

Taxing the UK Cannabis Market

A report commissioned by CLEAR



Independent Drug Monitoring Unit

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1 Introduction

- 1.1 IDMU was established in 1998 and incorporated as a limited company in 1999, providing expert witness services to the UK courts on issues surrounding controlled drugs. Our mission is to provide accurate, up to date and unbiased information on drugs to all parties in the debate on drugs policy. We conduct annual surveys on drug consumption levels, prices and drug-arrest history.
- 1.2 IDMU has been commissioned by CLEAR to investigate the current size of the UK cannabis market and estimate potential tax revenues and cost savings if the cannabis market were to be regulated and taxed at recent levels of activity.
- 1.3 Sources of information used re cannabis offenders have included official Home Office & Ministry of Justice statistics, annual reports of official bodies and studies commissioned by from the Home Office, Ministry of Justice and devolved governments in Scotland and Northern Ireland, as well as written answers to parliamentary questions. Departmental budgets have been taken from annual reports of the relevant agencies.
- 1.4 Data from IDMU sources have included core data from annual surveys of drug usage, purchasing behaviour and prices at different market levels, cultivation methods and past arrests for cannabis etc, and from the IDMU plants database derived from legal casework data.
- 1.5 The stages in this investigation include:
 - (a) The size, value and composition of the UK cannabis market
 - (b) The levels of domestic cannabis production
 - (c) Potential excise duty revenues based on potency levels
 - (d) Potential Criminal Justice System cost savings
 - (e) New cost implications for a regulated cannabis market
 - (f) Calculation of net benefit to UK Treasury
- 1.6 Disclaimer: Provision of this report for CLEAR does not imply any affiliation with CLEAR nor any formal endorsement of the aims and objectives of CLEAR on the part of IDMU Ltd or members of IDMU staff.

2 Background

- 2.1 IDMU has conducted regular surveys of drug consumption and prices in the UK since 1994, involving a total of over 25000 UK drug users recruited either
 - (a) at pop festivals and other outdoor events using anonymous self-completed questionnaires, or
 - (b) via online surveys on the IDMU Website
- 2.2 IDMU has collected core data on frequency of use of a range of different drugs including cannabis, with indices including age at first use, monthly spending, monthly and weekly usage, types of cannabis used, and prices of different varieties at different market levels, among other data including whether the respondent had been 'busted' for cannabis or other drugs and if so how many times.
- 2.3 In 2004 IDMU was commissioned by the BBC to estimate the potential tax revenues and expenditure savings if all currently illegal drugs were instead regulated and taxed. Based on data up to 2003 the UK cannabis market was estimated at between £978 Million and £3.8 Billion. Based on 2x Duty bands of under 10%, THC (covering most resin and traditional herbal cannabis) at £1 per gram, and over 10% THC (covering most 'skunk' type cannabis and some high-grade resins) of £2 per gram, the potential excise duty revenues were estimated at between £342 Million and £1.3 Billion. In addition VAT on the retail value would have generated between £171 Million and £673 Million per annum, i.e. total tax revenues of £513 Million to £2015 Million (£2.0 Billion) from regulated cannabis sales.
- 2.4 IDMU submitted written evidence to the Coalition government in 2010 outlining the various options for a drugs market which was regulated and taxed, whilst maintaining firm controls on availability depending on the potential risks involved for different types of drug.
- 2.5 This current study undertakes a more detailed analysis of survey and offender data, including data on domestic cannabis cultivation, and more detailed reviews of cost savings and new cost implications. A different method of assessing excise duty, based on the potency of the material concerned on a sliding scale, has been adopted.

3 Estimating Prevalence of Cannabis Use

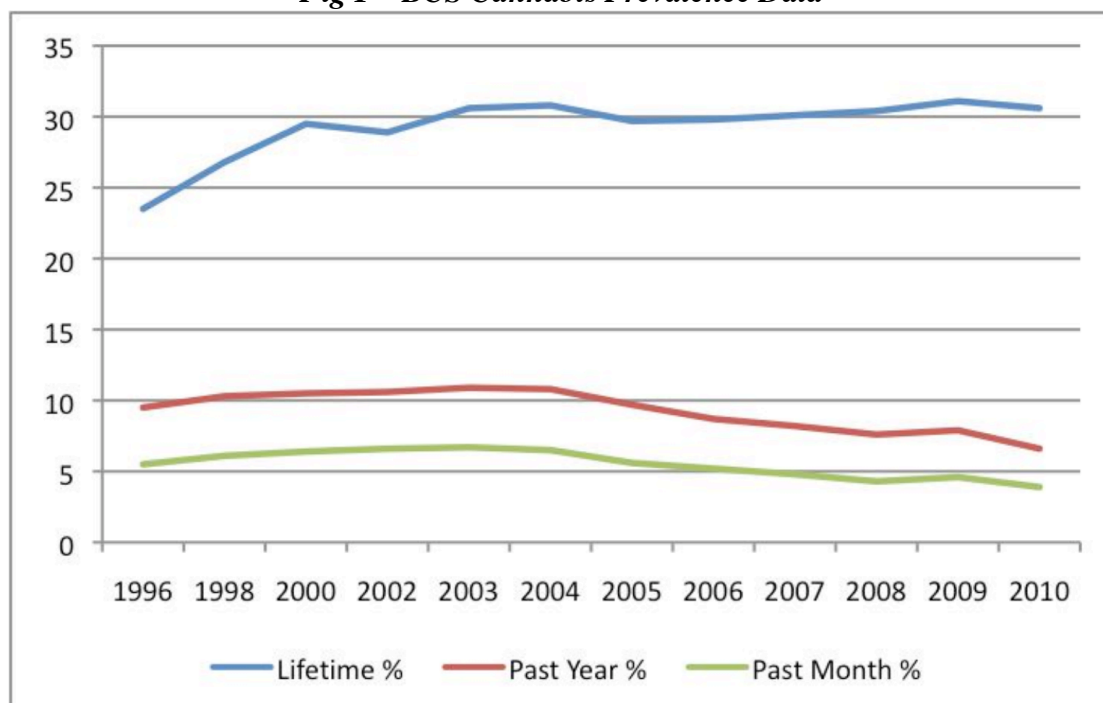
3.1 British Crime Survey – Drug Misuse Declared

3.1.1 The leading source for prevalence of drug use by the UK Government is the British Crime Survey (BCS), now conducted annually, with the results published under the ‘Drug Use Declared’ series of Home Office bulletins. This is a household survey and as such can be criticised on two grounds – firstly the nature of the survey will fail to capture those who are away e.g. out drinking or clubbing, and those of no fixed abode, both groups among whom drug use is accepted to be more common than in the population as a whole. Secondly as a household survey the data is linked to a particular address and the survey is conducted by a government agency, not a combination to inspire confidence in the respondent that the data is truly confidential and thus encouraging under-reporting or non-disclosure of drug use. The BCS Figures thus represent the proportion of the settled population willing to admit they use an illegal drug or drugs to a government researcher. This proportion may be expected to vary according to prevailing public attitudes to cannabis, and with the age of the respondent.

3.1.2 The BCS data relating to cannabis use includes lifetime, past year and past month use among adults age 16-59. The picture shows lifetime prevalence to be stable – however note that adults currently crossing the 60 year old threshold are now of the generation first exposed to cannabis use as teenagers or young adults in the 1960s. Lifetime prevalence will stabilise once the levels of lifetime use of deceased persons is of a similar level to use among young people of the day. It is notable that lifetime prevalence estimates from older cohorts today is significantly lower than those age-cohorts reported in surveys 5-10 years ago when they were younger.

