

Estimating the Prevalence of Problem Opiate and Problem Cocaine Use in Northern Ireland

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Executive Summary

Overview

Up to date information on the prevalence of problem drug misuse should be an essential part of the evidence base used to formulate policy, inform service provision, and assess the wider population impact of interventions. Although direct enumeration is not possible, indirect techniques can provide estimates of drug misuse prevalence. This report provides details of a research study which uses data sources available at the local and province-wide level to estimate the prevalence of problem drug misuse in Northern Ireland. The capture-recapture method, which is an established method for estimating the size of covert populations, was used within the research. Estimates are provided for the four Health and Social Services Board (HSSB) areas in Northern Ireland. This is the second study of its kind to be completed in this location. McElrath (2002) completed a regional study of 'problem heroin use'. However, the previous work differs from the current study in that it did not include 'problem cocaine use' and was restricted in its efforts to produce regional estimates due to a lack of information on area of residence. Therefore, direct comparison between the 2002 estimates and the present estimates is unwise.

Data sources

Four sources of data were available within which problem drug users (defined as those who use opiates and / or cocaine) or opiate users could be identified. These sources of data are drug treatment services (as collated by the Northern Ireland Drug Misuse Database and Substitute Prescribing Database), hospital inpatient data, the Probation Board for Northern Ireland (PBNI) and the Police Service of Northern Ireland.

Persons in contact with these sources during 2004, known to be using heroin, methadone, other opiate drugs, or cocaine were included in the analysis. Only those aged 15 to 64 were included. The overlap between data sources was determined via comparison of initials, date of birth and gender within each HSSB area. Established statistical modelling techniques were used to examine this overlap and to produce prevalence estimates stratified by HSSB area of residence.

Results

Results are presented separately for estimated number of 'opiate users' and then for 'problem opiate and / or cocaine users'. Total estimates for opiate use and the prevalence rates per thousand of the population aged 15 to 64 for each HSSB area are shown in Table 1.

Table 1: Estimated number of opiate users by HSSB area

HSSB Area	Estimate	Rate (per 1,000)
Eastern	725	1.68
Northern	360	1.29
Southern	130	0.65
Western	180	0.99
NORTHERN IRELAND	1,395	1.28

In terms of opiate users, there are an estimated 1,395 people in Northern Ireland who use those drugs (1.28 per thousand of the population aged 15 to 64). The Eastern HSSB has the highest prevalence opiate use at 1.68 per thousand population and the Northern HSSB has the second highest prevalence at 1.29 per thousand.

Table 2 presents the estimates for opiate and / or problem cocaine use and the prevalence rates per thousand of the population aged 15 to 64, again by HSSB area.

Table 2: Estimated number of opiate and / or problem cocaine users by HSSB area

HSSB Area	Estimate	Rate (per 1,000)
Eastern	1,612	3.74
Northern	663	2.38
Southern	466	2.34
Western	562	3.08
NORTHERN IRELAND	3,303	3.03

As can be seen from Table 2, in total there are an estimated 3,303 opiate and / or problem cocaine users in Northern Ireland, this corresponds to 3.03 per thousand of the population aged 15 to 64. In terms of regional differences, the Eastern HSSB again has the highest prevalence of opiate and / or problem cocaine use at 3.74 per thousand population followed by the Western HSSB at 3.08 per thousand population. Interestingly when 'problem opiate and / or cocaine use' were considered the Northern HSSB ranked third.

Discussion and Conclusion

This study has demonstrated that it is possible to provide estimates of the prevalence of problem drug use (defined as the use of opiates and / or the problematic use of cocaine) as well as the prevalence of opiate use at HSSB area within Northern Ireland.

While examining the current results it is clear that there are regional differences within Northern Ireland, but the overall prevalence of opiate use (and indeed problem drug use) in Northern Ireland remains far lower than the prevalence in other parts of the United Kingdom or the island of Ireland.

The prevalence estimates for these neighbouring administrations are detailed in Table 3 below, along with the rate per population aged 15 to 64.

Table 3: Prevalence estimates of opiate use for elsewhere in the United Kingdom and Ireland

Country	Number	Population (15-64)	Rate (per 1,000)
England	287,670	32,292,156	8.91
Republic of Ireland	14,452	2,588,700	5.58
Northern Ireland	1,395	1,090,990	1.28
Scotland	51,582	3,352,022	15.39

Chapter 1: Background

1.0 Introduction

Information about the number of people who use illicit drugs such as heroin, other opiates or cocaine should be a key element of the evidence base used to formulate policy and inform service provision and should provide a context in which to understand the population impact of interventions to reduce drug related harm. To direct resources effectively, it is desirable to know about the prevalence of drug use at local level. To determine whether treatment may reduce harm to communities, it is necessary to know what proportion of the number of drug users in any given area is engaging with treatment. Although direct enumeration of a largely covert activity such as the use of heroin is not possible, indirect techniques can be applied to provide estimates of drug use prevalence. This research aims to use data sources that are available at local level to provide estimates of the prevalence of problem drug use in the four Health and Social Services Board areas of Northern Ireland and thus provide Northern Ireland-wide prevalence estimates.

1.1 Research aims

The original aims of the research study were:

- To apply prevalence estimation methods to establish estimates of the prevalence of problem opiate use at HSSB area level in Northern Ireland in 2004.
- To apply prevalence estimation methods to establish estimates of the prevalence of problem cocaine use at HSSB area level in Northern Ireland in 2004.

It was not possible to derive specific estimates of the number of problem cocaine users; however the study did provide estimates of the number of people estimated to be using either opiates or using cocaine in a problematic manner.

1.2 Health and Social Services Board Areas in Northern Ireland

There are currently four Health and Social Services Boards (HSSBs) in Northern Ireland established by Government in 1973¹. They are responsible for assessing the needs of their respective populations and commissioning services to meet those needs. They commission and purchase health and social care services for their resident populations from a range of providers, including health and social services trusts and voluntary and private sector bodies. The Eastern Health and Social Services Board (EHSSB) is Northern Ireland's largest local health authority and has responsibility for the care of approximately 670,000 people who live within its area. Northern Ireland's largest city Belfast is included in this Board area as is the coastal town of Bangor. The Northern Health and Social Services Board (NHSSB) is the second largest of the four HSSBs, just over 430,500 people live within the Board's area. The Southern Health and Social Services Board (SHSSB) area has a population of 320,000 while the Western Health and Social Services Board (WHSSB) serves a population of over 284,000 people and includes Northern Ireland's second largest city Derry and some of its most remote and rural areas. Table 1.1 outlines the population of each HSSB area² and the District Council areas that each covers.

