

# Availability of Morphine and Pethidine in the World and Africa

With a special focus on:

**Botswana, Lesotho, Mozambique, Namibia, Swaziland, Zimbabwe**

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## I. ABOUT THE PAIN & POLICY STUDIES GROUP

The Pain & Policy Studies Group (PPSG) mission is to promote “balance” in international, national and state pain policies to ensure adequate availability of opioid analgesics for the relief of pain and suffering and their appropriate medical use for patient care while addressing diversion and abuse. The PPSG is part of the University of Wisconsin Paul P. Carbone Comprehensive Cancer Center within the School of Medicine and Public Health, and is designated the World Health Organization (WHO) Collaborating Center for Policy and Communications in Cancer Care. Much of the PPSG’s work, including WHO Guidelines for achieving balanced national opioids control policies, are discussed later in this document, and are available on its website at [www.painpolicy.wisc.edu](http://www.painpolicy.wisc.edu). As a WHO Collaborating Center, the PPSG evaluates national legislation and has provided technical assistance to governments and NGO’s in Africa, Asia, Europe, Latin America, and has established a WHO Demonstration Project in Calicut, India. The PPSG has developed a fellowship training program and is in the process of developing an internet course on international pain policy.

The PPSG also supports a global communications program to improve access to information about pain relief, palliative care, and pain policy, and publishes a WHO newsletter *Cancer Pain Release* (<http://www.whocancerpain.wisc.edu/>).

In the USA, the PPSG supports a program of policy research, education and communications. This program includes: regular evaluation and grading of federal and state pain policies; model policy development; technical assistance; research and education of medical regulators; tracking trends in use and abuse of opioid analgesics and prescription monitoring programs; and a website with extensive pain policy resources including a full text data base of federal and state pain policies ([www.painpolicy.wisc.edu](http://www.painpolicy.wisc.edu)).

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## II. INTRODUCTION: INTERPRETING INFORMATION IN THIS DOCUMENT

### A. Why are opioid consumption statistics important?

In 1986, the World Health Organization (WHO) concluded that most pain due to cancer could be relieved using a simple analgesic method and that every national government should institute a cancer pain relief programme.<sup>1</sup> The WHO analgesic method has also been endorsed for relief of pain due to HIV/AIDS.<sup>2</sup> The method depends on the availability of, and patient access to, medicines that can relieve severe pain, such as morphine and other opioids. Recognizing that opioids are controlled strictly as narcotic drugs because of a potential for abuse and drug dependence, WHO recommended that governments (a) evaluate their drug control policies and practices to ensure that patients receive the opioid medications that are necessary for pain relief, and (b) encourage health care workers to report to the appropriate authorities any instance in which oral opioids are not available for cancer patients.

*Indeed, the fact that opioids are narcotic drugs regulated by governments is why those interested in pain relief and palliative care for HIV/AIDS and cancer must learn about the drug regulatory system and prepare to work with governments.*

More recently, the World Health Assembly and the United Nations Economic and Social Council have become concerned about inadequate patient access to pain relief and have adopted resolutions aimed at improving the availability of essential opioid medications for pain relief, especially in low and middle income countries.<sup>3,4</sup> The workshop on opioid availability for palliative care in Entebbe, Uganda in June 2006<sup>5</sup>, in Accra, Ghana in May 2007<sup>6</sup> and in Windhoek, Namibia in February 2008<sup>7</sup> are major steps in this direction.

Consumption statistics for opioids are one indicator of the capability of a country to treat moderate to severe pain. Morphine is frequently used as a principal indicator because morphine is the most widely available opioid analgesic for moderate to severe pain. Opioid consumption statistics can also be used to evaluate the outcomes of efforts to improve opioid availability. Consumption trends for pethidine are included in this monograph because, although pethidine is no longer recommended for chronic pain, it is still widely used. Other opioids such as tramadol and codeine are not included because they are not capable of relieving severe pain. Since

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<sup>1</sup> World Health Organization. *Cancer pain relief*. Geneva, Switzerland: World Health Organization; 1986.

<sup>2</sup> World Health Organization. *A community health approach to palliative care for HIV/AIDS and cancer patients in sub-Saharan Africa*. Geneva, Switzerland: World Health Organization; 2004.  
<http://www.who.int/cancer/palliative/report/en/print.html>

<sup>3</sup> World Health Assembly. *Cancer Prevention and Control*. WHA 58.22 Geneva, Switzerland: World Health Organization; 2005. [http://www.who.int/gb/ebwha/pdf\\_files/WHA58-REC1/english/A58\\_2005\\_REC1-en.pdf](http://www.who.int/gb/ebwha/pdf_files/WHA58-REC1/english/A58_2005_REC1-en.pdf)

<sup>4</sup> United Nations Economic and Social Council. *Treatment of pain using opioid analgesics*; Resolution 2005-25. Report on the forty-eighth session of the Commission on Narcotic Drugs E/2005/28; 19 March 2004 and 7-11 March 2005; issued 22 July 2005. 2005. [http://www.who.int/gb/ebwha/pdf\\_files/WHA58-REC1/english/A58\\_2005\\_REC1-en.pdf](http://www.who.int/gb/ebwha/pdf_files/WHA58-REC1/english/A58_2005_REC1-en.pdf)

<sup>5</sup> African Palliative Care Association. *Advocacy for Palliative Care in Africa: A Focus on Essential Pain Medication Accessibility* held 27-29 June, 2006 in Entebbe, Uganda.

<sup>6</sup> African Palliative Care Association. *Advocacy for Palliative Care in Africa: A Focus on Essential Pain Medication Accessibility* held 9-11 May 2007 in Accra, Ghana.

<sup>7</sup> African Palliative Care Association. *Advocacy for Palliative Care in Africa: A Focus on Essential Pain Medication Accessibility* to be held 27-29 February 2008 in Windhoek, Namibia.

pethidine and morphine are subject to the same legal controls, any country that uses pethidine should be able to use morphine.

## **B. Governments and the INCB are the source of opioid consumption statistics**

The International Narcotics Control Board (INCB) is the international narcotic regulatory authority for the United Nations; it monitors national governments' implementation of the 1961 Single Convention on Narcotic Drugs. This treaty, to which most governments are party, governs the cultivation, movement and availability of narcotic drugs for medical purposes in the world. According to the Single Convention, narcotic drugs are indispensable for the treatment of pain and suffering, and governments should ensure their adequate availability for all medical and scientific purposes, while preventing diversion and addiction. Governments must annually provide INCB an estimate of the amounts of opioids that will be required to satisfy all medical and scientific needs. Although INCB "confirms" the estimate as the amount authorized to be used in the country, the amount itself is determined by the government. The INCB does not reduce governments' estimates to less than is needed. In fact, if unanticipated needs arise during the year, the INCB can confirm a supplementary request by a country in a short amount of time.

Governments also report opioid consumption statistics to the INCB which compiles them into annual statistical reports.<sup>8</sup> "Consumption" means the amounts distributed to the retail level in a country, i.e., to those institutions and programs that are licensed to dispense to patients. Consumption is reported by anhydrous weight of the active drug, not including the salt; for example, the amount reported for morphine does not include the weight of the salt (sulfate or chloride), just the morphine base. Some countries do not report consumption statistics. INCB publications do not report consumption of a drug less than 1 kilogram although PPSG obtains these data from the INCB and publishes them because there are many countries where small amounts are important and because any amount of morphine consumed demonstrates that the government approved its use.

## **C. Overview of consumption trends**

### **Global Consumption**

#### Graph 1. Global consumption trends for morphine and pethidine 1980 – 2005:

The consumption statistics in this monograph begin with the 'big picture' of the global trend for morphine and pethidine from 1980 to 2005 expressed in kilograms. Prior to 1986, the consumption of morphine throughout the world was low and stable. After 1986, the total global consumption of morphine began to increase as some national governments and health professionals adopted the WHO Analgesic Ladder and as new opioid products became available more widely. The consumption of pethidine exceeded that of morphine, but has slowly decreased as other opioids have become more widely used. Recently, there are indications that consumption of morphine is being offset in some countries by the advent of other opioid analgesics such as fentanyl, hydromorphone, methadone and oxycodone. Although some countries use morphine mainly for cancer pain, morphine may be used for other types of pain,

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<sup>8</sup> International Narcotics Control Board. *Report of the International Narcotics Control Board for 2005*. New York, NY: United Nations; 2005. [http://www.incb.org/en/annual\\_report\\_2005.html](http://www.incb.org/en/annual_report_2005.html)

including acute, post-operative, AIDS, and for pain related to other chronic non-cancer conditions. In addition, some countries may use opioids including morphine and methadone for substitution treatment of drug dependence.

#### Graphs 2 and 3. Global consumption of morphine and pethidine, 2005:

The next several graphs present consumption statistics in milligrams per capita (dividing the total amount of drug “consumed,” in kilograms, by the population of the country) to provide a population-based statistic that will allow comparisons between countries and in relation to the global mean. The consumption of opioids varies greatly from country to country. Selected African countries that reported statistics are highlighted. The vast majority of morphine is consumed in high-income countries which represent a small part of the world’s population. The remaining countries of the world (a number of developed countries and all of the developing countries) consume comparatively little.

