represent the best effort in each country, although adjustments in the collection of information were, and are still necessary.

Table 1: Lifetime prevalence of PSA consumption on the population between 13-17 years old[7]

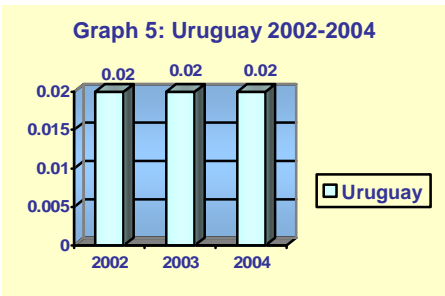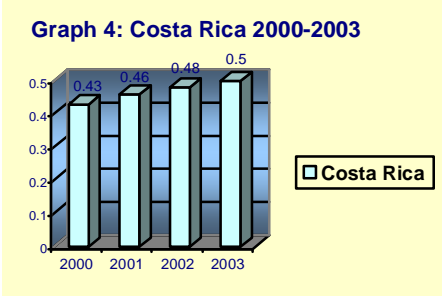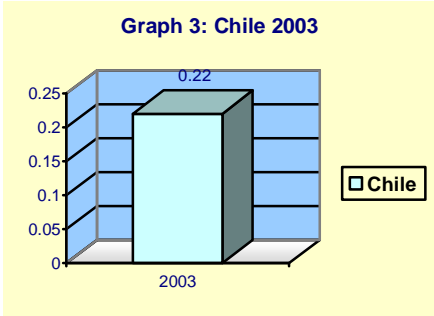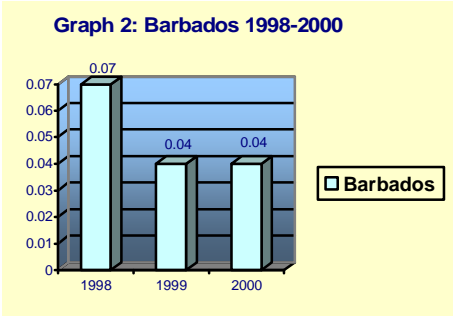|	Type of study and year	Marihuana	Cocaine	Amphetamines	Heroin	Crack	Ecstasy
Barbados	SIDUC (2003)	23,5	2	3,1	1,4	1,6	0,9
Chile	National Study (2003)	21,7	5,7	5,9	1,3	1,4	3,2
Costa Rica	National Study (2000)	4,7	1,5			0,3	
El Salvador	SIDUC (2003)	4,5	1,6	6,8	0,4	1,1	0,5
México	National Study (2002)	1,2	0,2	0,13	0		
Uruguay	SIDUC (2003)	11,9	3,1		0,5	0,8	0,9

This table, based on three SIDUC studies and three national studies, allows us to observe the levels of drug use within the population between 13 and 17 years of age, which generally is a good indicator for what is taking place at the national level. Based on these data, the countries can tentatively be grouped in three ranges: high consumption (Barbados and Chile), medium level consumption (Uruguay), and low consumption (Costa Rica, El Salvador and Mexico).

In graphs 2 - 6, changes in the GDP can be observed in the different countries. Note that in the case of Chile there is only one point because the
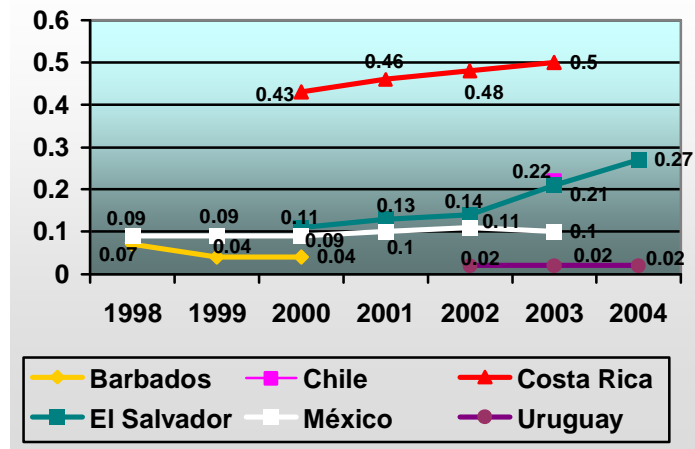
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[7] Note that all the studies in Table 1 were carried out in the school population, with the exception of Mexico, where the prevalence were produced from a general population survey.

information from the study only corresponds to the year 2003. In the case of Barbados, the data are quite limited and do not include supply reduction information. Uruguay only has direct government cost information. Graph 8 should be considered a comparative exercise, as explained above, and should be examined with caution.