¹ A recent review of public administration in Northern Ireland (Nov 2005) states the abolition of the existing four Boards, which will be replaced by a new strategic Health and Social Services Authority.

² Source: 2001 Census data supplied by Northern Ireland Statistics & Research Agency © Crown Copyright.

Table 1.1: Population of the four HSSB areas in Northern Ireland and District Councils they cover

HSSB Area	Population (15-64)	District Councils
Eastern	430,909	Ards, Belfast, Castlereagh, Down, Lisburn, North Down
Northern	278,371	Antrim, Ballymena, Ballymoney, Carrickfergus, Coleraine, Cookstown, Larne, Magherafelt, Moyle, Newtonabbey
Southern	199,438	Armagh, Banbridge, Craigavon, Dungannon, Newry & Mourne
Western	182,272	Londonderry, Fermanagh, Limavady, Omagh, Strabane
NORTHERN IRELAND	1,090,990	

It should be noted that the Drug and Alcohol Co-ordination Teams that implement both the drug and alcohol strategies at local level in Northern Ireland cover the HSSB areas. Therefore the prevalence estimates derived within this study can help to inform their work.

1.3 Prevalence Estimates in the United Kingdom and Ireland

This study attempted to build upon the work undertaken by Karen McElrath in her study which estimated the prevalence of ‘problem heroin use’ by applying the capture-recapture method in 2002 (McElrath, 2002). This current study counters one of the possible limitations with the previous research which lay in the fact that it was not possible to stratify the analysis by area of residence³. Although the data collection within that study strived to collate data from across Northern Ireland, we feel it cannot be assumed that the resultant prevalence estimates referred to the whole of the study area. We note the anecdotal suggestion that at that time drug misuse was largely confined to ‘the 3 Bs’ of Ballymena, Bangor and Belfast. Thus any over-representation in the data collection from one or more of those areas could have resulted in the prevalence estimate of 828 heroin users referring more to a restricted number of areas within Northern Ireland rather than the entire area the study aimed to cover. It may have been of critical importance within that previous project to consider how the ‘known’ drug using population was spread across the four HSSB areas and thus adapt the methods appropriately. For those reasons this study was stratified by HSSB area and also further stratified into areas within the Northern HSSB to specifically examine drug use in the Ballymena area. Because of the variation between the types of drug misuse identified and the data sources used to provide the estimates, the 2002 and the current estimate are not necessarily comparable.

Furthermore, McElrath’s previous study did not include cocaine. Estimating the number of people who have problems due to their use of cocaine is a far more difficult task than estimating heroin use prevalence. This is in part due to the issues relating to Police data where it can be difficult to differentiate between someone who has been arrested following their occasional or ‘recreational’ use of cocaine (perhaps within the club setting) and someone with a recognisable problem with that stimulant. It is also because of the fact that it is more difficult to ascribe a definition to problem cocaine use particularly as the drug is used in various ways by various groups of people. In prevalence estimation projects in England and in Scotland there had been difficulties in estimating problem cocaine use prevalence in most areas, with the studies only being able to estimate prevalence in areas with particularly high levels of problem cocaine use (including crack cocaine use) such as London or Aberdeen.

³ At the time this study was conducted, data sources were less well developed, for example the RDMD had only been operational for a few months and there were no data on substitute prescribing as that service only came into effect in 2004.

1.4 Prevalence Estimates elsewhere in the United Kingdom and Ireland

Elsewhere in the United Kingdom the most recent prevalence estimates are for Scotland in 2003 (Hay *et al*, 2005) and for England in 2000 / 2001 (Frischer *et al*, 2004). There is, however, an on-going study in England that aims to provide successive prevalence estimates over three financial years for each of the 149 DAT areas in that country. The Scotland study used capture-recapture methods in all DAT areas whereas the England estimate was derived from a mixture of estimates derived from the capture-methods and other estimates that were derived using a different method known as the multiple indicator method. The most recent prevalence estimates for the Republic of Ireland come from a study that used the capture-recapture method to estimate the prevalence of opiate use in 2001. These estimates can be summarised in Table 1.2, along with the rate per 1,000 of the population aged 15 to 64.

Table 1.2: Prevalence estimates of opiate use for elsewhere in the United Kingdom and Ireland

Country	Number	Population (15-64)	Rate (per 1,000)
England	287,670	32,292,156	8.91
Republic of Ireland	14,452	2,588,700	5.58
Scotland	51,582	3,352,022	15.39

All of the estimates primarily refer to problem opiate use. If it can be assumed that the prevalence rate for England (8.91 per thousand population) applies to Wales then combining the information in Table 1.2 with previous information about the prevalence of problem opiate use in Northern Ireland then there would be an estimated 356,593 problem drug users in the United Kingdom (or 9.24 per thousand population) or 371,045 in the United Kingdom and the Republic of Ireland (or 9.01 per thousand population). Thus the previous estimated prevalence rate for Northern Ireland (0.76 per thousand population)⁴ is less than a tenth of the prevalence rate for the immediate neighbouring administrations.

⁴ Calculated as the published estimate (828, McElrath (2002)) divided by the population figure (aged 15 to 64) used throughout this report.

Chapter 2: Prevalence estimation methods

2.0 Introduction

This research applies the capture-recapture method to estimate the prevalence of problem drug use in Northern Ireland in 2004. This method appears to offer the most cost-effective and straightforward approach to establishing valid local and national prevalence estimates. The benefits of this method are that: it does not rely on drug user's self reported use of substances; it uses a standard set of procedures that are tried and tested and allow for replication and it builds upon existing routinely collected data. This section outlines the key issues when applying the method to problem drug use prevalence estimation.

The capture-recapture method has been used in a number of settings in the United Kingdom to estimate the prevalence of problem drug use at local level, in particular a series of pilot studies funded by the Home Office (Hickman *et al*, 2004; Millar *et al*, 2004).

This chapter provides a brief overview of the method whereas a later chapter describes the particular methodological issues encountered within this study.

2.1 Capture-recapture methods

Capture-recapture methods were first developed over a century ago to estimate the size of animal or fish populations. In its basic form the method involves capturing a sample of animals, marking and then releasing them. A second sample is then captured; the proportion of marked animals in this second sample is equivalent to the proportion of animals in the population that were captured in the first sample, hence the population size can be deduced. For example, if a sample of 100 fish are caught, marked and released and a second sample of fish is caught, of which 10% are found to be marked, then the 100 fish in the first sample is equivalent to 10% of the population, hence the population size is 1,000.