3.1.3 The BCS data paints a picture of cannabis use peaking in 2003/04 around the time it was declassified, but of a steady decline thereafter with a slight peak in 2009. For 2010 their estimate of regular (past month) users was between 1.16 Million and 1.34 Million, or 3.9% of the adult population.

Fig 1 – BCS Cannabis Prevalence Data



3.2 Seizure and Arrest statistics

3.2.1 One indicator of cannabis use is the number of seizures and arrests by police and other authorities. This data was formerly published by the Home Office, however since devolution in Scotland and Northern Ireland the Home Office statistics now cover only England and Wales. Over the period from 2006 and 2008, 90% of UK cannabis offences were in England and Wales, 9% in Scotland and 1% in Northern Ireland. Despite repeated attempts, it has been impossible to obtain definitive figures (raw data) for total UK cannabis offenders since 2001 and the figures in italics are best-estimates based on graphical data (round figures) or on previous seizure/offender ratios.

Year	Seizures	Offenders*
2009	176578	<i>143949</i>
2008	186147	<i>158000</i>
2007	173589	<i>145000</i>
2006	144599	<i>124000</i>
2005	120427	<i>98000</i>
2004	81517	<i>68000</i>
2003	87512	<i>71341</i>
2002	82519	<i>67271</i>
2001	80654	<i>65751</i>
2000	91306	<i>75985</i>
1999	98450	<i>89382</i>

* Figures in italics are 'best estimates'

3.2.2 Seizure statistics are skewed by factors such as police policies and priorities, there have been a number of police campaigns targeted at growers of cannabis, coinciding with the declassification of cannabis in 2004. Similarly the introduction of informal warnings and penalty notices for adults has reduced the administrative costs of processing cannabis offenders and lowered the threshold for police activity, resulting in a dramatic increase in persons stopped for cannabis offences, with seizures increasing by 50% between 2004 and 2005. Far from signalling a softening of policy, declassification of cannabis instead resulted in a dramatic increase in police actions taken against cannabis users.

3.3 IDMU Drug-User Surveys – Drug Arrest Data

3.3.1 Proportions of respondents who had been 'busted' for cannabis offences. Experimental use is on fewer than 10 occasions, regular indicates monthly or more often but excludes daily users, 'stop' indicates respondents who have ceased using cannabis. Regular and daily users are most likely to have been busted for cannabis offences.

Year	Base	Ever Used	% Users reporting					% Busted for Cannabis				
			Exp	Occ	Reg	Daily	Stop	Exp	Occ	Reg	Daily	Stop
2004	2961	1627	10%	12%	36%	34%	7%	5%	8%	13%	26%	12%
2005	2713	1773	7%	13%	32%	39%	9%	0%	6%	8%	23%	10%
2006	3005	1637	12%	16%	26%	32%	14%	9%	11%	12%	27%	13%
2007	507	338	3%	4%	27%	61%	5%	10%	7%	14%	29%	13%
2008	328	215	8%	5%	27%	55%	5%	12%	9%	5%	27%	10%
2009	738	399	12%	9%	30%	39%	9%	12%	6%	15%	31%	6%
2010	2451	1718	5%	12%	30%	44%	10%	1%	7%	14%	18%	14%
2011*	1692	973	2%	14%	37%	40%	6%	0%	6%	11%	18%	14%
Total	14395	8680	8%	13%	31%	40%	9%	5%	8%	12%	23%	12%

* Part year January-June 2011 data

- 3.3.2 The vast majority (84%) of cannabis busts are attributable to regular or daily cannabis users.

Frequency	Total	Busts	% Busted	% of busts
Experimental	622	31	5%	2%
Occasional	1035	79	8%	6%
Regular	2578	298	12%	24%
Daily	3258	750	23%	60%
Stopped	748	91	12%	7%
Total	8241	1249	15%	100%

- 3.3.3 Offender figures taken by themselves would overestimate the number of users, as users may have been busted on more than one occasion. Some users reported their number of cannabis offences in double figures, with an average of 1.7 busts per person busted.

Year	Ever Busted?	Total busts	Avg Busts	Duration of use	Busts/year of use
2004	473	758	1.60	10.97	0.042
2005	343	538	1.57	11.18	0.027
2006	403	639	1.59	11.05	0.035
2007	97	151	1.56	8.81	0.051
2008	58	150	2.59	8.66	0.081
2009	115	206	1.79	11.16	0.046
2010	295	598	2.03	9.81	0.035
2011*	144	248	1.72	8.72	0.029
Total	1928	3288	1.71	10.97	0.035

* Part year January-June 2011 data

3.4 Estimating Prevalence from Arrest Data

- 3.4.1 Bringing the number of offenders and IDMU data together, total numbers of users can be estimated as follows:
- 3.4.2 **Stage 1** – Estimate numbers of experimental/occasional and regular/daily users represented by offender statistics (total busts x % of busts by use frequency)

Year	Total Cannabis Offenders	Of which estimated numbers of offenders by Frequency of Use		
		Exp/Occ	Reg/Daily	Stopped
<i>% of busts</i>		<i>9.0%</i>	<i>83.6%</i>	<i>7.4%</i>
2009	143949	12970	120327	10652
2008	158000	14236	132072	11692
2007	145000	13065	121206	10730
2006	124000	11172	103652	9176
2005	98000	8830	81918	7252
2004	68000	6127	56841	5032
2003	71341	6428	59634	5279

- 3.4.3 **Stage 2** – calculate total number of persons busted in UK over average duration of use by year (Duration of use = Age at survey – age first used cannabis).

Year	Duration of Use (yrs)			Total Busts over avg duration		
	Exp/Occ	Reg/Day	Stopped	Exp/Occ	Reg/Day	Stopped
2009	9.703	9.935	9.96	89,625	728,228	64,593
2008	7.52	11.294	13.82	68,999	872,326	94,552
2007	5.701	9.095	11.25	49,870	792,877	83,735
2006	5.458	8.968	11.71	41,331	664,757	83,189
2005	8.997	11.705	14.28	65,072	871,742	90,965
2004	7.773	11.786	13.47	54,481	818,903	81,028
2003	9.896	10.916	12.03	69,462	723,585	70,016

3.4.4 **Stage 3** – divide total busts by proportion of each frequency who had been busted in each year and the number of average busts/offender (in italics), the total of active users excludes estimates of users who have stopped.

Year	% Busted			Exp/Occ	Reg/Day	Stopped	Active Users
	Exp/Occ	Reg/Day	Stopped				
				<i>1.554</i>	<i>1.857</i>	<i>2.111</i>	
2009	5.0%	16.0%	13.9%	1,153,139	2,457,111	220,754	3,610,250
2008	9.6%	23.9%	6.3%	462,855	1,963,028	716,601	2,425,882
2007	10.7%	20.0%	10.0%	299,553	2,134,844	396,638	2,434,397
2006	8.0%	24.7%	12.5%	332,361	1,451,645	315,242	1,784,006
2005	10.0%	20.1%	13.1%	418,616	2,339,003	329,677	2,757,619
2004	3.9%	16.2%	10.4%	894,089	2,717,090	369,410	3,611,179
2003	6.4%	19.5%	11.5%	704,822	2,002,337	288,396	2,707,158
Average	7.7%	20.0%	11.1%	609,348	2,152,151	376,674	2,761,499

3.4.5 The estimate of active cannabis users in the UK would fall between 1.8 million and 3.6 million, of whom regular users would account for between 1.5 million and 2.7 million. I note the figures reflect the reduction in cannabis usage reported elsewhere in the aftermath of declassification, and the apparent recent increase post-reclassification could provide an explanation for the first significant increases in cannabis prices in 25 years seen in 2009-10.

