

# Appendix 5 – Economic framework: outline of key issues

## Introduction

The Department of Health (“DH”) and the Ministry of Justice (“MoJ”) have commissioned PricewaterhouseCoopers (“PwC”) to review prison-based drug treatment programmes and provide recommendations on how these should best be provided. As part of the project, PwC was asked to set out an appraisal of options for delivering drug treatment programmes in prison. An economic framework was developed to assess the costs and benefits from these programmes to prisoners, the government and wider society. These were identified through reviewing literature from academic and government sources.

The economic framework and the resultant numerical model (covered in a subsequent annex) allow high-level comparison to be made between the impacts of various options in common monetary terms. The initial results of the framework were shared with economists and senior officials in Department of Health and Ministry of Justice, and this version has addressed the useful issues raised by them.

This paper outlines the key issues and characteristics for the economic framework that PwC underpins the work that undertook for the project. In addition to the more general influence through the project, PwC has undertaken a numerical analysis to give a scale of the costs and benefits involved. This analysis is based on the characteristics of drug users in prisons in comparison to the general population. The resultant economic costs are spread across the expected lifetime of the users and include direct financial costs, indirect benefits lost and some measure of welfare loss through excess mortality and morbidity. The details and results of this modelling are included in Appendix 6.

## Structure

The structure of the paper:

- Characteristics – Outlines the high-level characteristics of drug users, prison population and how these may impact on outcomes from drug-treatment programmes
- Costs of drug use – The main impacts and estimated costs of drug use for society in terms of productivity, health, crime and social impacts.
- Treatment – Links existing and potential treatment programmes with their success and effectiveness.
- Economic Framework – Outlines the proposed structure of the economic model and potential methodological approaches.

## Characteristics

The characteristics of drug users, prisoners and drug-using prisoners are important for determining the expected costs of illegal drug abuse and treatment outcomes. People who find themselves involved with drugs and crime typically have personal or circumstantial attributes which impact their health, economic and social lives. It will also be important to determine where the characteristics of these three sets differ. This will allow us to best use existing data sources and ensure that our analysis is appropriately tailored to particular circumstances.

## Drug users

Illegal drug use is common. Up to a third of adults in the UK have used illicit drugs at some point in their lives, with prescription misuse likely to be even higher<sup>58</sup>. Cannabis and ecstasy are the most commonly used illicit drugs though heroin and cocaine are associated more often with problematic use<sup>59</sup>. In recent years, cocaine – and especially crack cocaine – has more prominent as a significant problem drug alongside opiates.

Drug users can be categorised into two broad groups – recreational and problem users. At any time, between 1.8m and 3.5m people in Britain will be using illegal drugs on a regular basis<sup>60</sup>. Most will be able to control their habit and impose relatively limited costs on the government and wider society<sup>61</sup>. However, there are approximately 350,000 problem drug users according to recent research<sup>62</sup>. There is no single definition of ‘problem drug use’ in the literature, but most papers agree that problems users are those where drug taking has become an essential and central element of life, where users are showing signs of drug dependence and/or where they are undertaking high risk activities (e.g. injecting). This group’s drug use imposes significant costs (e.g. health, criminal justice, social implications) on wider society – up to £23b per annum in England and Wales<sup>63</sup>.

Higher risk of developing drug problems is often associated with specific individual and environmental factors, such as social exclusion, stress levels, local social norms and parental influence<sup>64</sup>. These factors are likely to be collinear with other social and economic outcomes, e.g. skills performance and employment. Users can also often fail to realise when their drug use has become problematic. The causality relationship between drug use and these factors is complicated, multi-directional and inter-generational<sup>65 66</sup>.

### Some reasons for drug use

Many drug users exhibit a propensity towards higher present consumption preferring more immediate benefits over long term costs and risks. This could be driven by a higher than average discount rate of time preference and asymmetric information regarding the risks of drug use. This does not mean that drug abusers act differently than economists would expect. While extreme drug use and mental illness might impede some people’s ability to consider their actions, rational addiction theory provides an economic explanation for drug use by suggesting that individuals are forward looking and do take into consideration future risks<sup>67</sup>. However, those individuals who are prone to heavily discounting of the distant future will significantly favour present consumption against any long-term consequences. The larger discount rates imply a significant decline in consumption with age and health status, which is evidenced by steady decline in drug use in people over the age of 50 which may be linked to the onset of visible health consequences<sup>68</sup>.

