



**WORLD HEALTH ORGANIZATION, WESTERN PACIFIC REGION  
MINISTRY OF HEALTH MALAYSIA  
UNIVERSITI UTARA MALAYSIA**

# **ESTIMATION OF DRUG USERS AND INJECTING DRUG USERS IN MALAYSIA**

*A study by the Ministry of Health (MOH), Malaysia  
In collaboration with Universiti Utara Malaysia (UUM)  
With Technical and Financial Support of World Health Organization (WHO)*

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## **1.0 INTRODUCTION**

### **1.1 Malaysian Drug Scenario**

As other developing countries, Malaysia is also facing a plethora of social problems resulting from economic, developmental and societal growth. One of them is drug addiction, which has long been recognized as a serious problem at an epidemic proportion since the early 1970's. Despite strict laws and penalties for drug use and trafficking, illicit drug use is high and continues to rise. The drug problem that was then considered as a social problem was redefined as a security problem in 1983, where specific laws were formulated to curb the epidemic. However, the number of drug users identified each year still increases.

The National Drugs Agency (NDA) was set up in 1988 to coordinate all anti-drug activities, which among others is to identify, treat and rehabilitate drug users and addicts in the country. As of the year 2002, Malaysia has recorded a total of 423,574 drug addicts, with 31,893 individuals identified as addicted to psychoactive substances (Table 1). The national prevalence rate is at 9 drug addicts per 1,000 population with a range between 1:1000 (Sarawak) and 19:1000 for Penang (Tables 2 & 3).

### **1.2 Drug Treatment and Rehabilitation Program in Malaysia**

Drug treatment and rehabilitation is under the purview of the National Drugs Agency and The Prison Department, Ministry of Home Affairs. The strategy of the Malaysian government is basically to eliminate drug dependence by reducing the supply and the demand of the illicit substances. In the effort to reduce the demand for drugs, drug users and addicts were apprehended every month and put to treatment and rehabilitation under the Drug Addiction Act 283 (Treatment and

Rehabilitation) (1983) (Amendment 1998). This includes the Serenti drug treatment and rehabilitation program, the aftercare and supervision program. At present, there are 28 Serenti Drug Rehabilitation centers (DRC) in the country, providing rehabilitation service for about 9,939 drug users from various categories of addiction ranging from hardcore to new users. A total of 36,542 were placed in the non-institutional aftercare or the supervision program. Besides this, there are also drug addicts undergoing rehabilitation in the prison system (16,541), and about 930 persons who are addicted to drugs receiving treatment at clinics, hospitals and private treatment centers (Table 4). Relapse rate are presently derived from the number of recurring drug users and addicts captured every month by the police, which ranges between 43.9% to 62.1% (Table 1).

**Table 1: New and relapsed cases of drug addiction for 1998-2001**

Year	New drug users		Relapsed drug users		Total Number
	Number	%	Number	%	
1988	10,424	41.1%	14,781	58.6%	25,205
1989	7,631	37.9%	12,487	62.1%	20,118
1990	7,389	38.3%	11,921	61.7%	19,310
1991	8,083	39.7%	12,258	60.3%	20,341
1992	8,283	38.3%	13,268	61.7%	21,506
1993	10,383	40.8%	15,074	59.2%	25,457
1994	11,672	40.6%	17,084	59.4%	28,756
1995	13,140	38.5%	20,964	61.5%	34,104
1996	13,846	45.3%	16,752	54.7%	30,598
1997	17,342	47.8%	18,942	52.2%	36,284
1998	21,073	56.1%	16,515	43.9%	37,588
1999	17,915	50.7%	17,444	49.3%	35,359
2000	14,850	48.5%	15,743	51.5%	30,593
2001	15,831	50.2%	15,725	49.8%	31,556
2002	17,080	53.5%	14,813	46.4%	31,893

*Source: National Drug Information (NADI) of National Drug Agency, 2002*

### 1.3 National Drugs Information

There is a limited number of drug epidemiology studies in the country, much of it were conducted in the 70's and 80's to identify the number of drug addicts in the country. With the establishment of the National Drugs Agency (NDA) in 1988, all data concerning drug users and addicts are captured by the National Drugs Information (NADI). The recorded number of drug user are individuals who are apprehended based on police raids, voluntary and involuntary drug test in schools, work place, immigration check points and road blocks. Data are also provided by police (anti-narcotic division), Department of Immigration, Department of Prison, the Ministry of Education and schools, human resource departments from various organizations, hospitals and government and private rehabilitation centers. Data from NADI is the official statistics of the drug situation in the country.

**Table 2: Drug users and addicts registered by National Drug Information, National Drug Agency (1988-2001)**

State	Total Addicts	Total Population ('000)	Ratio of Drug Addict to Population (1:1 000)
Johor	24,965	2,783.8	9
Kedah	15,605	1,689.6	9
Kelantan	15,297	1,344.9	11
Melaka	7,304	648.5	11
Negeri Sembilan	11,348	878.5	13
Pahang	13,537	1,319.3	10
Perak	26,941	2,157.7	12
Perlis	2,256	209.1	11
Pulau Pinang	26,941	1,337.4	20
Sabah	8,422	2,716.8	3
Sarawak	2,144	2,119.0	1
Selangor	27,488	4,270.0	6
Terengganu	10,092	919.3	11
WPKL	30,783	1,401.4	22
<b>Total</b>	<b>223,123</b>	<b>23,795.3</b>	<b>9</b>

Source: NADI, NDA, 2002

## 1.4 Recommendation of Consensus Meeting on HIV Epidemiology 2000

The Consensus Report on STI, HIV and Aids Epidemiology (2001) concluded that Malaysia is a country with a concentrated HIV epidemic that is based on the current WHO/UNAIDS classification. The HIV prevalence has been less than 1 percent among the general population, and consistently higher than 5 percent among the IDU in the past 10 years. The report also concluded that the HIV epidemic among the IDU seems to be still progressing, where in recent estimation, IDU accounts for the biggest part of the current HIV infections.

The Consensus Report recommended that small expert working groups should be developed to gather, review, evaluate and then to use the available data to estimate HIV prevalence and the specific size of the population and sub-population, one of it is the IDUs. Thus, this study answers to one of the recommendations made by the Consensus Report on STI, HIV and Aids (2001).

**Table 3: Number of drug users and addicts registered in 2002**

State	New Cases	Relapse Cases	Total
Johor	1,383	1,079	2,462
Kedah	2,508	1,457	3,965
Kelantan	1,645	1,180	2,825
Melaka	151	373	524
Negeri Sembilan	648	547	1,195
Pulau Pinang	2,597	3,617	6,214
Pahang	830	584	1,414
Perak	1,438	1,505	2,943
Perlis	288	117	405
Sabah	1,765	280	2,045
Sarawak	284	22	306
Selangor	1,775	1,923	3,698
Terengganu	561	498	1,059
WP K. Lumpur	1,073	1,607	2,680
WP Labuan	134	24	158
<b>Total</b>	<b>17,080</b>	<b>14,813</b>	<b>31,893</b>

*Source: NADI, NDA, 2002*

**Table 4: Number of drug users and addicts undergoing treatment and rehabilitation program at the end of year 2002**

<b>Facilities</b>	<b>Number</b>	<b>%</b>
Serenti	9,939	15.54
Aftercare	24	0.04
Supervision	36,542	57.12
Private Centers	930	1.45
Prison	16,541	25.85
<b>Total</b>	<b>63,976</b>	<b>100</b>

*Source: Drug Bulletin, National Narcotic Agency, 1/2003*

### **1.5 Rationale of the study**

The first Aids case in Malaysia was reported in December 1986. Since then, the cumulative HIV infections are 44,208 cases, 6,024 of which are Aids cases. Most of the HIV cases were males (81.5%), Malays (72.3%) and a staggering 79% of reported cases of infections are from the injecting drug users in the year 2001.

Table 5 shows the percentage of IDUs from the total recorded HIV/AIDS cases in the country, which has risen from 60% in 1990 to a peak of 82% in 1994 with an average (1990-2001) of 76%.

Various intervention programs have been outlined for this population, ranging from education, treatment, rehabilitation and harm reduction approaches. However, there are no estimates on the number of IDUs in the country. Statistics from NDA showed that IDUs primarily use heroin and morphine, and there are 31,893 heroin and morphine users among the apprehended drug users in 2002, of which 13.62 percent are injecting drug users (approximately 4,342 persons). An estimate of the IDU population will enable a more meaningful intervention, treatment and rehabilitation policies and strategies. Further more, this study will also describe the populations that are exposed to HIV and Aids.

## 1.6 Limitation of the study

There are a few limitations to this study. First, it is limited by its budget, thus will also limit its scope and method.

Secondly, to estimate the number of IDUs in the country, this study has to rely on the current institutional data provided by NADI. These data are also limited by its data collection methodology.

**Table 5: Cumulative number of HIV/Aids cases due to injecting drug users 1990-2001**

Year	# Cases	% of Total HIV/AIDS Cases
1990	470	60%
1991	1153	64%
1992	1892	75%
1993	1970	78%
1994	2777	82%
1995	3187	70%
1996	3800	82%
1997	3014	77%
1998	3592	77%
1999	3374	72%
2000	3815	75%
2001	4724	79%
2002	5173	74%
<b>Total</b>	<b>39,092</b>	<b>76%</b>

*Source: Section of AIDS/STD, Ministry of Health Malaysia, 2003*

Third, this study employs the multiplier method, thus limited by its scope and estimation method.

Finally, the collection of field data is constrained by the Drug Addiction Act 283 that was enforced since 1983 (Amendment 1998), and the Dangerous Drug Act (1952). These Acts can be a source of limitation due to the following constraints; (i) the anxiety among the respondents that the interviewers may report them to the police, and may be apprehended under the Drug Addiction Act 283 (Treatment and Rehabilitation); and (ii) about 70% of drug users are Malays and they are quite sensitive concerning information that is labeled as “negative” such as addiction, HIV and others (Mahmood, Md Shuaib & Lasimon, 1999). However, this limitation is overcome by employing recovering drug users to conduct fieldwork together with the researchers where respondents would feel more secured and at ease to respond to our questions.

### **1.7 Definitions of concepts**

The followings are definitions of concepts used in this study:

- a. Drug users: A person who use, misuse or abuse any type of psychoactive substance (drugs) and who are physically and psychologically dependent on the substance.
- b. Recovering drug users: A drug user who is drug free for at least one year.
- c. Injecting drug users: A drug addict who with purpose and intent intravenously injects the psychoactive substances into his/her body with the aid of syringe and needle to gain the effect of the drug.

- d. Key informant: A person who is able to provide reliable information on the situation of drug use and estimate numbers of DU/IDU in a specific district/village/area. This is operationally defined in Table 11.
- e. Respondent: Those who are defined in a, b, c and d above.
- f. Non-respondent: Those who are other than the above.

## **2.0 METHODOLOGY**

To estimate the number of IDUs in a country, Pisani (2002) suggested several methods of estimation such as census and enumeration, population survey, capture-recapture and multiplier methods. For this study, we choose the multiplier method.

### **2.1 Rationale for using Multiplier Method**

Multiplier methods generally rely on having information from two sources that overlap in a known way: the first is usually an institution or service with which the population to be estimated is in contact, and the second is the population at risk itself. In this study, data from NADI, National Drugs Agency will be the main reference data representing institutional services.

Estimates are derived by multiplying the number of people who attend the institution or service over a certain period by the inverse of the proportion of the population who say they attended over the same period. The multiplier method for estimation, especially for specific population is one of the most commonly used, but rarely recorded in scientific literatures (Pisani, 2002).