In a recent report, the INCB stated, “The low consumption of opioid analgesics for the treatment of moderate to severe pain, especially in developing countries, continues to be a matter of great concern to the Board. Global consumption of morphine increased significantly throughout the 1990s; in the past 20 years, it rose almost 10-fold, from 3 tons in 1984 to about 28 tons in 2003. However, the bulk of that increase occurred in some, but not all, developed countries, which represent a small part of the world's population. “In 2003, six countries together accounted for 79% of global consumption of morphine. Developing countries, which represent about 80% of the world's population, accounted for only about 6% of global consumption of morphine.” (p. 25)<sup>9</sup>

Table 1 presents the data that appear in Graph 2 and table 2 presents the data for pethidine that appear in Graph 3.

#### **African regional consumption of morphine and pethidine**

Graph 4 presents a regional picture of morphine consumption in Africa, including the global and regional mean. Selected countries are highlighted. Pethidine statistics are provided for purposes of comparison in Graph 5.

Graphs 6 through 11 present morphine and pethidine consumption trends and data for 6 African countries expected to participate in the February 2008 workshop for which this monograph is prepared. These data are expressed in kilograms to enable the country team members to see exactly how much consumption was reported by their governments.

#### **D. Status of adherence to conventions, receipt of statistics and estimates**

Table 3 presents information that the INCB compiles annually in an effort to inform the public about whether national governments are adhering to their obligations under the Single Convention. Information is provided for the 6 countries participating in the February 2008 workshop.

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<sup>9</sup> International Narcotics Control Board. *Report of the International Narcotics Control Board for 2004*. New York, NY: United Nations; 2005. [http://www.incb.org/en/annual\\_report\\_2004.html](http://www.incb.org/en/annual_report_2004.html)

From these data, it can be seen that all 6 governments are parties to the Single Convention, 1961, and as amended in 1972. Five of the 6 countries submitted consumption statistics for 2005, however INCB did not receive reports on the amount of morphine and pethidine consumed from the government of Zimbabwe

### **E. Competent national authorities**

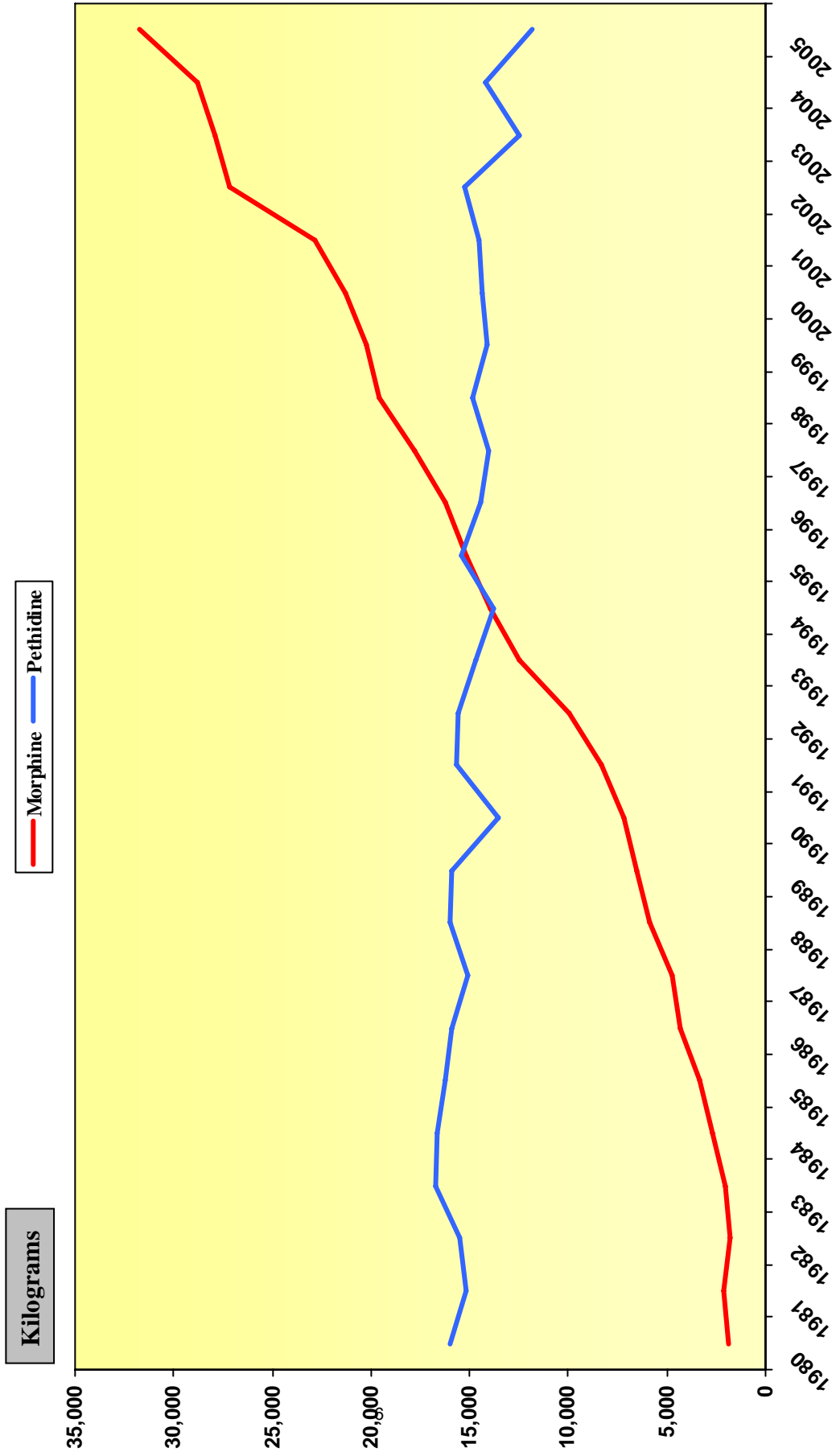
Each government that is party to the Single Convention designates an office which is responsible for carrying out required functions, including making estimates and reporting consumption statistics.<sup>10</sup> These offices may be located in the Ministry of Health in the pharmaceutical department or in the national food or drug control agency. These offices are the principal national authority for ensuring that opioid analgesics are adequately available for medical and scientific purposes and for submitting the required documents to the INCB. These offices receive reports from the INCB including (a) reports that are used in preparing this document, and (b) technical reports that encourage all governments to examine national policies and administrative procedures for barriers and to consult with health professionals in making up realistic estimates. However, sometimes these offices do not have adequate personnel to administer these and other important responsibilities in the area of drug control and availability.

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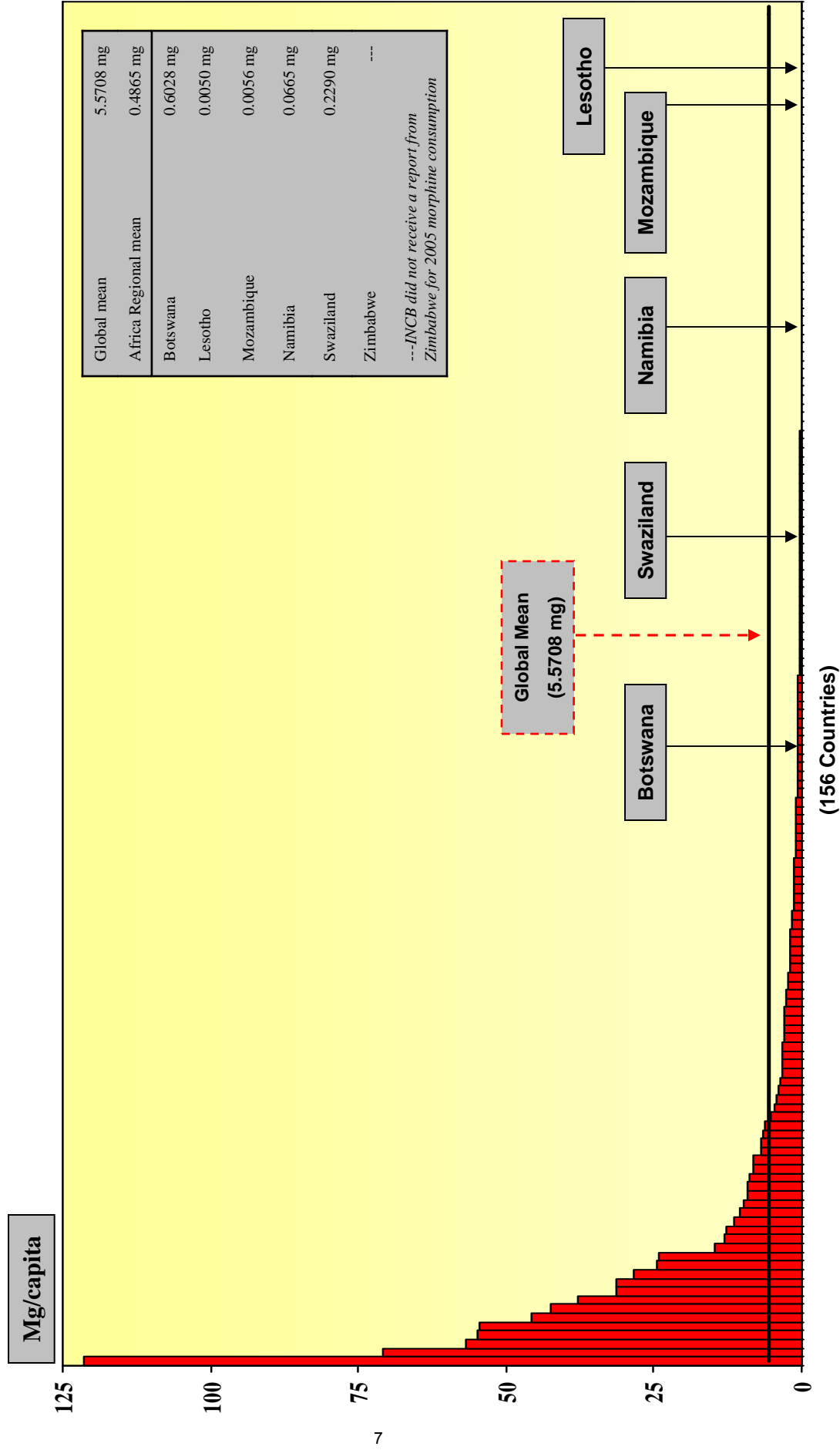
<sup>10</sup> United Nations. *Competent national authorities under the international drug control treaties*, 2004. New York, NY: United Nations; 2005.