When applied to estimating the size of drug using populations, the two samples are replaced with lists of individuals constructed from sources such as drug treatment services, police data, probation data etc. The number of individuals in each data source is equivalent to the size of the animal samples in the example above and the number appearing in both sources is equivalent to the number of recaptured, marked, animals. Hence the size of the population can be estimated, as above. In drug misuse prevalence estimation, samples are typically drawn from health (e.g. client lists supplied by drug treatment agencies) and / or criminal justice (e.g. police records or probation data) sources.

There are several assumptions that must be met in applying capture-recapture methods. These have a bearing on the work reported here and are outlined below.

Assumption 1: The population is 'closed'

It is assumed that drug users do not begin to use drugs or stop using drugs during the time period that is being studied. Moreover it is also assumed that drug users do not move into or out of the area that is being studied within that time period. By taking a period of one year it may be true that the population can be assumed to be closed, however there may be areas which are affected by drug users moving in or out, e.g. due to seasonal work. In this study, two years of data (2003 and 2004) were collated from the contributing data sources, however there were difficulties in fitting models to the two-year data (perhaps suggesting that over a two-year period the population could not be considered as 'closed'). Thus only the data from 2004 were used in the study.

Assumption 2: Drug users that are in more than one source are identified as such

To meet this assumption, the method of finding the overlap between lists must be accurate. In estimating drug misuse prevalence, individuals are usually identified by a code comprising initials, date of birth and gender (or an encrypted code based on those identifiers) to meet

data protection and client confidentiality requirements. No single method of identifying overlaps is perfect; cross-referencing on full initials, gender and date of birth would not identify that William Smith and Bill Smith are the same person, or that Mary Jones is sometimes known by her married name of Mary Brown. However, cross-referencing with a reduced set of identifiers can lead to false matching and thus impact on the validity of the prevalence estimates.

In order to best meet this assumption during the present study, all matching was carried out manually by a member of the research team and the impact of different matching techniques (see section 3.2) were assessed.

Assumption 3: Presence in one source does not influence presence in another

In other words, the fact that someone is in one data source does not increase (or decrease) the chances that they are in another one. If an individual's presence in one source affects the probability of their presence in the other, this will artificially inflate or deflate the observed overlap between samples. This assumption is often violated when looking at drug using populations, for example as those in probation data may be more likely to appear in prison data. This problem can be reduced by examining three or more samples using log-linear modelling techniques and this is the approach taken in this study and other recent studies in the United Kingdom and Ireland.

In the current study the examination of four samples worked to reduce the violation of this assumption in all but one area, Ballymena. The presence of a joint PBNI / Northern HSSB-funded project in Ballymena meant that if an individual was known to that project they were also known to the probation service. In order to address this issue the data for the joint funded project was used as a separate data source and the probation data was removed.

Assumption 4: All drug users are equally likely to appear in any data source

This assumption may not be met if there is 'heterogeneity' within data sources, leading to individuals having different probabilities of appearing in a particular source. For example, young drug users may be less likely than older drug users to have started treatment and therefore appear in a treatment data source. In other studies, stratifying samples according to known characteristics such as age or gender has reduced this problem. It has not been possible to do that in this study, however stratifying by HSSB area of residence will serve to make this assumption more valid.

Assumption 5: Data sources should be representative

In order to meet this assumption, data sources must have equal coverage of the area they serve and also be representative of gender, age group, ethnic group, type and severity of drug use etc. That is not to say that, for example, a treatment service should have equal numbers of female and male clients, rather the probability that a female drug user in the community appears in a treatment data source is similar to that of a male drug user (or that drug users in a rural part of a county are as likely to access treatment as drug users living in a town or city). By carrying out the analyses at HSSB area level, the data sources should be more representative but doubts may remain as to whether an individual would be as likely to contact services in, for example rural Fermanagh as opposed to Derry City.

Model selection

The capture-recapture method fits statistical models to the overlap pattern between three or more sources of data on drug using populations. Different statistical models are examined for each individual analysis to reflect different possible relationships between sources. For example, one model would assume that all sources are independent to each other (i.e. the chance of appearing in one source is not influenced by presence in another source) whereas a second model would assume, for example, that being in treatment would influence the chance that someone also turns up in a criminal justice source. When the capture-recapture analyses used four data sources there are over a hundred different models that could fit the overlap pattern, however simpler models are preferred to more complex models. The study team therefore restricted the various analyses to the 22 more simple models (the model that assumes all sources are independent, six models that account for relationships between

different pairs of sources and 15 models that account for relationships between sets of two different pairs of sources).

Hook and Regal (1997) discuss the validity of methods for selecting between the estimates derived from each of the 22 different models (or indeed more complex models). They also consider approaches to combining different models to give a 'weighted' estimate, such as using weights proposed by Schwarz (1978). Both approaches are based on values known as 'information criteria' that not only describe how well any given model fits the overlap data but also assists in comparing different models to suggest a 'best fitting' model (and thus a best estimate). In most capture-recapture analyses, prevalence estimation results are taken to be the estimates derived from the best fitting models; however there may be benefits in considering weighted estimates, particularly where there may be difficulties in choosing between different models, something that can happen when there are relatively few people in the available data sources.

Once estimates have been obtained, there are different approaches to deriving confidence intervals. The favoured approach in most studies is that outlined by Cormack (1992). This approach can be adapted to also give confidence intervals for weighted estimates. The 95% confidence interval is presented for all estimates.

Chapter 3: Data sources

3.0 Introduction

This chapter outlines the data that have been used to estimate the prevalence of problem drug use in Northern Ireland. The chapter begins by considering the case definition types of problem drug use used within the study along with other relevant inclusion criteria such as the age range. It then outlines the data employed by the capture-recapture analyses.

3.1 Case definitions

For the purposes of this study, problem drug use is defined as the use of opiates (including methadone) and / or the problematic use of cocaine (including crack cocaine use). It therefore does not include the use of other stimulants such as amphetamines or ecstasy, the use of cannabis or the use / misuse of prescribed drugs such as benzodiazepines. The reason for this case definition is partly because opiates are the drugs that cause most harm to an individual and communities, but also because the available prevalence estimations methods are not so appropriate for estimating the prevalence of other patterns of drug use. It should be noted that the case definition focuses on the 'use' of opiates, 'misuse' or the problematic use of these drugs or addiction to that type of drug. The part of the case definition relating to cocaine use is, however, restricted to problematic use of the drug. In particular, low frequency use of powder cocaine, perhaps associated with night clubs or so called 'recreational use' would not feature in the case definition. While it is difficult to completely ascribe a level or pattern of cocaine use that could be termed as problematic, the best way of considering the resultant estimates for opiate and / or problem cocaine use would be people whose use of either drug type could result in them needing drug treatment services or agencies to address their drug problem(s).