Percentage of impact of the drug problem on GDP

Graph 2: Barbados 1998-2000

Graph 3: Chile 2003

Graph 4: Costa Rica 2000-2003

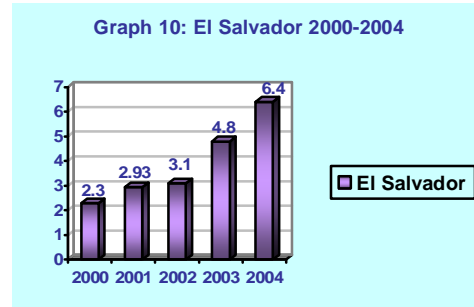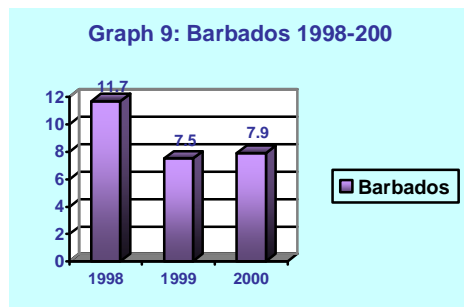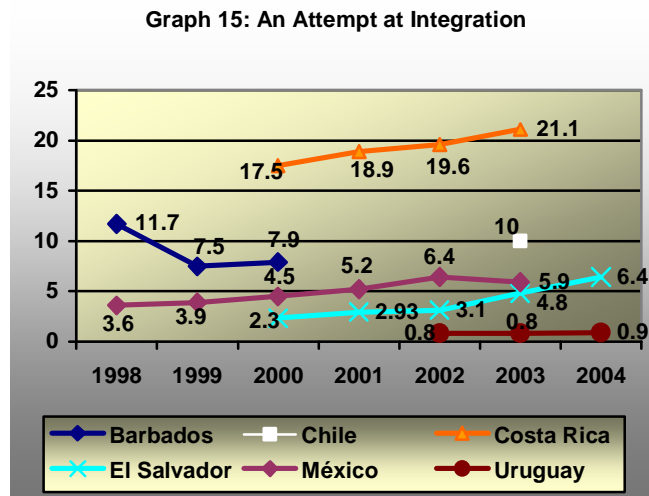Graph 5: Uruguay 2002-2004

Graph 6: México 1998-2003

Graph 7: El Salvador 2000-2004
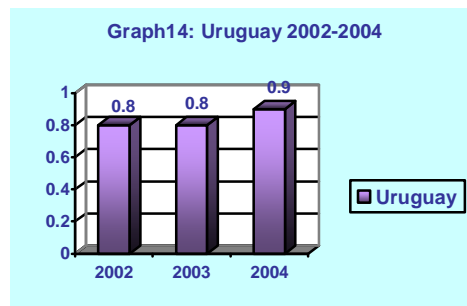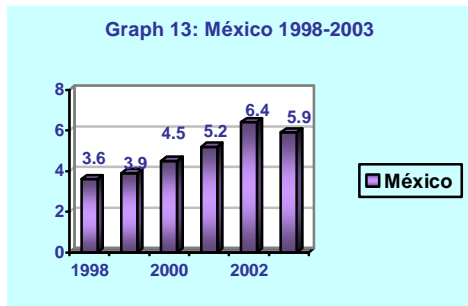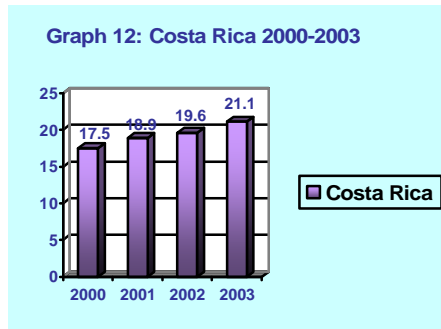
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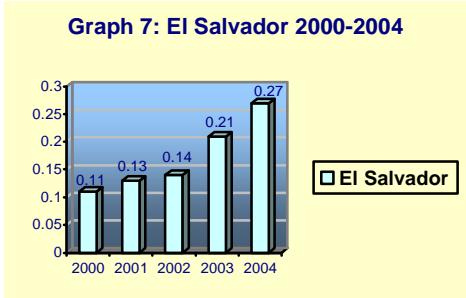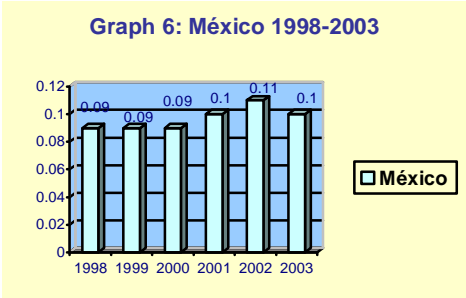
Graph 8: An Attempt at integration

