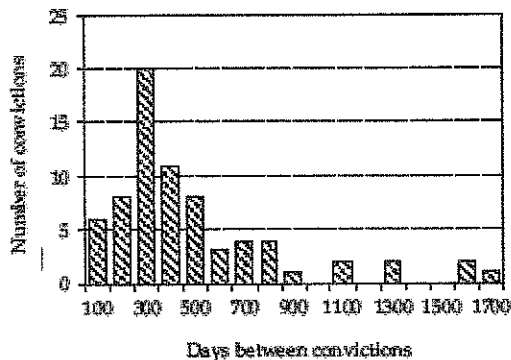


**Figure 2: Days Between Convictions**

spective, with only 100 plants, we saw about \$170,000 per operation in sales. The effective fine is far less important than having to set up all over again in another house. Recall that the equipment costs over \$10,000 and that with the bust, the producer lost the last crop, seed, and house lease.<sup>44</sup>

Restitution is theoretically a tool that can be used to undo the damage of the grow-op. Destruction of a house, damage to power connections, and miscellaneous damage to other facilities are all the types of things eligible for restitution. What is

the record? Of the 167 cultivation cases, 11 involved restitution. These had a mean of about \$3,500. Of the 167 cases, 45 paid fines for which the average \$2,550. Only two fines were over \$6,500. Compared to the rewards of growing marijuana, these are not substantial amounts.

### In summary

Marijuana production in British Columbia is substantial. Based on Vancouver data, a third of those who are caught are repeat offenders while two-thirds are first-time offenders. The penalties for being caught growing marijuana do not appear to be particularly stringent, and repeat offenders appear to average being caught marginally less than once a year. Fines appear to be modest and not sufficient to deter the behaviour. It is difficult to evaluate a policy that induces police to assign resources to catch nearly 3,000 grow operations a year, yet treats offenders to what must be seen as relatively minor punishment. These punishments do not seem to prevent recidivism. As argued in earlier sections, it is too profitable to prevent new people moving into production and to prevent old producers from rebuilding.

## Legalization in Canada: Suppose We Tax it Like Other Sins?

What kind of money are we talking about if we try to reduce the crime and punishment associated with marijuana? Although there are many issues associated with the full or even partial legalization of marijuana, one of the most important is how much the demand for marijuana

changes when the price changes. Measuring the demand for legal products is hard task, but it is doable, and forms core employment for legions of economists. For marijuana, an illegal product, it is a more difficult job and impossible to do directly.<sup>45</sup> Fortunately, some issues can be ad-

<sup>44</sup> In a case I recently observed, the convicted grower asked the judge in all innocence, "Do you want that in cash?" causing all in the courtroom to shake their heads.

**Table 12: The Result of Past Charges of those Currently Charged in Busts of Grow-ops**

	Convicted	Stayed	Acquitted	Discharged	Dismissed	Fines
Number	670	211	26	21	29	237
Percent of charged	0.70	0.22	0.03	0.02	0.02	
Percent of convicted						35
Average fine of those fined						\$1,167

Source: Wickstead, 2000s.

dressed without detailed knowledge of the elasticity of demand.

### Crude estimates in a revenue "switching" regime

Based on the grow-op data, for an investor we have assumed relatively high costs of around \$62,600 to produce, conservatively, 400 plants per year. That works out to \$156 per plant, and a plant produces 33.3 grams for a production cost of \$4.70 per gram.<sup>45</sup> A gram makes anywhere from one to three cigarettes. So today, *with the substance illegal*, we are looking at a per-cigarette wholesale price of \$1.60 to \$4.70 as opposed to the current "retail" price of \$8.60 per half gram.<sup>47</sup> This is still more expensive than tobacco, but then the tobacco industry has had a head start on mass production techniques, and by including very expensive labour costs, these are extreme

assumptions about the production costs of marijuana.<sup>48</sup>

What about tax revenue? If we substitute a tax on marijuana cigarettes equal to the difference between the local production cost and the street price that people currently pay—that is, transfer the revenue from the current producers and marketers (many of whom work with organized crime) to the government, leaving all other marketing and transportation issues aside we would have revenue of (say) \$7 per cigarette. If you could collect on every cigarette and ignore transportation, marketing, and advertising costs, this comes to over \$2 billion on Canadian sales<sup>49</sup> and substantially more from an export tax, and you forego the costs of enforcement and deploy your policing assets elsewhere.<sup>50</sup>

Notice that we have merely substituted government taxation for the premium on illegality. We

<sup>45</sup> Appendix F reviews some approaches to an estimate of the demand for marijuana.