While it was one of the original aims of the study that estimates of the number of problem cocaine users (distinct from the number of opiate and / or problem cocaine users) should be obtained, there were insufficient data on people only using cocaine (including crack cocaine) to provide any meaningful estimates. Some information may be gleaned from comparing opiate and / or problem cocaine use estimates with the corresponding opiate use estimates; however it must always be borne in mind that both are estimates and any comparison needs to consider the associated confidence intervals.

All data refer to the calendar year 2004. The age range employed within the study is from 15 to 64. It has not been possible to stratify the estimates by age group nor by gender. Individuals with missing date of birth or gender were excluded from the analyses, as were individuals where it was not possible to assign HSSB area of residence (or those that were resident outside Northern Ireland).

3.2 Capture-recapture analyses

Four main sources of data on problem drug use were available that could provide sources for the capture-recapture analyses:

- The Northern Ireland Drug Misuse and Substitute Prescribing Databases
- Hospital Inpatient Statistics
- Probation data from the PBNI
- Police data from the PSNI

The Northern Ireland Drug Misuse and Substitute Prescribing Databases and the Hospital Inpatient Statistics data were collated centrally by the Department of Health, Social Services and Public Safety and released to the research team following the receipt of relevant ethical and data protection approval. The data from the PSNI were collated by the Central Statistics Unit of the PSNI following a specific request submitted by the research team to the PSNI

Drugs Squad. The data from the PBNI were collated by hand by a trained member of the research team who visited regional offices and the head office of the Probation Board to screen through pre-sentence reports for any indication of the use of opiates and / or cocaine by the client.

The following fields were collated from each of the data sources (apart from the Hospital data which did not collate a patient's initials):

- forename initial
- surname initial
- date of birth
- gender
- drugs used
- postcode district of residence.

Data Cleaning

Once data from the four contributing data sources had been collated, a data cleaning exercise was carried out to further ensure that each record met the inclusion criteria for the study. Within each data source, the data were filtered to ensure that an individual only appeared once within a HSSB area. In contrast to other studies that use computational methods to identify duplicate cases and also to match across data sources, all comparison of individual data records was done manually by a member of the research team. When matching across data sources techniques such as 'hard' matching and 'soft' matching need to be considered. To expand on this, under 'hard' matching two records within the same area would be deemed to refer to the same individual if the gender, date of birth, forename initial and surname initial all matched. This matching procedure does not, however, account for different initials being used by individuals (i.e. difference in maiden name / married name or names such as Bill / William). In contrast 'soft' matching allows forename initials to differ but makes it more likely that distinct individuals are wrongly assumed to be the same person.

Within each data source care was taken to include all relevant information within the resultant single record per HSSB area (for example if someone was noted as using heroin in one treatment episode and cocaine in another later in 2004 then it was ensured that such an individual was classed as an opiate and / or problem cocaine user).

The HSSB area of residence was assigned from the individual's postcode district (e.g. BT9). As HSSB boundaries do not always match with postcode district boundaries a 'lookup table' was created which allocated each postcode district to a HSSB area on the basis of which HSSB covered the largest proportion of the residences of any given postcode district. For example, out of the 2,499 address points in the postcode database for Northern Ireland that are in the BT31 postcode district, 1,801 (72%) are in the Down District Council area (and thus covered by the Eastern HSSB area) whereas the remaining 28% are in the Banbridge District Council area (and thus covered by the Southern HSSB area). This issue was only pertinent in a very small number of records used within the study. A more pertinent issue was, however, the likely miscoding of some postcode districts in the treatment database. It was clear that there was a very small number of cases with a Belfast postcode (e.g. BT9 3) that initially appeared to be resident in the Western HSSB area (e.g. BT93). After checking which treatment agency the individuals were in contact with it was clear that miscoding was a far more likely explanation than an individual from rural Fermanagh accessing services in Belfast. This certainly would not influence the estimates for the Eastern HSSB that covers Belfast, but could have skewed the data for the Western HSSB area.

Summary

In this section the 'known' number of drug users is presented by data source for each of the four HSSB areas in Northern Ireland. It should be remembered that the 'known' figure for each HSSB area will almost certainly be an undercount of the number of drug users engaging

with any treatment or criminal justice service within a particular HSSB area as the study has only focused on new contacts within the Northern Ireland Drug Misuse Database and has not collated data from needle exchanges or agencies that provide support to problem drug users but do not contribute to the Drug Misuse Database.

Table 3.1: Number of opiate users by HSSB area in each source

HSSB Area	Treatment	Hospital	PBNI	PSNI	TOTAL
Eastern	169	8	37	5	207
Northern	192	13	21	11	200
Southern	39	2	5	2	45
Western	49	2	8	3	58
NORTHERN IRELAND	449	25	71	21	510

Table 3.2: Number of opiate and / or problem cocaine users by HSSB area in each source

HSSB Area	Treatment	Hospital	PBNI	PSNI	TOTAL
Eastern	334	8	84	48	443
Northern	254	13	27	28	275
Southern	101	3	8	14	120
Western	149	3	13	9	167
NORTHERN IRELAND	838	27	132	99	1,005

It should be noted that in both tables, the Total column accounts for people being in more than once source (overlap cases) and thus the columns cannot be summed across to get the total.

Thus from Table 3.2 there are 1,005 individuals in Northern Ireland who have been identified as opiate and / or problem cocaine users. Most of those individuals (83%) were identified from the treatment data. Furthermore from Table 3.1 there were 510 individuals identified from the four sources as using opiates, again the largest proportion (88%) were identified from the treatment data.

Ballymena

Because of the perceived different nature of opiate use in the Ballymena area, additional analyses were undertaken to account for any variability in the Northern HSSB area that might affect the validity of the prevalence estimates and also to provide policy-relevant estimates for the Ballymena area. Unfortunately the town of Ballymena is split across two postcode districts; BT42 which includes parts of the south of the town and extends out to encompass Ahoghill and Cullybackey to the west and Broughshane to the east and BT43 which includes the city centre and the north of the town and an area extending out north and north west of the town. Thus an area comprised of the BT42 and the BT43 postcode districts was studied. Although this area did not completely match the area covered by Ballymena District Council, most of the main settlements in the council area would be covered. Data corresponding to a larger area that also included parts of neighbouring district councils (including Antrim and Randalstown in Antrim, Dunloy in Ballymoney and Carnlough in Larne) was examined when data relating to postcode districts BT41 to BT44 were analysed. In this report these areas are referred to as Ballymena (BT42 and BT43) and mid-Antrim (BT41-BT44).