3.5 Consumption Patterns & Levels of Use

3.5.1 IDMU has been monitoring levels of cannabis use and market shares of cannabis varieties since the early 1990s, with consumption asked directly in average amounts used per month and per week. The 2010 data which showed an apparent significant increase in consumption was however skewed by an orchestrated campaign by a users forum and absence of a key variable from the dataset. Consequently 2010 figures are replaced by the corresponding average 2009-2011 figures. Annual consumption is taken as the average of weekly and monthly consumption reports.

Year	Monthly Use (g)			Weekly Use (g)			Annual Usage	
	Exp/Occ	Reg/Day	Stopped	Exp/Occ	Reg/Day	Stopped	Exp/Occ	Reg/Day
2004	9.0	20.5	11.9	4.7	8.5	1.3	176	343
2005	4.6	26.2	6.3	3.2	8.5	6.6	110	378
2006	12.4	31.5	4.1	3.7	7.7	3.1	170	390
2007	7.6	39.6	17.6	5.3	12.7	13.7	184	567
2008	11.3	35.4	19.0	1.9	11.2	35.0	116	504
2009	7.6	25.6	29.8	2.3	11.0	7.0	105	438
2010	10.1	38.0	5.4	2.3	11.0	1.5	122	515
2011*	15.0	46.4	0.0	2.2	10.5	0.0	146	551
Totals	9.6	32.0	7.3	3.3	9.6	3.8	144	441

* Part year January-June 2011 data

4. The UK Cannabis Market

4.1 Volume

4.1.1 The total size of the cannabis market can thus be estimated by multiplying the estimated numbers of experimental/occasional and regular/daily users by their average annual consumption. The annual volume of cannabis consumption is thus estimated between 622 tonnes and 1407 tonnes per annum with an . Note 2010 estimates based on average 2009-11 figures.

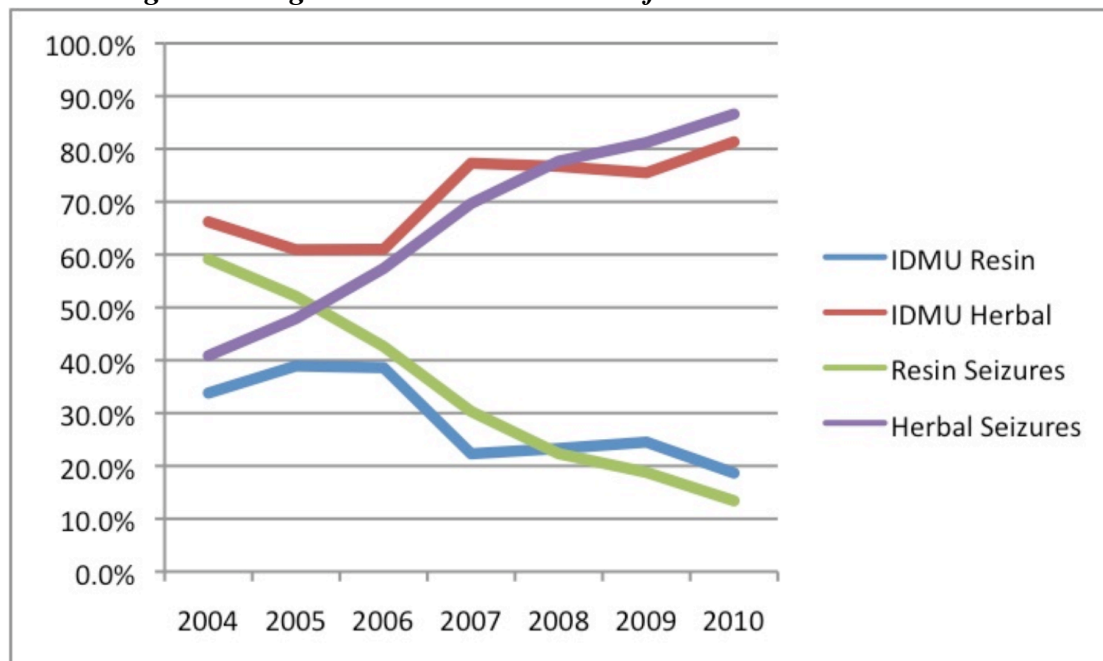
Year	Annual Usage (g)		Total Users		Total Consumption (M tonnes)		
	Exp/Occ	Reg/Day	Exp/Occ	Reg/Day	Exp/Occ	Reg/Day	Total
2004	176	343	894089	2717090	157	932	1089
2005	110	378	418616	2339003	46	884	930
2006	170	390	332361	1451645	56	566	622
2007	184	567	299553	2134844	55	1210	1266
2008	116	504	462855	1963028	54	989	1042
2009	105	438	299553	2134844	31	936	967
2010	122	515	1153139	2457111	140	1267	1407
2011*	146	551	551452	2171081	81	1196	1277
Average	144	441	551452	2171081	80	958	1037

* Part year January-June 2011 data

4.2 Market Shares of Cannabis Types

4.2.1 The cannabis market in the UK has changed over the past 20 years from dominance of cannabis resin to dominance of herbal cannabis, particularly sinsemilla varieties collectively known as skunk. IDMU market share data corresponds closely to police seizure statistics.

Fig 2 – Changes in UK Market Shares of Resin & Herbal Cannabis

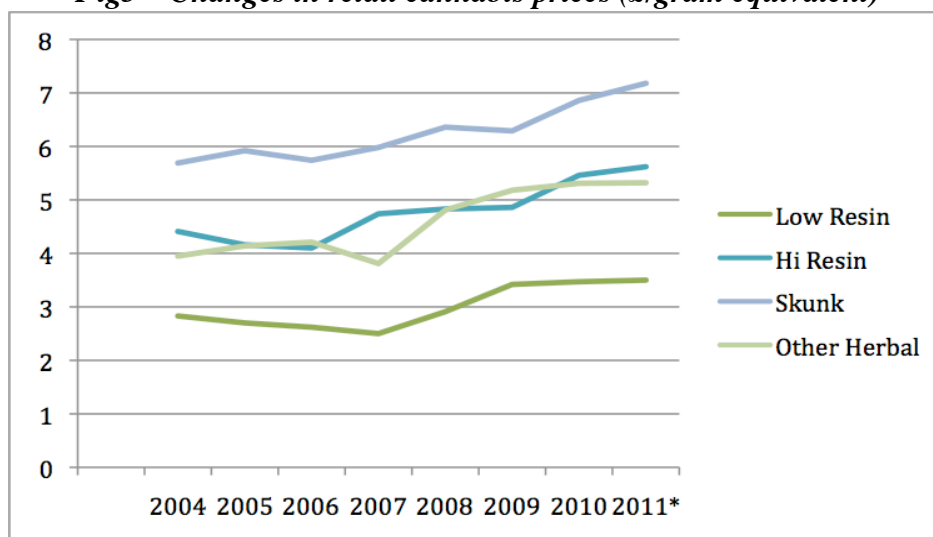


4.3 Cannabis Prices

4.3.1 Prices of most types of cannabis had fallen significantly since IDMU price monitoring started in 1994 bottoming out in 2005-06 and rising steadily thereafter.