Other potential reasons for drug use which may also be involved include responses to parental authority, escapism, mental health issues and under-arousal.

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<sup>58</sup> Gerada and Ashworth 1997

<sup>59</sup> Godfrey et al 2002

<sup>60</sup> Godfrey et al 2002

<sup>61</sup> For young recreational users £35m and for older regular users £12m according to Godfrey et al 2002

<sup>62</sup> Godfrey et al 2002, and Hay et al 2007

<sup>63</sup> Godfrey 2002

<sup>64</sup> Gerada and Ashworth 1997

<sup>65</sup> Social Exclusion Unit 2002

<sup>66</sup> Johnson 2006

<sup>67</sup> Becker and Murphy 1988

<sup>68</sup> Arcidiacono et al (2007)

## Key demographics of drug users

The majority of users start in their teens<sup>69</sup>, develop their habitual use in their twenties with use then declining or ceasing in later years of life<sup>70</sup> (though high premature mortality among users makes the sample somewhat biased). Illegal drug use is highest among males, particularly for those who are young and unattached to a partner or children. Many drug users have problems – both currently and in their past -- with training and employment which is likely to be circular relationship<sup>71 72</sup>.

Drug users who end up in prison – or least in the criminal justice system – are more likely to have problems than the population wide averages for drug users. It is therefore necessary to bear in mind that the intensity of costs and risks for drug-abusing prisoners are likely to be greater than for the results obtained by looking at population-wide data.

## Risk factors for drug usage

There are a number of individual and environmental factors that contribute to the likelihood of drug use, which often 'cluster' in an individual.

- Biological factors
- Temperament and personality: issues with under-stimulation which respond to chemical stimulation
- Family: poor familial and peer relations increase risk, while being married decreases probability of use. Drug abusers are also more likely to have had parents who abused drugs or alcohol.
- Emotional and behavioural problems: often associated with mental or physical disorders; negative links between substance abuse and delinquency.
- Mental or physical problems: psychopathology may also be linked to substance abuse; higher psychopathology in using than non-using delinquents
- Poor social connections: high unemployment, low level of skills and education.
- Peer use of substances: including drinking<sup>73</sup>

The likelihood of individuals to engage in problematic drug taking is a combination of these personal, social and instructional factors, along with a degree of unexplained variation within populations.

## Prisoners

The prisoner population is a subset of the arrested criminal population, i.e. only those that have committed serious enough or repetitive enough to justify custody.

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<sup>69</sup> Bonomo and Promios 2005

<sup>70</sup> McDonald and Pudney 1999

<sup>71</sup> McDonald 2002

<sup>72</sup> Zuvekas et al 2005

<sup>73</sup> Bonomo and Promios 2005

## Key demographics of prisoners

At any one point, about 80,000 people are in prison in England and Wales with another 225,000 on probation. Most prisoners (95%) are male<sup>74</sup> with a mean age in their mid/late twenties<sup>75</sup>. A high proportion have a mental disorder – one-third with a psychiatric diagnosis<sup>76</sup>. Around 43% of prisoners are serving long-term sentences between 4 years and life with slightly less (35%) serving short term sentences between 12 months and 4 years<sup>77</sup>. Therefore, the stock of prisoners will be dominated by those serving periods greater than a year.

About 135,000 people will pass through the prison system during the year. The flow of prisoners will have a much higher contingent of those serving shorter sentences, so that the number of people serving shorter sentences is a more significant share of all of those that will interact with the prison system in any particular year. It is crucial to differentiate between those people that have involvement with the prison system during a period of years and those currently in the system. The first group will include many more small level criminals who commit more frequent but less violent crime.