### III. GLOBAL CONSUMPTION OF MORPHINE AND PETHIDINE

## Graph 1. Global Consumption of Morphine & Pethidine 1980-2005



# Graph 2. Global Consumption of Morphine, 2005



Source: International Narcotics Control Board  
 By: Pain & Policy Studies Group, University of Wisconsin/WHO Collaborating Center, 2008

# Table 1

## Morphine Consumption: Africa and the World (mg/capita)

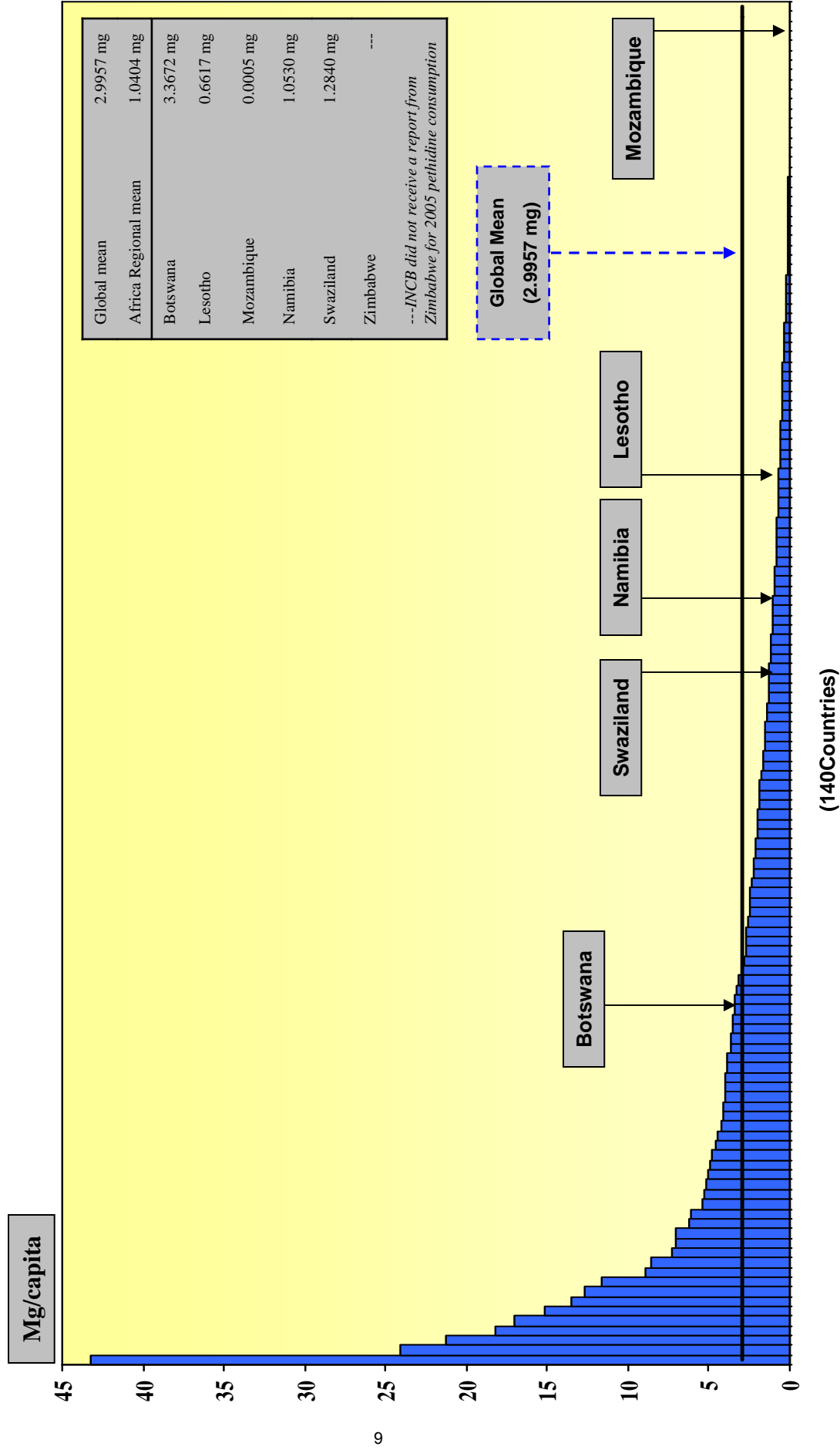
Note: Countries not listed did not report morphine consumption to the INCB for 2005

|    |                          |          |     |                             |               |     |                         |               |
|----|--------------------------|----------|-----|-----------------------------|---------------|-----|-------------------------|---------------|
| 1  | Austria                  | 121.4477 | 53  | Ukraine                     | 1.4626        | 105 | Saint Lucia             | 0.1700        |
| 2  | Canada                   | 70.8756  | 54  | Croatia                     | 1.4284        | 106 | Kyrgyzstan              | 0.1646        |
| 3  | Denmark                  | 56.6437  | 55  | Netherlands Antilles        | 1.2350        | 107 | Egypt                   | 0.1644        |
| 4  | Australia                | 54.6830  | 56  | Brazil                      | 1.1520        | 108 | Turks & Caicos Islands  | 0.1481        |
| 5  | United States of America | 54.6161  | 57  | Lebanon                     | 1.1486        | 109 | Viet Nam                | 0.1375        |
| 6  | New Zealand              | 45.5940  | 58  | Brunei Darussalam           | 1.1475        | 110 | Morocco                 | 0.1353        |
| 7  | France                   | 42.2925  | 59  | Cuba                        | 1.1254        | 111 | Ecuador                 | 0.1316        |
| 8  | Iceland                  | 37.9667  | 60  | Jordan                      | 1.1021        | 112 | Uzbekistan              | 0.1275        |
| 9  | Norway                   | 31.3615  | 61  | Singapore                   | 0.9923        | 113 | Vanuatu                 | 0.1050        |
| 10 | Switzerland              | 31.2043  | 62  | Bosnia and Herzegovina      | 0.9892        | 114 | Kenya                   | 0.0986        |
| 11 | United Kingdom           | 28.5573  | 63  | Bahrain                     | 0.9343        | 115 | Senegal                 | 0.0908        |
| 12 | Germany                  | 24.4174  | 64  | Malaysia                    | 0.9230        | 116 | Zambia                  | 0.0789        |
| 13 | Sweden                   | 24.1391  | 65  | Bahamas                     | 0.9067        | 117 | Nepal                   | 0.0786        |
| 14 | Netherlands              | 14.8085  | 66  | Dominican Republic          | 0.7984        | 118 | Cape Verde              | 0.0700        |
| 15 | Gibraltar*               | 13.2069  | 67  | Republic of Moldova         | 0.7774        | 119 | Turkmenistan            | 0.0690        |
| 16 | Belgium                  | 12.7096  | 68  | Dem. Peop. Rep. of Korea    | 0.7623        | 120 | <b>Namibia</b>          | <b>0.0665</b> |
| 17 | Ireland                  | 11.5529  | 69  | Jamaica                     | 0.6592        | 121 | Azerbaijan              | 0.0655        |
| 18 | Slovenia                 | 10.3270  | 70  | Thailand                    | 0.6219        | 122 | Algeria                 | 0.0631        |
| 19 | Portugal                 | 9.9375   | 71  | Mauritius                   | 0.6217        | 123 | Wallis & Futuna Islands | 0.0624        |
| 20 | Malta                    | 9.2500   | 72  | Sri Lanka                   | 0.6200        | 124 | Syrian Arab Republic    | 0.0387        |
| 21 | Spain                    | 9.1038   | 73  | <b>Botswana</b>             | <b>0.6028</b> | 125 | Myanmar                 | 0.0375        |
| 22 | Saint Helena*            | 8.8472   | 74  | Oman                        | 0.5636        | 126 | Macedonia (TFYR)        | 0.0335        |
| 23 | New Caledonia            | 8.2043   | 75  | Belarus                     | 0.5610        | 127 | Guyana                  | 0.0288        |
| 24 | Luxembourg               | 8.1680   | 76  | Greece                      | 0.5600        | 128 | Gabon                   | 0.0264        |
| 25 | Poland                   | 6.9653   | 77  | Russian Federation          | 0.5508        | 129 | Indonesia               | 0.0207        |
| 26 | Bulgaria                 | 6.7874   | 78  | Albania                     | 0.5339        | 130 | Dominica                | 0.0200        |
| 27 | Czech Republic           | 6.4021   | 79  | Peru                        | 0.4911        | 131 | Benin                   | 0.0188        |
| 28 | Israel                   | 6.2226   | 80  | Macao                       | 0.4639        | 132 | Djibouti                | 0.0188        |
| 29 | Finland                  | 5.2146   | 81  | St Vincent & Grenadines     | 0.4600        | 133 | Sudan                   | 0.0179        |
| 30 | South Africa             | 4.4586   | 82  | Marshall Islands            | 0.4571        | 134 | Rwanda                  | 0.0119        |
| 31 | Estonia                  | 4.4000   | 83  | Samoa                       | 0.4450        | 135 | Chad                    | 0.0118        |
| 32 | Japan                    | 3.9937   | 84  | Suriname                    | 0.4300        | 136 | Sierra Leone            | 0.0079        |
| 33 | Chile                    | 3.7496   | 85  | Montserrat                  | 0.4282        | 137 | Libyan Arab Jamahiriya  | 0.0079        |
| 34 | Hong Kong SAR            | 3.3820   | 86  | Republic of Palau           | 0.3940        | 138 | Madagascar              | 0.0069        |
| 35 | Slovakia                 | 3.1844   | 87  | Republic of Korea           | 0.3602        | 139 | Eritrea                 | 0.0067        |
| 36 | Italy                    | 3.1663   | 88  | China                       | 0.3504        | 140 | Haiti                   | 0.0065        |
| 37 | Uruguay                  | 3.1271   | 89  | Tonga                       | 0.3500        | 141 | <b>Mozambique</b>       | <b>0.0056</b> |
| 38 | Cyprus                   | 2.9088   | 90  | Saudi Arabia                | 0.3479        | 142 | Congo                   | 0.0051        |
| 39 | Lithuania                | 2.8682   | 91  | Micronesia (Fed. States of) | 0.3238        | 143 | Sao Tome and Principe   | 0.0050        |
| 40 | Barbados                 | 2.8233   | 92  | El Salvador                 | 0.3187        | 144 | <b>Lesotho</b>          | <b>0.0050</b> |
| 41 | Costa Rica               | 2.8070   | 93  | Kiribati                    | 0.3104        | 145 | Yemen                   | 0.0030        |
| 42 | Argentina                | 2.5020   | 94  | Nauru                       | 0.3066        | 146 | Uganda                  | 0.0029        |
| 43 | Hungary                  | 2.5016   | 95  | Qatar                       | 0.2513        | 147 | Burundi                 | 0.0025        |
| 44 | Georgia                  | 2.4269   | 96  | Philippines                 | 0.2452        | 148 | Côte d'Ivoire           | 0.0025        |
| 45 | Latvia                   | 2.4143   | 97  | Grenada                     | 0.2400        | 149 | Dem. Rep. of the Congo  | 0.0016        |
| 46 | Andorra                  | 2.0933   | 98  | <b>Swaziland</b>            | <b>0.2290</b> | 150 | Tajikistan              | 0.0016        |
| 47 | Mongolia                 | 2.0654   | 99  | United Arab Emirates        | 0.2179        | 151 | Guinea                  | 0.0011        |
| 48 | Venezuela                | 2.0642   | 100 | United Republic of Tanzania | 0.2162        | 152 | Niger                   | 0.0007        |
| 49 | Colombia                 | 1.8667   | 101 | Panama                      | 0.2125        | 153 | Burkina Faso            | 0.0007        |
| 50 | Tunisia                  | 1.8260   | 102 | Kazakhstan                  | 0.2097        | 154 | Paraguay                | 0.0007        |
| 51 | Cook Islands             | 1.7500   | 103 | Nicaragua                   | 0.1978        | 155 | Togo                    | 0.0007        |
| 52 | Kuwait                   | 1.5442   | 104 | Turkey                      | 0.1937        | 156 | Ethiopia                | 0.0004        |