Skunk prices had remained stable in the region of £115-£130 per ounce between 1994 and 2006 but have risen significantly to record levels in 2010-11.

Fig3 – Changes in retail cannabis prices (£/gram equivalent)



4.3.2 The many varieties of cannabis and cannabis resin can be subdivided into four main groups (excluding cannabis oil which has a negligible market share). Low-grade resin (e.g. Moroccan Soap-Bar), High-grade resin (Moroccan flat-press, pollen, Asian varieties), Skunk (and variants) and other herbal (imported bush and low-grade homegrown plant material). The market shares of these types and average eighth-ounce price (expressed as price per gram) for each market segment was as follows:

Year	Low-Grade Resin		Hi-Grade Resin		Skunk		Other Herbal	
	% Mkt	Price/gm	% Mkt	Price/gm	% Mkt	Price/gm	% Mkt	Price/gm
2004	16.4%	£2.83	17.4%	£4.41	60.2%	£5.69	6.0%	£3.95
2005	15.7%	£2.70	23.3%	£4.16	45.0%	£5.92	15.9%	£4.14
2006	19.1%	£2.62	19.5%	£4.10	52.7%	£5.74	8.3%	£4.21
2007	9.7%	£2.50	12.6%	£4.74	71.2%	£5.98	6.1%	£3.81
2008	12.7%	£2.91	10.6%	£4.83	69.2%	£6.36	7.5%	£4.81
2009	9.9%	£3.42	14.6%	£4.86	65.1%	£6.29	10.4%	£5.18
2010	7.1%	£3.47	11.5%	£5.46	71.0%	£6.86	10.3%	£5.31
2011*	6.9%	£3.50	9.3%	£5.62	75.6%	£7.18	8.0%	£5.32
Average	12.2%	£2.99	14.8%	£4.77	63.8%	£6.25	9.1%	£4.59

* Part year January-June 2011 data

4.4 Value of Cannabis Market

4.4.1 The total value of the UK cannabis market, at street level is thus estimated at between £2.9 Billion and £8.8 Billion per annum, and an average of £5.9 Billion.

Year	Total Market (tonnes)	Market Size (Metric Tonnes)				Market Value (£M)				
		Low Resin	High Resin	Skunk	Other Herbal	Low Resin	High Resin	Skunk	Other Herbal	Total Value
2004	1089	179	190	656	65	£506	£836	£3,731	£258	£5,331
2005	930	146	216	419	148	£394	£900	£2,479	£611	£4,384
2006	622	119	121	328	52	£311	£498	£1,883	£217	£2,909
2007	1266	123	159	901	77	£307	£756	£5,388	£294	£6,745
2008	1042	132	111	721	78	£385	£534	£4,588	£376	£5,883
2009	967	96	141	630	100	£327	£687	£3,960	£520	£5,494
2010	1407	100	162	999	145	£348	£885	£6,856	£770	£8,859
2011*	1260	87	117	953	101	£304	£659	£6,840	£536	£8,339
Average	1075	131	160	685	97	£392	£762	£4,286	£447	£5,887

* Part year January-June 2011 data

5. Skunk Production in the UK

5.1 Background

5.1.1 Domestic production of cannabis has occurred since the 1970s but increased significantly in the 1990s with widespread availability of equipment and pedigree seeds. Systems vary from a single plant in a pot or garden patch to industrial or agricultural units capable of growing hundreds or thousands of plants in controlled conditions.

5.2 Estimating Number of Growers

5.2.1 IDMU surveys have gathered information on growing methods and other data, growers tend to use more cannabis than non-growers and are more likely to be arrested for cannabis offences. This increase in arrest probability is presumed to reflect arrests on production or cultivation charges. As the total number of offences is known the number of persons involved in cannabis cultivation can be estimated on the basis of the increase in risk of arrest and the total number of cultivation/production seizures over the average duration of criminal history of that group of respondents..

Year	User Bust %	Grower %	Grower Bust %	Inc. bust risk %	Yrs since 1st Bust	Seizures/ Bust yrs	Est No. Growers
2004	18.1%	7.5%	32.9%	14.7%	9.84	30385	206145
2005	14.0%	9.8%	30.5%	16.4%	11.43	38136	232300
2006	15.9%	8.4%	32.5%	16.7%	10.05	30680	184143
2007	20.6%	20.7%	31.4%	10.8%	9.68	34275	316364
2008	19.0%	15.2%	32.0%	13.0%	9.53	40654	311627
2009	18.7%	10.6%	36.1%	17.4%	10.44	42975	247464
2010	19.5%	6.5%	31.0%	11.4%	6.11	44027	385664
Avg	18.0%	11.2%	32.3%	14.4%	9.58	37305	269101

5.2.2 More crudely, the number of growers can be estimated from the proportion of users who claim to grow, with an average figure taken from the two estimates.

Year	% Grow	Total Users	Growers 1	Growers 2	Average
2004	7.5%	3611179	270747	206145	238446
2005	9.8%	2757619	270375	232300	251337
2006	8.4%	1784006	149607	184143	166875
2007	20.7%	2434397	504165	316364	410265
2008	15.2%	2425882	369799	311627	340713
2009	10.6%	3610250	381673	247464	314568
2010	6.5%	2707158	176280	385664	280972
Average	11.2%	2761499	310573	269101	289837

5.2.3 The number of growers is thus estimated at between 150000 and 504000, with a best average estimate of 290000.

5.3 Domestic Production

5.3.1 Growers of cannabis vary from those growing one or two plants per year to large scale commercial enterprises in industrial or agricultural premises. A high proportion grow intermittently, although the bulk of the market is accounted for by

the most efficient growing operations using continuous production methods and large industrial or agricultural premises.

Harvests/year	<i>n</i>	% of growers	Avg Yield	% of Production
5x or more	190	23.9%	5057	51.7%
4x a year	157	19.8%	2621	27.0%
3x a year	147	18.5%	1742	8.9%
<3x Episodic	290	36.5%	738	11.5%

5.3.2 Domestic production of cannabis is estimated between 386 and 948 metric tonnes, with an average of 661 tonnes per annum (approx 65% of total UK market)

Year	Growers	Episodic	3x Year	4x Year	5x or more	Total
% of growers		36.5%	18.5%	19.5%	23.9%	100%
2004	238446	64.2	76.8	121.9	288.2	551.1
2005	251337	67.7	81.0	128.5	303.8	580.9
2006	166875	45.0	53.8	85.3	201.7	385.7
2007	410265	110.5	132.2	209.7	495.9	948.3
2008	340713	91.8	109.8	174.1	411.8	787.5
2009	314568	84.7	101.4	160.8	380.2	727.1
2010	280972	75.7	90.5	143.6	339.6	649.4
Average	289837	78.1	93.4	148.1	350.3	661.4
Average yield per annum		738g	1742g	2621g	5057g	2342g

5.3.3 The majority of the consumption of skunk cannabis is catered for by UK production, however there are significant levels of importation (hundreds of kilos per shipment) of skunk-grade cannabis from western Europe.