## Characteristics of prisoners

People under custodial sentence or on remand typically face a range of social, financial and health issues in their life which have been contributing factors to their criminal activity and subsequent incarceration<sup>78</sup>. The main characteristics of the prison population are low skills and education, poor employment outcomes, limited financial resources, high level of social exclusion, previous criminal history and widespread drug use.

Nine key factors have been identified as important to determining rates of offending and re-offending – education, employment, drug/alcohol misuse, mental/physical health, attitudes/self-control, institutionalisation/life skills, housing, financial support/debt and family networks<sup>79</sup>. Criminal activity tends to decline with age after the thirties even for the most prolific criminals<sup>80</sup>.

## Where drug users / prisoners converge

There is an intrinsic link between problem drug users and prisoners, with both group sharing many of the same general characteristics. The largest share of drug users in prisons will generally be males, aged 20 – 35, on a short-term sentence for an acquisitive crime, with a history of imprisonment. This is because they represent the largest share of prisoners. A significant share of female prisoners will have drug problems, but they are much smaller share of the overall numbers of prisoners. It is estimated that around 70% of prisoners have taken illegal drugs in the year before their prison sentence, with up to 50% being categorised as problem users<sup>81</sup>. A high proportion of prisoners will have committed the crime in order to get drugs<sup>82</sup>, or will have been under the influence of drugs at the time, particularly for robbery, weapons offences, burglary and motor vehicle theft. Drug users are more likely to have prior convictions, and have a higher chance of re-offending than other prisoners<sup>83</sup>.

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74 Offender caseload statistics

75 Brooke et al 1996

76 Brooke et al 1996

77 Offender caseload statistics

78 Birmingham et al 1996

79 Social Exclusion Unit 2002

80 Sampson and Laub 2003

81 Ramsay 2003

82 Ramsay 2003

83 Ramsay 2003

Drug abuse is a causal factor in a relatively high proportion of the prison and jail population, with problem drug users committing a disproportionate amount of total offences<sup>84</sup>. Small subsets of particularly active criminals are likely to have committed a very large share of total crimes. These crimes will tend to be more acquisitive and less violent as (i) they are often used to finance drug habits and (ii) more serious crimes would require longer sentences which limit the opportunity to commit external crimes. This strong correlation between problem drug users and crime could mean that addressing issues of drug dependency could be effective in decreasing rates of crime but will also require addressing other issues which underpin both criminal and drug-using activity. Treating the type of drug users who record the most crime -- particularly while they are young -- is likely to have the largest impact on reducing the costs from drug-related criminal activity.

A high discount rate of time preference also provides some explanation of the correlation between drug use and crime. Higher relative values on the current proceeds of crime but less value on the potential negative consequences of being caught could lead to higher perceived net benefits to individuals from criminal activity. This would cause them to be more likely to commit crimes than a person who had a similar set of morals but a different perception of relative time values. Thus, drug use and criminal activity may not only have a direct relationship between themselves but also be partially co-determined by personal characteristics such as perception of future costs and benefits.

Drug dependence treatment benefits tend to be concentrated among younger prisoners. These prisoners are less established in their addictions, have longer potential working lives and are less likely to have developed the most serious health consequences from their drug habits. This means that the benefits of effective drug treatment programmes for younger prisoners could have higher lifetime benefits. However, these needs to be tempered by the lower rates of achieving abstinence in this group than in older prisoners who may have higher personal incentives to quit drugs<sup>85</sup>. Current drugs policy also is based on provision based on individual need and not simply on the groups that have the highest personal and societal gains from treatment.

Before commencing their sentence, the most commonly used drugs are cannabis and heroin, with a third of prisoners injecting. Once in prison drug use decreases slightly, with injection decreasing significantly<sup>86</sup>. Many prisoners also have recently been in drug treatment, methadone being the most common<sup>87</sup>. This has significant implications for the types of drug programmes that should be targeted which need to differ according to the substance being abused, and linked to programmes before and after prison.