Pisani also argued that the greatest difficulty in using multiplier methods correctly is finding data for institutions and populations that correspond with one another. In order to use institutional and survey data together to estimate the size of a population, all members of the population have to have a chance of being included in both the survey and in the institutional data (for example because they have access to that service).

One key issue in using multiplier method successfully is the need to have clear, consistent definitions between different data sources. Firstly, the population

definitions must be clear. In principle, it ought to be possible to use the proportion of drug users imprisoned together with the number of drug users in prison to arrive at an estimate of the number of drug users in a city or country.

For example, let us say that 45 percent of respondents in a survey of drug users recruited on the streets and at treatment centers say they have been in prison in the last year in a given city. Over the previous year, the prison service in the city has released 1,234 individuals who had been implicated on drug-related offences. A simple estimate would assume that those 1,234 individuals represented 45 percent of drug users in the city, and that the true number of drug users was therefore in the region of  $1,234 / 0.45$ , or around 2,760. But this estimate relies on the assumption that “drug users in prison” is synonymous with “prisoner incarcerated on drug charges”. It assumes, that is, that all drug users in prison were imprisoned for drug-related offences, and that all of those imprisoned for drug-related offences were drug users. In practice, this is unlikely to be true. Many of those classified as “drug users” by this definition may be people who are dealers but not users, while many people who are users and in prison but were imprisoned for theft and other criminal activities (which may or may not be related to generating money to support a drug habit), or who started using drugs while in prison, would not be captured. An estimate based on these unclear definitions would certainly be inaccurate. For our data concerning drug addicts in prisons, all these limitations are taken into account as stated in Table 6.

Secondly, the catchment area for the services or institutions must be clear, and should ideally be the same as that covered in the sub-population survey from which multipliers are derived. In other words, the populations must correspond geographically, as well as by definition. The number of people under supervision in an aftercare program in one specific area cannot be multiplied by the proportion of

those who said they are involved with the aftercare program in another area, since service availability may differ very significantly between these two areas.

Because of the catchment area is an issue, multiplier methods based on service use are most commonly used at the local level. They have, however, sometimes been used at the national level. A notable example is a recent national-level estimate of the number of injecting drug users in Pakistan (Pisani, 2002). In this case specific estimates were made for four cities where behavioral surveys and treatment use data were available. Behavioral surveys asked about use of treatment in the last year, the proportion of users who had been in treatment was calculated for that city, and the appropriate multiplier was applied to the numbers in treatment in that city in the past year. The regional variations were examined and with the advice of key informants, multipliers were extrapolated and adjusted to apply to other parts of the country, where treatment data were available but where there was no specific population-based data about treatment use from which multipliers could be calculated. Finally, the four city estimates and the remaining regional estimates were summed up to produce a national estimate for the number of drug users in Pakistan

## **2.2 General principles of multiplier method to be applied for Malaysia**

There are four stages of general principles of multiplier method that will be used in the study.

### **2.2.1 Stage I: Data collection of IDUs**

Data of IDUs are recorded under the current system for the year 2002, and they are collected from the National Drugs Information System (NADI), National Drugs Agency. These data also include those captured by the Prison Department (HQ

and states) and the licensed private treatment and rehabilitation centers registered with NDA

These sources are available at the national, state and most of the districts in the country. For data provided by NDA, the numbers of IDUs are ascertained from heroin and morphine addicts. NDA identified 733 IDUs (5.97%) from a total of 12,266 heroin users and 3,609 IDUs (39.76%) from 9,076 morphine users. From the total of 31,893 drug addicts apprehended in 2002, there are 4,342 (13.62%) IDUs.

Apart from the Serenti DRC and the supervision program under the auspices of NDA, the Prison Department has the next largest number of drug offenders, where recorded a total of 8,200 drug addicts and 4,729 drug addicts cum traffickers in the year 2002 (Table 6). From a total of 33,578 prisoners, the number of drug addicts is 12,929 (38.5%). The prison department estimated that the number of IDUs among the drug addicts is 13%, which makes a total of 1,681 IDUs in the prison system.

#### 2.2.2 Stage II: Estimation of the value of multiplier (m)

This stage includes three steps; ranking the states, interviews with key informants and interviews with drug addicts and injecting drug addicts.

- a. All 14 states in Malaysia are listed and ranked into three categories (white, low grey and high grey) in accordance to the NDA Addiction Severity Classification (2002) (Table 7). From this table, we selected 7 states; 2 from the white area, and 5 from the grey area, where it is further subdivided as following; 3 from the low-grey and 2 more from the high-grey area.

**Table 6: Number of drug offenders in prison as of 31 December 2002**

Type of Offence	2001	2002
Cases Under DDA		
Addicts	2,950	4,213
Addicts cum Traffickers	4,059	4,620
Traffickers	1,368	1,491
Total Cases	8,377	10,324
Cases Not Under DDA		
Addicts	3,560	3,987
Addicts cum Traffickers	46	109
Traffickers	6	422
Total Cases	3,612	4,518
Total Prisoners	27,785	33,578
Total Persons using drugs	10,615 (38.20%)	12,929 (38.50%)
Total charged with drug offences	11,989 (43.15%)	14,842 (44.20%)

Source : Department of Prison Malaysia, Reported in NDA, 2002

Note : DDA – Dangerous Drug Act

- b. All states and districts (Tables 8 - 9), which are selected for the sampling is based on the low and high Addiction Severity categorization. As mentioned above, the grey category is further sub-divided into 2; that is the low and high-grey category based on the median of the grey range (0.1 - 0.49). For low-grey category, the same principle applies, i.e. one each representing the low, medium and high area. For the high-grey category, one each represents the low and high area. Therefore, a total of 14 districts are selected for the sampling (Table 10).

**Table 7: Drug Addiction Severity Classification (DASC) 2002**

No	State	%	Category
1.	Sarawak	0.01	White
2.	Sabah	0.07	White
3.	Selangor	0.08	White
4.	Melaka	0.08	White
5.	Johor	0.09	White
6.	Pahang	0.10	Grey
7.	Terengganu	0.11	Grey
8.	Negeri Sembilan	0.13	Grey
9.	Perak	0.14	Grey
10.	Perlis	0.19	Grey
11.	WP Kuala Lumpur	0.19	Grey
12.	WP Labuan	0.20	Grey
13.	Kelantan	0.21	Grey
14.	Kedah	0.23	Grey
15.	Pulau Pinang	0.45	Grey
<b>Malaysia</b>		<b>0.13</b>	<b>Grey</b>

**Note: The Number of district/category**

<b>White area</b>	<b>75</b>
<b>Grey area</b>	<b>59</b>
<b>Black area</b>	<b>2</b>

**Categorization of area:**

**(Addiction within an area/district as compared to the area/district population)**

**White area: Less than 0.1% of the area population**  
**Grey area: Between 0.1% - 0.49% of the area population**  
**Black area: More than 0.50% of the area population**

**Table 8: Districts Classified as White in 2002**

No.	District	State	%	No	District	State	%
1.	Batu Pahat	Johor	0.05	39.	Papar	Sabah	0.07
2.	Kluang	Johor	0.04	40.	K.Marudu	Sabah	0.03
3.	Muar	Johor	0.07	41.	Pitas	Sabah	0.00
4.	Pontian	Johor	0.09	42.	K.Penyu	Sabah	0.01
5.	Bdr. Baharu	Kedah	0.05	43.	Tenom	Sabah	0.01
6.	Jeli	Kelantan	0.04	44.	Nabawan	Sabah	0.00
7.	Jasin	Melaka	0.09	45.	Keningau	Sabah	0.07
8.	Melaka Tengah	Melaka	0.07	46.	Tambunan	Sabah	0.01
9.	P.Dickson	N.Sembilan	0.08	47.	Tongod	Sabah	0.00
10.	Jempul	N.Sembilan	0.07	48.	Kuching	Sarawak	0.01
11.	G. Highland	Pahang	0.08	49.	Bau	Sarawak	0.00
12.	Kuantan	Pahang	0.08	50.	Lundu	Sarawak	0.00
13.	Lipis	Pahang	0.03	51.	Samarahan	Sarawak	0.00
14.	Raub	Pahang	0.06	52.	Serian	Sarawak	0.00
15.	Temerloh	Pahang	0.09	53.	Simunjan	Sarawak	0.00
16.	Bera	Pahang	0.09	54.	Sri Aman	Sarawak	0.01
17.	Manjung	Perak	0.04	55.	Lubuk Antu	Sarawak	0.00
18.	Hilir Perak	Perak	0.09	56.	Betong	Sarawak	0.00
19.	Gombak	Selangor	0.07	57.	Seratok	Sarawak	0.00
20.	K.Langat	Selangor	0.06	58.	Sarikei	Sarawak	0.01
21.	Petaling	Selangor	0.03	59.	Maradong	Sarawak	0.00
22.	Sabak Bernam	Selangor	0.02	60.	Daro	Sarawak	0.00
23.	H.Selangor	Selangor	0.02	61.	Julau	Sarawak	0.00
24.	Besut	Terengganu	0.07	62.	Sibu	Sarawak	0.06
25.	Kemaman	Terengganu	0.04	63.	Dalat	Sarawak	0.00
26.	Marang	Terengganu	0.06	64.	Mukah	Sarawak	0.00
27.	H.Terengganu	Terengganu	0.07	65.	Kanowit	Sarawak	0.00
28.	Setiu	Terengganu	0.03	66.	Bintulu	Sarawak	0.01
29.	Lahad Datu	Sabah	0.05	67.	Tabau	Sarawak	0.00
30.	Tawau	Sabah	0.05	68.	Kapit	Sarawak	0.00
31.	Sandakan	Sabah	0.03	69.	Song	Sarawak	0.00
32.	Kinabatangan	Sabah	0.00	70.	Belaga	Sarawak	0.00
33.	Semporna	Sabah	0.03	71.	Miri	Sarawak	0.02
34.	Beluran	Sabah	0.00	72.	Marudi	Sarawak	0.00
35.	Ranau	Sabah	0.02	73.	Lawas	Sarawak	0.00
36.	Kota Belud	Sabah	0.08	74.	Matu	Sarawak	0.00
37.	Tuaran	Sabah	0.07	75.	Asajaya	Sarawak	0.00
38.	Penampang	Sabah	0.04				

*Source: National Drug Agency 2003*

**Table 9: Districts classified as Grey and Black in 2002**

No.	District	State	%	No.	District	State	%
1.	Johor Bahru	Johor	0.10	31.	Jerantut	Pahang	0.14
2.	Kota Tinggi	Johor	0.15	32.	Pekan	Pahang	0.10
3.	Mersing	Johor	0.12	33.	Rompin	Pahang	0.10
4.	Segamat	Johor	0.10	34.	Maran	Pahang	0.13
5.	Baling	Kedah	0.17	35.	Perak Tengah	Perak	0.10
6.	Kota Star	Kedah	0.22	36.	Balang Pdg	Perak	0.13
7.	Kuala Muda	Kedah	0.23	37.	Kinta	Perak	0.14
8.	Kubang Pasu	Kedah	0.37	38.	Kerian	Perak	0.14
9.	Kulim	Kedah	0.32	39.	K.Kangsar	Perak	0.18
10.	Langkawi	Kedah	0.10	40.	Larut & Matang	Perak	0.22
11.	Pdg. Terap	Kedah	0.10	41.	Ulu Kinta	Perak	0.18
12.	Sik	Kedah	0.23	42.	Perlis	Perlis	0.19
13.	Yan	Kedah	0.17	43.	Barat Daya	P.Pinang	0.32
14.	Pendang	Kedah	0.14	44.	S.P.Tengah	P.Pinang	0.19
15.	Bachok	Kelantan	0.16	45.	S.P.Selatan	P.Pinang	0.31
16.	Kota Bahru	Kelantan	0.35	46.	H. Langat	Selangor	0.16
17.	Machang	Kelantan	0.11	47.	Klang	Selangor	0.12
18.	Pasir Mas	Kelantan	0.18	48.	K.Selangor	Selangor	0.12
19.	Pasir Putih	Kelantan	0.17	49.	Sepang	Selangor	0.17
20.	Tanah Merah	Kelantan	0.10	50.	K.Terengganu	Terengganu	0.20
21.	Tumpat	Kelantan	0.11	51.	Dungun	Terengganu	0.13
22.	Gua Musang	Kelantan	0.15	52.	K.Lumpur	WP	0.19
23.	Kuala Krai	Kelantan	0.11	53.	Labuan	WP	0.20
24.	Alor Gajah	Melaka	0.10	54.	Kota Kinabalu	Sabah	0.22
25.	Jejebu	N.Sembilan	0.22	55.	Kudat	Sabah	0.10
26.	Kuala Pilah	N.Sembilan	0.11	56.	Beaufort	Sabah	0.11
27.	Rembau	N.Sembilan	0.22	57.	Sipitang	Sabah	0.13
28.	Seremban	N.Sembilan	0.15	58.	Kunak	Sabah	0.12
29.	Tampin	N.Sembilan	0.17	59.	Limbang	Sabah	0.12
30.	Bentong	Pahang	0.28				