<sup>46</sup> To make the point that these "estimates" are fraught with uncertainty, I will round the numbers ruthlessly.

<sup>47</sup> Contrast this with the current price of tobacco cigarettes that sell for about 24 cents of which 9 cents is production and distribution. Tax makes up the difference.

<sup>48</sup> In the long run, the cost of producing both tobacco and field marijuana is likely to be similar since both are weeds amenable to cultivation. A pound of tobacco wholesales for about \$3 Canadian a pound (between \$1.75 and 2.00 per pound US depending on the grade. See <http://towners.usda.gov/publications/agoutlook/jan1999/ta258b.pdf>).

<sup>49</sup> That is, from appendix table 1A, year 2000 low weight is 160,000 kg, or 160,000,000 grams. Assume 5 grams per cigarette or 320 million cigarettes. At a cost of approximately \$1.60 per cigarette, available revenue (plus transport and marketing that are assumed to be negligible) is 320 million cigarettes x (\$8.60 - \$1.60) = \$2.24 billion.

have not changed anything else. We have kept the price the consumer pays the same, and we have not altered the structure of production. We would still grow marijuana in "flower pots" except now it would be in the open and taxed like any other commodity at the retail level.

Importantly, this approach has the effect of transferring to the government revenue currently received by illegal producers as reward for their cost of production and risk.<sup>51</sup> Unless we wish to continue to transfer these billions from this lucrative endeavor to organized crime, this policy should be considered. Not only would we deprive some very unsavory groups of a profound source of easy money, but also resources currently spent on marijuana enforcement would be available for other activities.

### Advanced production techniques

If we were to assume that the wholesale price of marijuana would fall if it were legalized, since it would become cheaper to produce with proper mass production techniques—remember the difference between gin produced in hidden stills during Prohibition and modern distilleries—then both the cost and retail prices would most certainly fall. If we assume that the elasticity of demand is 0.6—a common estimate for tobacco and alcohol demand (see appendix F)—at

the current price, then dropping the price from \$8.60 to \$0.10 per cigarette would increase the quantity consumed by nearly 60 percent, but less than in proportion to the fall in price. However, by increasing taxes, the \$8.60 per cigarette retail price can be maintained with an increase in government revenue of another few billion dollars. The simplest taxation arithmetic is basic. The government can transfer revenue from organized crime and other small producers to itself by taxing a legal product to the level consumers have already revealed they are willing to pay. There are questions about how we collect taxes on exports, and what would happen should the US retaliate against our legalization, but the basic argument would be the same: we affect no change in price, we only transfer the revenue from current producers.

As for those current producers who argue for legalization, recall the old proverb, "Be careful what you wish for; your wish may be granted." Many of those who advocate legalization for pecuniary reasons are perhaps thinking primarily of the increase in demand associated with legalization.<sup>52</sup> However, as with the transition from prohibition to legalization of liquor early in the last century, we may note that very few of the "ma and pa" stills are currently in operation. Although there is always room for home and boutique production, large, sophisticated industries would quickly supplant local suppliers of marijuana with a corresponding decrease in costs.

50 Of course marijuana enforcement is only one aspect of drug enforcement and only one aspect of overall enforcement. There are economies of scope and scale that may well make this issue more complicated. Further, since we believe a lot of the product is sold in the US, it is unlikely that Canada would be able to collect much of this revenue.

51 In a wild flight of fancy, the government could even choose not to tax, but current policy obviously emphasizes taxes on "sin," and in this, marijuana is no different than tobacco, alcohol, and gambling, and no doubt would be taxed accordingly.

52 The current Canadian proposal to decriminalize up to 15 grams of marijuana possession is an interesting exercise. It has the potential to increase demand without legalizing supply. If prices rise at all, it is likely that they will rise in the short run. In all probability, the supply response will be sufficiently great to keep the price stable in the medium and long term. Higher prices in the short run will only reward current producers—including organized crime. Those these are merely unintended consequences of an inadequately thought out policy shift.

## Conclusion

Marijuana is grown all over the world. In British Columbia (as in other provinces, notably Quebec and Ontario), it is a significant crop that fuels organized crime. Marijuana production appears to have been growing robustly during the past decade. Like many illegal products and services, it is difficult to measure the level of marijuana production. This is particularly the case when it is cheap to set up a grow operation and the market is substantial. In this paper I have reported a methodology for estimating the output of illegal production. Using estimates of marijuana growing in British Columbia based on this methodology, I have developed an estimate about the overall size of the local market and the implied level of exports.