Entry and exit from prison are key risk points for many prisoners. Suicide and serious self-harm are significant risks for new prisoners, especially those with drug problems. Exit from prison is associated with much higher mortality with many deaths linked to drug overdose<sup>88</sup>.

## The impact of characteristics

The characteristics of drug users and prisoners will impact on the expectations that we have on their actions. In so far, as we can measure how these characteristics lead to outcomes that differ from the general population, these need to be included in our analysis.

The age of the population will influence the timescale over which future economic impacts can be assessed and also the degree to which previous behaviours may have already resulted in lifelong consequences. Younger people will have more years of future employment, fewer existing consequences of past use and also be more accessible to training opportunities to increase productivity.

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<sup>84</sup> Karberg and James 2005

<sup>85</sup> Arcidiacono et al 2007

<sup>86</sup> Mason et al 2003

<sup>87</sup> Mason et al 2003

<sup>88</sup> Singleton et al 2003

The health of the population will determine their ability to function effectively in society and the expected future costs which they will impose. Several of the illness related to illegal drug use have relatively binary impacts, i.e. once you have been infected the costs occur no matter what happens subsequently. For instance, infection with Hepatitis C will involve considerable future costs to the health service even if one's subsequent behaviour is exemplary. Many people have flawed sense of potential health consequences of their actions leading to risky behaviours which they do not fully understand<sup>89</sup>.

Existing skills and educational potential will influence the level of potential earnings that could be expected when engaged in mainstream employment.

Personal characteristics are often difficult to measure. In some cases, they may not be readily identifiable, and any population will have a natural variation in characteristics such as hard work, honesty and punctuality. However, generalisations based on studies can be made where we have reasonable expectations that population groups may be biased from the average in certain ways. The observation of poor personal and social skills in a significant share of both drug users and prisoners should inform our expectations of how they will perform in the wider economy and society.

## Costs of drug use

Drug use results in significant costs for users, their friends and family, the government and society in general. The UN estimates the cost of drug use is between 0.5%-1.3% of GDP across a number of countries<sup>90</sup>, while a separate study estimates that drug use costs around 1.8% of GDP in the UK<sup>91</sup>.

We have reviewed detailed studies of the economic costs of illegal drug users for Australia<sup>92</sup>, Canada<sup>93</sup>, the United States<sup>94</sup> and England & Wales<sup>95</sup>. Though they differ in their exact calculations, all the studies highlight the importance of lost productivity, additional health costs, criminal justice costs and social impacts. Lost productivity – through black market activity, unemployment, health problems and early mortality – is the largest cost in the studies that directly address it whereas the others note that it is expected to be the largest though they have not directly calculated the impact. Higher health costs are driven by a combination of direct impacts (e.g. infections, overdoses) and indirect impacts (e.g. poorer overall health relative to age). Criminal justice and prevention costs are estimated in a number of ways to allow for the complex interactions between drug use and different criminal behaviours. The final category, social costs, are not calculated in any of the studies though they all recognise that these would be massive and also key drivers for future costs in more identifiable areas of lost output, health costs and criminal justice activities.

## Output (productivity)

The productivity and output of drug users is impacted in three key ways:

- causes or exacerbates their unemployability – up to 80% of problem users are unemployed;
- lost productive years due to morbidity and impairment;
- reduced skills development and failure to meet potential

For prisoners, productivity loss is compounded by time spent in prison which erodes skills, creates an opportunity cost of lost experience, and acts as a negative signal for employers. The vast majority of problem drug users are welfare dependent, typically both before and after imprisonment, thereby increasing the costs to the economy in both direct costs and foregone output.

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<sup>89</sup> Smith et al 2001

<sup>90</sup> Benyen et al 2006

<sup>91</sup> US Office of Drug National Control Policy 2004

<sup>92</sup> National Drug Research Institute and the Centre for Adolescent Health (2004)

<sup>93</sup> Rehm et al 2006

<sup>94</sup> US Office of Drug National Control Policy 2004

<sup>95</sup> Godfrey et al 2002

Interestingly, longer term incarceration has shown some positive impacts on employment outcomes. This has been linked to longer gaol time being more effective in breaking contact with former criminal associates, in addition to the effect of work and training programmes undertaken by long term prisoners<sup>96</sup>. There is a strong link between stable employment and reducing reconviction rates<sup>97</sup>. Increasing the productivity through long-term stable employment is a key performance indicator of effective drug treatments.

