**French Monitoring Centre
for Drugs and Drug Addictions**

The Prevalence of Problem Drug Use in France: Estimates for 2006

< TENDANCES >

This document describes a method making it possible to generate a new estimate of the number of regular users of opioids, cocaine or amphetamines experiencing major health or social problems due to their drug use.

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Estimating the number of drug users is vital in order to assess treatment requirements. It also provides a realistic basis upon which to measure the social cost of drug problems. This is therefore a vital task for national monitoring centres such as OFDT, the role of which is to provide assistance in public decision-making. Additionally, at a European level, for more than 10 years now the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA), (which has made this data one of its five key indicators1), has sought to supply comparable national estimates of the prevalence of the most problematic forms of drug use, which cannot be measured by general population surveys.

Since 2005, all countries have been in a position to produce an estimate of the national prevalence of Problem Drug Use (PDU) based on the definition and the methodological guidelines issued by the EMCDDA («injecting drug use or long duration /regular use of opioids, cocaine and/or amphetamines»). Many of these estimates are based on the results from several estimation methods which increases both their comparability and reliability. The most recent data is available in the EMCDDA's annual report [1].

A series of studies and research initiatives have been carried out by the OFDT during recent years in order to draw up a new estimate of the number of problem drug users in France. This estimate, which is based on data from 2006, follows on from those previously drafted in 1995 and 1999 [2-4]. This work also seeks to estimate the number of regular users of heroin in addition to injecting drug users. Accompanied by the relevant methodological notes, this detailed information was presented in the report quoted in the references [5]. In addition to presenting the main results, this issue of Tendances examines changes in this data over time and compares it to that obtained from other European countries.

Material and methods

The European protocol [6] defines the population group covered by this estimate (the target group) and describes the information sources and the various methods available for use. It recommends the use of as many methods as possible in order to be able to compare results.

The target group and the data sources used

The operational definition chosen by the EMCDDA for a «problem drug user» is as follows: injecting drug users or regular users of opioids, cocaine and/or amphetamines during the year gone by, for the 15-64 year old age group.

Six separate data sources were used to produce these estimates
■ ILIAD (local addiction information indicators);
■ The activity report from the CSSTs (drug addiction treatment centres);
■ FNAILS (National file of narcotics legislation offences);
■ SIAMOIS (system of information on the accessibility of injection equipment and substitution products (InVs));
■ Ena-CAARUD (National Survey of low threshold services);
■ NEMO (the New Multicentric OFDT study into local estimates of problem drug use).

Methods

The capture-recapture method: local estimates
This method combines data obtained from several sources, for example those issued by the health or law enforcement systems.

This involves mathematical modelling based on the observation of the presence or absence of drug users included in the survey in each of the sources, analysing overlaps between the sources and extrapolating the hidden population which is not identified by any of the sources.

1. General population surveys, Problem Drug Use, Treatment request indicator, Mortality related to drug use, Infectious diseases related to drug use.

The results of the New Multicentric study into local estimates of problem drug use (the NEMO study) carried out by the OFDT in 2005-2006 involving six cities in mainland France are presented in table 1.

These relatively convergent estimates (only Rennes appears to have a lower prevalence level but one which is not statistically different from the other cities in view of the extent of the confidence intervals) indicate that problem drug use in the cities concerns between 6 and 15 people per 1,000 inhabitants aged 15 to 64 years old.

Multiplier method using treatment data

The main problem in estimating the number of problem drug users is that part of this population group is hidden. The principle behind the multiplicative methods is as follows: if a sample (a comparison base) of this population of size B is available, as well as the probability of an individual belonging to the sample, the total size of the population may be estimated using the following formula: $N = B / c$. In this particular case, the comparison base (B) is considered to be those drug users seeking treatment, (c) being an estimate of the healthcare system's coverage rate.

Police multiplier method

By analogy with the previous method, the number of problem drug users can be extrapolated based on police statistics. Here, the comparison base is the number of drug users arrested by the police in a given year. It is also necessary to estimate the probability that a drug user will be arrested by the police in a given year.