The analysis reveals how widespread is the use of marijuana in Canada and how extensively it is produced in British Columbia. Consequently, the broader social question becomes less whether or not we approve or disapprove of local production, but rather who shall enjoy the spoils. As it stands now, growers and distributors pay some of the costs and reap all of the benefits of the multi-billion dollar marijuana industry while the non-marijuana-smoking taxpayer sees only costs. Alcohol prohibition in the US expanded organized crime in North America. Removing alcohol prohibition generated many problems, but none like those afflicting society in the days of Al Capone and his ilk. Removing the prohibition on marijuana production would permit society to replace today's gift of revenue to organized crime with (at the very least) an additional source of revenue for government coffers.

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## Appendices

### Appendix Table 1A

Table 1A puts Canadian marijuana consumption into some kind of numerical perspective that is commensurate with the degree of uncertainty associated with it. Row 1 identifies the number of users based on estimates of usage described in Single *et al.* (1999, table 5.1). User numbers are im-

puted (using rates of change from Rhodes *et al.*) for years not sampled. Row 2 gives the actual surveyed percentage of Canadians over the age of 15 who are users. Row 3 assumes per-user consumption of marijuana cigarettes (based on US data.) Rows 4 and 5 use two estimates for the size of

**Table 1A: Estimates of the Internal Canadian Market for Marijuana, 1988-2000**

	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
1. Millions of Current Users in Canada <sup>1</sup>	1.38	1.41	1.10	1.11	1.13	0.96	1.71	1.73	1.73	1.78	1.80	1.82	1.84
2. Actual surveyed users as a % of the population 15 or older <sup>2</sup>		6.5	5.0			4.2	7.4						
3. Number of cigarettes used per month <sup>3</sup>	16.9	17.3	17.4	16.6	17.2	17.8	18.7	18.7	18.7	18.7	18.7	18.7	18.7
Weight of one cigarette													
4. Low (grams) <sup>4</sup>	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
5. High (grams)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Implied Average Annual Marijuana Consumption per user (grams):													
6. Low weight estimate	77.0	79.5	82.0	76.2	78.4	82.4	86.5	86.5	86.5	86.5	86.5	86.5	86.5
7. High weight estimate	202.8	207.6	211.2	199.2	206.4	203.6	224.4	224.4	224.4	224.4	224.4	224.4	224.4
8. Price per ounce (in year 2000 \$C) <sup>5</sup>	370.3	377.6	476.1	474.0	482.3	418.0	382.7	321.5	303.9	308.1	331.9	303.9	303.9
9. Price per gram \$C	13.0	13.3	16.8	16.7	17.0	14.7	13.5	11.3	10.7	10.8	11.7	10.7	10.7
Total Canadian Internal Consumption (in thousands of kg—metric tons)													
10. Low weight average	106.3	111.7	90.1	84.8	88.2	78.8	147.7	149.7	151.6	153.7	155.5	157.4	159.4
11. High weight average	279.8	291.9	232.0	221.5	232.9	204.3	383.2	388.2	393.2	398.6	403.3	408.2	413.4
Total Canadian Internal Consumption Annual Expenditure (in billions of dollars)													
12. Low weight average	1.4	1.5	1.5	1.5	1.6	1.2	2.0	1.7	1.7	1.7	1.9	1.7	1.8
13. High weight average	3.6	3.9	3.9	3.7	3.9	3.0	5.2	4.4	4.2	4.3	4.7	4.4	4.4
14. Amount Canadians Spend on Tobacco										2.5	2.5	2.4	2.3

Notes: All figures are in 2000 Canadian dollars.

<sup>1</sup>Data from surveys reported by Single (1999) interpolated with rates of growth of US use reported in Rhodes *et al.* (2000)

<sup>2</sup>Single (1999).

<sup>3</sup>US data (Rhodes *et al.*)

<sup>4</sup>US data (Rhodes *et al.*) converted from ounces to grams.