**Black Area 2002**

1. S.P. Utara Pulau Pinang - 0.74%
2. Timur laut Pulau Pinang - 0.61%

*Source: National Drug Agency 2003*

**Table 10: Selection of States and District for sampling**

Category	Selection	State	District
White <0.1% of population	Choose 2 out of 5 states	Sarawak (0.01)  Melaka (0.08)	Kucing (0.01) Miri (0.02)  M. Tengah (0.07) Jasin (0.09)
Grey 0.1 – 0.49% of population	Low-grey (0.1 - 0.195) Choose 3 out of 6 states	Pahang (0.10)  Perak (0.14)  WPKL (0.19)	Pekan (0.10) Maran (0.13)  Kinta (0.14) K.Kangsar (0.18)  Sentul (Black) Brickfields (Grey)
	High-Grey (0.2 – 0.49) Choose 2 out of 4 states	Kedah (0.23)  Penang (0.45)	Kota Setar (0.22) Kubang Pasu (0.37)  SPS (0.31) SPU (0.75)

- c. At each district, researchers ascertain the estimated number of drug users and IDUs from local key informants. This number includes those who are in the government or private drug treatment and rehabilitation centers or programs for the year 2002. The questions used for the interviews are as in Appendix 1. The key informants are as stated in Table 11.
- d. Researchers appointed recovering drug addicts in the area as field workers to interview the DUs/IDUs (as discussed in Pisani, 2002:19) and they work under the supervision of the researchers in order to have an estimation of the total number of DUs and IDUs in the district.

**Table 11: Key Informants to be selected at district level**

Principle key informant	Estimated Number	Secondary key informants
NDA district officer	1	NDA Counselors or Chief clerk
District Health officer	1	Health officer
Narcotic Division head	1	Other division head or assistants
Pemadam other Drug-related NGO state officer	1	RELA
District officer (DO)	1	ADO, Chief Clerk
Chairman JKKK	1 – 5	Deputy or Committee member
Head of the village	1 – 5	Senior member or ex-head

Note: Secondary key informants will provide the estimate number of drug addicts for the district in the absence of the key informants

### 2.2.3 Stage III: The derivation of multiplier

This stage involves three steps:

- i) Estimation of the percentage of IDUs recorded from Stage I.

The formula

$$p_x = \frac{n}{N} \times 100$$

where n is the number of IDUs/DUs recorded from Stage I and N is the total number of IDUs/DUs estimated in Stage II.

For white area:

$$P_w = \frac{n_w}{N_w} \times 100$$

For low-grey area:

$$P_{lg} = \frac{n_{lg}}{N_{lg}} \times 100$$

$N_{lg}$

For High-grey

$$P_{hg} = \frac{n_{hg}}{N_{hg}} \times 100$$

- ii) Multiplier (m) is estimated for each district by the inverse of percentages (Pisani, 2002) of the formula used.

The formula

$$M_x = \frac{100}{P_x}$$

For white area:

$$M_w = \frac{100}{P_w}$$

For low-grey area:

$$M_{lg} = \frac{100}{P_{lg}}$$

For high-grey area:

$$M_{hg} = \frac{100}{P_{hg}}$$

- iii) Total numbers of drug users estimates for each state are obtained by multiplying the recorded number of users in each state multiplied by the respective area multiplier.

#### 2.2.4 Stage IV: Total National Estimation of Drug Users

The total national estimation of drug users is ascertained by the number of drug users captured by the NDA system multiply by the average multiplier of all the 14 states in the country. An upper and lower limit is provided by statistical and non-statistical means.



## **3.0 RESULTS**

### **3.1 Key Informants**

A total of 83 key informants responded to our survey, ranging from 8 to 14 in numbers from all six districts (please refer to Appendix 2). They have lived or worked in the districts for 11.58 years, holding various positions or post. Most of them are from NDA, DBKL, Ministry of Health, JKKK, some NGO, Police and Heads of villages.

We identified 79 (97.5%) key informants who said that they are aware of the drug situation in their district. Most of them declared that the number of drug users has decreased as compared to the previous year (2001). Heroin is identified as the drug of choice by drug addicts in their districts. On the average, the key informants identified a total of 1,017 DUs and 134 IDUs in the sampled districts, which mean that about 13.27% of the drug using population is estimated as IDUs. This is almost similar to NDA's estimates (13.62%) for the year 2002. Also, about 53% said that some of these drug users were in Serenti DRC, NDA or Prison in the year 2002, and on the average they estimated, about 160 persons are in these institutions, which means, 15.8% of the 1,017 drug users estimated in these districts.

A total of 76% of the key informants are aware and have knowledge of the HIV and Aids situation among the DUs and IDUs, and they estimated about 40 persons have this disease among the IDUs, which is about 25% of the estimated of IDUs in their district.

### **3.2 Drug Addicts**

In sum, 330 recovering drug addicts and drug addicts responded to our study, ranging between 42 to 56 from each district (Appendix 3); 106 persons are married (32.1%) and out of this, about 29% have children. All respondents interviewed are male, and 42.5% confirmed that they have girlfriends, with a small number (1.08%) said they have boyfriends (indicating possible homosexual activities). Also, 74% declared they do not use condoms during sexual intercourse.

On the average, they have used drugs for 7.2 years and lived in the district for 21.8 years. Most of them used heroin (53.6%) and ganja (22.15), others used heroin together with other drugs such as psychoactive pills and alcohol. About 19.8% said that they are in Serenti DRC, ADK, Prison and private treatment facilities in the years 2002.

A total of 113 (36.2%) confirmed that they injected drugs, and identified ganja and heroin as the drug of choice of most of the drug users in their district.

On the average, they identified that IDUs inject 2.65 times a day. About 47 out of 117 IDUs (40.2%) share their needles, 35 respondents (11.0%) declared they are HIV positive and 27 (8.9%) confirmed that they have Aids.

### **3.3 Multiplier for the Sampled Districts**

A total of 14 districts were sampled for this estimation exercise. Table 12 indicates the number of DUs stated by NDA in each district, and the numbers identified by drug addicts and key informants. The multipliers for DUs and IDUs are derived from the formula stated in section 2.2.3 of this report. The range of multiplier

provided by the drug addicts in the district is from 0.6 (SPU) to 21.3 (Miri) and 0.6 (SPU) to 2.7 (Sentul) provided by the key informants (Table 13).

**Table 12: Multiplier for DU based on district sampled**

No	District	DU (NDA)	Drug Addicts		Key Informants	
			Calculated Multiplier	Adjusted Multiplier	Calculated Multiplier	Adjusted Multiplier
1	Kubang Pasu	757	1.6	1.6	0.8	<b>1.0</b>
2	Kota Setar	872	1.4	1.4	0.8	<b>1.0</b>
3	Seberang Perai (U)	1906	0.6	<b>1.0</b>	0.6	<b>1.0</b>
4	Seberang Perai (S)	403	1.9	1.9	1.6	1.6
5	Kuala Kangsar	285	1.3	1.3	1.2	1.2
6	Kinta	1044	1.7	1.7	1.0	1.0
7	Sentul	465	4.6	4.6	2.7	2.7
8	Brickfield	404	5.3	5.3	1.6	1.6
9	Melaka Tengah	281	1.3	1.3	1.5	1.5
10	Alor Gajah	139	1.4	1.4	1.6	1.6
11	Pekan	103	3.9	3.9	1.3	1.3
12	Maran	158	1.7	1.7	1.6	1.6
13	Kuching	54	2.6	2.6	1.2	1.2
14	Miri	42	21.3	21.3	2.2	2.2

**Table 13: Multiplier for IDU based on district sampled**

No	District	IDU (NDA)	Drug Addicts		Key Informants	
			Calculated Multiplier	Adjusted Multiplier	Calculated Multiplier	Adjusted Multiplier
1	Kubang Pasu	82	2.6	2.6	0.9	<b>1.0</b>
2	Kota Setar	175	1.6	1.6	1.3	1.3
3	Seberang Perai (U)	602	1.3	1.3	0.3	<b>1.0</b>
4	Seberang Perai (S)	29	2.0	2.0	4.3	4.3
5	Kuala Kangsar	19	2.8	2.8	1.4	1.4
6	Kinta	54	1.9	1.9	4.6	4.6
7	Sentul	13	4.6	4.6	1.5	1.5
8	Brickfield	12	8.3	8.3	3.2	3.2
9	Melaka Tengah	37	1.9	1.9	2.0	2.0
10	Alor Gajah	14	2.9	2.9	2.2	2.2
11	Pekan	35	3.6	3.6	2.2	2.2
12	Maran	31	1.3	1.3	1.4	1.4
13	Kuching	0	1.0	1.0	1.0	1.0
14	Miri	2	14.9	14.9	0.5	<b>1.0</b>

Some adjustments on the multipliers are necessary. If the multiplier obtained from the estimates is less than 1.0, the researchers decided to use the population provided by NDA as the minimum number of DUs and IDUs in the area, therefore producing a multiplier of 1.0. This is because the number provided by NDA represent those captured from a particular area or district. This number may include those who stay in other area or districts but was captured in a different district. The estimates provided to us by our respondents is the number in that particular district, including those in the treatment and rehabilitation programs but does not include those who come from outside of their district or area.

Similar calculations were performed to ascertain the multiplier for IDU for each district. This is shown in Table 13. The range of multiplier provided by the drug addicts in the district is from 1.0 (Kuching) to 14.9 (Miri), and between 1.0 (Kuching) to 4.6 (Kinta) provided by the key informants. The adjusted multiplier is also performed based on the same principle as discussed above. The information for calculating the non-adjusted multipliers for DU and IDU are as presented in Tables 14 and 15 respectively.