Multivariate indicator method

The prevalence of problem drug use in a country may be estimated based on a set of indirect indicators (arrests, mortality, use of care facilities, treatments, etc.) available at a more detailed geographical level (regions) for which local prevalence estimates exist (anchor points). This method analyses the relationship between the indirect indicators and the available local prevalence estimates and then applies the regression coefficients to the regions for which prevalence estimates are not available. The national estimate is obtained by combining the local estimates.

Results

National estimates - methods based on the EMCDDA protocol

The three methods recommended by the EMCDDA applicable to the situation in France and providing us with estimates of the prevalence of «problem drug use» are presented in table 2.

The results obtained using the «multiplier-treatments» and «multivariate» methods are convergent. The third method reveals much lower prevalence levels. If we take account of the three confidence intervals, we see that the

Table 1 - Estimates of the number of Problem Drug Users (PDU) in six French cities and the prevalence per 1,000 inhabitants aged between 15 and 64, 2005-2006

	Estimated PDUs	Confidence interval*		Population aged 15-64	Prevalence rate	Confidence interval	
Lille	7 900	6 300	10 200	728 173	10.8	8.6	14.0
Lyon	8 400	6 300	11 800	788 893	10.7	8.0	15.0
Marseille	5 600	4 200	7 700	543 206	10.2	7.7	14.2
Metz	2 300	1 700	3 200	212 632	10.8	8.0	15.0
Rennes	1 500	1 100	2 300	196 389	7.6	5.6	11.7
Toulouse	5 400	4 300	6 900	534 132	10.1	8.0	12.9

Estimates rounded off to the nearest hundred. Population: INSEE, 1999 census
*Cormack method (please see: R.M. Cormack, Interval Estimation for Mark-Recapture Studies of Closed Population, Biometrics, 1992, 48:p. 567-576).
Source: NEMO, OFDT

spread of estimates is very wide, (from 4 to 10 per 1,000 inhabitants aged 15 to 64 years old).

The limitations of each of the methods

It should be stressed that this data derived from complex methods, based on often debatable hypotheses, should be used with extreme caution. Each of these is explained and discussed in the above-mentioned report. This section provides an overview of the main limitations.

The first method, the «Multiplier method using treatment data», is based on the sales data for two drugs used for substitution treatments, making it possible to estimate the number of drug users concerned by these treatments. In view of the very high levels of accessibility of this type of treatment in France, this data provides an excellent basis on which to apply this method. It is certainly true that substitution treatments theoretically cover only part of the target group, i.e. opioid users. In practice, however, we know that many users take a number of different substances. Nevertheless, these estimates can be subject to certain biases, in particular due to the «misuse» of these treatments or even the trafficking of these drugs on the black market. These biases tend to result in an overestimation of the population receiving treatment as the drugs sold on the black market are not used by «users undergoing treatment».

The fact nevertheless remains that these substances are taken by drug users. Consequently, the method remains valid if this relatively well-documented phenomenon is uniform in all French départements. However, this is not really the case as we know that such misuse or trafficking is chiefly focused on a number of regions [7] (the Paris region, Alsace and Languedoc) which do not have sites participating in the NEMO study. There is therefore a risk of an overestimation of the numerator for the for-

mula applied in this method and, consequently, an overestimation of the final result.

The second method, the « police multiplier method « is based on data concerning «arrests by the police for heroin or cocaine use» of which the rather ambivalent nature should be highlighted (an indirect indicator of drug use but also an indicator of the intensity of police activity in this area). Regarding this latter point, it is by no means certain that this is uniform from one département to another. Another bias which may exist in the use of this indicator is that the subject that it measures falls slightly outside the scope of the target group definition (injecting drug use or regular use of opioids, cocaine and/or amphetamines during the year gone by for the 15-64 year old age group) since infringement of the law does not make any distinction concerning the intensity of the drug use. An occasional user may well be arrested, with the police statistics making no distinction regarding the type of use.