The tables below detail the number of users in each source for Ballymena and mid-Antrim.

Table 3.3: Number of opiate users in each source in the Ballymena and Mid-Antrim areas

HSSB Area	Treatment	Hospital	PBNI	PSNI	TOTAL
<i>Ballymena BT42, BT43</i>	128	7	11	7	131
<i>Mid-Antrim BT41 - BT44</i>	152	11	12	7	157
Northern	192	13	21	11	200
NORTHERN IRELAND	449	25	71	21	510

Table 3.4: Number of opiate and / or problem cocaine users in each source in the Ballymena and Mid-Antrim areas

HSSB Area	Treatment	Hospital	PBNI	PSNI	TOTAL
<i>Ballymena BT42, BT43</i>	134	7	11	10	139
<i>Mid-Antrim BT41 - BT44</i>	158	11	12	10	165
Northern	254	13	27	28	275
NORTHERN IRELAND	838	27	132	99	1,005

Chapter 4: Analyses

4.0 Introduction

In this Chapter the specific application of the capture-recapture method in the context of this study is considered. The first stage, after collating and cleaning the individual data sources, is to compare across data sources to identify the overlap pattern. This is done by comparing identifiers such as initials (where available), dates of birth and gender. This process was carried out separately for each HSSB area. At this stage it became clear that there was a very high level of overlap between data sources in the Northern HSSB area, particularly in the Ballymena and mid-Antrim areas. The degree of overlap between sources was such that provisional estimates suggested that the total estimated number of drug users was virtually the same as the number in contact with treatment agencies or, in other words, there was almost no hidden drug use, particularly opiate use, in that area. With closer examination, it became apparent that everybody in the probation data source was also appearing in the treatment data. While the capture-recapture method can, to a certain extent, account for relationships between data sources it was felt that it would be totally unrealistic to suggest that all opiate users in Ballymena were known to treatment services.

On further consideration of the data sources in the Ballymena area it was noted that there was a joint PBNI / Northern HSSB funded-project within the Community Addiction Team where PBNI clients identified as using the types of drugs included in this study would be offered an assessment by the treatment service and thus would (almost automatically) appear in the treatment database. This effectively meant that it would not be appropriate to treat probation and treatment as distinct data sources within the Ballymena area (and at least questionable to treat them as separate in any Northern HSSB area analyses). Various approaches to dealing with this issue were considered, and the most appropriate approach was to exclude the probation data for the Northern area from the analyses. It should be noted that as the vast majority of the probation cases were also identified from treatment, this effectively meant reducing the known number of drug users by only a few individuals. Although a three-sample analyses could then be carried out on the remaining sources, the comparatively large amount of data concerning Ballymena could be restructured as four sources by treating the Community Addiction Team as a separate data source from other treatment services in the area (such as the Holywell in-patient unit). Thus for the analyses for the Northern HSSB area and also the additional analyses for the Ballymena (BT42, BT43) and the mid-Antrim (BT41-44) areas the four sources were:

- Community Addiction Team
- Other Treatment
- Hospital
- PSNI

Whereas in the other three HSSB areas the four data sources were:

- Treatment
- Hospital
- PBNI
- PSNI

Once these overlap patterns have been established, the capture-recapture analysis typically involves testing a series of statistical models, to find one that best matches, or 'fits' the pattern of overlap between data sources. This model is then used to calculate the number of problem drug users who do not appear in any source. This estimate is then added to the total number of known problem drug users, to provide an overall estimate of prevalence. The analyses can also consider a 'weighted estimate' that summarises across a number of possible estimates and attaches more weight to the estimates from models that fit the available overlap data. Again this weighted estimate is combined with the known number of problem drug users to

provide an overall estimate of prevalence. The weighted approach was the one taken within this study.

4.1 Capture-recapture analyses

In total, twenty-two models were fitted to the overlap data for each geographical area. These models ranged from the simplest model that assumed that all data sources were independent of each other to more complex models that accounted for relationships between sources. Although there are over a hundred models that can be fitted to the overlap between four sources, only the 22 most common models (and associated estimates) were considered. How well each model fits the overlap pattern was gauged by calculating a value known as Akaike's Information Criterion (AIC) where the model with a lower AIC is taken to be a better fit.

Although the estimate from the best fitting model is usually taken to provide the most accurate estimate of the prevalence of problem drug use in any particular area, the analyses for Northern Ireland also considered weighted estimates. The main reason for this was because of the size of the known population which was relatively small compared to other studies in the United Kingdom or Ireland and had particularly small levels of overlap between treatment data and criminal justice sources (apart from in the Ballymena area). Where the known data are small, there can be a tendency to select the independence model as, to a certain extent, there is insufficient data to identify and thus account for any relationship between sources. By looking at the weighted estimates, relationships between sources are considered and all possible estimates contribute to the weighted estimate. Thus the weighted estimate may be considered as more representative and it is simply a weighted average of the estimates derived from the 22 simplest models with the weights derived from an information criterion proposed by Schwarz (1978).

To obtain a confidence interval for the estimates for the whole of Northern Ireland, the methods for combining confidence intervals as outlined in Millar et al (2004) were used. In short, methods known as 'bootstrap' methods were used to combine confidence intervals in a more meaningful way than just simply summing either the lower or upper bounds (which would have given artificially wide confidence intervals).

Chapter 5: Results

5.0 Introduction

In this chapter the prevalence estimates for opiate and / or problem cocaine use and also opiate use are reported. The estimates are presented by HSSB area and estimates are also provided for the combined BT42 and BT43 postcode districts (the two postcode districts that cover the town of Ballymena and surrounding settlements such as Ahoghill, Broughshane and Cullybackey) and the combined BT41 to BT44 postcode districts (also including Antrim, Carnlough, Dunloy and Randalstown). The population figures for those areas were derived from combining information on the postcode database for Northern Ireland and the 2001 census.

5.1 Opiate use

Table 5.1 presents the estimates for opiate use.