As can be seen, the greatest impact on GDP occurs in the Central American countries (Costa Rica and El Salvador), followed by Chile. Mexico is at around 0.1%, and both Barbados and Uruguay are below 0.5%. Keep in mind that the information from Barbados refers only to demand reduction costs, while the other countries demonstrate both supply and demand reduction. Even among the countries where the highest impact is seen, these percentages are relatively low in comparison to the United States or Canada, representing between a third and a fifth of the impact on GDP in those countries.

As we examine the following seven graphs the same limitations should be taken into account with respect to impact on GDP.

Cost Per Capita of the Drug Problem in Six Pilot Countries
(US dollars)

Graph 9: Barbados 1998-200

Graph 10: El Salvador 2000-2004

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Graph 11: Chile 2003

Graph 12: Costa Rica 2000-2003

Graph 13: México 1998-2003

Graph14: Uruguay 2002-2004

Graph 15: An Attempt at Integration
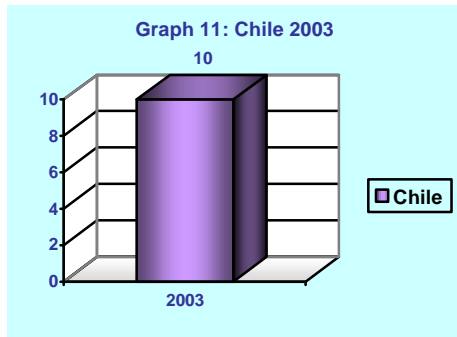
Once again, Costa Rica is the country that demonstrates the greatest impact in per capita costs. Chile appears in second place, and Barbados is third. Once again, keep in mind that in Barbados, the costs for supply reduction are severely undervalued. The cost per capita in El Salvador is relatively low given the high density of the population.

Table 2 shows the percentages of highest expenditures in each country. These percentages are calculated based on the *information available in each country*. In Barbados the sum of the direct costs incurred by the government in 1998 is 85.6% of the total costs reported; all other costs reported that year comprise the remaining 14.4%. In El Salvador during 2001 and 2002 lost productivity represents the greatest cost, while in 2003 and 2004 those costs were centered mainly in healthcare. However, during this four year period the country had costs in many other areas, which are detailed in the El Salvador country report.

Table 2: Distribution of areas where heaviest costs were reported in each country

Country	Cost Area	1998	1999	2000	2001	2002	2003	2004
Barbados	Direct Costs	85.6	86.7	88.3				
Chile	Direct Costs						55.0	
Costa Rica	Direct Costs			39.0	42.1	40.9	46.9	
	Loss of productivity				60.1	43.3		
El Salvador	Health						46,7	61
Mexico	Direct Costs	70.1	70.4	67.3	69.3	68.6	70.3	
Uruguay	Direct Costs					100.0	100.0	100.0

In this table we can clearly see that direct costs make up a major portion of the total costs in the pilot countries, with the exception of El Salvador. In 2003 these proportions varied between nearly 70% in Mexico to approximately 47% in Costa Rica.

In Table 3 we can see the proportionate costs of supply reduction (SR) and demand reduction (DR) as they were reported by each country. Keep in mind that the sum of these rubrics is not 100% because in the majority of the countries direct costs only represent a portion of the total costs reported. The only exception in this case is Uruguay, which reported on direct costs only.

Table 3: Comparison of Direct Expenditures Reported by Country (%)

Country		1998	1999	2000	2001	2002	2003	2004
	SR	NA	NA	NA				
Barbados	DR	82.4	79.3	78.5				
Chile	SR						40.4	
	DR						14.6	
	SR			56.6	50.0	50.64	54.9	
Costa Rica	DR			0.2	5.0	0.4	0.45	
El Salvador	SR				25.4	14.4	9.6	8.3
	DR				6.2	6	8.5	3
	SR	66.5	66.3	62.9	64.9	64.5	66	
México	DR	3.6	4.1	4.5	4.5	4.1	4.3	
Uruguay	SR					60.3	67.1	63.6
	DR					39.8	32.9	36.4

**SR:** Supply Reduction   **NA:** Not Available
DR: Demand Reduction
* Supply Reduction + Demand Reduction + all other costs = 100%

As was previously mentioned, the data from Barbados contemplates demand reduction only. The above analysis shows that in almost all the countries that have information on both demand and supply reduction, supply reduction expenditures are far superior to demand reduction. We expect that if supply reduction data were available for Barbados, the direct supply and demand reduction expenditures would represent nearly 100% of total costs. Take note that Uruguay only reported direct expenditures on supply and demand reduction, which is why their total is 100%.