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# Graph 3. Global Consumption of Pethidine, 2005



Source: International Narcotics Control Board  
 By: Pain & Policy Studies Group, University of Wisconsin/WHO Collaborating Center, 2008

## Table 2

### Pethidine Consumption: Africa and the World (mg/capita)

**Note: Countries not listed did not report morphine consumption to the INCB for 2005**

|    |                         |               |    |                             |               |     |                        |               |
|----|-------------------------|---------------|----|-----------------------------|---------------|-----|------------------------|---------------|
| 1  | Barbados                | 43.2533       | 48 | Macao                       | 2.4201        | 95  | Kiribati               | 0.5820        |
| 2  | Canada                  | 24.0391       | 49 | Lithuania                   | 2.4153        | 96  | Bangladesh             | 0.5747        |
| 3  | Slovakia                | 21.2507       | 50 | Turkey                      | 2.3988        | 97  | Guyana                 | 0.5475        |
| 4  | U.S. of America         | 18.1841       | 51 | Uruguay                     | 2.2518        | 98  | Peru                   | 0.5249        |
| 5  | Bahamas                 | 17.0100       | 52 | Singapore                   | 2.2472        | 99  | Sweden                 | 0.5200        |
| 6  | New Zealand             | 15.1265       | 53 | Iran (Islamic Republic of)  | 2.0707        | 100 | Italy                  | 0.5040        |
| 7  | Denmark                 | 13.4611       | 54 | Latvia                      | 2.0600        | 101 | Argentina              | 0.5021        |
| 8  | Cook Islands            | 12.7000       | 55 | El Salvador                 | 2.0437        | 102 | Tunisia                | 0.4633        |
| 9  | Switzerland             | 11.6621       | 56 | Spain                       | 2.0423        | 103 | Cape Verde             | 0.4260        |
| 10 | St Vincent & Grenadines | 8.9700        | 57 | United Arab Emirates        | 2.0058        | 104 | Japan                  | 0.3712        |
| 11 | Mauritius               | 8.6317        | 58 | Germany                     | 1.9269        | 105 | Vanuatu                | 0.3600        |
| 12 | Australia               | 7.3409        | 59 | Saudi Arabia                | 1.8722        | 106 | Viet Nam               | 0.3298        |
| 13 | Jamaica                 | 7.1031        | 60 | Saint Lucia                 | 1.8250        | 107 | Egypt                  | 0.2996        |
| 14 | Czech Republic          | 7.0180        | 61 | Marshall Islands            | 1.8114        | 108 | Uganda                 | 0.2832        |
| 15 | Turks & Caicos Islands  | 6.1852        | 62 | Syrian Arab Republic        | 1.6637        | 109 | Eritrea                | 0.2240        |
| 16 | Bahrain                 | 6.0843        | 63 | Iceland                     | 1.6267        | 110 | Sudan                  | 0.2213        |
| 17 | Montserrat              | 5.3527        | 64 | Netherlands                 | 1.5773        | 111 | Indonesia              | 0.1912        |
| 18 | United Kingdom          | 5.3079        | 65 | Portugal                    | 1.5012        | 112 | Nepal                  | 0.1817        |
| 19 | Republic of Palau       | 5.1716        | 66 | Andorra                     | 1.4800        | 113 | Anguilla               | 0.1538        |
| 20 | Malta                   | 5.0000        | 67 | Micronesia (Fed. States of) | 1.4338        | 114 | Rwanda                 | 0.1437        |
| 21 | Norway                  | 4.8852        | 68 | Bulgaria                    | 1.4276        | 115 | Philippines            | 0.1374        |
| 22 | Cyprus                  | 4.8613        | 69 | Thailand                    | 1.3444        | 116 | India                  | 0.1027        |
| 23 | Ghana                   | 4.6083        | 70 | China                       | 1.3390        | 117 | Sierra Leone           | 0.1026        |
| 24 | Grenada                 | 4.4300        | 71 | Chile                       | 1.3184        | 118 | France                 | 0.1024        |
| 25 | Jordan                  | 4.2421        | 72 | <b>Swaziland</b>            | <b>1.2840</b> | 119 | Yemen                  | 0.1019        |
| 26 | Israel                  | 4.1303        | 73 | United Republic of Tanzania | 1.1554        | 120 | Togo                   | 0.1000        |
| 27 | Republic of Korea       | 4.1131        | 74 | Oman                        | 1.1204        | 121 | Pakistan               | 0.0843        |
| 28 | Poland                  | 4.0176        | 75 | Kenya                       | 1.1198        | 122 | Ethiopia               | 0.0645        |
| 29 | Kuwait                  | 4.0031        | 76 | Sri Lanka                   | 1.1085        | 123 | Burundi                | 0.0514        |
| 30 | Estonia                 | 3.9708        | 77 | Austria                     | 1.1074        | 124 | Benin                  | 0.0507        |
| 31 | Qatar                   | 3.9188        | 78 | Albania                     | 1.1052        | 125 | Venezuela              | 0.0375        |
| 32 | Libyan Arab Jamahiriya  | 3.8596        | 79 | <b>Namibia</b>              | <b>1.0530</b> | 126 | Congo                  | 0.0359        |
| 33 | Ireland                 | 3.6659        | 80 | Hungary                     | 0.9568        | 127 | Haiti                  | 0.0311        |
| 34 | Gibraltar               | 3.6207        | 81 | Brunei Darussalam           | 0.9200        | 128 | Lao Peop. Dem. Rep.    | 0.0300        |
| 35 | Belgium                 | 3.5460        | 82 | Cuba                        | 0.9007        | 129 | Gabon                  | 0.0193        |
| 36 | South Africa            | 3.4874        | 83 | Panama                      | 0.8225        | 130 | Sao Tome and Principe  | 0.0100        |
| 37 | Malaysia                | 3.4379        | 84 | Suriname                    | 0.8150        | 131 | Myanmar                | 0.0092        |
| 38 | <b>Botswana</b>         | <b>3.3672</b> | 85 | Luxembourg                  | 0.7940        | 132 | Djibouti               | 0.0075        |
| 39 | Dominica                | 3.2800        | 86 | Colombia                    | 0.7877        | 133 | Dem. Rep. of the Congo | 0.0034        |
| 40 | Hong Kong SAR           | 3.1499        | 87 | Slovenia                    | 0.7680        | 134 | Chad                   | 0.0032        |
| 41 | Nauru                   | 2.9123        | 88 | Croatia                     | 0.7278        | 135 | Guinea                 | 0.0013        |
| 42 | Brazil                  | 2.8422        | 89 | Finland                     | 0.7121        | 136 | Côte d'Ivoire          | 0.0012        |
| 43 | Lebanon                 | 2.7286        | 90 | Netherlands Antilles        | 0.7104        | 137 | Niger                  | 0.0007        |
| 44 | Saint Helena            | 2.6810        | 91 | Romania                     | 0.6677        | 138 | <b>Mozambique</b>      | <b>0.0005</b> |
| 45 | Samoa                   | 2.6600        | 92 | <b>Lesotho</b>              | <b>0.6617</b> | 139 | Paraguay               | 0.0005        |
| 46 | Tonga                   | 2.6100        | 93 | Zambia                      | 0.6004        | 140 | Dominican Republic     | 0.0003        |
| 47 | Greece                  | 2.4209        | 94 | Costa Rica                  | 0.5960        |     |                        |               |