**Table 14: Informations for calculating the multiplier for DU**

No	Districts	DU NDA	No. of Respondent		Average Estimate		Percentage		Multiplier (not adjusted)		
			DA	K.I	DA	K.I	DA	K.I	DA	K.I	Average
1	Kubang Pasu	757	17	5	1241	614	60.99	123.3	1.6	0.8	1.2
2	Kota Setar	872	25	6	1248	725	69.9	120.3	1.4	0.8	1.1
3	Seberang Perai (U)	1906	22	4	1212	1113	15.7	171.2	0.6	0.6	0.6
4	Seberang Perai (S)	403	12	4	773	641	52.1	62.9	1.9	1.6	1.75
5	Kuala Kangsar	285	12	6	370	345	77.02	82.6	1.3	1.2	1.25
6	Kinta	1044	9	5	1728	1056	60.4	98.9	1.7	1	1.35
7	Sentul	465	12	2	2167	1250	21.5	37.2	4.6	2.7	3.65
8	Brickfield	404	14	4	2143	644	18.8	62.7	5.3	1.6	3.45
9	Melaka Tengah	281	23	5	375	427	74.9	65.8	1.3	1.5	1.4
10	Alor Gajah	139	22	2	202	228	68.8	60.96	1.4	1.6	1.5
11	Pekan	103	17	1	400	134	25.8	76.9	3.9	1.3	2.6
12	Maran	158	3	3	272	253	58.1	62.4	1.7	1.6	1.65
13	Kuching	54	7	3	143	63	37.8	85.7	2.6	1.2	1.9
14	Miri	42	17	3	888	92	4.7	45.6	21.3	2.28	11.75

Table 15: Informations for calculating the multiplier for IDU

No	Districts	IDU NDA	No. of Respondent		Average Estimate		Percentage		Multiplier (not adjusted)		
			DA	K.I	DA	K.I	DA	K.I	DA	K.I	Average
1	Kubang Pasu	82	11	5	215	71	38.1	115.5	2.6	0.9	1.75
2	Kota Setar	175	16	5	288	223	60.8	78.3	1.6	1.3	1.45
3	Seberang Perai (U)	602	23	2	810	190	74.3	316.8	1.3	0.3	0.8
4	Seberang Perai (S)	29	3	2	58	124	50	23.4	2	4.3	3.15
5	Kuala Kangsar	19	4	3	53	27	35.8	70.4	2.8	1.4	2.1
6	Kinta	54	20	3	104	247	51.9	21.9	1.9	4.6	3.25
7	Sentul	13	2	1	60	20	21.7	65	4.6	1.5	3.05
8	Brickfield	12	2	2	100	38	12	31.6	8.3	3.2	5.75
9	Melaka Tengah	37	17	6	69	75	53.6	49.3	1.9	2	1.95
10	Alor Gajah	14	18	2	40	31	35	45.2	2.9	2.2	2.55
11	Pekan	35	33	3	125	77	28	45.4	3.6	2.2	2.9
12	Maran	31	19	3	41	44	75.6	70.4	1.3	1.4	1.35
13	Kuching	0	5	2	0	0	0	0	1	1	1
14	Miri	2	7	4	30	1	6.7	200	14.9	0.5	7.7

### 3.4 Multiplier for all Districts

Subsequent to the identification of the multipliers for the sampled districts, the multipliers for other districts are derived based on their respective Drug Addiction Severity Classification (DASC) by NDA. This is done by referring the DASC of a particular district to the one nearest to the sampled district. For example, the (sampled) district Johor Bahru has a DASC of 0.10%, and this is comparable to Pekan district (0.10%). Thus, Johor Bahru will use the multiplier for Pekan that is 3.9 as estimated by the drug addicts and 1.3 estimated by key informants for the drug user group; and 3.6 as estimated by the drug addicts and 2.2 as estimated by key informants for the IDU group (see Tables 12 and 13). These multipliers are then adjusted accordingly as explained in 3.3 above.

Appendix 4 calculates the multipliers for drug users in all the 14 states according to its districts. All multipliers for these districts are calculated from the estimates given by drug addicts and key informants. The estimated number of DUs in the district is derived by multiplying the official numbers of DU provided by NDA with the multiplier, and the estimates for the state is also calculated from the official numbers provided by NDA with the average of the districts' multipliers. Table 16 provides the multipliers and estimates for DUs for all the states.

Similarly, Appendix 5 calculates the multipliers and estimates for IDUs for all states according to its district. Table 17 provides the summarized multipliers and estimates for IDUs for all the states.

Table 16: Multipliers for DU by State

States	DU (ADK)	Drug Addicts		Key Informants	
		Multiplier	Estimates	Multiplier	Estimates
Kedah	3965	1.89	5052	1.19	4189
Penang	6617	1.50	7302	1.33	3078
Perlis	405	1.30	405	1.20	405
Perak	2943	5.90	10252	1.42	3408
Selangor	3698	8.05	10916	1.69	4657
Kuala Lumpur	2680	4.95	10586	2.15	5628
Negeri Sembilan	1195	1.76	1566	1.21	1253
Melaka	524	1.33	552	1.53	695
Johor	2462	4.55	7427	1.49	3498
Kelantan	2825	4.41	4558	1.30	2886
Terengganu	1059	7.08	2213	1.64	1248
Pahang	1414	5.54	2928	1.56	1805
Sarawak	306	4.66	1140	1.41	367
Sabah	2037	6.86	6126	1.58	2504
Multiplier		4.27		1.47	

### 3.5 Multiplier and estimates for Malaysia

The national multipliers for DUs and IDUs are derived from the average multipliers for all the 14 states, which is as shown in Table 16, 17 and 18. For DUs, the

multipliers provided by drug addicts is 4.27 and 1.47 provided by the key informants. For IDUs, the multipliers provided by drug addicts is 3.82, and 1.96 provided by the key informants. The average national multipliers for DUs and IDUs are 2.87 and 2.89 respectively. At the same time, the statistical Lower Limit (LL) and the Upper Limit (UL) is calculated as indicated in Appendices 6 and 7.

**Table 17: Multipliers for IDU by State**

States	IDU (NDA)	Drug Addicts		Key Informants	
		Multiplier	Estimates	Multiplier	Estimates
Kedah	841	2.36	1317	2.09	1417
Penang	848	2.02	1151	3.27	1106
Perlis	36	2.8	79	1.4	43
Perak	242	5.04	446	2.52	672
Selangor	219	6.3	641	1.4	265
Kuala Lumpur	144	5.52	569	1.92	204
Negeri Sembilan	61	2.19	100	2.11	134
Melaka	60	2.23	101	2.07	105
Johor	225	3.87	607	2.17	480
kelantan	948	4.22	2129	1.96	1175
Terengganu	502	5.66	1126	1.54	645
Pahang	238	3.34	426	2.34	511
Sarawak	3	2.89	25	1.17	3
Sabah	4	5.06	16	1.47	5.28
Multiplier		3.82		1.96	

**Table 18: Multipliers for DUs and IDUs by drug users, key informants and statistical calculation**

	Categories/Calculation	Multiplier
DU	Key Informants (KI)	1.47
	Drug Addicts (DA)	4.27
	Average (DA + KI)	2.87
	Statistical L.L.	2.54
	Statistical U.L.	3.30
IDU	Key Informants (KI)	1.96
	Drug Addicts (DA)	3.82
	Average (DA + KI)	2.89
	Statistical L.L.	2.56
	Statistical U.L.	3.32

### 3.6 Estimating the number of DUs and IDUs

A series of discussions with NDA officers on the number of drug users in the country concluded that for 1988 to 2002 data, a total of 423,574 drug users were captured by the NADI systems, and 166,363 drug users completed their treatment and rehabilitation program from the Serenti DRCs. On the average, 25% were recorded as successful, 73% relapsed and 2% died. If we assume that this figures remain constant for 15 years, then, the cumulative number will be as reflected in Table 19.

**Table 19: Number of drug users 1988-2002 less successful and death cases**

Year	Number of drug users	Less 27 %	Cumulative
1988	25, 205	18, 400	18, 400
1989	20, 118	14, 686	33, 086
1990	19, 310	14, 096	47, 182
1991	20, 341	14, 849	62, 031
1992	21, 506	15, 670	77, 731
1993	25, 457	18, 583	96, 314
1994	28, 756	20, 992	117, 306
1995	34, 104	24, 896	142, 202
1996	30, 598	22, 337	164, 539
1997	36, 284	26, 487	191, 026
1998	37, 588	27, 272	218, 298
1999	35, 359	25, 812	244, 110
2000	30, 593	22, 333	266, 443
2001	31, 556	23, 036	289, 479
2002	31, 893	23, 282	312, 761

Therefore the cumulative number of drug users, assuming all other variables as constant for 1988 to 2002 is 312,761. The average multiplier for DU is 2.87, and the estimates for the number of DU in Malaysia for 2002 is 897,624.

**Table 20: Number and percentage of IDU 1992, (1998-2002)**

Year	Number of IDU	Total of DU	% of IDU
1992	4, 207	21, 506	19.56
1998	3, 706	37, 588	9.85
1995	2, 756	35, 359	7.79
2000	2, 446	30, 593	7.99
2001	6, 170	31, 556	19.55
2002	4, 342	31, 893	13.61
Average			13.05

For IDUs, the NDA statistics is as stated in Table 20. The average percentage of IDUs in relation to DUs for 6 years period is 13.05%. If we multiply this number with the cumulative DU for 2002 (312,761), there are a total of 40,815 IDUs in the country. The average multiplier for IDUs is 2.89 thus the estimates for IDUs in the country for 2002 is 117,955.

In conclusion, the summary for the estimates of DUs and IDUs in Malaysia is as stated in Table 21.

**Table 21: Estimates of DU and IDUs in Malaysia for 2002.**

	Source of multiplier	Adjusted population in 2002	Multiplier	Estimates
DUs	Key Informants (KI)	312,761	1.47	459,759
	Drug Addicts (DA)		4.27	1,335,489
	Average (DA + KI)		2.87	897,624
	Statistical L.L.		2.54	794,413
	Statistical U.L.		3.30	1,032,111
IDUs	Key Informants (KI)	40,815	1.96	79,997
	Drug Addicts (DA)		3.82	155,913
	Average (DA + KI)		2.89	117,955
	Statistical L.L.		2.56	104,486
	Statistical U.L.		3.32	135,506

This study suggests using the average multiplier to indicate the number of DUs and IDUs in the country for 2002, and the statistical lower and upper limit (at 95% confidence interval) to reflect the minimum and maximum range.

## REFERENCES

- Buletin Dadah (Drug Bulletin), (2003), *Agensi Dadah Kebangsaan (NDA)*, Kementerian Dalam Negeri, Malaysia.
- Hassan Haji Ali, (2002), *Ekonometrik Asas (Basic Econometrics)*, Sintok:Penerbit UUM.
- Hassan Haji Ali, (2004), Modul Pengantar Statistik Ekonomi, Sintok;: Penerbit, UUM.
- Mahmood, N. M., Md Shuaib Che Din & Lasimon Matokrem (1999). *Psychosocial determinants of recidivism among psychoactive drug addicts who undergo the Serenti rehabilitation program*. Unpublished research report, IRPA-UUM.
- Mendenhall, W., Reinmuth, J.E., and Beaver, R., (1989), *Statistics for Management and Economic*, Sixth Edition, Boston: PWS-KENT Publishing Company.
- National Drugs Agency. (2002). Statistics Bulletin on Drugs: Putrajaya: NDA, Ministry of Home Affairs.
- NADI, (2001), *National Drug Agency*, Putrajaya.
- National Household Survey on Drug Abuse: Population Estimates 1997, Department of Health and Human Services, DHHS Publication No.(SMA) 98-3250.
- Pisani, E. (2002). *Estimating the size of population at risk for HIV: Issues and methods*. A joint UNAIDS/IMPACT/FHI workshop, May.
- WHO (2001). Consensus Report on STI, HIV and Aids Epidemiology in Malaysia.