Improving the health outcomes and risk of morbidity will also have a significant impact on output of users by increasing both the quantity and quality of work that they can perform as well as reducing the personal, social and health care costs of poor health. Their ability to work will also allow them to secure more easily stable and quality housing which has a significant positive impact on their life chances.

## Health

Problem drug users face significant health risks, which are associated with injecting, general health impacts and a higher risk of accident and injury. A study of England and Wales estimates the total costs to the health service to be between £283m – £509m per annum, with inpatient care (including treatment for mental problems) being the largest cost component, followed by accident and emergency<sup>98</sup>. This figure does not include the costs of premature death of young users, which is estimated at an additional £1 billion per annum.

The majority of drug users in prisons tend to have a history of injecting which has high health risks from poor injecting techniques and needle sharing which can lead to HIV / AIDS, hepatitis, tuberculosis and higher chance of mortality. The health costs of HIV / AIDS are often the largest drug related health costs.

Problem drug users are at an increased risk of mortality immediately following release from prison, up to 40% higher than the general population, particularly in the first week following release. This risk is increased further for poly-drug users<sup>99</sup>. The high mortality cost among young problem users is associated with the significant productivity losses, and highlights the potential benefits from intervention for young users.

Drug use also has significant neonatal health costs for problem female drug users, which is estimated at approximately £4.3 million per annum<sup>100</sup>. The lower quantum of drug related neonatal costs is related to the lower proportion of female problem drug users, but it is highly significant for the future health and social impacts on the children. This emphasises the need for targeted and specific drug treatment programs to address the potential problems that arise from different groups of drug users.

## Crime

The crime associated with drug use has a significant impact associated with the costs to the criminal justice system as well as the costs to the victims of crime. The costs of drug related crime range from £2bn to £3.5bn in direct costs with another £7bn-£12bn in social costs due to victims of crimes<sup>101</sup>.

The key costs to the criminal justice system include – arrest, policing and surveillance costs, judicial costs, and incarceration costs. Costs to the victims include – loss and damage to property, physical injury, stress and fear of crime. Particularly for violent crime the emotional and physical impact account for large share of costs. In addition, there are commercial and public costs that are incurred, which include – security, insurance, crime prevention, etc.

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<sup>96</sup> Kling 2006

<sup>97</sup> Latendresse and Cortoni 2005

<sup>98</sup> Godfrey et al 2003

<sup>99</sup> Singleton et al 2003

<sup>100</sup> Godfrey et al 2003

<sup>101</sup> Godfrey et al 2003

While drug users commit a disproportionate amount of crime, they typically commit more acquisitive crimes, which tend to have lower social and health cost implications compared to violent crimes. As it is estimated that only 10 – 25% of crime committed is actually recorded, the benefits of effectively addressing drug dependence issues to decrease rates of drug related crime will have a significant flow-on effect for victims and the community that is not fully reflected in official crime statistics.

## Social

Problem drug use has significant social impacts on users, family, other individuals, wider community, industry and the public sector.

The key social costs are associated with the break down of familial relationships and impact on parenting skills<sup>102 103</sup>. Parental drug and alcohol problems are the leading cause of children in care, as the needs of child can become secondary to drug addiction – problems with feeding, clothing and caring, health in particular can be a problem through inattention to safety and supervision. Drug abuse in the household is also linked to abuse and serious neglect whether directly through parental action or lack of appropriate supervision and care. Further social costs are linked to behavioural and obedience issues for children, academic impacts with erratic attendance and underperformance, and further health costs with boys more likely to suffer from ADHD. There is a strong link between parental and sibling drug use and later drug use leading to inter-generational impacts.

While the majority of crime related costs are incurred by male problem users, a significant proportion of social costs are linked to problem use by females, especially mothers with young children.