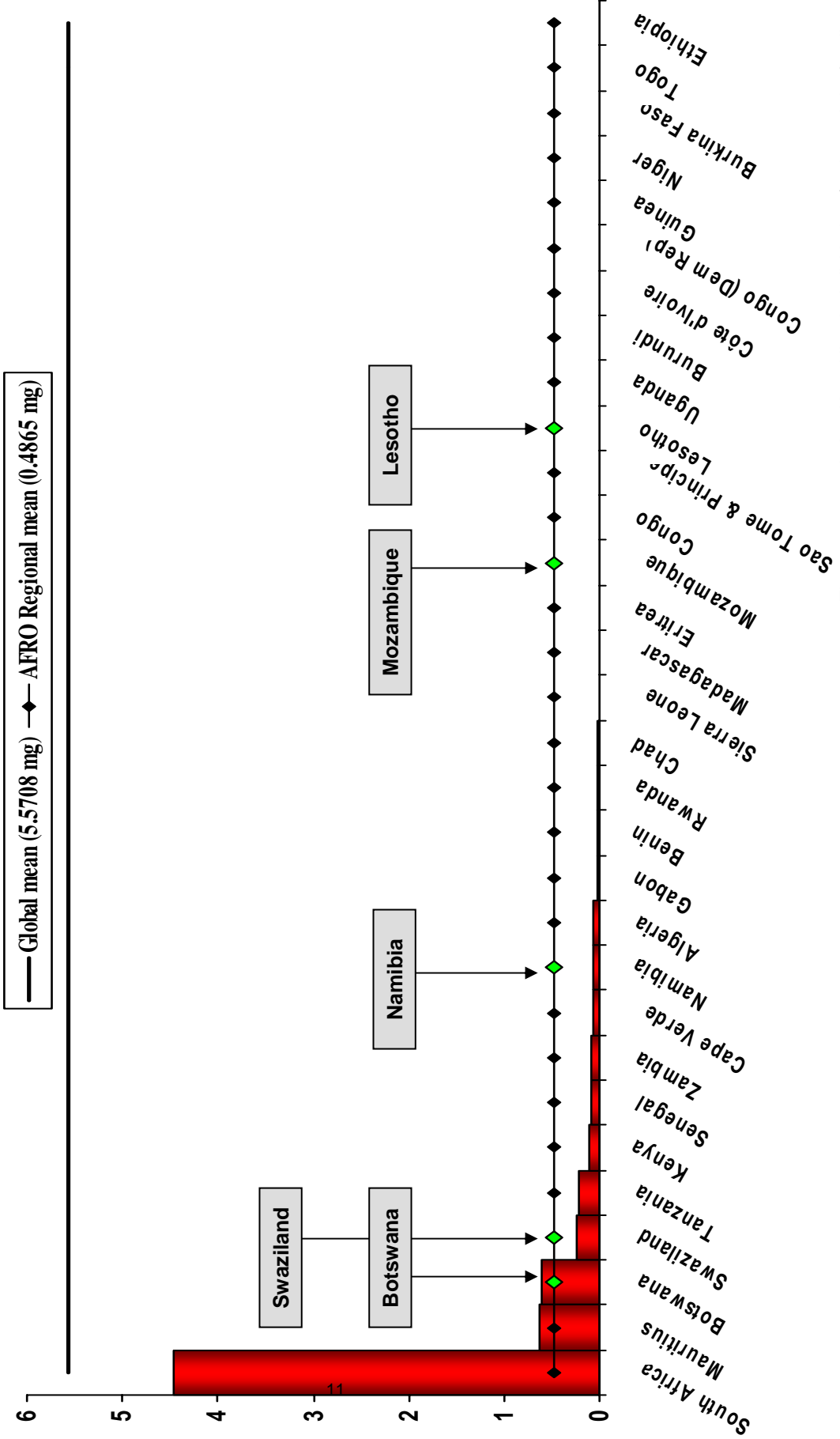
**Pain & Policy Studies Group**

WHO Collaborating Center for Policy and  
Communications in Cancer Care

University of Wisconsin Paul P. Carbone Comprehensive Cancer Center  
UW-School of Medicine and Public Health

**IV. AFRICA REGIONAL CONSUMPTION OF MORPHINE AND PETHIDINE, 2005**

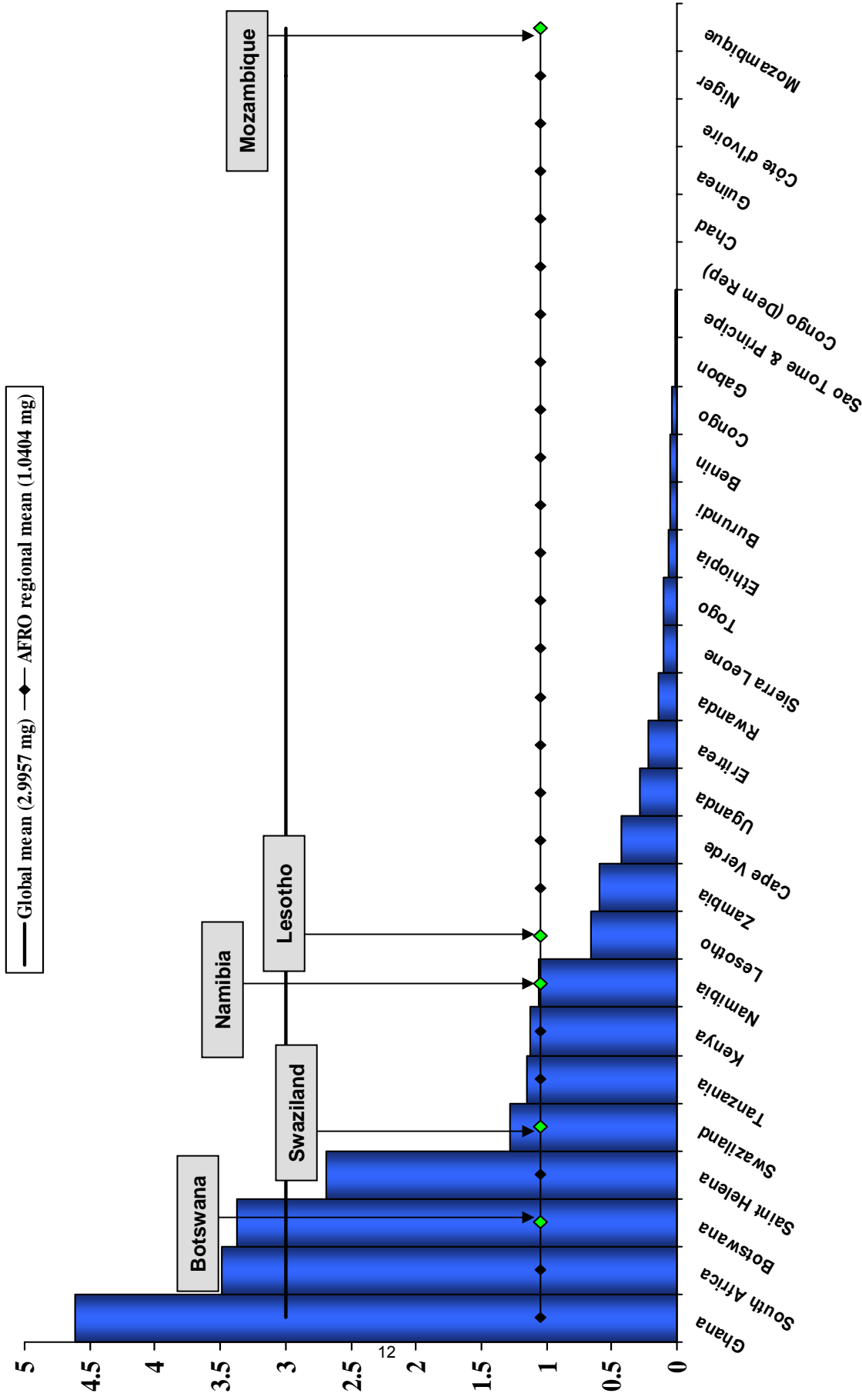
**Graph 4. Consumption of Morphine, Africa, 2005 mg/capita**