# APPENDIX 1: QUESTIONNAIRE

## Interview Guide for Key Informants:

1. How long have you stayed or worked in this district: **(Berapa lamakah anda tinggal/bekerja di daerah ini?)**\_\_\_\_\_
2. What is your present position/occupation:**(Apakah pekerjaan/jawatan anda sekarang)**\_\_\_\_\_
3. What is your department/NGO**(Nama Jabatan atau NGO)**\_\_\_\_\_
4. Are you aware of the current drug situation in this district **(Adakah anda sedar tentang masalah dadah di daerah/kawasan ini?)**: ( )Yes ( )No
5. If **NO**, who, in your office is aware of it **(Jika TIDAK, siapa yang tahu?)** *(NOTE: Change Key informant, continue the interview)*\_\_\_\_\_
6. If **YES**, can you inform us of the areas with high concentration of drug addicts in this district **(Jika YA, kawasan mana yang ramai penagih?)**:  
\_\_\_\_\_
7. How many drug addicts do you estimate to be in this area last year **(Berapa ramaikah penagih dadah di kawasan ini pada tahun lalu)** \_\_\_\_\_ dan di mana dapat data ini \_\_\_\_\_
8. What about this year (2003) **Berapa ramai tahun ini** \_\_\_\_\_ increase **(Meningkat)** \_\_\_\_\_ or decrease **(atau menurun)** \_\_\_\_\_
9. Among the drug addicts, any **IDUs** **(Berapa di kalangan mereka menyuntik dadah)**\_\_\_\_\_
10. Does this include those who are in Serenti, ADK or prison last year **(Adakah bilangan ini termasuk yang berada di Serenti, ADK atau Penjara?)**  
( )Tidak \_\_\_\_\_ ( )Ya (berapa ramai) \_\_\_\_\_
11. Do you know what type of drugs these IDU uses **(Tahukah jenis dadah apa yang mereka (IDU) gunakan)** ( )Heroin ( )morfin ( ) syabu ( ) ecstasy ( ) candu dll \_\_\_\_\_
12. Do you know anyone of them who are HIV+ or with AIDS? **(Adakah di antara mereka yang HIV+ atau Aids?)**\_\_\_\_\_

Interviewer may explore further but must stay within the scope.

Interviewer \_\_\_\_\_ Date \_\_\_\_\_

District: \_\_\_\_\_, Area: \_\_\_\_\_

### Interview Guide for DU/IDUs

1. How long have you taken drugs (**Berapa lama anda telah menggunakan dadah?**) \_\_\_\_\_ years  
(**Tahun**)
2. How long have you stay in this district/area (**Berapa lama anda tinggal di kawasan, daerah ini?**) \_\_\_\_\_
3. What type of drugs do you usually use (**Dadah jenis apa yang selalu anda gunakan**)  
\_\_\_\_\_
4. Do you inject drugs (**Anda suntik dadah?**) Yes No
5. If NO can you estimate how many DUs and IDUs in this area (**Jika TIDAK, boleh anda anggarkan bilangan IDU di sini?**) \_\_\_\_\_
6. Where are they (**Di kawasan manakah mereka berada?**) \_\_\_\_\_  
\_\_\_\_\_
7. If YES, what drugs do you use (**Jika YA, dadah apa yang awak selalu gunakan** \_\_\_\_\_ and how much (**dan banyak mana**) \_\_\_\_\_)
8. How frequent do you inject in a day (**Berapa kali anda suntik sehari**) \_\_\_\_\_
9. Where were you last year (**Di manakah anda akhir tahun lalu**)  Serenti  NDA  Prison  
 Private center  Other area **Tempat lain**  Here *Di sini*
10. How many IDUs are in this area (**Berapa ramaikah anggaran penagih suntikan (IDU) di kawasan ini**) \_\_\_\_\_
11. Do you share your needles with other IDUs (**Adakah anda kongsi jarum suntikan dengan penagih lain?**)  YA  TIDAK
12. Have you tested for HIV+/Aids (**Adakah anda HIV+**)  Yes  No; *atau Aids*  Yes  No
13. Are you married **Anda sudah berkahwin**  Yes  No,  
*Anda ada anak*  Yes  No
14. If not married, do you have a girlfriend (**Kalau belum kahwin, ada teman wanita**):  Yes  No,  
Boyfriend (**Teman laki-laki**):  Yes  No
15. Do you use condom during intercourse? (**Anda gunakan kondom semasa hubungan kelamin**):  
 Yes  No

Your favourite pet \_\_\_\_\_, your mother's name \_\_\_\_\_

Where were you born \_\_\_\_\_, your favourite food \_\_\_\_\_

Area: \_\_\_\_\_ District: \_\_\_\_\_ Date of interview \_\_\_\_\_

Interviewer: \_\_\_\_\_

## APPENDIX 2: RESPONSE BY KEY INFORMANTS

### 2.1 States where respondents were interviewed

	Frequency	Percent
Kedah	12	14.5
Kuala Lumpur	10	12.0
Melaka	14	16.9
Pahang	13	15.7
Perak	12	14.5
Pulau Pinang	8	9.6
Sarawak	14	16.9
Total	83	100.0

### 2.2 Districts where respondents were interviewed

	Frequency	Percent
Alor Gajah	7	8.4
Brickfields	6	7.2
Kinta	6	7.2
Kota Setar	7	8.4
Kuala Kangsar	6	7.2
Kubang Pasu	5	6.0
Kuching	7	8.4
Maran	7	8.4
Melaka Tengah	7	8.4
Miri	7	8.4
Pekan	6	7.2
Seberang Perai (S)	4	4.8
Seberang Perai (U)	4	4.8
Sentul	4	4.8
Total	83	100.0

### 2.3 Number of years respondents lived or worked in this district

n	82
Mean	11.5854
Std. Deviation	14.59998



## 2.4 Present position/occupation

	Frequency	Percent
Missing Value	1	1.2
AJK Pemadam	1	1.2
ASP Ketua Narkotik	2	2.4
Detektif	1	1.2
JKKK	2	2.4
Ketua ADK Daerah	2	2.4
Ketua Bahagian Narkotik	5	6.0
Ketua Daerah	2	2.4
Ketua Kampung	1	1.2
Ketua Kaum	1	1.2
Pegawai ADK	3	3.6
Pegawai Kesihatan	2	2.4
Pegawai Pemulihan Dadah	2	2.4
Pegawai Pengawalan Kawasan Hiburan	1	1.2
Pegawai Penyiasat	2	2.4
Pegawai Rela Daerah	2	2.4
Pegawai Tadbir	1	1.2
Pembantu Luar JET (S/U Pemadam)	1	1.2
Pembantu Perubatan	1	1.2
Pembantu Tadbir	2	2.4
Pengerusi JKKK	1	1.2
Penghulu	10	12.0
Pengurus Kesihatan Pengasih	1	1.2
Penolong Kaunselor	3	3.6
Penolong Pegawai Bahagian Narkotik	1	1.2
Penolong Pegawai Daerah	3	3.6
Penolong Pegawai Daerah/ Setiusaha Pemadam	1	1.2
Penolong Pegawai Kesihatan Persekitaran	10	12.0
Penolong Pegawai Pembangunan Masyarakat	1	1.2
Penolong Pegawai Pentadbiran	1	1.2
Penolong Pegawai Penyiasat	2	2.4
Penolong Pegawai Rela	1	1.2
Penolong Pegawai Tadbir	3	3.6
Penolong Pegawai Tadbir Kanan	1	1.2
Penolong Pengarah 2, ADK Negeri Sembilan	1	1.2
Penyelia Perumahan	1	1.2
Penyelia Perumahan DBKL	1	1.2
Polis Bahagian Narkotik	1	1.2
Sarjan	1	1.2
Sarjan Mejar	1	1.2
Setiausaha Pemadam	2	2.4
Temenggong	1	1.2
<b>Total</b>	<b>83</b>	<b>100.0</b>

## 2.5 Present department / NGO

	Frequency	Percent
NDA (ADK)	16	19.3
DBKL	2	2.4
Jabatan Kesihatan	13	15.7
Jabatan Penerangan	1	1.2
JKKK	3	3.6
Ketua Kampung	1	1.2
NGO	3	3.6
PDRM	16	19.3
Pejabat Daerah	11	13.3
Pemadam	6	7.2
Pengasih	1	1.2
Penghulu	8	9.6
Total	83	100.0

## 2.6 Awareness towards the current drug situation in this district

	Frequency	Percent
No	2	2.5
Yes	79	97.5
Total	81	100.0

## 2.7 Areas with high concentration of drug addicts in the sampled district

Kedah	Kubang Pasu	Tunjang Felda Batu 8 Changlun Jitra Padang Prai Binjai Mukim Hosba Mukim Jasam Changkat Setoi Bukit Tangga Kampung Baru
	Kota Setar	Mergong Pokok Sena Anak Bukit Kuala Kedah Kampung Raja Simpang 4 Tanjong Bendahara Tanjung Seri Derga
Pulau Pinang	Seberang Perai Utara	Mak Mandin Butterworth Kepala Batas Kawasan Nelayan
	Seberang Perai Selatan	Nibong Tebal Sungai Acheh Sungai Bahau Sungai Kecil Sungai Udang Simpang 4 Sungai Che

Perak	Kuala Kangsar	Kawasan Felda Padang Rengas Saut Kati Kampung Mansur, Felda Lasah, Mukim Sayong, Sungai Siput Pekan Kuala Kangsar Kampung Rambai 7
	Kinta	Tanjung Rambutan Ulu Kinta Manjoi Kampung Pasir Putih Gunung Hijau Kampung Baru Bambu Kampung Tualang Bandar Kinta Changkat Batu Gajah Kampung Air Papan Tanjung Tualang Kampung Dato' Ahmad Said
Kuala Lumpur	Brickfields	Kawasan Setinggan Kawasan maklumat mengikut ADK
	Sentul	Dang Wangi Kampung Keramat Kawasan perumahan
Melaka	Melaka Tengah	Bandar Tanjung Kling Batang 3
	Alor Gajah	Masjid Tanah Kuala Sungai Besar Merlimau

Pahang	Pekan	Chini Nenasi Kampung Pahang Felda Chini Kampung Mardum Kampung Sebang Tok Pi Sayong Tengah Kuak Sayong
	Maran	Felda Jengka 15, 16, 17, 18, 19, 2, 1, 8, 9, 12, 13 Kampung Anah, Sungai Nereh, Ulu Jempol Kampung Sentosa, Felda Bukit Tajani Kampung Chedang Kampung Bahat
Sarawak	Kuching	Petrajaya Bandar Kampung
	Miri	Kampung Wirels Kampung Liring Bukit Kampung Muhibah Gua Niah Bandar

### 2.8 Estimated number of drug users and addicts in the district (2002)

n	75
Mean	717.35
Std. Deviation	1455.174

## 2.9 The source of the data for the estimated number of DUs

	Frequency	Percent
Missing Value	20	24.1
Anggaran	23	27.7
Buku daftar kes	1	1.2
Buletin pemadam	1	1.2
Data ADK	8	9.6
Fail mesyuarat	3	3.6
Hospital Kuala Lumpur	1	1.2
Jabatan narkotik	6	7.2
Kementerian Kesihatan	1	1.2
Maklumat penduduk	3	3.6
Mesyuarat	1	1.2
Pemerhatian	5	6.0
Perangkaan tahunan	2	2.4
Permerhatian	1	1.2
Tangkapan	7	8.4
<b>Total</b>	<b>83</b>	<b>100.0</b>

## 2.10 Estimated number of drug users and addicts in the district (2003)

n	67
Mean	1017.19
Std. Deviation	2843.670

## 2.11 Increase or decrease in the number of drug users and addicts in the district over 2 years period

	Frequency	Percent
Increase	21	30.4
Decrease	35	50.7
<b>Total</b>	<b>69</b>	<b>100.0</b>