<sup>5</sup>Author's calculation using Canada-wide data for 1998-2001 and US data to track relative price movement. See the section below on pricing marijuana in Canada. Rhodes *et al.* use 1/2 ounce as a purchase unit. This accounts for the difference between the prices in rows 8 and 9 and those of table 2 in the text. All are derived from the pricing formula of appendix A.

each marijuana cigarette. These are reasonable low and high values. The price estimates are developed (Appendix A) and are adjusted by an available US price series for marijuana to account for relative price movements.<sup>53</sup> The next two rows refer to the high and low estimates of metric tons of internal Canadian marijuana consumption. The final rows multiply this by price to illustrate the size of the Canadian (consumption) market. Of course this does not include exports.

The final rows of table 1A indicate that the bounds on Canadian domestic consumption of

marijuana bracket substantial differences. Appropriate interpretation of such uncertainty is that we need to know more about the true quantitative measures of consumption to understand how much of the crop is used locally and how much is exported. How large is the industry? To illustrate the internal market, the final row of table 1 lists Canadian expenditures on legal tobacco. Notice that the value of legal tobacco expenditures lies roughly in the middle of the two estimates of the value of Canadian consumed marijuana.

### Appendix A: Pricing Marijuana in British Columbia and Canada

What prices are used to evaluate the quantities of marijuana sold? This is an interesting question that has been explored in the context of gram quantities of heroin and cocaine as distinct from pound or kilogram quantities. Using gram prices leads to a higher evaluation of the amount of a drug than using the bulk quantity value. If there is a systematic relationship between them, then it is less important since one or the other form of pricing may be relevant to a particular problem, but one can go either forward or backward to generate the price relevant to the question being asked, and with knowledge about quantities sold, an average price can be generated.

Locally, Pileas *et al.* suggest:

Current estimates of the average wholesale market value of a kilogram of dry local marijuana in British Columbia, sold in large quantities of a kilogram or more, vary from \$3,500 to \$7,500 per kilogram. Estimates of the retail value of a kilogram of dry local marijuana in British Columbia, sold by the pound or by the ounce, vary

between \$3,500 and \$9,000 per kilogram. One can reasonably assume that the average market price in British Columbia during the period [1997-2000] considered was probably somewhere between \$5,000 and \$7,000 per kilogram. (p. 37)

Caulkins (1994) considers the problem of quantity discounts in the following way. Let  $P(x)$  be the market price of  $x$  grams (note this is *not* the price per gram of  $x$  grams sold but the price of  $x$  grams sold). If  $f(x)$  is the distribution of retail sales – the frequency with which each gram quantity  $x$  is sold, then the total amount paid is  $\int P(x)f(x)dx$  and the total quantity purchased is  $\int xf(x)dx$ . The average price paid for the total consumption of marijuana is then

$$1. \quad \bar{P} = \frac{\int P(x)f(x)dx}{\int xf(x)dx}$$

To know the value of final sales of the total amount sold, multiply  $\bar{P}$  by total quantity sold.

53 All prices, however, are in 2002 Canadian dollars.



While this formula is undoubtedly correct, we do not have good information about the true distribution of quantities sold,  $f(x)$ . Further, we need to assume something about the relationship between price and quantity sold. What is assumed is that  $P(x) = ax^{-\beta}$  in which the power reflects the quantity discount. If  $\beta = 1$ , then price is proportional to quantity. If  $\beta < 1$ , then there are quantity discounts and the price per gram is falling with increasing quantities. How fast it falls depends on  $\beta$ .

In general, if  $P(1)$  is the price of one gram, then  $P(1) = \alpha$ , and  $P(x) = P(1)x^{-\beta}$  so that increases in price are relative to the gram price.<sup>54</sup>

To understand marijuana pricing in British Columbia we have the RCMP data from 1995-1999.

The relevant approach is to estimate the relationship  $\ln(P) = \alpha + \beta \ln(Q)$  where price is the price per unit for the chosen quantity and the term "LN" refers to the natural logarithm. For example, based on the data available we find the equation for table 2 in the text

$$2. \quad \text{LN}(P) = 2.73 + 0.84 \text{LN}(Q)$$

(31.31) (39.3)

$$R^2 = 0.95$$

$$N = 86$$

In comparison, Caulkins (1994) finds that  $\beta = 0.80$  for heroin based on the US Drug Enforcement Administration's STRIDE data with some 301 observations. I find the similarity between the two estimates striking in light of the different product and location. Taken at face value, it suggests that

the cost of the cutting, repackaging, and retailing are adding to cost in a similar way in both disparate data sets.

But there is clearly more to the price than simply a power function of the observed relationship between quantity and price. There are other dimensions to the pricing function for which this literature does not usually control.