Year	Est Skunk Production	Est Skunk Consumption	% Skunk Domestic
2004	551	656	84.0%
2005	581	419	138.7%
2006	386	328	117.6%
2007	948	901	105.2%
2008	788	721	109.2%
2009	727	630	115.5%
2010	649	999	65.0%
Average	661	685	96.5%

5.4 Yields per plant

5.4.1 The yields of skunk cannabis from a single plant can vary from a few grams to several hundred grams, depending on the size and variety of plant and method of cultivation. At one end of the spectrum is the 'sea of green' cultivation method where numerous plants are grown closely-spaced and flowered shortly after taking root, reaching under 30cm at maturity with yields in the range of 5-10g per plant. At the other extreme plants can be grown in large individual pots with a handful of plants to a room, to heights of 5-6 feet and yields of 4-6 ounces per plant.

5.4.2 Mature Plants: A review of evidence from past IDMU cases (1994-2010) involving a total of 1478x mature (i.e, over 50% flowering tops) sample and bulk flowering plants, found a range between 0.5g and 298g flowering tops (average 24.3g) from individual mature plants with a height range of 8cm to 2.1 metres. The average proportion of flowering tops (excluding figures over 95% which represent stripped plants) was 64.2%. Heights and maximum internodal lengths (short 4cm or less,

medium 4.1-7.9cm, long 8cm plus) were also recorded, and results are shown in table 17 below:

Height	No of Plants	Yield of Flowering Tops			% Yield Tops	Yield by Internodal Length		
		Min	Max	Average		Short	Medium	Long
<25cm	135	0.5g	14.8g	3.11g	66.5%	3.24g	4.54g	2.20g
26-40cm	207	0.7g	30.1g	11.69g	62.0%	16.24g	8.51g	12.45g
41-60cm	229	2.12g	118g	16.25g	65.8%	31.78g	19.15g	5.25g
61-80cm	303	1.58g	154g	27.32g	69.2%	66.36g	34.50g	10.16g
81-100cm	307	2.80g	126g	32.04g	66.4%	46.34g	47.14g	22.05g
101-120cm	156	2.54g	221g	34.65g	66.7%	53.04g	33.43g	27.39g
121cm +	141	11.04g	298g	41.55g	70.4%	68.00g	37.08g	38.53g
Overall	1478			24.32g	64.2%	595mg	393mg	211mg

5.4.3 Clearly the single most important factor in predicting yield is the height of plants, although the relationship is not linear. For a given height, plants with short internodal lengths tend to produce higher yields (595mg/cm) than those with medium (393mg/cm) or long internodes (211mg/cm), although a heavily-branched plant with long internodes will produce a higher yield than a single-stemmed plant with short-medium internodes.

5.4.4 From survey data, the year-on-year average yield per harvest has varied from 359g to 833g (mean 603g) with an average yield per plant between 18.7g to 56.7g (mean 33g). Note not all respondents gave data for plants both planted and harvested.

Year	Planted	Harvested	Yield	Yield/Plant
2004	17.4	13.4	490g	36.7g
2005	24.9	18.6	601g	32.3g
2006	34.7	35.0	657g	18.7g
2007	9.1	8.2	359g	44.0g
2008	18.2	31.8	463g	14.6g
2009	25.9	14.4	817g	56.7g
2010	25.4	29.6	833g	28.2g
Average	22.2	21.6	603g	33.0g

6. Potential Tax & Excise Duty Revenues

6.1 Background

6.1.1 Our 2004 study based excise duties on £1 per gram for resin and compressed herbal cannabis and £2 for skunk and other sinsemilla varieties. This would have an advantage that it would be simple to administer without requiring batch-testing of THC content, with herbal cannabis containing flowering tops and no significant seed content would attract the higher excise duty band. Clear have suggested a level of £1 per gram across the board.

6.2 Excise Duty model 1 – Flat Rate

6.2.1 Model 1 would be based on the CLEAR proposals involving a flat rate of £1 per gram, this would raise between £622 million and £1.4 Billion with an average of £1.08 Billion. If a duty of £2 per gram were levied for skunk cannabis the revenues would rise to between £948 million and £2.4 Billion per annum with an average of £1.76 Billion:

Year	Total 1	Lo Resin	Hi Resin	Skunk	Oth. Herbal	Total 2
<i>Duty/Gram</i>	<i>£1.00</i>	<i>£1.00</i>	<i>£1.00</i>	<i>£2.00</i>	<i>£1.00</i>	
2004	£1,089	£179	£190	£1,312	£65	£1,746
2005	£930	£146	£216	£838	£148	£1,348
2006	£622	£119	£121	£656	£52	£948
2007	£1,266	£123	£159	£1,802	£77	£2,161
2008	£1,042	£132	£111	£1,442	£78	£1,763
2009	£967	£96	£141	£1,260	£100	£1,597
2010	£1,407	£100	£162	£1,998	£145	£2,405
2011*	£1,260	£87	£117	£1,906	£101	£2,211
Average	£1,075	£131	£160	£1,370	£97	£1,758

* Part year January-June 2011 data

6.3 Excise Duty Model 2 – According to potency

6.3.1 An alternative would be to levy duty according to THC content, which would require batch-testing, adding significantly to the administration costs. Excise duty could be levied at £1 per gram per 5% THC, with batches date-stamped and bar-coded with average THC content and duty levied at that value pro-rata. However these tests are expensive. Having bands of THC content would create uncertainty and/or appeals where products are of borderline potencies. Clearly this would create advantages for large-scale producers or importers where there are economies of scale and uniformity of product compared to small-scale producers where the costs of analysis would significantly reduce margins.

6.3.2 The positive side of levying duty according to THC content would be to discourage use of higher-potency varieties, it could even be possible to apply 'negative duty' to CBD content to encourage use of varieties which are less likely to lead to mental health problems.

6.3.3 In evidence to Parliamentary Select Committees, Hardwick & King provided potency data for resin, bush and skunk samples in 2007-08. These data only reflect those cases for which quantitative THC analyses were requested (Table 20).

Potency Range	Resin	Bush	Skunk
0-2	6	3	0
2-4	30	1	0
4-6	40	6	5
6-8	15	3	21
8-10	5	6	20
10-12	4	5	22
12-14	4	1	27
14-16	2	1	33
16-18	0	0	20
18-20	2	0	26
20-22	0	1	13
22-24	0	0	9
24-26	0	0	8
26-28	1	0	4
28-30	0	0	7
>30	0	0	9
Total samples	109	27	224
Average potency	5.9%	8.3%	16.1%

6.3.4 Based on the above figures, at £1 per 5% THC per gram, low-grade resin (5% and under) would attract an average duty of 78p per gram, high-grade resin an average £2.07, skunk an average £3.16 and other herbal an average £1.59.

Year	Lo Resin	Hi Resin	Skunk	Oth. Herbal	Total
<i>Avg. Duty/Gram</i>	<i>£0.78</i>	<i>£2.07</i>	<i>£3.16</i>	<i>£1.59</i>	<i>(£ Million)</i>
2004	£139	£393	£4,151	£104	£4,787
2005	£114	£446	£2,651	£236	£3,447
2006	£93	£250	£2,076	£83	£2,501
2007	£96	£328	£5,702	£123	£6,249
2008	£103	£229	£4,562	£124	£5,019
2009	£75	£291	£3,987	£159	£4,512
2010	£78	£335	£6,322	£231	£6,965
2011*	£68	£242	£6,031	£161	£6,501
Average	£102	£331	£4,335	£155	£4,922

6.3.5 Taxing cannabis at a rate of £1 per gram per 5% THC would have the potential to raise gross duty revenues between £2.5Bn and £6.9 Bn per year, with an average of £4.9 Bn. Clearly a potency-based duty system would have the potential to raise the greatest levels of revenue and ensure a price differential between low potency and high-potency preparations.