### 2.12 Estimated number of IDUs in the district

n	17
Mean	134.20
Std. Deviation	218.815

Note: The percentage of IDU among DU is 13.27%

### 2.13 The types of drugs often used by IDUs

	Frequency	Percent
Heroin	60	81.1
Morfin	4	5.4
Syabu	6	8.1
Others	4	5.4
Total	74	100.0

### 2.14 Do you know anyone of them who are HIV+ or with Aids

	Frequency	Percent
No	18	24.0
Yes	57	76.0
Total	75	100.0

### 2.15 Estimated number of HIV+ and AIDS

N	54
Mean	40.09
Std. Deviation	78.007

Note: Percentage of HIV/Aids to IDU = 29.8%

Percentage of Hiv/Aids to DU = 5.57%

## APPENDIX 3: RESPONSE BY DRUG USERS

### 3.1 States where respondents were interviewed

	Frequency	Percent
Kedah	45	13.6
Kuala Lumpur	48	14.5
Melaka	51	15.5
Pahang	56	17.0
Perak	46	13.9
Pulau Pinang	42	12.7
Sarawak	42	12.7
Total	330	100.0

### 3.2 Districts where respondents were interviewed

	Frequency	Percent
Alor Gajah	25	7.6
Brickfields	24	7.3
Kinta	31	9.4
Kota Setar	25	7.6
Kuala Kangsar	15	4.5
Kubang Pasu	20	6.1
Kuching	20	6.1
Maran	23	7.0
Melaka Tengah	26	7.9
Miri	22	6.7
Pekan	33	10.0
Seberang Perai (S)	19	5.8
Seberang Perai (U)	23	7.0
Sentul	24	7.3
Total	330	100.0

### 3.3 Number of years respondents has used drugs

n	329
Mean	7.2371
Std. Deviation	7.79491

### 3.4 Number of years respondents lived in district

n	328
Mean	21.8902
Std. Deviation	13.37601

### 3.5 Type of drugs usually used by drug users

	Frequency	Percent
Alcohol	1	.3
Codeine	5	1.5
Domikon	1	.3
Gam maru	1	.3
Ganja	73	22.1
Ganja, Heroin	3	.9
Ganja, Morfin	2	.6
Heroin	177	53.6
Heroin, Morfin	2	.6
Ice baby	4	1.2
Morfin	24	7.3
Pil bom	10	3.0
Pil ecstasy	16	4.8
Syabu	11	3.3
Total	330	100.0

### 3.6 Do drug users inject drugs

	Frequency	Percent
No	199	63.8
Yes	113	36.2
Total	312	100.0

### 3.7 Estimates of drug users

n	274
Mean	1380.37
Std. Deviation	1812.14

### 3.8 Location of DU and IDUs in district

No	Districts	Branch Name's
1	Kubang Pasu	Kuala Sanglang Kodiang Tunjang Balai Pos Jitra Changlon Malau Kuala Reban Kg. Lahad Lubuk Kawah Kg. Pelunjuk
2	Kota Setar	Kota Setar Kuala Kedah Seberang Nyonya Jalan Langgar, Jalan Putra Pekan Tanah Merah Alor Setar Tong Kayak Simpang Kuala Kebun Lima Ratus Batu 3 Tandok Alor Mengkudu Mergong Pokok Sena Alor Malai Terok Kecai, Batang Paip Kg. Berjaya Simpang 4 Kangkung, Taman Nuri Lorong Seri Lanchu Barat Kg. Bukit Pinang Jalan Lumpur
3	Seberang Perai Utara	Bagang Luar Mak Mandin Raja Uda Kg. Baru Perai Kg. Benggali

		Kg. Perlis Bagang Dalam Bagang Lalang
4	Seberang Perai Selatan	Nibong Tebal Tanjung Pinang Sungai Chi Simpang Empat Bukit Tengah Bukit Minyak
5	Kuala Kangsar	Jalan Kem Kg. Beruntung Kg. Simia Kg. Thaili Sungai Siput Kg. Sayong Kg. Udang Kering Kg. Talang Kg. Likut Kg. Karak Sauk Hutan Kg. Menora Kg. Muhibah Kg. Kati Felda Lasah Kg. Padang Rengas
6	Kinta	Menglembu Kg. Kang Putih Kg. Tambun Kg. Manjoi Sri Kinta Kg. Tok Chadang Kg. Pusing
7	Brickfields	Kg. Jinjing Jalan Ipoh Jalan Kepong Selayang Flat Kedai DBKL Ipoh Road Batu 2 Bandar Baru Sentul Jalan Sentul Flat DBKL Bakar Batu
8	Sentul	Pantai Dalam Kg. Kerinchi Pagung Lido Jalan Sanbanthan

		Kg. Katijah Flat Jelatek
9	Melaka Tengah	Kg. Padang Temu Kg. Bachang Plaza Hang Tuah Tanjung Keling Kg. Kelubung Kg. Bukit Rambai Batu Berendam Melaka Jaya Duyong Kg. Motaram Melaka Raya Taman Seri Golam
10	Alor Gajah	Pantai Belimbing During Tunggal Batu 13 Kg. Melaka Pindah Kg. Bukit Darat Kuala Linggi Kuala Sungai Baru Kg. Nyalas Kg. Tanjung Rima Masjid Tanah Lubuk Cina Sungai Udang Kg. Lubok Kepong Simpang Empat Batu 12 Kg. Belimbing Dalam Batu 24 Kg. Permatang Kg. Baru Kg. Pulau Seberang
11	Pekan	Kg. Pahang Kuala Pahang Felda Chini Kg. Tanah Putih Kg. Nenasi Kg. Permatang Pauh Kg. Ketapang Kg. Pasir Panjang Kg. Sekukuh Bandar Pekan
12	Maran	Jengka 2

		Jengka 5 Jengka 12 Jengka 13 Bandar Pusat Jengka Ulu Jempul Tanjung Api
13	Kuching	Kg. Gobel Bintawak Lundu Semantan Kawasan Bandar Wisma Serbekas Petrajaya
14	Miri	Perumahan Piasau Kg. Primajaya Tuden Kg. Wireles Kg. Pujut Pusat Bandar Kg. Luak Bay

### 3.9 Drugs usually used by respondents

	Frequency	Percent
Ganja	212	64.2
Heroin	2	.6
Morfin	98	29.7
Syabu	15	4.5
	3	.9
Total	330	100.0

### 3.10 How much drugs (dose) usually used by IDU

N	105
Mean	2.43
Std. Deviation	1.480

### 3.11 How frequent IDU inject in a day

N	114
Mean	2.65
Std. Deviation	1.602

### 3.12 Location of respondents in the year 2002

	Frequency	Percent
Serenti	27	8.5
ADK	11	3.4
Prison	18	5.6
Private Center	5	1.6
Other area	33	10.3
Here	225	70.5
Total	319	100.0

### 3.13 Number IDUs in this area

n	309
Mean	476.74
Std. Deviation	876.469

### 3.14 Sharing needles with other IDUs

	Frequency	Percent
No	70	59.8
Yes	47	40.2
Total	117	100.0

### 3.15 Respondents marital status

	Frequency	Percent
No	224	67.9
Yes	106	32.1
Total	330	100.0

### 3.16 Respondents number of children

	Frequency	Percent
No	214	71.3
Yes	86	28.7
Total	300	100.0

### 3.17 Number of single respondents who have girlfriends

	Frequency	Percent
No	134	57.5
Yes	99	42.5
Total	233	100.0

### 3.18 Number of single respondents who have boyfriends

	Frequency	Percent
No	215	98.2
Yes	4	1.8
Total	219	100.0

Note: Imply homosexual tendencies

### 3.19 Respondents who are HIV+

	Frequency	Percent
No	283	89.0
Yes	35	11.0
Total	318	100.0

### 3.20 Respondents with have Aids

	Frequency	Percent
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No	275	91.1
Yes	27	8.9
Total	302	100.0

### 3.22 Respondents who used condom during intercourse

	Frequency	Percent
No	159	74.0
Yes	56	26.0
Total	215	100.0

## APPENDIX 4: MULTIPLIERS FOR DUs FOR ALL DISTRICTS

### Kedah

District	Category	DU (NDA)	Drug Addicts Multiplier (Estimates)	Key Informants Multiplier (Estimates)
Kubang Pasu	High Grey	757	1.6 (1211)	1.0 (757)
Kota Setar	High Grey	872	1.4 (1221)	1.0 (872)
Baling	Low Grey	234	1.3 (304)	1.2 (281)
Bandar Baharu	White	21	1.3 (27)	1.5 (31)
Kuala Muda	High Grey	857	1.4 (1200)	1.0 (857)
Kulim	High Grey	681	1.9 (1294)	1.6 (1090)
Langkawi	Low Grey	77	3.9 (300)	1.3 (100)
Padang Terap	Low Grey	61	3.9 (238)	1.3 (79)
Pendang	Low Grey	139	1.7 (236)	1.0 (139)
Sik	High Grey	148	1.4 (207)	1.0 (148)
Yan	Low Grey	118	1.3 (153)	1.2 (142)
Average			1.89	1.19

### Penang

District	Category	DU (NDA)	Drug Addicts Multiplier (Estimates)	Key Informants Multiplier (Estimates)
Seberang Perai (U)	High Grey	1906	1.0 (1906)	1.0 (1906)
Seberang Perai (S)	High Grey	403	1.9 (766)	1.6 (645)
Balik Pulau	High Grey	565	1.9 (1073)	1.6 (904)
Georgetown	High Grey	2716	1.0 (2716)	1.0 (2716)
Nibong Tebal	High Grey	403	1.9 (766)	1.6 (645)
Seberang Perai (T)	Low Grey	624	1.3 (811)	1.2 (749)
Average			1.5	1.33

### Perlis

District	Category	DU (NDA)	Drug Addicts Multiplier (Estimates)	Key Informants Multiplier (Estimates)
Kangar	Low Grey	128	1.3 (166)	1.2 (154)
Arau	Low Grey	52	1.3 (68)	1.2 (62)
Beseri	Low Grey	23	1.3 (30)	1.2 (28)
Chuping	Low Grey	28	1.3 (36)	1.2 (34)
Kuala Perlis	Low Grey	82	1.3 (107)	1.2(98)
Sanglang	Low Grey	44	1.3 (57)	1.2 (53)
Kaki Bukit	Low Grey	3	1.3 (4)	1.2 (4)
Padang Besar	Low Grey	45	1.3 (58)	1.2 (54)
Average			1.3	1.2

## Perak

District	Category	DU (NDA)	Drug Addicts Multiplier (Estimates)	Key Informants Multiplier (Estimates)
Kuala Kangsar	Low Grey	285	1.3 (370)	1.2 (342)
Kinta	Low Grey	1044	1.7 (1775)	1.0 (1044)
Batang Padang	Low Grey	208	1.7 (354)	1.6 (333)
Hilir Perak	White	196	1.3 (255)	1.5 (294)
Hulu Perak	White	143	21.3 (3046)	2.2 (315)
Kerian	Low Grey	236	1.7 (401)	1.0 (236)
Larut Matang	High Grey	664	1.4 (930)	1.0 (664)
Manjung	White	75	21.3 (1597)	2.2 (165)
Perak Tengah	Low Grey	92	1.4 (129)	1.3 (120)
Average			5.9	1.42

## Selangor

District	Category	DU (NDA)	Drug Addicts Multiplier (Estimates)	Key Informants Multiplier (Estimates)
Gombak	White	398	1.3 (517)	1.5 (597)
Hulu Selangor	White	37	21.3 (788)	2.2 (81)
Hulu Langat	Low Grey	1499	1.3 (1949)	1.2 (1799)
Kelang	Low Grey	823	1.7 (1399)	1.6 (1317)
Kuala Langat	White	137	1.3 (178)	1.5 (205)
Kuala Selangor	Low Grey	210	1.7 (357)	1.6 (336)
Petaling	White	364	21.3 (7753)	2.2 (801)
Sepang	Low Grey	203	1.3 (264)	1.2 (244)
Sabak Bernam	White	27	21.3 (575)	2.2 (59)
Average		-	8.05	1.69