Source: International Narcotics Control Board; United Nations Demographic Yearbook  
 By: Pain & Policy Studies Group, University of Wisconsin/WHO Collaborating Center, 2008

The means are calculated by adding the individual mg/capita statistics for all countries and then dividing by the number of countries; data does not include information for countries from which the INCB did not receive a report

# Graph 5. Consumption of Pethidine, Africa 2005 mg/capita



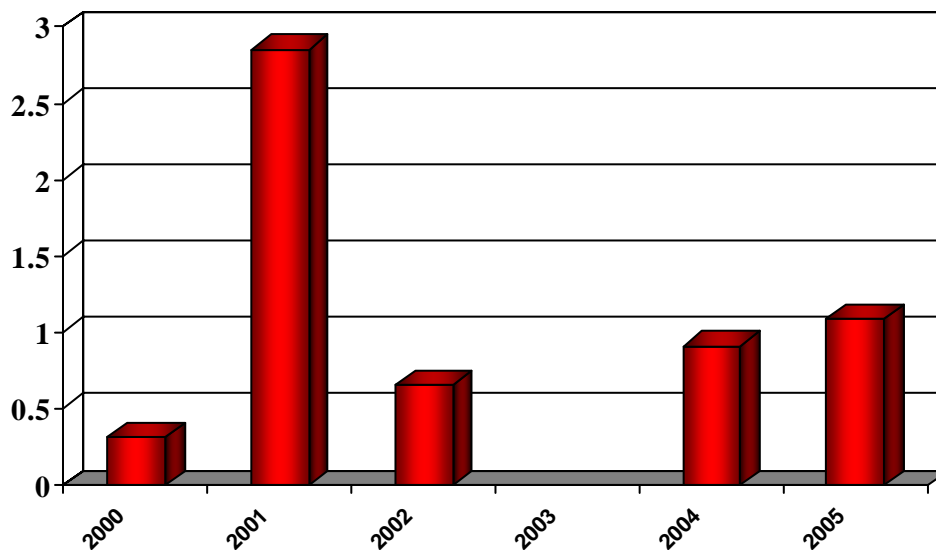
Source: International Narcotics Control Board; United Nations Demographic Yearbook  
 By: Pain & Policy Studies Group, University of Wisconsin/WHO Collaborating Center, 2008

The means are calculated by adding the individual mg/capita statistics for all countries and then dividing by the number of countries; data does not include information for countries from which the INCB did not receive a report

## V. INDIVIDUAL COUNTRY CONSUMPTION TRENDS FOR MORPHINE AND PETHIDINE

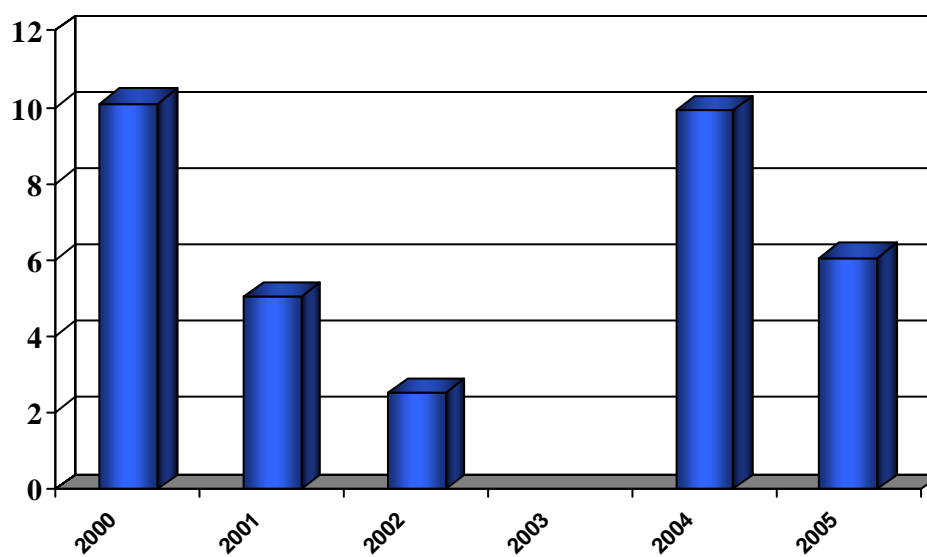
### GRAPH 6. BOTSWANA

Morphine Consumption (Kg) 2000-2005



|                 | 2000  | 2001  | 2002  | 2003 | 2004  | 2005  |
|-----------------|-------|-------|-------|------|-------|-------|
| <b>Morphine</b> | 0.309 | 2.851 | 0.655 | ?    | 0.910 | 1.085 |

Pethidine Consumption (Kg) 2000-2005



|                  | 2000   | 2001  | 2002  | 2003 | 2004  | 2005  |
|------------------|--------|-------|-------|------|-------|-------|
| <b>Pethidine</b> | 10.089 | 5.027 | 2.495 | ?    | 9.907 | 6.061 |

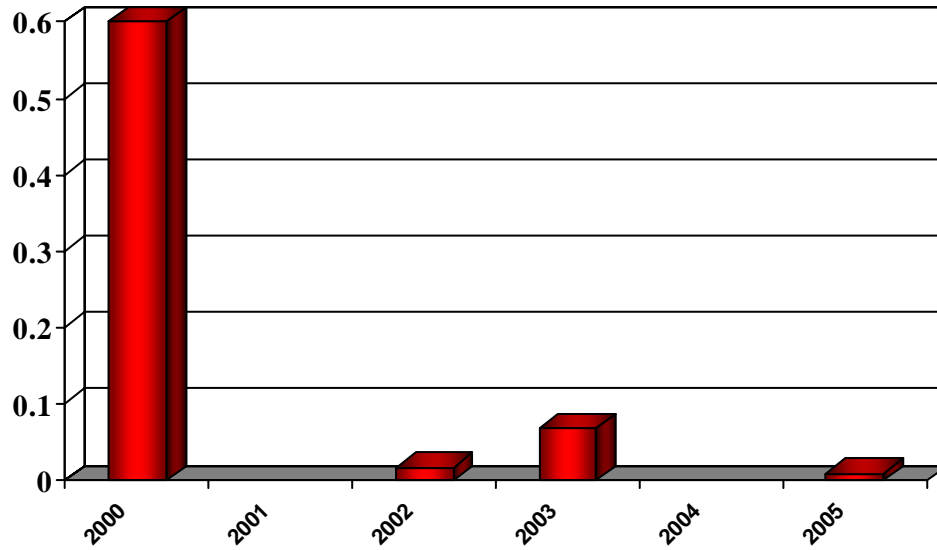
“?” indicates consumption statistics were not received

Source: International Narcotics Control Board; United Nations “Demographic Yearbook”

By: Pain & Policy Studies Group, University of Wisconsin/WHO Collaborating Center, 2007

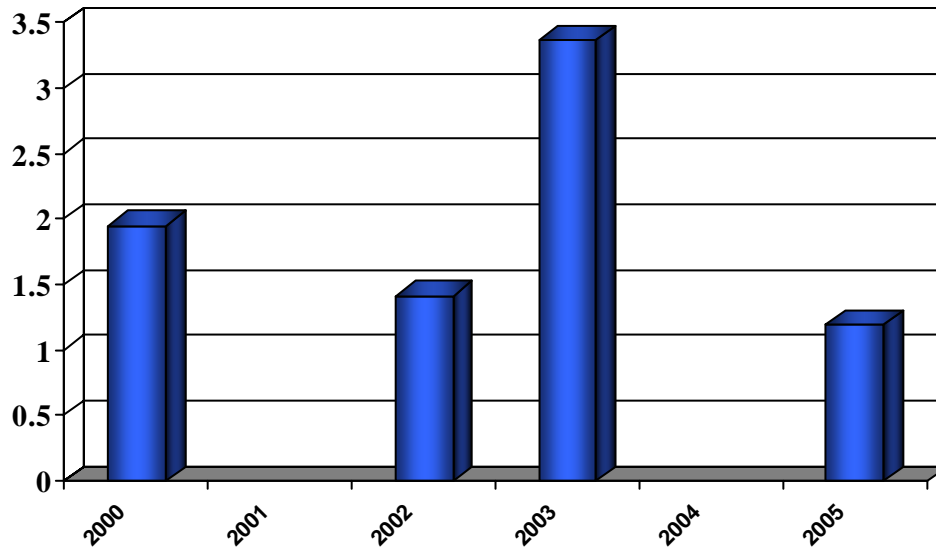
# GRAPH 7. LESOTHO

## Morphine Consumption (Kg) 2000-2005



|                 | 2000  | 2001 | 2002  | 2003  | 2004 | 2005  |
|-----------------|-------|------|-------|-------|------|-------|
| <b>Morphine</b> | 0.600 | ?    | 0.017 | 0.067 | ?    | 0.009 |