The third method, the «multivariate indicator method « has the advantage of comparing various data sources based on which estimates of known prevalence data for six départements are extrapolated to the 90 other départements. Nevertheless, each of the four indirect indicators used has its own specific limitations. Those concerning the number of persons receiving substitution treatment and the number of arrests have already been discussed above. The «treatment data» is obtained from an administrative source (the activity report addressed to the supervisory authority). The reliability of the declared data where new patient intakes are concerned is debatable. Furthermore, intra- and inter-centre «double entries» cannot be ruled out. The sales of Stéribox® provide a data source indicating

Table 2 - Estimates obtained based on the methods of the European protocol

| Method	Average estimate	CI-	CI+
Multiplier (treatments)	272 000	209 000	367 000
Multiplier (arrests)	187 000	144 000	253 000
Multivariate	264 000	189 000	338 000
	Rate per 1 000 inhab. 15-65 y.o.		
Multiplier (treatments)	**7.0**	**5.4**	**9.5**
Multiplier (arrests)	**4.8**	**3.7**	**6.5**
Multivariate	**6.8**	**4.9**	**8.7**

Source: OFDT

both the scale of intravenous drug use (which only concerns part of the definition of problem drug use) but also the presence of harm reduction activities which may vary from one part of France to another.

Finally, we should not forget that these three methods are all based on local estimates derived from the NEMO study. The first two methods estimate the percentage of the population which is «hidden» vis-à-vis the information source used (the «c» factor in the formula), while the last method uses departmental estimates as anchor points for the extrapolation. However, it appears that the application of the «capture/recapture» method to the drug use field is difficult in itself, requiring theoretical hypotheses which have not been fully verified in practice. Thus, this technique is based on the hypothesis that each individual belonging to the target group (the subject of the estimate) has the same probability of being captured by the various information sources (the «population uniformity» hypothesis) and on the hypothesis that the information sources are fully independent, i.e. the probability of an individual being identified by one source does not affect the probability of him being spotted by all of the other sources. In reality, regular users of illegal drugs are not uniform: some succeed in «managing»

their drug use and have a low likelihood of being «spotted» either by the health and social system or by the law enforcement bodies, particularly in the case of cocaine use. Possible relationships also exist with regard to «capture» by several sources. A user who has been arrested may be incriminated or even imprisoned, which means that it will be impossible for this user to be identified during the same period by a CSAPA (centre for treatment, assistance and prevention of addiction) or a CAARUD (reception and harm reduction support centres for drug users). However, the use of log-linear analysis with three data sources makes it possible to circumvent the hypothesis of independent sources (groups of two) and the existence of any interaction between the three sources is highly unlikely, according to the log-linear models used. Finally, over and above these limitations concerning the basis for the hypotheses underpinning the method used, we must once again stress the magnitude of the confidence intervals applicable to the estimates obtained by NEMO, due to low numbers of triads.

Graph 1 - Estimates obtained and chosen range
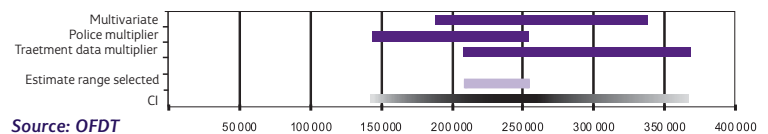
Source: OFDT

Estimates for 2006

The purpose of this research initiative was to produce a new estimate of the number of problem drug users in France and the corresponding prevalence levels. Despite being as rigorous as possible, there is a great temptation to highlight the diversity of the results obtained and to provide a wide range of estimates. Nevertheless, this risks hampering the clarity and understanding of such data. It is the task of the expert to propose a single estimate (or a narrow range of estimates), which in his opinion is/are as close as possible to the truth.

In view of the limitations inherent in each of the applied methods as discussed above, none of them can be considered a preferred method. Thus, in defining the most likely range of estimates we will use those values common to the confidence intervals of the three methods, i.e. between 210,000 and 250,000 problem drug users in France in 2006, half of whom are involved in medical opioid substitution treatments (graph 1). Indeed, it is estimated that approximately 120,000 people have used opiate substitution drugs during the first half of 2007 [8].