## Kuala Lumpur

Districts	Category	DU (NDA)	Drug Addicts Multiplier (Estimates)	Key Informants Multiplier (Estimates)
Sentul	Low Grey	465	4.6 (2139)	2.7 (1255)
Brickfields	Low Grey	404	5.3 (2141)	1.6 (646)
Kampung Baru	Low Grey	1249	4.6 (5745)	2.7 (3372)
Cheras	Low Grey	562	5.3 (2979)	1.4 (787)
Average			4.95	2.15

## Negeri Sembilan

District	Category	DU (NDA)	Drug Addicts Multiplier (Estimates)	Key Informants Multiplier (Estimates)
Jelevu	High Grey	89	1.4 (125)	1.0 (89)
Jempol	White	101	1.3 (131)	1.5 (151)
Kuala Pilah	Low Grey	78	3.9 (304)	1.3 (101)
Port Dickson	White	67	1.3 (87)	1.5 (100)
Rembau	High Grey	89	1.4 (125)	1.0 (89)
Seremban	Low Grey	630	1.7 (1071)	1.0 (630)
Tampin	Low Grey	141	1.3 (183)	1.2 (169)
Average			1.76	1.21

## Melaka

District	Category	DU (NDA)	Drug Addicts Multiplier (Estimates)	Key Informants Multiplier (Estimates)
Melaka Tengah	White	281	1.3 (365)	1.5 (421)
Alor Gajah	Low Grey	139	1.4 (195)	1.6 (222)
Jasin	White	104	1.3 (135)	1.5 (156)
Average			1.33	1.53

## Johor

District	Category	DU (NDA)	Drug Addicts Multiplier (Estimates)	Key Informants Multiplier (Estimates)
Batu Pahat	White	200	1.3 (260)	1.5 (300)
Johor Bahru	Low Grey	1156	3.9 (4508)	1.3 (1503)
Kluang	White	126	21.3 (2684)	2.2 (277)
Kota Tinggi	Low Grey	317	1.7 (539)	1.0 (317)
Mersing	Low Grey	90	1.7 (153)	1.6 (144)
Muar	White	240	1.3 (312)	1.5 (360)
Pontian	White	141	1.3 (183)	1.5 (211)
Segamat	Low Grey	192	3.9 (749)	1.3 (250)
Average			4.55	1.49

## Kelantan

District	Category	DU (NDA)	Drug Addicts Multiplier (Estimates)	Key Informants Multiplier (Estimates)
Bachok	Low Grey	181	1.3 (235)	1.2 (217)
Kota Bharu	High Grey	1509	1.6 (2414)	1.0 (1509)
Gua Musang	Low Grey	151	1.7 (257)	1.0 (151)
Jeli	White	16	21.3 (341)	2.2 (35)
Kuala Krai	Low Grey	111	3.9 (433)	1.3 (144)
Machang	Low Grey	93	3.9 (363)	1.3 (121)
Pasir Mas	Low Grey	315	1.3 (409)	1.2 (378)
Pasir Putih	Low Grey	186	1.3 (242)	1.2 (223)
Tanah Merah	Low Grey	113	3.9 (441)	1.3 (147)
Tumpat	Low Grey	150	3.9 (585)	1.3 (195)
Average			4.41	1.3

## Terengganu

District	Category	DU (NDA)	Drug Addicts Multiplier (Estimates)	Key Informants Multiplier (Estimates)
Besut	White	89	1.3 (116)	1.5 (133)
Dungun	Low Grey	183	1.7 (311)	1.6 (293)
Hulu Terengganu	White	44	1.3 (57)	1.5 (66)
Kemaman	White	53	21.3 (1129)	2.2 (117)
Kuala Terengganu	Low Grey	626	1.4 (876)	1.0 (626)
Marang	White	49	1.3 (64)	1.5 (73)
Setiu	White	15	21.3 (319)	2.2 (33)
Average			7.08	1.64

## Pahang

District	Category	DU (NDA)	Drug Addicts Multiplier (Estimates)	Key Informants Multiplier (Estimates)
Pekan	Low Grey	103	3.9 (402)	1.3 (134)
Maran	Low Grey	158	1.7 (269)	1.6 (253)
Bentong	High Grey	277	1.9 (526)	1.6 (443)
Cameron Highland	White	26	21.3 (554)	2.2(57)
Jerantut	Low Grey	126	1.7 (214)	1.0 (126)
Kuala Lipis	White	26	21.3 (554)	2.2 (57)

Kuantan	White	314	1.3 (408)	1.5 (471)
Raub	White	51	1.3 (66)	1.5 (76)
Rompin	Low Grey	110	3.9 (429)	1.3 (143)
Temerloh	White	142	1.3 (185)	1.5 (213)
Bera	White	81	1.3 (105)	1.5 (121)
Average			5.54	1.56

### Sarawak

Districts	Category	DU (NDA)	Drug Addicts Multiplier (Estimates)	Key Informants Multiplier (Estimates)
Kuching	White	54	2.6 (140)	1.2 (65)
Miri	White	42	21.3 (895)	2.2 (92)
Kota Semarahan	White	1	2.6 (3)	1.2 (1)
Limbang	Low Grey	53	1.7 (90)	1.6 (85)
Bintulu	White	10	2.6 (26)	1.2 (12)
Sarikei	White	7	2.6 (18)	1.2 (8)
Sibu	White	131	1.3 (170)	1.5 (196)
Sri Aman	White	8	2.6 (21)	1.2 (10)
Average			4.66	1.41

### Sabah

Districts	Category	DU (NDA)	Drug Addicts Multiplier (Estimates)	Key Informants Multiplier (Estimates)
Beauford	Low Grey	68	3.9 (265)	1.3 (88)
Keningau	White	106	1.3 (138)	1.5 (159)
Kinabatangan	White	1	2.6 (3)	1.2 (1)
Kota Belud	White	63	1.3 (82)	1.5 (94)
Kota Kinabalu	High Grey	865	1.4 (1211)	1.0 (865)
Kota Marudu	White	18	21.3 (383)	2.2 (40)
Kuala Penyu	White	2	2.6 (5)	1.2 (2)
Kudat	Low Grey	77	3.9 (300)	1.3 (100)
Kunak	Low Grey	66	1.7 (112)	1.6 (106)
Lahad Datu	White	109	1.3 (142)	1.5 (163)
Papar	White	70	1.3 (91)	1.5 (105)
Penampang	White	57	21.3 (1214)	2.2 (125)
Ranau	White	19	21.3 (405)	2.2 (42)
Sandakan	White	105	21.3 (2236)	2.2 (231)
Semporna	White	31	21.3 (660)	2.2 (68)
Sipitang	Low Grey	43	1.7 (73)	1.6 (69)
Tambunan	White	3	2.6 (8)	1.2 (4)
Tawau	White	267	1.3 (347)	1.5 (400)

Tenom	White	6	2.6 (16)	1.2 (7)
Tuaran	White	61	1.3 (79)	1.5 (91)
Average			6.86	1.58

## APPENDIX 5: MULTIPLIERS FOR IDU FOR ALL DISTRICTS

### Kedah

District	Category	DU (NDA)	Drug Addicts Multiplier (Estimates)	Key Informants Multiplier (Estimates)
Kubang Pasu	High Grey	82	2.6 (213)	1.0 (82)
Kota Setar	High Grey	175	1.6 (280)	1.3 (227)
Baling	Low Grey	27	2.8 (76)	1.4 (38)
Bandar Baharu	White	6	1.9 (11)	2.0 (12)
Kuala Muda	High Grey	269	1.6 (430)	1.3 (350)
Kulim	High Grey	177	2.0 (354)	4.3 (761)
Langkawi	Low Grey	17	3.6 (61)	2.2 (37)
Padang Terap	Low Grey	9	3.6 (32)	2.2 (20)
Pendang	Low Grey	26	1.9 (49)	4.6 (120)
Sik	High Grey	17	1.6 (27)	1.3 (22)
Yan	Low Grey	36	2.8 (101)	1.4 (50)
Average			2.36	2.09

### Penang

District	Category	IDU (NDA)	Drug Addicts Multiplier (Estimates)	Key Informants Multiplier (Estimates)
Seberang Perai (U)	High Grey	602	1.3 (783)	1.0 (602)
Seberang Perai (S)	High Grey	29	2.0 (58)	4.3 (125)
Balik Pulau	High Grey	3	2.0 (6)	4.3 (13)
Georgetown	High Grey	26	2.0 (52)	4.3 (112)
Nibong Tebal	High Grey	29	2.0 (58)	4.3 (125)
Seberang Perai (T)	Low Grey	159	2.8 (445)	1.4 (223)
Average			2.02	3.27

### Perlis

District	Category	IDU (NDA)	Drug Addicts Multiplier (Estimates)	Key Informants Multiplier (Estimates)
Kangar	Low Grey	13	2.8 (36)	1.4 (18)
Arau	Low Grey	9	2.8 (25)	1.4 (13)

Beseri	Low Grey	3	2.8 (8)	1.4 (4)
Chuping	Low Grey	2	2.8 (6)	1.4 (3)
Kuala Perlis	Low Grey	5	2.8 (14)	1.4 (7)
Sanglang	Low Grey	3	2.8 (8)	1.4 (4)
Kaki Bukit	Low Grey	0	2.8 (0)	1.4 (0)
Padang Besar	Low Grey	1	2.8 (3)	1.4 (1)
Average			2.8	1.4

### Perak

District	Category	IDU (NDA)	Drug Addicts Multiplier (Estimates)	Key Informants Multiplier (Estimates)
Kuala Kangsar	Low Grey	19	2.8 (53)	1.4 (27)
Kinta	Low Grey	54	1.9 (103)	4.6 (248)
Batang Padang	Low Grey	13	1.9 (25)	4.6 (60)
Hilir Perak	White	15	1.9 (28)	2.0 (30)
Hulu Perak	White	3	14.9 (45)	1.0 (3)
Kerian	Low Grey	86	1.9 (163)	4.6 (396)
Larut Matang	High Grey	40	1.6 (64)	1.3 (52)
Manjung	White	4	14.9 (60)	1.0 (4)
Perak Tengah	Low Grey	8	3.6 (29)	2.2 (18)
Average			5.04	2.52

### Selangor

District	Category	IDU (NDA)	Drug Addicts Multiplier (Estimates)	Key Informants Multiplier (Estimates)
Gombak	White	12	1.9 (23)	2.0 (24)
Hulu Selangor	White	3	14.9 (45)	1.0 (3)
Hulu Langat	Low Grey	103	2.8 (288)	1.4 (144)
Kelang	Low Grey	24	1.3 (31)	1.4 (34)
Kuala Langat	White	3	1.9 (6)	2.0 (6)
Kuala Selangor	Low Grey	39	1.3 (51)	1.4 (55)
Petaling	White	21	14.9 (313)	1.0 (21)
Selangor	Low Grey	13	2.8 (36)	1.4 (18)
Sabak Bernam	White	1	14.9(15)	1.0 (1)
Average			6.3	1.4

### Kuala Lumpur

District	Category	IDU (NDA)	Drug Addicts Multiplier (Estimates)	Key Informants Multiplier (Estimates)
Sentul	Low Grey	13	4.6 (60)	1.5 (19)
Brickfield	Low Grey	12	8.3 (100)	3.2 (38)