## Pethidine Consumption (Kg) 2000-2005



|                  | 2000  | 2001 | 2002  | 2003  | 2004 | 2005  |
|------------------|-------|------|-------|-------|------|-------|
| <b>Pethidine</b> | 1.950 | ?    | 1.415 | 3.366 | ?    | 1.191 |

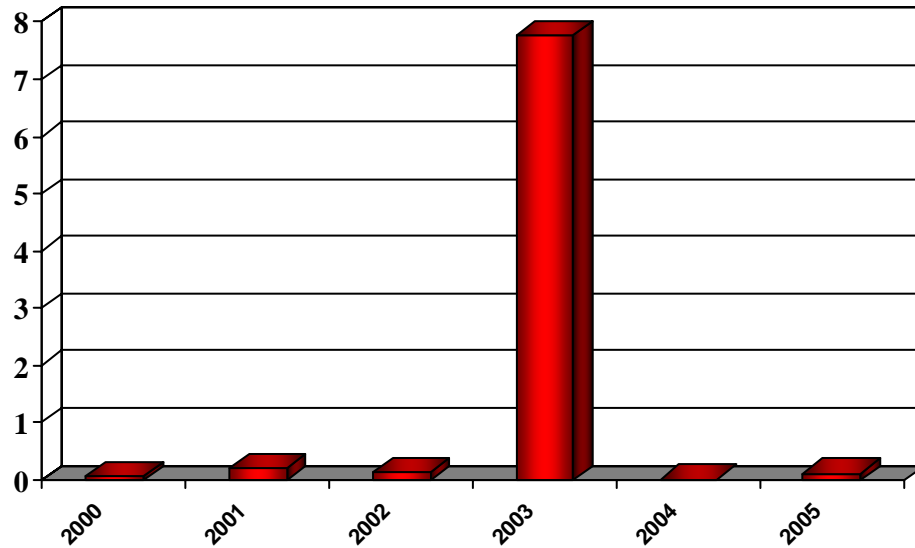
“?” indicates consumption statistics were not received

Source: International Narcotics Control Board; United Nations “Demographic Yearbook”

By: Pain & Policy Studies Group, University of Wisconsin/WHO Collaborating Center, 2007

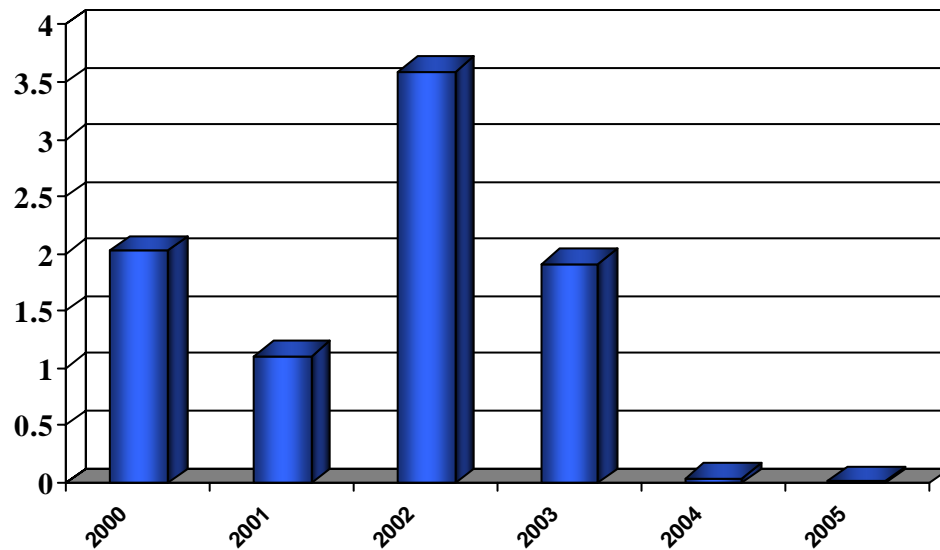
## GRAPH 8. MOZAMBIQUE

### Morphine Consumption (Kg) 2000-2005



|                 | 2000  | 2001  | 2002  | 2003  | 2004  | 2005  |
|-----------------|-------|-------|-------|-------|-------|-------|
| <b>Morphine</b> | 0.056 | 0.205 | 0.140 | 7.754 | 0.011 | 0.108 |

### Pethidine Consumption (Kg) 2000-2005



|                  | 2000  | 2001  | 2002  | 2003  | 2004  | 2005  |
|------------------|-------|-------|-------|-------|-------|-------|
| <b>Pethidine</b> | 2.031 | 1.108 | 3.596 | 1.912 | 0.042 | 0.010 |

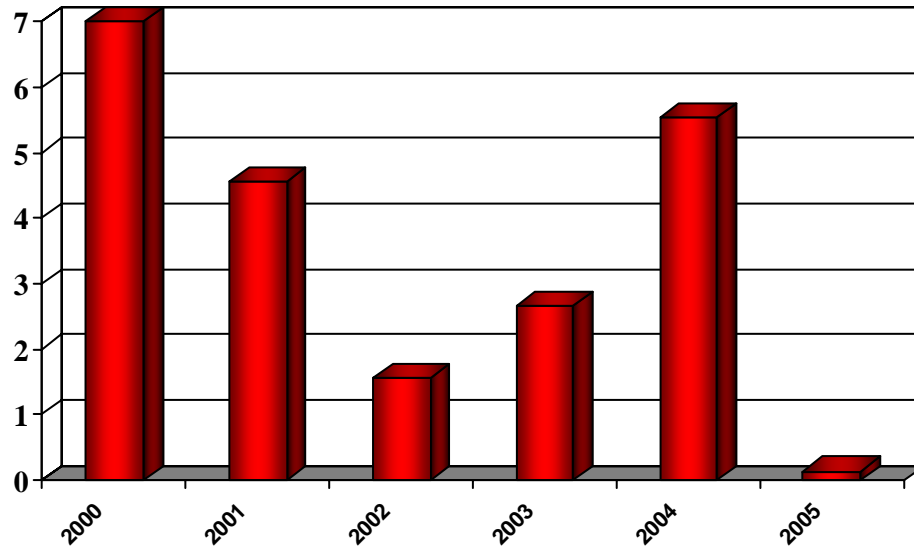
“?” indicates consumption statistics were not received

Source: International Narcotics Control Board; United Nations “Demographic Yearbook”

By: Pain & Policy Studies Group, University of Wisconsin/WHO Collaborating Center, 2007

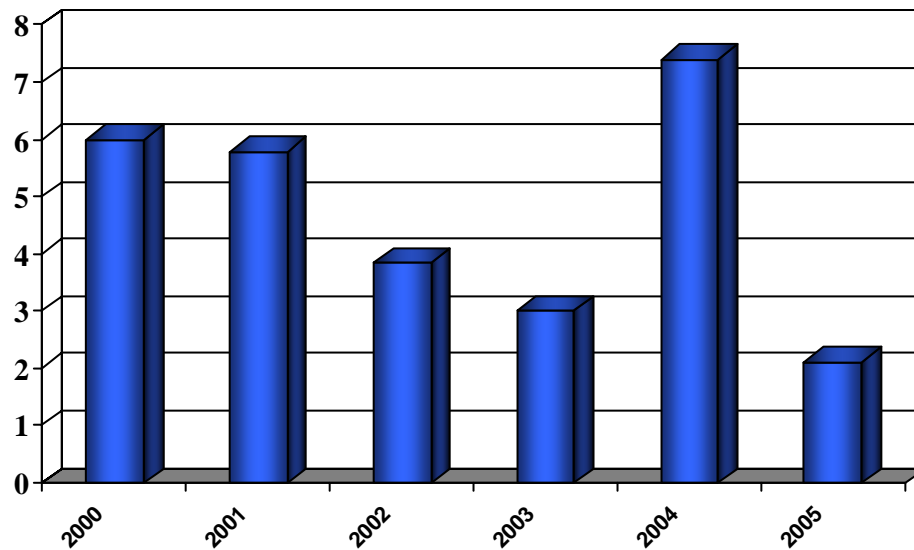
## GRAPH 9. NAMIBIA

### Morphine Consumption (Kg) 2000-2005



|                 | 2000  | 2001  | 2002  | 2003  | 2004  | 2005  |
|-----------------|-------|-------|-------|-------|-------|-------|
| <b>Morphine</b> | 7.000 | 4.565 | 1.563 | 2.656 | 5.530 | 0.133 |

### Pethidine Consumption (Kg) 2000-2005



|                  | 2000  | 2001  | 2002  | 2003  | 2004  | 2005  |
|------------------|-------|-------|-------|-------|-------|-------|
| <b>Pethidine</b> | 6.000 | 5.784 | 3.838 | 3.003 | 7.394 | 2.106 |