Regarding the estimate of the number of regular heroin users, when we identify the proportion of heroin users in the various surveys, and apply this to the number of problem users we can estimate the number of active heroin users (i.e. those having taken heroin during the last month) at approximately 75,000. When applying the same method to users of injecting drugs we arrive at a figure of 81,000 people using injecting drugs during the month gone by and 145,000 during their lifetime (table 3).

Table 3 - Estimates of the number of problem drug users in France in 2006

Estimate range selected		**210,000 - 250,000**
Rate per 1,000 hab. 15-64 ans		**5.4 - 6.4**
Central estimation		**230,000**
Rate per 1,000 inhab. 15-64 y.o.		**5.9**
Including	- Active heroin users (month)	74,000
	Rate per 1,000 inhab. 15-64 y.o.	**1.9**
	- Injecting users (lifetime)	145,000
	Rate per 1,000 inhab. 15-64 y.o.	**3.7**
	- Active injecting users (month)	81,000
	Rate per 1,000 inhab. 15-64 y.o.	**2.1**

Source: OFDT, 2008

COMPARISON WITH FRAMING DATA CONCERNING THE USE OF ILLEGAL DRUGS

The low prevalence levels of opioid, cocaine or amphetamine use severely limits the potential contribution of surveys carried out among the general population when it comes to estimating the scale of this phenomenon. Indeed, the latter provide us with estimates of the number of people having used these substances at least once during their life or at least once during the year gone by. We do not have any estimates of the number of regular users (i.e. at least 10 times during the last month) for these substances, as such behaviour is too marginal at a national level to be measured in this type of survey. The estimates produced based on the most recent surveys among the general population carried out in 2005 [9] are as follows:

	Lifetime prevalence	Last year use
Cocaine	1,100,000	250,000
Heroin	360,000	NA

NA: not available
Sources: ESCAPAD 2003, OFDT, ESPAD 2003, INSERM/OFDT/MJENR: 2005 Health Barometer, INPES, processing by the OFDT.

It would have been reasonable to expect estimates of the number of drug users among the general population (i.e. not only «problem» users) to be higher than those supplied by the three methods applied for problem drug users. This result is partially explained by the levels of social marginalisation often noted among problem drug users, as this particular population group generally slips through the net during surveys of the general population.

Changes over time

The initial estimates of the prevalence of problem drug use, documented methodologically, date from the mid-1990s in France. In 1995, for an estimate concerning 1993, the application of a demographic method provided an estimate of at least 160,000 heroin addicts [10]. Several years later, an initial application to the situation in France of the European protocol (which was still being drafted), resulted in an estimate of 146-170,000 problem opioid users in France in 1995 [3]. The very first application in France (in the Toulouse area) of the capture/recapture method to the field of drug use dates back to the same period [11]. A second application of the European protocol was carried out at the start of the new millennium in addition to an extension of the capture/recapture method to several cities [12]. The new estimate concerning the year 1999 was close to the previous one: 146-180,000 problem users of opioids or cocaine [4].

Rising from 160,000 in 1993 to 230,000 in 2006, the raw data may lead us to believe that a major increase in the phenomenon has occurred. This impression can be deceptive, however, for at least two reasons. The first is that the methods and, above all, the purpose, of the estimate have changed. We moved from the notion of «heroin addicts» (1993) to that of «problem opioid users» (1995), and subsequently to the definition of «problem users of opioids or cocaine» (1999) before finally using the definition of «injecting drug user or regular user of opioids, cocaine and/or amphetamines» (2006). Thus, the subject of the estimate has been widened over time.

The second reason is due to the magnitude of the confidence intervals to which the central estimates are subject. Just like the confidence intervals obtained in the application of the capture/recapture method (which forms the centrepiece for all of the methods used), we have noted in the estimates calculated for 2005-2006 that the national estimate ranged from 144,000 to 367,000. For these reasons, it is difficult to issue a firm opinion concerning the apparent increase in these estimates.