Table 5.1: Estimated number of opiate users by HSSB area

Area	Population (15-64)	Known	Estimate	95% CI	
Eastern	430,909	207	725	462	1,308
Northern	278,371	200	360	289	472
Southern	199,438	45	130	54	480
Western	182,272	58	180	87	656
NORTHERN IRELAND	1,090,990	510	1,395	1,316¹	1,910¹

1 Confidence interval derived using bootstrap methods

Table 5.2: Estimated opiate use prevalence rate by HSSB area

Area	Rate (per 1,000)	95% CI	
Eastern	1.68	1.07	3.04
Northern	1.29	1.04	1.70
Southern	0.65	0.27	2.41
Western	0.99	0.48	3.60
NORTHERN IRELAND	1.28	1.21¹	1.75¹

1 Confidence interval derived using bootstrap methods

From Tables 5.1 and 5.2 there were an estimated 1,395 opiate users in Northern Ireland in 2004. This corresponds to 1.28 per thousand population aged 15 to 64. The highest prevalence was found in the Eastern HSSB area with a prevalence rate at 1.68 per thousand population. Although containing Ballymena, the Northern HSSB area as a whole only had the second highest prevalence rate at 1.29 per thousand. Opiate use was identified in all HSSB areas with a prevalence rate of 0.65 per thousand in the South and 0.99 per thousand in the West.

5.2 Opiate and / or problem cocaine use

The analyses were repeated for opiate and / or problem cocaine use and the results are presented in Tables 5.3 and 5.4.

Table 5.3: Estimated number of opiate and / or problem cocaine users by HSSB area

Area	Population (15-64)	Known	Estimate	95% CI	
Eastern	430,909	443	1,612	1,185	2,329
Northern	278,371	275	663	515	861
Southern	199,438	120	466	152	661
Western	182,272	167	562	319	1,275
NORTHERN IRELAND	1,090,990	1,005	3,303	3,093¹	4,307¹

1 Confidence interval derived using bootstrap methods

Table 5.4: Estimated opiate and / or problem cocaine use prevalence rate by HSSB area

Area	Rate (per 1,000)	95% CI	
Eastern	3.74	2.75	5.40
Northern	2.38	1.85	3.09
Southern	2.34	0.76	3.31
Western	3.08	1.75	7.00
NORTHERN IRELAND	3.03	2.84¹	3.95¹

1 Confidence interval derived using bootstrap methods

It can be seen from Table 5.3 that there are an estimated 3,303 people in Northern Ireland who are opiate and / or problem cocaine users. 1,612 of those individuals live in the Eastern HSSB area whereas 663 live in the Northern HSSB area. Opiate and / or problem cocaine use was also found in the Southern and Western HSSB areas; with an estimated 466 people in the South and 562 people in the west. In terms of the prevalence rate per thousand population, overall there were 3.03 people per thousand population aged 15 to 64, with the higher prevalence rates to be found in the Eastern HSSB at 3.74 and in the Western HSSB at 3.08.

5.3 Ballymena

As noted above, it was necessary to undertake separate analyses for the Ballymena (BT42, BT43) and the mid-Antrim area (BT41 – BT44) due to the relationship between probation and treatment data in the town.

Tables 5.5 and 5.6 provide the estimates for opiate use in this area whereas Tables 5.7 and 5.8 provide the corresponding estimates for opiate and / or problem cocaine use.

Table 5.5: Estimated number of opiate users in Ballymena and Mid-Antrim areas

Area	Population (15-64)	Known	Estimate	95% CI	
<i>Ballymena BT42, BT43</i>	<i>35,776</i>	<i>131</i>	<i>174</i>	<i>146</i>	<i>218</i>
<i>Mid-Antrim BT41-BT44</i>	<i>72,075</i>	<i>157</i>	<i>238</i>	<i>194</i>	<i>309</i>
Northern	278,371	200	360	289	472
NORTHERN IRELAND	1,090,990	510	1,395	1,316¹	1,910¹

1 Confidence interval derived using bootstrap methods

Table 5.6: Estimated opiate use prevalence rates for Ballymena and Mid-Antrim areas

Area	Rate (per 1,000)	95% CI	
<i>Ballymena BT42, BT43</i>	4.86	4.08	6.09
<i>Mid-Antrim BT41-BT44</i>	3.30	2.69	4.29
Northern	1.29	1.04	1.70
NORTHERN IRELAND	1.28	1.21 ¹	1.75 ¹

1 Confidence interval derived using bootstrap methods

The highest prevalence rate was to be found in the Ballymena (BT42, BT43) area with an estimated 4.86 per thousand population. This is over three times the prevalence rate found in either the Northern HSSB area or Northern Ireland as a whole.

Table 5.7: Estimated number of opiate and / or problem cocaine users in Ballymena and Mid-Antrim areas

Area	Population (15-64)	Known	Estimate	95% CI	
<i>Ballymena BT42, BT43</i>	35,776	139	193	160	245
<i>Mid-Antrim BT41-BT44</i>	72,075	165	258	210	335
Northern	278,371	275	663	515	861
NORTHERN IRELAND	1,090,990	1,005	3,303	3,093 ¹	4,307 ¹

1 Confidence interval derived using bootstrap methods

Table 5.8: Estimated opiate and / or problem cocaine use prevalence rates for Ballymena and Mid-Antrim areas

Area	Rate (per 1,000)	95% CI	
<i>Ballymena BT42, BT43</i>	5.39	4.50	6.68
<i>Mid-Antrim BT41-BT44</i>	3.58	2.98	4.76
Northern	2.38	1.85	3.09
NORTHERN IRELAND	3.03	2.84 ¹	3.95 ¹

1 Confidence interval derived using bootstrap methods

Within the Northern HSSB area, there were estimated to be 193 opiate and / or problem cocaine users in the Ballymena area (BT42, BT43), which corresponds to 5.39 per thousand population aged 15 to 64.

5.4 Proportions in treatment

Tables 5.1 and 5.3 provide estimates of the number of opiate users and the number of opiate and / or problem drug users in Northern Ireland by HSSB area. The current study did not set out to count the number of drug users in contact with treatment services in Northern Ireland in 2004; rather the prevalence estimation method used data on new contacts to treatment services throughout the year augmented with data from the substitute prescribing database. Thus a 'census' of opiate users or opiate and / or problem cocaine users in contact with treatment services was not undertaken within this study. If, however, the treatment totals presented in Tables 3.1 - 3.4 are compared with the prevalence estimates then the following table can be produced.