Kg. Baru	Low Grey	92	4.6 (423)	1.5 (138)
Cheras	Low Grey	27	4.6 (124)	1.5 (40)
Average			5.52	1.92

## Negeri Sembilan

District	Category	IDU (NDA)	Drug Addicts	Key Informants
			Multiplier (Estimates)	Multiplier (Estimates)
Jelebu	High Grey	3	1.6 (5)	1.3 (4)
Jempol	White	15	1.9 (28)	2.0 (30)
Kuala Pilah	Low Grey	4	3.6 (14)	2.2 (9)
Port Dickson	White	7	1.9 (13)	2.0 (14)
Rembau	High Grey	7	1.6 (11)	1.3 (9)
Seremban	Low Grey	18	1.9 (34)	4.6 (83)
Tampin	Low Grey	7	2.8 (20)	1.4 (10)
Average			2.19	2.11

## Melaka

District	Category	IDU (NDA)	Drug Addicts	Key Informants
			Multiplier (Estimates)	Multiplier (Estimates)
Melaka Tengah	White	37	1.9 (70)	2.0 (74)
Alor Gajah	Low Grey	14	2.9 (41)	2.2 (31)
Jasin	White	9	1.9 (17)	2.0 (18)
Average			2.23	2.07

## Johor

District	Category	IDU (NDA)	Drug Addicts	Key Informants
			Multiplier (Estimates)	Multiplier (Estimates)
Batu Pahat	White	12	1.9 (23)	2.0 (24)
Johor Bahru	Low Grey	58	3.6 (209)	2.2 (128)
Kluang	White	14	14.9 (209)	1.0 (14)
Kota Tinggi	Low Grey	43	1.9 (82)	4.6 (198)
Mersing	Low Grey	10	1.3 (13)	1.4 (14)
Muar	White	48	1.9 (91)	2.0 (96)
Pontian	White	7	1.9 (13)	2.0 (14)
Segamat	Low Grey	33	3.6 (119)	2.2 (73)

Average		3.87	2.17
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## Kelantan

District	Category	IDU (NDA)	Drug Addicts Multiplier (Estimates)	Key Informants Multiplier (Estimates)
Bachok	Low Grey	63	2.8 (176)	1.4 (88)
Kota Bharu	High Grey	578	2.6 (1503)	1.0 (578)
Gua Musang	Low Grey	24	1.9 (46)	4.6 (110)
Jeli	White	3	14.9 (45)	1.0 (3)
Kuala Krai	Low Grey	42	3.6 (151)	2.2 (92)
Machang	Low Grey	22	3.6 (79)	2.2 (48)
Pasir Mas	Low Grey	75	2.8 (210)	1.4 (105)
Pasir Putih	Low Grey	78	2.8 (218)	1.4 (109)
Tanah Merah	Low Grey	20	3.6 (72)	2.2 (44)
Tumpat	Low Grey	43	3.6 (155)	2.2 (95)
Average			4.22	1.96

## Terengganu

District	Category	IDU (NDA)	Drug Addicts Multiplier (Estimates)	Key Informants Multiplier (Estimates)
Besut	White	46	1.9 (87)	2.0 (92)
Dungun	Low Grey	83	1.3 (108)	1.4 (116)
Hulu Terengganu	White	19	1.9 (36)	2.0 (38)
Kemaman	White	14	14.9 (209)	1.0 (14)
Kuala Terengganu	Low Grey	307	2.8 (860)	1.4 (430)
Marang	White	28	1.9 (53)	2.0 (56)
Setiu	White	5	14.9 (74)	1.0 (5)
Average			5.66	1.54

## Pahang

District	Category	IDU (NDA)	Drug Addicts Multiplier (Estimates)	Key Informants Multiplier (Estimates)
Pekan	Low Grey	35	3.6 (126)	2.2 (77)
Maran	Low Grey	31	1.3 (40)	1.4 (43)
Bentong	High Grey	34	2.0 (68)	4.3 (146)
Cameron Highlands	White	2	1.9 (4)	2.0 (4)
Jerantut	Low Grey	21	1.9 (40)	4.6 (97)

Kuala Lipis	White	0	14.9 (0)	1.0 (0)
Kuantan	White	64	1.9 (122)	2.0 (128)
Raub	White	2	1.9 (4)	2.0 (4)
Rompin	Low Grey	23	3.6 (83)	2.2 (51)
Temerloh	White	15	1.9 (28)	2.0 (30)
Bera	White	11	1.9 (21)	2.0 (22)
Average			3.34	2.34

### Sarawak

Districts	Category	IDU (NDA)	Drug Addicts Multiplier (Estimates)	Key Informants Multiplier (Estimates)
Kuching	White	0	1.0 (0)	1.0 (0)
Miri	White	2	14.9 (30)	1.0 (2)
Kota Semarahan	White	0	1.0 (0)	1.0 (0)
Limbang	Low Grey	1	1.3 (1)	1.4 (1)
Bintulu	White	0	1.0 (0)	1.0 (0)
Sarikei	White	0	1.0 (0)	1.0 (0)
Sibu	White	0	1.9 (0)	2.0 (0)
Sri Aman	White	0	1.0 (0)	1.0(0)
Average			2.89	1.17

### Sabah

Districts	Category	IDU (NDA)	Drug Addicts Multiplier (Estimates)	Key Informants Multiplier (Estimates)
Beauford	Low Grey	0	3.6 (0)	2.2 (0)
Keningau	White	0	1.9 (0)	2.0 (0)
Kinabatangan	White	0	1.0 (0)	1.0 (0)
Kota Belud	White	1	1.9 (2)	2.0 (2)
Kota Kinabalu	High Grey	1	1.6 (2)	1.3 (1)
Kota Marudu	White	0	14.9 (0)	1.0 (0)
Kuala Penyu	White	0	1.0 (0)	1.0 (0)
Kudat	Low Grey	0	3.6 (0)	2.2 (0)
Kunak	Low Grey	0	1.3 (0)	1.4 (0)
Lahad Datu	White	0	1.9 (0)	2.0 (0)
Papar	White	0	1.9 (0)	2.0 (0)
Penampang	White	0	14.9 (0)	1.0 (0)
Ranau	White	1	14.9 (15)	1.0 (1)
Sandakan	White	0	14.9 (0)	1.0 (0)
Semporna	White	0	14.9 (0)	1.0 (0)
Sipitang	Low Grey	0	1.3 (0)	1.4 (0)
Tambunan	White	0	1.0 (0)	1.0 (0)

Tawau	White	1	1.9 (2)	2.0 (2)
Tenom	White	0	1.0 (0)	1.0 (0)
Tuaran	White	0	1.9 (0)	2.0 (0)
Average			5.06	1.47

States	DU (ADK)	Drug Addicts		Key Informants	
		Multiplier	Estimates	Multiplier	Estimates
Kedah	3965	1.89	5052	1.19	4189
Penang	6617	1.5	7302	1.33	3078
Perlis	405	1.3	405	1.2	405
Perak	2943	5.9	10252	1.42	3408
Selangor	3698	8.05	10916	1.69	4657
Kuala Lumpur	2680	4.95	10586	2.15	5628
Negeri Sembilan	1195	1.76	1566	1.21	1253
Melaka	524	1.33	552	1.53	695
Johor	2462	4.55	7427	1.49	3498
Kelantan	2825	4.41	4558	1.3	2886
Terengganu	1059	7.08	2213	1.64	1248
Pahang	1414	5.54	2928	1.56	1805
Sarawak	306	4.66	1140	1.41	367
Sabah	2037	6.86	6126	1.58	2504
Multiplier		4.27		1.47	

## APPENDIX 6: CALCULATION FOR LOWER AND UPPER LIMIT OF DU IN MALAYSIA, USING 95% C.I. FOR POPULATION PROPORTION P<sup>1</sup>

Average of the multiplier:

$$\frac{4.27 + 1.47}{2} = 2.87$$

$$\hat{m} = 2.87$$

$$\hat{p} = \frac{100}{2.87} = 34.8\% = 0.348$$

<sup>1</sup> p represent population proportion of recorded DU by NDA

<sup>^</sup> p represent estimate proportion of recorded DU by NDA

$$\hat{q} = (1-\hat{p}) = 0.652$$

95% C.I. for p is:

$$\begin{aligned} \hat{p} \pm 1.96 \sqrt{\frac{\hat{p}\hat{q}}{n}} \\ = 0.348 \pm \left[ 1.96 \sqrt{\frac{0.348 \times 0.652}{413}} = 1.96 \sqrt{\frac{0.226896}{413}} = 0.045 \right] \\ = (0.303, 0.393) \end{aligned}$$

$$0.303 \leq p \leq 0.393$$

95% C.I. for p is:

$$30.3\% \leq p \leq 39.3\%$$

95% C.I. for m is:

$$2.54 \leq m \leq 3.30$$

95% C.I. for DU in Malaysia:

$$(\text{DU ADK}) 2.54 \leq \text{DU} \leq (\text{DU ADK}) 3.30.$$

$$312,761 \times 2.54 = 794,413$$

$$312,761 \times 3.30 = 1,032,111$$

$$794,413 \leq \hat{\text{DU}} \leq 1,032,111$$

Thus, the lower and higher estimates for DUs for the year 2002 is 794,413 persons (minimum) to 1,032,111 persons (maximum)



## APPENDIX 7: CALCULATION FOR LOWER AND UPPER LIMIT OF IDU IN MALAYSIA, USING 95% C.I. FOR POPULATION PROPORTION P<sup>2</sup>

States	IDU (NDA)	Drug Addicts		Key Informants	
		Multiplier	Estimates	Multiplier	Estimates
Kedah	841	2.36	1317	2.09	1417
Penang	848	2.02	1151	3.27	1106
Perlis	36	2.8	79	1.4	43
Perak	242	5.04	446	2.52	672
Selangor	219	6.3	641	1.4	265
Kuala Lumpur	144	5.52	569	1.92	204
Negeri Sembilan	61	2.19	100	2.11	134
Melaka	60	2.23	101	2.07	105
Johor	225	3.87	607	2.17	480
kelantan	948	4.22	2129	1.96	1175
Terengganu	502	5.66	1126	1.54	645
Pahang	238	3.34	426	2.34	511
Sarawak	3	2.89	25	1.17	3
Sabah	4	5.06	16	1.47	5.28
Multiplier		3.82		1.96	

Average of the multiplier:

$$\frac{3.82 + 1.96}{2} = 2.89$$

$$\hat{m} = 2.89$$

$$\hat{P} = \frac{100}{2.89} = 34.6\% = 0.346$$

$$\hat{q} = (1 - \hat{p}) = 0.654$$

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<sup>2</sup> p represent population proportion of recorded IDU by NDA

<sup>^</sup> p represent estimate proportion of recorded IDU by NDA

95% C.I. for p is:

$$\hat{p} \pm 1.96 \sqrt{\frac{\hat{p}\hat{q}}{n}}$$
$$= 0.346 \pm \left[ 1.96 \sqrt{\frac{0.346 \times 0.654}{413}} = 1.96 \sqrt{\frac{0.226284}{413}} = 0.045 \right]$$
$$= (0.301, 0.391)$$

$$0.301 \leq p \leq 0.391$$

95% C.I. for p is:

$$30.1\% \leq p \leq 39.1\%$$

95 % C.I. for m is:

$$2.56 \leq m \leq 3.32$$

95% C.I. for IDU in Malaysia:

$$40,815 \times 2.56 = 104,486 \leq \hat{IDU} \leq 40,815 \times 3.32 = 135,506$$

(Min) (Max)

Thus, the lower and higher estimates for IDUs for the year 2002 is 104,486 persons (minimum) to 135,506 persons (maximum)