Table 3 and graph 16 show that with one exception that has an almost perfect equilibrium between demand reduction and supply reduction expenditures, in all other countries the investment in supply reduction is far superior to demand reductions. Ratios vary from 2:1 up to 110:1. These proportions do not appear to have any particular correlation with the levels of drug consumption observed in table 1.
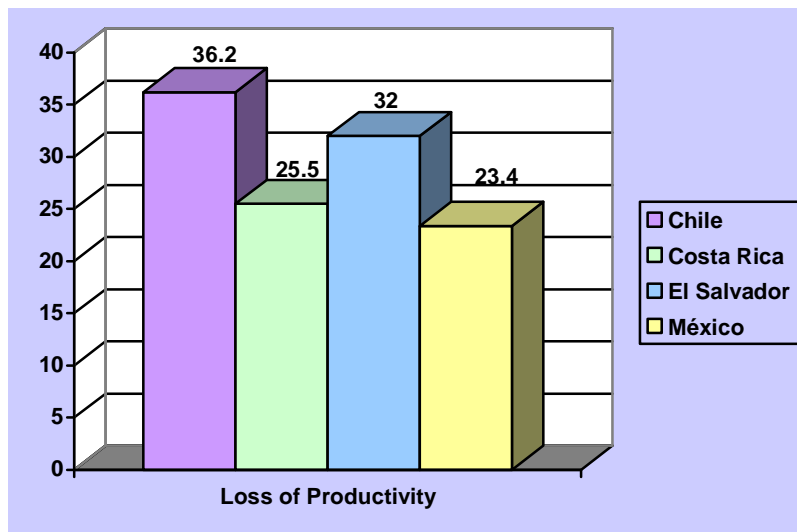
Graph 16: Comparison (%) of Direct Costs by Country 2003
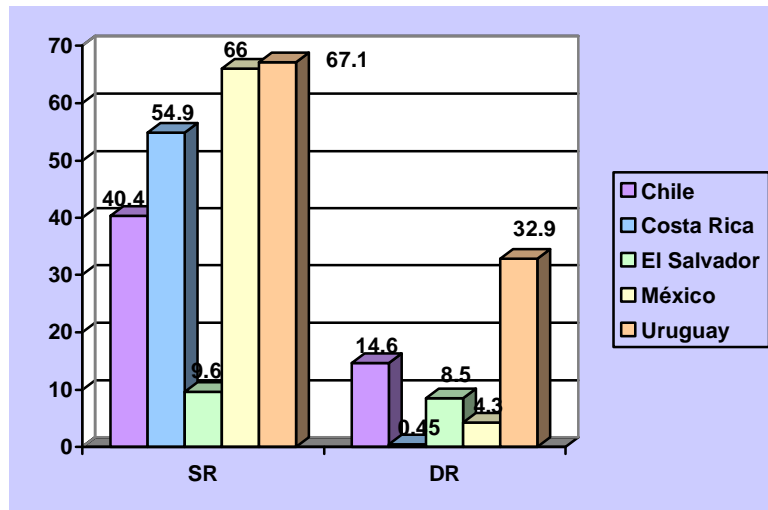
SR: Supply Reduction
DR: Demand Reduction

Finally, an approximate measure of the loss of productivity during 2003 in four of the pilot countries is presented[8].

Graph 17: Comparison (%) of Loss of Productivity

Despite the fact that the information is not always complete in all of the countries, we can observe that losses in productivity are around 30%.

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[8] The information for Barbados and Uruguay 2000 only corresponds to Direct Governmental Costs.

8. OBSTACLES ENCOUNTERED

Some of the principle obstacles encountered over the course of the program were:

- Data bases were of varying quality across the different sectors under study.
- Technical problems associated with the website management
- Some countries found it difficult to follow the fast-paced timeline.
- The ability of the countries to manage information differed due to structural reasons, which were beyond the scope of control of this project. For example, in some cases clear policies regarding data collection and the processing of information did not exist in certain sectors, which was reflected in the appearance of sectors that appeared to bear a greater burden of costs, but in reality simply had more available information. Such is the case of loss of productivity due to absenteeism, especially associated with premature death.