Table 5.9: Estimated proportion in treatment by HSSB area

Area	Opiate			Opiate and / or problem cocaine		
	Treatment	Estimate	%	Treatment	Estimate	%
Eastern	169	725	23.3	334	1,612	20.7
Northern	192	360	53.3	254	663	38.3
Southern	39	130	30.0	101	466	21.7
Western	49	180	27.2	149	562	26.5
NORTHERN IRELAND	449	1,395	32.2	838	3,303	25.4

Table 5.10: Estimated proportion in treatment for Ballymena and Mid-Antrim areas

Area	Opiate			Opiate and / or problem cocaine		
	Treatment	Estimate	%	Treatment	Estimate	%
<i>Ballymena BT42, BT43</i>	<i>128</i>	<i>174</i>	<i>73.6</i>	<i>134</i>	<i>193</i>	<i>69.4</i>
<i>Mid-Antrim BT41-BT44</i>	<i>152</i>	<i>238</i>	<i>63.9</i>	<i>158</i>	<i>258</i>	<i>61.2</i>
Northern	192	360	53.3	254	663	38.3
NORTHERN IRELAND	449	1,395	32.2	838	3,303	25.4

There appear to be marked differences in the estimated proportion of drug users known to treatment services (derived as the number identified from the Drug Misuse Database during this study divided by the prevalence estimate). While the Eastern, Southern and Western HSSB areas appear quite similar (with around a quarter of drug users identified as being known to treatment services), Ballymena differs, with approximately 70% of opiate and / or problem cocaine users and almost 74% of opiate users identified as being known to treatment services.

Chapter 6: Discussion and Conclusions

6.0 Introduction

It has been estimated that there are 3,303 opiate and / or problem cocaine users in Northern Ireland, 1,395 of which use opiates. Those figures were derived using the capture-recapture method to estimate prevalence. Although this was the second study to estimate the prevalence of opiate use in Northern Ireland using those methods, there remain several issues that may need to be addressed before the methodology can be considered as an 'off the shelf' technique for estimating prevalence in Northern Ireland. This chapter discusses the issues encountered during the research and makes comparisons between the results of this study and other information on prevalence in Northern Ireland, the United Kingdom and Ireland.

6.1 Size of the 'known' population

The capture-recapture method has become established as the most appropriate for estimating the size of hidden or covert populations such as people who use drugs such as heroin. It has been used in 29 out of the 32 Drug Action Team areas in Scotland, 10 Drug Action Team areas in Greater Manchester and also in Brighton, Liverpool and London. Although some of the Drug Action Team areas in Scotland are relatively small (in terms of population size) and cover fairly rural areas, the 'known' or 'visible' drug using populations found in Scotland were greater than those found in the current study (with the exception of data on Ballymena). The capture-recapture method needs at least some overlap between data sources and the overlap between sources does depend on the relative size of sources. Thus, the fewer the data there are then the more likely it is that there is no overlap between sources. Even when there is overlap between sources, small numbers of overlap can result in unstable estimates (i.e. equally good models offering markedly different estimates). That was not a problem in the current analyses; however the small size of the known population resulted in the most basic model being chosen in the majority of cases. This could potentially have the effect of underestimating the true prevalence as there would not be sufficient data to account for any relationships between sources. One approach to resolving this issue, which was the approach taken in this study, was to look at the weighted estimates.

One approach to increasing the size of the known population would have been to undertake a complete screening of all drug treatment data in Northern Ireland in 2004 instead of relying on the combined data from the Northern Ireland Drug Misuse Database and the Northern Ireland Substitute Prescribing Database. This was not done for two reasons; firstly (and most importantly) the research study did not receive ethical permission to screen through medical files. Although this has been done in previous studies, within this study, it was a requirement that only Drug Misuse Database records where the client had given consent for their information to be used for statistical purposes (the vast majority) would be supplied to the research team. Secondly, it was anticipated that the roll-out of the Substitute Prescribing Database in 2004 would mean that virtually all clients at drug services would actually appear in the combined treatment data source.

6.2 Ballymena

The biggest issue within the study was providing valid estimates for the Ballymena area. It is clear from the known data that the nature and extent of heroin / opiate use in Ballymena is very different to most of the rest of Northern Ireland. This is borne out in, for example, the statistics from the Drug Misuse Database where 55% of those with heroin as their main drug use were resident in the Northern HSSB area. There has also been increased media attention focussed on Ballymena, such as a story in the Guardian on February 17, 2001, 'Drug secret lurks in Ulster's bible belt' which claimed that Ballymena was 'home to up to 1,000 addicts'. While clearly there is an increased prevalence in the town, the available data from treatment services suggests that a large proportion of addicts would not be known to treatment services

nor hidden their drug problem so successfully that they were not appearing in probation data for drug-related crimes such as shoplifting, police data for possession offences or hospital data for drug-related morbidity.

The problem this study faced in applying capture-recapture methods to estimate prevalence in the Ballymena area is that virtually everybody identified from the police data and the probation data were also in the treatment data. As previously noted, a significant reason for this was due to a joint PBNI / Northern HSSB funded project where PBNI clients in the area who are identified as having a problem with drugs such as heroin would automatically receive an assessment at a treatment service (and thus appear in the Northern Ireland Drug Misuse Database). This made it impossible to use the probation data as a distinct source. It could, however, be possible that heroin using clients of the PBNI in that area are not being identified as such by probation officers, but there is no reason to believe that this should be the case. Equally interesting is the large overlap between Police data and treatment data in Ballymena – again the vast majority of people identified as using opiates from the Police data concerning the Ballymena area are already known to treatment services. This also suggests that treatment services in Ballymena have been successful in reaching out to the town's opiate using community in one way or another.

So it appears that Ballymena does have a higher prevalence of heroin use than elsewhere in Northern Ireland, but also that the heroin using community is fairly visible in terms of contact with treatment services. It is not beyond the bounds of possibility that there is another opiate using community in Ballymena that has been successful in remaining hidden from treatment, police and probation; however it would be difficult to try to access that community (if indeed it does exist) to account for it in a prevalence estimation exercise. While in other settings the use of community-based interviews (using methods of contacting hidden individuals such as snowballing) have been used it would be difficult to see how that approach would have more success in accessing hidden opiate users than the established treatment services (or indeed the police or probation services).

There does, however, remain the marked difference in the estimated proportion of drug users known to treatment services in Ballymena as opposed to the rest of Northern Ireland. It was estimated in the study that approximately 74% of opiate users in the Ballymena (BT42, BT43) area were known to treatment. That figure is not only high compared to the Northern Ireland average (32%), but could be quite high compared to other parts of the UK where the proportion engaging with services (in particular structured treatment) is typically around 40%. One interpretation would be that Ballymena's drug services have been increasingly successful in engaging with the town's relatively stable and established heroin using community.