We should simply stress that an increase in the number of problem drug users may make sense. Indeed, other information sources indicate both the «increasing age of this population group» which is less hard hit by high mortality levels since the large scale rollout of substitution treatments in the 1990s, and secondly something of a «renewal» of this population group due to the circulation of stimulants, the appearance of new opioid users and changes occurring in the festive context.

Finally, we need to take a fresh look at the theoretical definition established by the EMCDDA. A problem drug user is taken to refer to: an injecting drug user or regular user of opioids, cocaine and/or amphetamines during the year gone by, for the 15-64 age group. However, all of the proposed methods more or less assume that this user is able to be accounted for through contact with one of the information sources used (i.e. arrests, treatment, health problems or death, etc.). Extrapolation may be possible by estimating the number of individuals with whom such contact has not yet been made but with whom it will be made in the future, but not the number of individuals «with whom contact will never be made». It is therefore highly likely that our estimate does not cover all of the «regular users of opioids, cocaine and/or amphetamines» due to the fact that it is impossible to identify (at least via these methods) the «regulated» uses of these products by a better integrated population group.

European comparisons

A comparison of the results obtained in France with those of other European countries having applied the EMCDDA protocol shows that France falls within the average for the European Union, with (in comparison to our European neighbours) a higher prevalence than that seen in Germany but which is lower than that of Italy, Spain or the United Kingdom (please see the statistical bulletin on the EMCDDA website at http://www.emcdda.europa.eu/stats08).

A comparison of the local estimates obtained for six French cities with other similar studies carried out in other European cities reveals a similar situation i.e. average prevalence with regard to the rest of Europe (graph 2). Indeed, the prevalence levels for «problem drug use» for the population group aged 15 to 64 years of age in most of the French cities studied as part of NEMO is around 10 per thousand:

Lower than those estimated in English, Scottish or Irish cities: Manchester (23.1 per thousand, 2001) Dundee (23.4 per thousand, 2003), Glasgow (28.4 per thousand, 2003), Edinburgh (18.2 per thousand, 2003), Dublin (15.9 per thousand -opioids only, 2001);

Equivalent to those of other western and northern European cities: Vienna (10.1 per thousand -opioids only, 1995) and Helsinki (11.1 per thousand, 2005);

Higher than those available for the cities of Eastern Europe and Greece: Athens (3.2 per thousand -opioids only, 2004), Warsaw (1.6 per thousand, -opioids only, 2005), Vilnius (5.4 per thousand,-opioids only, 2006).

Equivalent studies carried out in the Netherlands provide fairly disparate results according to the towns concerned although the average level is not very far from the figures noted for the French cities, i.e. Amsterdam (5 per thousand, -opioids only, 2007) and Rotterdam (12.4 per thousand, 2003).
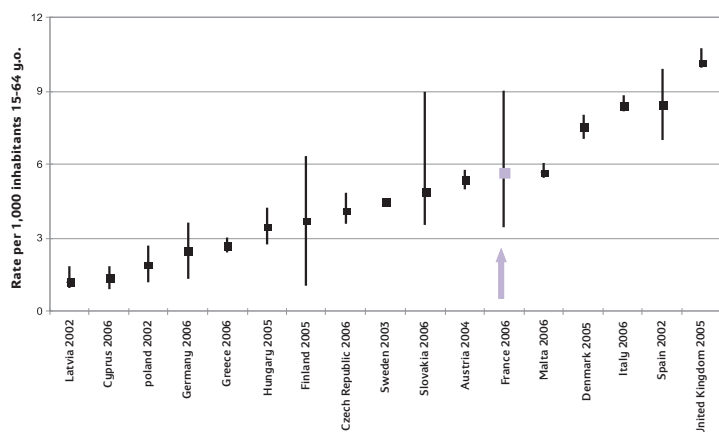
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Graph 2 - The prevalence of problem drug use in various European countries

Sources: EMCDDA ; REITOX, National focal points