6.4 Value Added Tax

6.4.1 VAT would be payable on the gross price, including duty of the cannabis at retail level. On the basis of the price remaining the same with excise and tax costs absorbed by the market in place of the premium relating to an illegal activity, the annual VAT revenues would vary between £581 Million and £1.7 billion per annum, with an average of £1.17 Billion.

6.5 Income Tax

6.5.1 Our surveys find that there is a significant difference in annual income (approximately £1000 per annum) between cannabis users with a criminal record for cannabis and those with clean records for cannabis. If previous cannabis convictions were to be expunged from the system those who had previous records for cannabis

offences could find various professions reopened to them and increase their earning potentials.

- 6.5.2 On the basis of 1 million users affected in this way this could result in additional income tax revenues in the region of £200 million per annum. This figure excludes any economic activity arising from a legitimate market for cannabis products in the UK, including previously undeclared income from newly-legitimised cannabis dealers.

7. Licensed Production

7.1 Home Production Licences

- 7.1.1 CLEAR proposes a licence of £200 per annum permitting the holder to cultivate up to 6x mature plants at any one time.
- 7.1.2 Based on the estimated number of growers in recent years, the CLEAR proposal would generate modest revenues of between £33 Million and £164 Million, with an average of £87 Million per annum. This figure might be expected to grow if more people were to grow small quantities for personal use, and a maximum of 6x plants would be roughly a third to a quarter of the average number of plants grown by current growers.

Year	Growers	1 m² Licences	2 m² Licences
2004	238446	£47.7	£95.4
2005	251337	£50.3	£100.6
2006	166875	£33.4	£66.8
2007	410265	£82.1	£164.2
2008	340713	£68.1	£136.2
2009	314568	£62.9	£125.8
2010	280972	£56.2	£112.4
Average	289837	£58.0 M	£116.0 M

- 7.1.3 Basing a personal allowance on a number of plants is flawed, as plants can vary considerably in yield, and a limit on the number of plants would encourage growers to maximise the size of plants before harvest to maximise the potential yield. There would be scenarios where plants in a large area are trained to grow laterally by training/tying of branches using 2-3 lights per plant to produce monster plants yielding several hundred grams each legally, whereas a grower with 7x small flowering plants in a cupboard yielding only a couple of ounces in total would face prosecution.
- 7.1.4 Limiting factors for yield include available space and lighting and an allowance could reasonably be based on cultivated surface area and maximum wattage. A square metre can be expected to yield between 200g and 400g flowering tops per harvest, irrespective of the number of plants grown therein. A growing area of 2 square metres and 2000 watts per person would be sufficient to satisfy the usage of all but the heaviest users. A licence could cover 1 square metre with a maximum of 2x licences per person. A number of equipment providers currently sell complete grow-kits, including grow-tent, light, extractor/filter etc which could be marketed as 'licence-compliant' where appropriate.
- 7.1.5 Immature plants – Propagation of the majority of plants occurs from cuttings, and growers normally produce a surplus of cuttings selecting the healthiest for transplantation and flowering. The most basic system allowing continuous production would involve a single mother plant kept alive in a separate chamber from the flowering plants, and a propagator to root cuttings which are transplanted into the main room after the previous crop is harvested, then grown and flowered in the same room (12-18 week cycles). The more sophisticated systems have a larger vegetative space where plants can be grown to the desired size before transplantation and flowering in the main area, reducing the interval between harvests to the minimum (8-10 week cycles).

- 7.1.6 **Recommendation:** It would therefore be proposed that personal cultivation licences be restricted to a total of 2 square metres, encompassing surface area of flowering areas and vegetative areas, and a single propagator tray not exceeding 0.5sq metres which does not form part of the allowance. Such restrictions may lead to a grey market in cuttings or small vegetative plants from individuals or small businesses using their allowances to maximise production of cuttings, and for the buyer the incentive of reducing the time between harvests and maximising the proportion of their space allowance used for flowering plants.
- 7.1.7 Other options would include a levy on HPS and other horticultural light bulbs, which could be reclaimed by purchasers who can demonstrate use for other purposes.

7.2 Commercial cultivation

- 7.2.1 Commercial cultivation licences would be issued based on the surface area and lighting used, with the costs of these off-settable against duty payable.
- 7.2.2 Commercial cultivation premises would need to be suitable and not situated close to schools, hospitals or where the smell could cause unreasonable public nuisance. Cultivators would be required to have good security and continuous CCTV coverage/recording of all parts of the crop, any drying rooms, and all entrances/exits to the premises to ensure compliance.
- 7.2.3 At harvest the yield would be declared (inspected) and samples taken for THC determination and duty payable. ‘Legitimate’ cannabis could be sold with tax stamps such as are found on cigarette packets from several countries, based on actual THC content and issued in one gram units (thus a 5g package would bear 5x tax stamps).

7.3 Commercial Importation

- 7.3.1 Commercial importation should be permitted from any countries where the trade is legal or regulated, consignments declared at importation and held in bonded warehouse for testing and released on payment of duty.

7.4 Fit & Proper Tests

- 7.4.1 Individuals or directors of companies seeking commercial cannabis licences must be of good character. Persons with previous convictions relating to possession or supply of cannabis would not be excluded, however persons involved in serious crime, trafficking of drugs other than cannabis would not be considered fit and proper to hold cannabis licences.

8. New Costs

8.1 Introduction

8.1.1 The logistics of taxing cannabis are similar to those involved in the alcohol trade, where duty is levied according to alcohol content. There are a number of potential models as to how the trade in cannabis would be regulated, however all would require payment of excise duty to HMRC or accredited organisations tasked with duty collection and compliance.

8.2 Inspectorate

8.2.1 There would need to be an inspectorate with powers of entry and prosecution for unlicensed premises, laboratories for analysis of THC content, and bonded warehouses for storage and distribution. This could be incorporated within the HM Treasury or be a standalone agency responsible for policing and revenue collection.

At Import – imported cannabis held in bonded warehouse and representative samples obtained from each batch of cannabis or resin for THC determination.
Released upon payment of duty.

On Production – Harvested under supervision and dried in equivalent of bonded warehouse. Released upon payment of duty or purchased from warehouse by wholesale distributors.

8.2.2 Inspectorate structure – It is anticipated that the Inspectorate would be an executive agency of government, reporting to the Treasury and Home Office.

Head Office – 20 staff including Chief Executive, executive board, press office etc

Analysis division – 10x labs with 20x staff each (200)

Bonded Warehousing – 10x warehouses with 10x staff each (100)

Licensing Division – devolved to regional/local offices – award licences for domestic & commercial cultivation, importation & wholesaling and retail licenses

Enforcement division – 100x staff at regional offices (100) – deal with issues of non-compliance including prosecutions

10x Regional Offices – 20 staff each (200) – deal with accounting, warehousing and analysis admin

100x local offices – 20 staff each (2000) – regular random inspections of cultivation systems (domestic & commercial) and retail premises, validation of commercial harvests & sample taking.