## Prison Environment

Drug use is highly likely to influence the environment within prisoners. Prisoners need to be in a fit physical and mental state to get the benefits from many of the rehabilitation programmes that are offered. Drug using prisoners may not only limit their own ability to benefit from programmes but also impact the wider prison environment which limits the potential benefit to other prisoners by forcing greater focus on security and drug dealing.

## Treatment

The economic evaluation of drug treatment programmes is most concerned with the success rates of such programmes, the distribution of their impacts across populations and time and their financial costs. The largest drivers of economic benefit will be the success rates of programmes as even small differences in performance will have a large impact on future benefits and cost savings. Unfortunately, the evidence on treatment success rates in the medium- to long-term (more than a few years) is very patchy. The NTORS study of heroin-addicted prisoners<sup>104</sup> found a 38% abstinence rate after five years and even among continuing users the amount of drugs taken fell significant. Interestingly, though, in both groups alcohol consumption increased. However, this study is one the few that has followed patients over this long of a period.

The range and scale of drugs for which treatment is being sought will have a significant impact on the modelling of the impact as treatment programmes for stimulants will differ significant from those for opiates<sup>105</sup>. The characteristics of drug users involved in programmes – including the degree of dependence - is another important factor alongside the design of the programmes and quality of providers in determining the success rate of specific programmes<sup>106</sup>.

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<sup>102</sup> Johnson 2006

<sup>103</sup> Barnard and McKeganey 2004

<sup>104</sup> Gossop et al 2001

<sup>105</sup> Beynon et al 2006

<sup>106</sup> Dowden et al 2003

A key question is what we consider as success from prison-based drug treatment programmes. The most basic measure would be those rehabilitated to the population norm. In reality, success rates for programmes will likely be judged against a series of measures. Substance dependence is a chronic illness where relapses to damaging behaviour are to be expected and need to be addressed over the long-term. The primary success output for treatment programmes will be the reduction in drug taking but this leads to three key outcome measures: health improvement, crime reduction and ability to be involved in activities of normal life. Unfortunately, clear measures of reduced drug taking are particularly difficult to find in the evidence. While we recognise that this is the most appropriate measure, our modelling has instead focussed on the gains from complete rehabilitation as the impacts of partial behavioural change could be included when the evidence becomes available. This could be used to work backwards to find what level of success would be needed to economically justify the costs of treatment, whether these are the aggregate benefits (social, personal and governmental) or just the direct financial benefits in terms of increased output and reduced state expenditure in health, criminal justice and social care.

## Conclusion

This paper has highlighted the main sources of costs and benefits to individuals, the government and society and identified the messages coming from the academic and official evidence. These costs relate to the economy, health, social and criminal justice system. The results of this paper have fed into the wider project work that PwC have undertaken to identify the commissioning, process and prioritisation options for drug treatment programmes in prisons. As an extension of this work, PwC have undertaken a numerical analysis based on official and published data to present the scale of economic, social, health and criminal justice costs of problem drug use in relation to key characteristics of users. The details and results of this analysis have been included in Appendix 6.