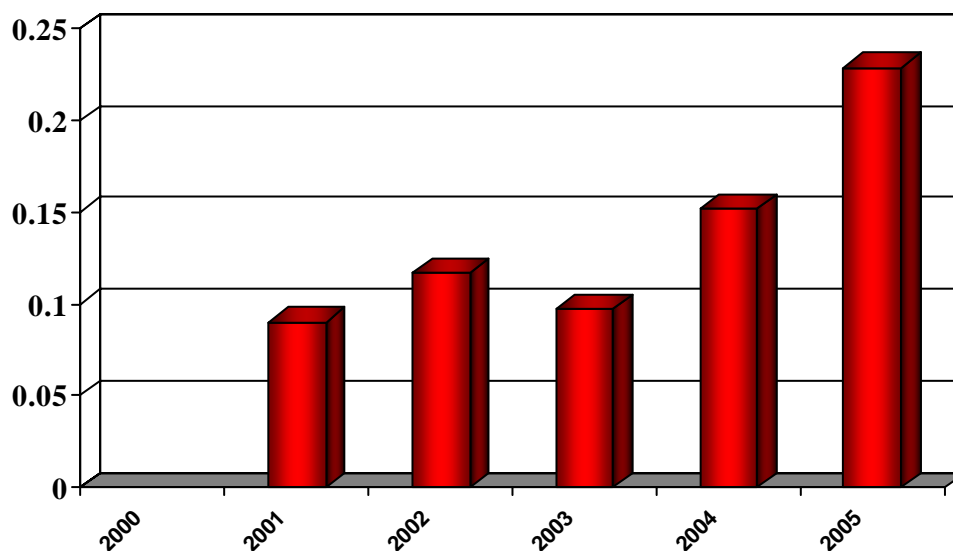
“?” indicates consumption statistics were not received

Source: International Narcotics Control Board; United Nations “Demographic Yearbook”

By: Pain & Policy Studies Group, University of Wisconsin/WHO Collaborating Center, 2007

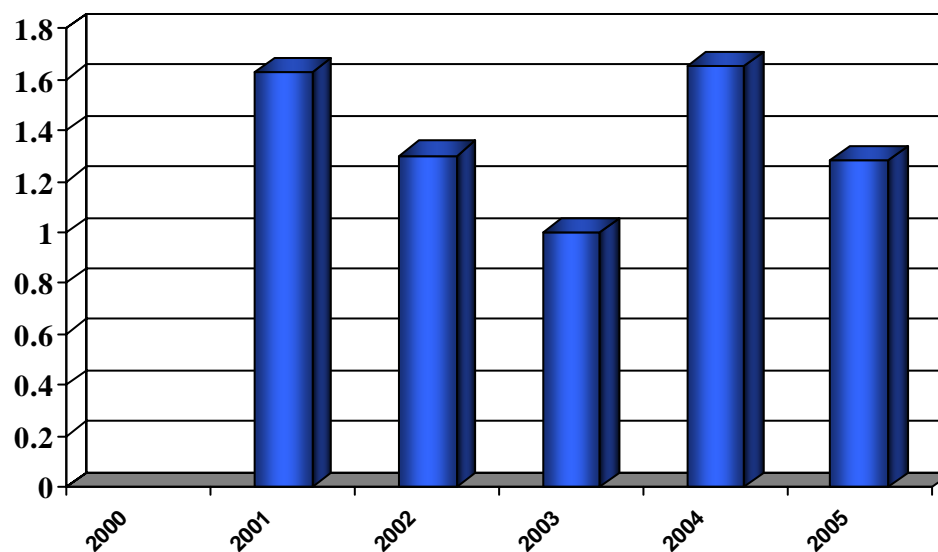
## GRAPH 10. SWAZILAND

### Morphine Consumption (Kg) 2000-2005



|                 | 2000 | 2001  | 2002  | 2003  | 2004  | 2005  |
|-----------------|------|-------|-------|-------|-------|-------|
| <b>Morphine</b> | ?    | 0.090 | 0.117 | 0.097 | 0.152 | 0.229 |

### Pethidine Consumption (Kg) 2000-2005



|                  | 2000 | 2001  | 2002  | 2003  | 2004  | 2005  |
|------------------|------|-------|-------|-------|-------|-------|
| <b>Pethidine</b> | ?    | 1.630 | 1.300 | 1.000 | 1.653 | 1.284 |

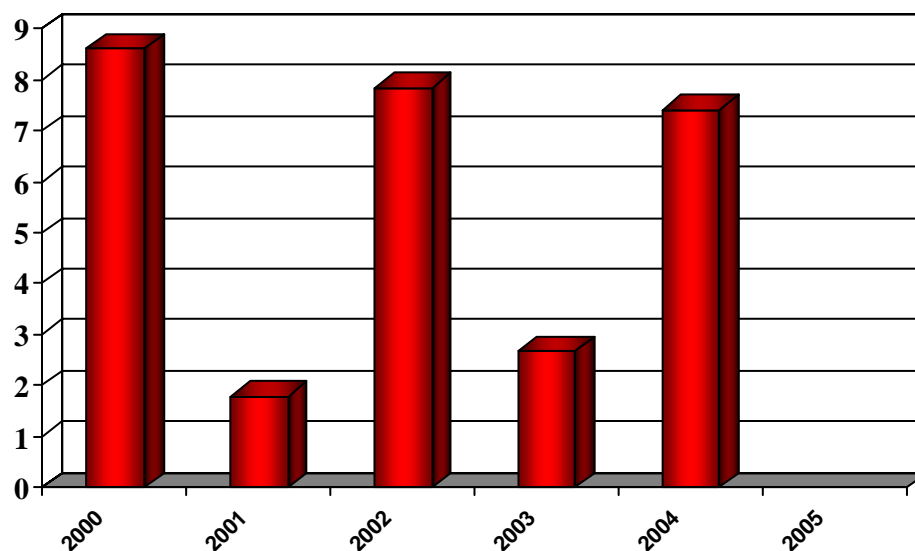
“?” indicates consumption statistics were not received

Source: International Narcotics Control Board; United Nations “Demographic Yearbook”

By: Pain & Policy Studies Group, University of Wisconsin/WHO Collaborating Center, 2007

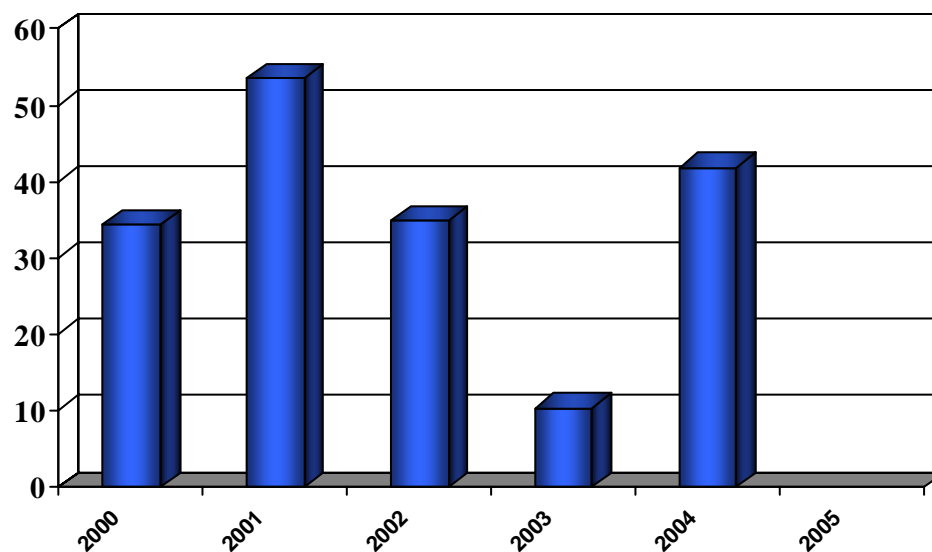
# GRAPH 11. ZIMBABWE

## Morphine Consumption (Kg) 2000-2005



|                 | 2000  | 2001  | 2002  | 2003 | 2004  | 2005 |
|-----------------|-------|-------|-------|------|-------|------|
| <b>Morphine</b> | 8.626 | 1.791 | 7.853 | 2.68 | 7.411 | ?    |

## Pethidine Consumption (Kg) 2000-2005



|                  | 2000   | 2001   | 2002   | 2003   | 2004   | 2005 |
|------------------|--------|--------|--------|--------|--------|------|
| <b>Pethidine</b> | 34.278 | 53.561 | 34.891 | 10.294 | 41.794 | ?    |

“?” indicates consumption statistics were not received

Source: International Narcotics Control Board; United Nations “Demographic Yearbook”

By: Pain & Policy Studies Group, University of Wisconsin/WHO Collaborating Center, 2007

**VI. TABLE 3. STATUS OF ADHERENCE TO CONVENTIONS,  
RECEIPT OF STATISTICS, AND ESTIMATES**

|            | Adherence                    |                       | Consumption<br>Statistics for 2005 | Estimated<br>requirements for<br>2007 |
|------------|------------------------------|-----------------------|------------------------------------|---------------------------------------|
|            | Single<br>Convention<br>1961 | As amended<br>1961/72 |                                    |                                       |
| Botswana   | ●                            | ●                     | ●                                  | ●                                     |
| Lesotho    | ●                            | ●                     | ●                                  | ●                                     |
| Mozambique | ●                            | ●                     | ●                                  | ●                                     |
| Namibia    | ●                            | ●                     | ●                                  | ●                                     |
| Swaziland  | ●                            | ●                     | ●                                  | ●                                     |
| Zimbabwe   | ●                            | ●                     | ●                                  | ●                                     |

Source: International Narcotics Control Board, Narcotic Drugs, Estimated World Requirements for 2007, Statistics for 2005  
By: Pain & Policy Studies Group, University of Wisconsin/WHO Collaborating Center, 2008

## VII. COMPETENT NATIONAL AUTHORITIES

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