8.2.3 Total staff approx 2620 with staff costs of approx £131 Million per annum, estimated total costs (including buildings, equipment, vehicles etc) approx **£200 million** (range £150-£300 Million)

8.3 Enforcement

8.3.1 Unlicensed cultivation (or cultivation exceeding licence) would result in seizure of all plants and equipment without compensation and a fine equivalent to 2 years production based on maximum predicted yields per surface area and minimum interval between harvests, with imprisonment an option in cases over a certain threshold.

8.3.2 Any person selling cannabis without a tax stamp would be fined a minimum of 10x times the retail value of untaxed cannabis found, any subsequent offences would lead

to suspension of any licences and imprisonment in serious cases (as would any selling of cannabis products to a minor)

8.4 THC Analysis

- 8.4.1 Currently the typical cost for an analysis of THC content in a cannabis sample by a forensic laboratory is in the region of £100. Costs per test would be expected to fall considerably if a lab were to be undertaking these in bulk as their core business, although (HPLC) machine-time limitations would provide a floor on costs and a ceiling on capacity. It is estimated that a specialist lab running mass samples could reduce costs to around £40 per sample
- 8.4.2 The number of samples taken to establish duty levels would be on a sliding scale according to the total quantity to be assessed.
- Kilo – 1x sample
 - 5 kilos – 2x samples
 - 10 kilos – 3x samples
 - 50 kilos – 5x samples
 - 100 kilos – 10x samples
 - 250 kilos – 15x samples
 - 1 Tonne – 20x samples
- 8.4.3 On the basis of typical consignments of 10 kilos (equivalent to the production of a small commercial unit) requiring 3x samples at £40, the annual costs of analysis would fall between £7.5 Million and £16.9 Million, with an average of £12.9 million.

8.5 Tax Stamps

- 8.5.1 Tax stamps with barcode, THC assessment and date of analysis and duty paid would be issued by accredited laboratories, or upon receipt of cannabis from a bonded warehouse of one stamp per gram of product (duty calculated to nearest penny). There would be costs associated with design and printing of stamps to prevent forgeries.

8.6 NHS Costs

- 8.6.1 It is not anticipated that regulation and taxation of cannabis would lead to any significant increase in usage. Downgrading of cannabis to class C was associated with a decrease in overall usage although this downward trend appears to have reversed following reclassification back to Class B. Consequently no additional burden on NHS resources would be anticipated.
- 8.6.2 It is possible that more widespread use of cannabis for therapeutic purposes could reduce some NHS spending where cannabis replaced existing drug prescriptions or other treatments.
- 8.6.3 It is anticipated that spending on NHS advertising/health promotion campaigns relating to cannabis would increase.

9. Cost Savings

9.1 Criminal Justice System

- 9.1.1 In 2009/10. Drug offences accounted for 5% of offences as a whole, of which based on 80% of drug offences being cannabis-related, cannabis offences would represent approximately 4% of the annual total. In 2010 the Ministry of Justice Budget was £9.5 Billion and the Police budget was approximately £5 Billion.
- 9.1.2 Significant cost savings can be made if cannabis offenders were removed from the criminal justice system. These costs are difficult to quantify as individuals may be dealt with by the courts for a variety of offences at any one time. These costs can be subdivided into three broad categories;

Investigation costs (Police & Customs/UKBA/Forensics)
Prosecution costs (CPS, Courts & Legal Aid)
Sentencing Costs (Prisons, Probation)

9.2 Police

- 9.2.1 The costs of police time and resources relating to cannabis offences vary at the lowest end from as little as £10-£20 for a street-issued warning up to over £1M for multi-handed conspiracy cases involving large scale import or supply involving extensive surveillance and investigation resources. Arrests for possession on the street fall at the lower end of the spectrum, issuing of warrants and searches of premises usually involve 5 or more officers, with cultivation cases probably among the more expensive usually involving more officers, requiring photography and/or video recording, storage and/or disposal of plants and equipment and more detailed forensic and expert evidence.
- 8.3.2 Based on the presumption that 4% of police caseload relates to cannabis offences, and an annual police budget of £4.8 Billion (2010-11), the potential annual savings from police funds would be in the region of £200 Million.

9.3 HM Customs/UK Border Agency

- 9.3.1 Cost savings from Customs would be marginal, as resources directed towards major cannabis importations would most likely be redeployed to other investigation work including detecting unlicensed importations.

9.4 Forensics

- 9.4.1 The Forensic Science Service is being closed by the UK government, leaving the field to private companies contracting services with individual police forces – this has been happening for a number of years with organisations such as LGC Forensics, Environmental Scientifics Group, Forensic Access competing with the FSS.
- 9.4.2 On the basis of average forensic costs of £100 per seizure (noting street cautions are unlikely to involve forensics but prosecuted cases commonly include a number of separate items requiring examination) the estimated cost of forensic analysis would vary from £8 Million to £18 Million per year with an average of £12.2 Million. The FSS budget for 2009 was approx £126 Million.

Year	Seizures	Est. cost
2000	91306	£9,130,600
2001	80654	£8,065,439
2002	82519	£8,251,918
2003	87512	£8,751,231
2004	81517	£8,151,668
2005	120427	£12,042,656
2006	144599	£14,459,936
2007	173589	£17,358,919
2008	186147	£18,614,700
2009	176578	£17,657,800
Average	122485	£12,248,487

9.4.3 It is anticipated that in a potency-based taxing regime the demand for forensic services (THC assays) will increase providing opportunities for specialised laboratories to contract with the Inspectorate.

9.5 Crown Prosecution Service

9.5.1 Based on cannabis offences representing 4% of total offences, and the annual CPS budget of £640 Million, the cost of prosecuting cannabis offenders would be in the region of £26 Million per annum.

9.6 Legal Aid

9.6.1 In 2008-09 the Legal Services Commission spent £498.2M on criminal legal aid for police stations & magistrates courts and £676.6M in Crown Court legal aid, a total of £1.17 Bn, on the basis of 4% of total spending representing cannabis offences this would give an estimated cost of £47 Million annually.

9.7 Courts

9.7.1 Summary offences dealt with at magistrates courts involve a brief hearing with legal representation and court time on both sides, possibly as little as £500 where a defendant pleads guilty. Crown court trials are more expensive, usually involving several separate hearings on different days including plea & direction, mention & fix, trial and sentencing (including trials of issue). A typical case would involve around 3 court days, including roughly an hour each for preliminary hearings, 2 hours for sentencing (inc Newton hearings) and 2 days for a jury trial.

9.7.2 Costs of the criminal courts in 2010-11 are estimated at £1.04 Bn (£970M in 2009-10), handing 1.8 million magistrates cases and 156000 cases in the Crown Courts. Costs attributable to the different courts are not specified in the HMCS annual report. The proportion of court caseloads attributable to cannabis offences is approximately 1.2% of magistrates court cases (based on possession cases) and 3.8% of Crown Court cases (based on supply/production cases). On the basis of half the budget for the criminal courts being costs of Crown Courts, the approximate annual saving would be;

Magistrates - £520 M x 1.2% = £6.24 Million

Crown - £520 M x 3.8% = £19.8 Million

Total - £26 Million

9.8 Prisons

9.8.1 Statistics are available for the numbers of persons sentenced to immediate custody for cannabis offences including possession, possession with intent and supply, comparable figures for cannabis production have not been published in full, but those dealt with by the courts have been estimated from data in graphic form. On the basis of the 2009 breakdown of cannabis production disposals numbers and the total number of offenders prosecuted and average lengths of sentence. The total cost of prison places for recent years. Costs of prison places are estimated at £45000 per annum.