6.3 Comparison with other estimates

The first comparison that most people would make would be between the estimate for 2001 and the current estimate. This comparison should only be made for the opiate use estimate and should be made with caution. In 2001 there were an estimated 828 opiate users with a 95% confidence interval of 695 to 1,018. This study estimated that there were an estimated 1,395 opiate users (95% CI 1,316 to 1,910). When drawing a comparison with the 2001 estimate, the increase would be 567 or 68% from the previous baseline. This is a significant increase. The previous study did not stratify the estimates by geographical area therefore it is difficult to make direct comparisons. It is, however, clear that the prevalence of opiate use has increased in Northern Ireland, but it may be that the increase is not as large as it may originally appear as this current study has been able to account for geographical differences and without doing so, the previous estimate could have been an underestimate. From Table 5.1, the available estimates for the Southern and Western HSSB areas could be interpreted as those areas catching up with the Eastern and Northern HSSB areas but without further systematic research it is difficult to ascribe any trends to the regional data.

The prevalence estimates presented in this report can also be compared with other sources of information on problem drug use in Northern Ireland. The weighted estimates from Tables

5.1 and 5.3 can be used to estimate what percentage of Northern Ireland's opiate users or opiate and / or problem drug users reside in each HSSB area.

Table 6.1: Estimated percentage of the Northern Ireland total by HSSB area

HSSB Area	Opiate		Opiate and / or problem cocaine	
	Estimate	%	Estimate	%
Eastern	725	52.0	1,612	48.8
Northern	360	25.8	663	20.1
Southern	130	9.3	466	14.1
Western	180	12.9	562	17.0
NORTHERN IRELAND	1,395	100.0	3,303	100.0

The figures in Table 6.1 can be compared with four other data sources.

In 2004 there were 259 notified addicts in Northern Ireland from the Northern Ireland Drug Addicts Index 2004 (DAIRU, 2005a). From the Census of Drug and / or Alcohol Misuse in Northern Ireland (DAIRU, 2005b) there were 1,838 individuals⁵ noted as having either a problem with drugs only or with drugs and alcohol. It should, however, be noted that the definition of drug use in that census would include drugs such as cannabis. The Statistics from the Northern Ireland Needle and Syringe Exchange Scheme (DAIRU, 2005c) summarises the number of visits to needle exchanges where needles and / or syringes were issued to clients and, in particular, provides a regional breakdown of the 7,440 by HSSB area. Finally the Statistics from the Northern Ireland Drug Misuse Database (DAIRU, 2005d) presents the number of people who stated that heroin was the drug that was causing them the most problems. Again this source provides a regional breakdown. Table 6.2 summarises the regional breakdown for each of those sources.

Table 6.2: Estimated percentage of the Northern Ireland total in other data sources by HSSB area

HSSB Area	Opiate Estimates	Addicts Index	Drug Misuse Census	Needle Exchange	Drug Misuse Database
Eastern	52	41	41	38	30
Northern	26	44	22	52	55
Southern	9	5	13	0*	9
Western	13	8	24	10	6
NORTHERN IRELAND	100	100	100	100	100

* 0.2% in Southern HSSB area

Thus from Table 6.2 there are marked differences not only across Northern Ireland but also between the data sources. The biggest difference appears to be between the Drug Misuse Database figure and the new prevalence estimates for the Northern HSSB area. A further regional comparison can be found from the All Ireland Drug Prevalence Survey 2002/2003 which looked at cocaine use. While there are issues in making direct comparisons between this study and that prevalence survey (not least in comparing cocaine use with opiate and / or problem cocaine use), it can be seen that cocaine use is far more prevalent in the Eastern HSSB area. For example 2.4% of 15 to 64 year olds in the Eastern HSSB area reported ever having used cocaine, compared to 1.0% in the Northern, 0.8% in the Southern and 1.6% in the Western HSSB area.

At 1.28 per thousand population, it is still apparent that the prevalence of opiate drug use in Northern Ireland is still far less than in neighbouring administrations. The most recent estimate for Scotland was 15.39 per thousand so the estimated prevalence remains less than a tenth of that found across the North Channel. Interestingly, the area of Scotland closest to

⁵ Individuals who could not be assigned to a HSSB area, i.e. not in prison.

Northern Ireland (Dumfries and Galloway, including Stranraer) was one of the areas that recorded the highest increase in prevalence from 2001 to 2003 and now has a comparatively high opiate use problem. While the estimated prevalence in Ireland in 2001 at 5.60 per thousand is less than the corresponding figure for England (8.91) both remain far higher than the new estimate for Northern Ireland.

6.4 Conclusions

It has been possible to use the capture-recapture method to estimate the prevalence of opiate use in Northern Ireland in 2004. It has also been possible to provide stratified estimates by HSSB area although a slightly different approach was needed to provide valid estimates for the Northern HSSB area due to the nature of treatment service provision in the Ballymena area. Comparing the prevalence estimates with other information on opiate use in Northern Ireland does raise questions about the relationship between the estimated prevalence and the identified number of drug users in treatment. While it was possible to provide HSSB estimates, it was not possible to provide estimates by gender or indeed age group. Furthermore, it was not possible to specifically look at problem cocaine use separate from the 'opiate and / or problem cocaine use' definition employed in the study. While information on the prevalence of problem cocaine use would be important to both the DHSSPS and the local Drug and Alcohol Co-ordination teams, the capture-recapture method is not an appropriate method to specifically examine that nature of problem cocaine use on its own. This is primarily due to problems in differentiating between different patterns of cocaine use within the criminal justice data sources; in particular it can be difficult to identify problem cocaine users who may benefit from treatment / support for their drug use (in contrast to people who only occasionally use the drug in a less harmful manner) from police data. This issue is dissipated when the available data on cocaine use is considered alongside the data on opiate use.

To conclude, it now appears possible to estimate the prevalence of opiate use and the prevalence of opiate and / or problem cocaine use at HSSB level in Northern Ireland. Indeed, much of the time and effort of the research team within the study was in securing access to data sources, either in terms of gaining ethical / data protection approval or establishing appropriate methods of gaining access to data within individual sources. Any future prevalence estimation exercise should be able to build upon that essential groundwork. The most interesting result from the study was that, although high compared to the rest of Northern Ireland, the prevalence of opiate use in Ballymena was not as high as some anecdotal information. While it may be easy to dismiss the suggestion that there were 1,000 addicts living in the town, there does remain the question why treatment services in the town are in contact with the majority of drug users whereas in most areas of the United Kingdom (and the rest of Northern Ireland) usually only a minority (albeit a substantial minority) of opiate users are in contact with services. Any future prevalence research in Northern Ireland may want to specifically focus on this issue.

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