## Sources

- Arcidiacono P, Sieg H and Sloan F (2007). "Living Rationally under the Volcano? An Empirical Analysis of Heavy Drinking and Smoking", *International Economic Review*, 48.1, 37-65.
- Barnard M and McKeganey N (2004) "The impact of parental problem drug use on children: what is the problem and what can be done to help?" *Addiction*, 99, 552-559.
- Becker G and K Murphy (1988) "A Theory of Rational Addiction", *Journal of Political Economy*, 96.4, 675-700.
- Beynon C, Bellis M and McVeigh J (2006) "Trends in drop out, drug free discharge and rates of re-presentation: a retrospective cohort study of drug treatment clients in the North West of England", *BMC Public Health*, 6: 205.
- Birmingham L, Mason D and Grubin D (1996) "Prevalence of mental disorder in remand prisoners: consecutive case study", *British Medical Journal*, 313, 1521-1524.
- Bonomo Y and Promios J (2005) "Substance misuse: alcohol, tobacco, inhalants and other drugs", *British Medical Journal*, 330, 770-780.
- Brooke D, Taylor C, Gunn J and Maden A (1996) "Point prevalence of mental disorder in unconvicted male prisoners in England and Wales", *British Medical Journal*, 313, 1524-1527
- Dowden C (January 2003) *The Effectiveness of Substance Abuse Treatment with Young Offenders*, Department of Justice (Canada).
- Gerada C and Ashworth M (1997) "ABC of mental health: Addiction and dependence – I: Illicit drugs", *British Medical Journal*, 315, 297-300.
- Godfrey C, Eaton G, McDougall C and Culyer A (2002) *The economic and social costs of Class A drug use in England and Wales, 2000*, Home Office Research Study 249
- Gossop M, Marsden J and Stewart D (2001) "NTORS after five years: Change in substance use, health and criminal behaviour during the five years after intake", National Addiction Centre
- Hay G, Gannon M, MacDougall J, Millar T, Eastwood C, and McKeganey, N (2007) *National and regional estimates of the prevalence of opiate use and/or crack cocaine use 2005/06: a summary of key findings*. Home Office Online

- Johnson H (June 2006) "Factors associated with drug and alcohol dependency among women in prison", Australia Institute of Criminology, Trends & Issues in crime and criminal justice 318.
- Karberg J and James D (July 2005). "Substance Dependence, Abuse, and Treatment of Jail Inmates, 2002", (United States) Bureau of Justice Statistics Special Report.
- Kling J (2006). "Incarceration Length, Employment and Earnings", *American Economic Review*, 96.3, 863-876.
- Latendresse M and Cortoni F (2005) "Increasing Employability Related Skills Among Federal Male Offenders: A Preliminary Analysis of the National Employability Skills Program", Correctional Service Canada Research Branch.
- Mason P, Mason D and Brookes N (2003), "A process evaluation of drug treatment in English and Welsh prisons" in Ramsay M (ed) (2003) "Drug use and treatment: seven studies", Home Office Research Study 267, 113-129.
- McDonald Z (2002). "The Employment Prospects of Scottish and English Drug Abusers", University of Leicester Department of Economics Working Paper
- McDonald Z and Pudney S (1998). "Illicit Drug Use and Labour Market Achievement: Evidence from the UK", University of Leicester Department of Economics Working Paper
- McDonald Z and Pudney S (1999). "The Wages of Sin? Illegal Drug Use and the Labour Market", University of Leicester Department of Economics Working Paper
- National Drug Research Institute and the Centre for Adolescent Health (2004), *The Prevention of Substance Use, Risk and Harm in Australia: a review of the evidence*, Australian Government Department of Health and Ageing, January 2004.
- Ramsay M (ed) (2003) "Drug use and treatment: seven studies", Home Office Research Study 267.
- Rehm J, Baliunas D, Brochu S, Fischer B, Gnam W, Patra J, Popova S, Sarnocinska-Hart A and Taylor B with Adlaf E, Recel M and Single E (March 2006), *The Costs of Substance Abuse in Canada 2002*, Canadian Centre on Substance Abuse
- Sampson R and Laub J (2003). "Life-Course Desisters? Trajectories of Crime among Delinquent Boys Followed to Age 70", *Criminology*, 41.3, 301-339
- Singleton N, Pendry E, Taylor C, Farrell M and Marsden J (2003) "Drug-related mortality among newly release offenders", Home Office Research Findings 187.
- Smith K, Taylor D and Sloan F (2001). "Longevity Expectations and Death: Can People Predict Their Own Demise?", *American Economic Review*, 91.4, 1126-1134.
- Social Exclusion Unit (2002) Reducing re-offending by ex-prisoners
- Office of National Drug Control Policy (United States) (December 2004). *The Economic Costs of Drug Abuse in the United States 1992-2002*
- Zuvekas S, Cooper P and Buchmueller T (April 2005) "Health Behaviours and Labor Market Status: The Impact of Substance Abuse", (United States) Agency for Healthcare Research and Quality Working Paper 05013.