CONCLUSIONS

1. Findings from the pilot study indicate that in countries which had data spanning a series of years there was a tendency for expenditures to increase over time.
2. The majority of the information available corresponded to the direct indicators for supply reduction.
3. In countries that had both supply control and demand reduction data, investments in the supply reduction area were remarkably greater.

Although the cost estimates produced from this study are far from perfect, our experience demonstrates that by applying a methodology adjusted to the conditions of developing countries, it is possible to begin estimating the costs associated with the drug problem across a select number of direct and indirect indicators. The initial goals of the Cost program, to work with four countries and calculate direct or indirect costs in at least one social sector or area were surpassed, and far exceeded our original expectations. All six pilot countries successfully completed studies in one or more than one of the

following areas: public health, economic productivity, damage to property, and direct governmental costs.

There are some important data limitations to this type of study. Although we make an attempt in this report to display the major data trends across countries, it is important to keep in mind that the principal use of economic studies is for *internal comparison* over a series of years. Comparisons between can only be made taking great precautions, This is of particular importance in COI and similar studies that rely on a great deal of aggregate data and information gathered across a variety of sources. No two countries possess identical data sets, and even the most complete studies can only be compared taking into account the difference between nations. Therefore, we strongly caution policy makers against reading too much into the differences between countries, but rather use these results to provide further information on what is taking place internally in each country.

With respect to the limitations of the data collected in this study, it is important to raise the following points:

1. In some countries the data regarding the cost of treatment is inconsistent. This suggests that the values for treatment reported are not being accurately assessed in some countries.

2. Absenteeism cost estimates are imprecise. The data requirements for estimating the costs of absenteeism were beyond the capability of most, but not all countries.

3. Most of the cost data collected in the countries was from the same areas and social sectors. Data gaps were similar across countries because the data simply did not exist, reflecting the difficulty for most countries to collect a broad range of cost data from a variety of indicators.

The following are some specific recommendations to support the continuation of CICAD Cost Program:

1. The results of the pilot study demonstrate that cost studies can be done in a broad range of countries in the hemisphere. However, countries entering the CICAD Cost Program should receive training in the application of the methodology.

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2. Countries interested in research on the economic impact of drugs should seek to gather information that clearly differentiates issues associated with illicit substance use, alcohol, and tobacco use.

3. There are both theoretical and technical reasons to think that loss of productivity associated with drug use has an important role the majority of the pilot countries. Therefore, in future drug surveys it might be useful to include a question or questions that permit a better understanding of productivity loss.[9]

4. It is essential to carry out epidemiological surveys regularly as these are the fundamental bases of COI studies.

5. In order to refine the results, it would be useful to deepen the studies in the area of attribution fractions for crime and health. CICAD will make available the protocols for calculating attribution fractions available to the countries interested in this work.[10]

6. Over the course of this study, a web page and template were created to process data quickly, efficiently and in a uniform manner. We suggest that those instruments, which are complementary, be fused into a single tool.

7. As was expected, the indicator on intangible costs was beyond the reach of any country in the program. This particular indicator is highly complex and even in countries with a long history of cost research there is not a well established, reliable methodology for calculating them. Nevertheless, the research team recommends that CICAD keep this indicator in the methodology as a guide for potential future cost research.

8. The research team recommends that over time new indicators could be added that would provide further insight into supply and demand costs.

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[9] A datum that became apparently difficult for countries to obtain was loss of productivity. In response, CICAD is developing a module on productivity loss that can be included in SIDUC national household surveys.

[10] Chile was able to calculate the attribution fractions for health using data already available in the country. None of the pilot countries were able to calculate attribution fractions for crime with their existing data.

No single study shows the entire spectrum of costs related to the drug problem. Nevertheless, we believe that the information and experience gained is extremely useful to researchers and policy makers alike. A broad range of research and information gaps were identified in each country, which provide an excellent roadmap to strengthening research infrastructure. This includes not only information on drug use prevalence, but also basic information on the public health, criminal justice, education, labor and other social systems. In addition, the results of this study can be useful to policy makers in order to help them understand more clearly where investments are being made.

It is our hope that each country that participated in this study will use this information to further develop their research agendas and apply it to the formulation of sound policy and practices in the drug field. In addition we hope that CICAD and its Commission will continue to support the advances made in the six countries, and extend this research to the other countries in the hemisphere that wish to embark on economic research.

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