	Drugs Custody	Cannabis Custody	Total Yrs	Total Cost
2000	8,473	1839	1762	£79,271,913
2001	9,147	1369	1504	£67,698,000
2002	10,066	1300	911	£41,010,462
2003	10,330	1331	1326	£59,678,308
2004	10,487	1025	1041	£46,849,010
2005	10,661	820	688	£30,971,712
2006	10,647	782	912	£41,055,750
2007	10,613	922	1305	£58,732,788
2008	10,982	1156	1628	£73,267,038
2009	10,696	849	1027	£46,209,000
2000-09 avg	10210	1139	1211	£54,474,398

9.8.2 Savings in prison costs could therefore range between £31M and £79 M per year, with an average of £54 Million

9.9 Probation Services

9.9.1 Pre-sentence reports – the Probation service provide pre-sentence reports for all offenders convicted or pleading guilty before the courts. Costs of these will vary according to the circumstances and location, but an estimate of 6 hours work would be reasonable for a basic offence. Based on typical hourly rates of £50, a cost of £300 per PSR would be a conservative estimate of costs. Minimum estimated costs (2000-09) £4.4M, max £8.8M, average £6.5M.

9.9.2 Community Penalties & Supervision – Approximately 6000 cannabis offenders a year (3800-6950) receive community penalties including unpaid work, suspended sentences or probation orders, representing around 3% of the Probation Service/NOMS caseload. Based on 2010 expenditure of £4.7Bn, the potential savings would be in the region of £141 Million per annum.

9.10 Fines

9.10.1 Fines would no longer be levied where the offence no longer exists, representing a potential loss of revenue.

In 2009 approximately 10,000 individuals were fined an average £85 for possession of cannabis, with average fines between £69 in 2002 and £87 in 2008.

Approximately 690 offenders for cannabis production in 2009 were fined an average £154

Approximately 160 offenders were fined for cannabis supply/import offences (no amounts listed – assumed similar levels to production fines)

Estimated fine income - £981000

10. Summary & Conclusions

10.1 The Cannabis Market

10.1.1 There are between 1.7 Million and 3.6 Million active cannabis users in the UK consuming between 620 and 1400 metric tonnes of cannabis each year with an estimated market value of between £2.9 and £8.6 Billion per annum. The best estimates are an average 2.7 Million active users consuming 1037 metric tonnes with an estimated street value of £5.9 Billion per annum.

10.1.2 The majority of the UK market is accounted for by cannabis domestically produced in the UK, with an estimate of between 167000 and 410000 UK growers producing between 390 and 950 metric tonnes of cannabis per annum. The bulk of production is accounted for by large scale commercial cultivations operating on a continuous basis, although significant quantities of skunk-type cannabis are imported into the UK from Western Europe.

10.2 Proposed Control Regime

10.2.1 A viable alternative control regime to the current prohibition policy could involve regulation and taxation of the cannabis market, involving

- Excise duty based on the potency of the cannabis purchased – encouraging via pricing the consumption of lower-THC varieties of cannabis
- Domestic production licences allowing production for personal use within a specified surface area and/or limited wattage of horticultural lighting.
- Licensed Commercial production or importation and distribution including a network of bonded warehouses and licensed retailers, similar to but tighter than the existing control regimes for alcohol and tobacco.

10.3 Potential Tax & Duty Revenues

10.3.1 Based on estimated excise duty revenues at £1 per gram per 5% THC, VAT on recent total cannabis market values at 20%, licenses based on estimated numbers of growers taking 1 square metre to 2 square metre licences a £200 per square metre per annum and additional income tax revenues based on £200 per offender per annum (if records expunged), the revenue raised by licensing and taxing cannabis would range from £3.2 Billion to £9.2 Billion per annum, with an average of £6.4 Billion.

10.4 Cost Savings and New Costs

10.4.1 Estimated cost savings to the Criminal Justice System would fall between £293 Million and £646 Million per annum with an average of £512 Million.

10.4.2 New costs of a compliance regime and collections are estimated at between £157 Million and £317 Million per annum, with an average of £214 Million.

10.5 Overall Cost Benefit

10.5.1 **Overall the net benefit to the taxpayer of a taxed and regulated cannabis market could range from £3.4 Billion to £9.5 Billion per annum, with a best estimate of £6.7 Billion per year at recent market levels.**

Table 25 - Cannabis Regulation – Financial Summary			
Item	Minimum	Maximum	Average
Excise Duty	£2,510,000,000	£6,965,000,000	£4,922,000,000
Licenses	£33,400,000	£164,200,000	£87,000,000
VAT	£581,800,000	£1,771,800,000	£1,177,400,000
Income Tax	£100,000,000	£300,000,000	£200,000,000
Total Revenue	£3,225,200,000	£9,201,000,000	£6,386,400,000
Police	£100,000,000	£200,000,000	£200,000,000
Forensic	£8,065,439	£18,614,700	£12,248,487
CPS	£15,000,000	£40,000,000	£26,000,000
Legal Aid	£25,000,000	£60,000,000	£47,000,000
Courts	£15,000,000	£40,000,000	£26,000,000
Prisons	£30,971,712	£79,271,913	£54,474,398
Probation-PSR	£4,404,300	£8,761,800	£6,472,980
Probation - Other	£95,938,239	£190,857,040	£141,000,000
<i>Fines</i>	<i>(£800,000)</i>	<i>(£1,200,000)</i>	<i>(£981,000)</i>
Total Savings (costs)	£293,579,690	£636,305,453	£512,214,865
<i>Inspectorate</i>	<i>(£150,000,000)</i>	<i>(£300,000,000)</i>	<i>(£201,000,000)</i>
<i>THC Analysis</i>	<i>(£7,464,000)</i>	<i>(£16,884,000)</i>	<i>(£12,900,000)</i>
Total New Costs	(£157,464,000)	(£316,884,000)	(£213,900,000)
Grand Total	£3,368,779,690	£9,537,305,453	£6,684,714,865

10.6 Caveats

10.6.1 The figures for market size, potential tax revenues and costs of enforcement are based on the best sources available, however the appropriate data is not always available in the public domain. Sources of potential error in this report therefore include

- (a) Estimates of total offenders where full details not available – Estimates were based on ratios of seizures to offenders in years for which information is available, estimated margin of error $\pm 5\%$
- (b) Representativeness of survey respondents – it is possible that users who had been busted for cannabis would be more likely to complete surveys, however proportions of users with records from festival surveys similar to those in web-surveys, and ‘bust rates’ calculated with reference to frequency of use categories rather than overall rates for year.
- (c) Data from 2007-08 less reliable as web-survey only and smaller samples, usage data from 2010 incomplete and unreliable (missing variable) and not used in favour of average from 2009 & 2011
- (d) Current spending data on cannabis enforcement is not separately itemised (except where stated), estimated costs are based on best estimate of proportion of cannabis offences dealt with via different disposal methods. Forensic costs do not include companies other than the Forensic Science Service (e.g. LGC Forensics, Environmental Scientifics Group)
- (e) Costs of inspectorate, THC-analysis and compliance-enforcement within a regulated environment may exceed estimates.

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