Fortunately, the price data come with some additional information attached as to the location of purchases and the type of marijuana purchased. In British Columbia, for example, I find that equation 3 in the table below best characterizes the relationship between price per gram and independent attributes such as weight in which the marijuana is sold, urban or rural, home grown or commercial, and whether or not the crop was grown hydroponically. Also included in this national data set are provincial dummies and whether the purchase was of imported marijuana or not.

In Equation 3, where PPG is the price per gram, WEIGHT is the actual weight sold, CITY is a dummy variable for urban or rural; HG refers to home grown (as distinct from "commercial"); HYDRO refers to hydroponically grown.<sup>55</sup> There are also a series of dummy variables for provinces. The regression suggests that there is, for example, a 1.7 percent increase in the price per gram for a 10 percent increase in the quantity unit sold. The data also suggest that there is a discount on home-grown marijuana and a premium for hydroponic marijuana. Similarly, marijuana sold in the city is cheaper than that sold in rural areas.

54 That is  $\frac{d \ln(p(x)/p(1))}{dx} = \beta \frac{d \ln(x)}{dx}$  so that  $\beta$  is the percentage increase in price with respect to a percentage increase in quantity. A value of  $\beta < 1$  means that when quantity purchased increases by 10 percent, the price increases by less than 10 percent.

55 The form of this equation is similar to that of 2 except that we are looking at price per gram on the left hand side. The coefficient on the natural logarithm of weight is consequently  $\beta - 1$  which implies that a point estimate of  $\beta = 0.83$ .

## Equation 3—Full

Dependent Variable: LOG(PPG)

Price per gram of marijuana

Included observations: 86

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LN(WEIGHT)	-0.2	0.0	-9.3	6.9E-14
CITY	-0.23	0.14	-2.38	0.02
FE	-0.29	0.25	-2.40	0.02
HYDRO	0.26	0.34	2.59	0.01
IMPTD	0.10	0.18	0.52	0.60
ALTA	0.06	0.20	0.31	0.76
SAS	0.16	0.16	0.98	0.33
MAN	0.26	0.20	1.30	0.20
ONT	0.12	0.16	0.76	0.45
QUE	0.21	0.25	0.82	0.41
MUN	1.1	0.2	5.8	1.8E-07
NWT	0.53	0.25	2.12	0.04
NS	0.49	0.18	2.67	0.01
C	2.6	0.1	29.	3.3E-41
R-squared	0.66	Mean dependent var		2.25
Adjusted R-squared	0.60	S.D. dependent var		0.64
S.E. of regression	0.41	Akaike info criterion		1.18
Sum squared resid	11.9	Schwarz criterion		1.58
Log likelihood	-36.9	F-statistic		10.9
Durbin-Watson stat	1.33	Prob(F-statistic)		2.4E-12

The variable IMPTD refers to whether the product was imported or local. Among the provincial dummies, British Columbia is the home province and consequently does not appear on the list. The provincial dummies are self-explanatory. Other than British Columbia, those that do not appear were excluded because of problems with a small number of observations.

The points of interest in the provincial dummies is that there is a substantial increase in price associated, not surprisingly, with Nunavut and the Northwest Territories, and a premium for Nova Scotia. The rest of the provinces have prices not distinguishable from those in British Columbia. Overall, about 60 percent of the price variance is explained, and of that, about 50 percent is explained without provincial dummies.

**Appendix B: Risk and the Alternatives**

Suppose that an investor has a bond that pays \$1 per year in perpetuity. The formula relating the price of the \$1 per year and the rate at which the future is discounted to the present at the interest rate,  $r$ , is:

4.  $P_b = (1/r)$ .

If we have an investment that is likely to be destroyed in any period at a rate of  $(1-\pi)$ , then the price of the \$1 per year is now.<sup>56</sup>

5.  $P_b = (1-\pi)/(r+\pi)$ .

Since  $P_b$  and the rate of discount are inverses, the discount of the future is:

6.  $(1/P_b) = (r+\pi)/(1-\pi)$

The text assumes for analytic simplicity that this is approximated<sup>57</sup> by  $(r+\pi)$  and that in turn, this is represented by,  $R^*+\pi$  the alternative return available to our grow-op operator. It is an alternative at the same risk as would be found in the grow-op business, which is what puts all legal investments at risk.

**Appendix C: A Richer Model Police Enforcement Enthusiasm**

The primary problem with the model thus far is that it does not take into account different conditions that affect the number of busts carried out by the police (or for that matter by others who want to rip off grow-ops.)

**Grow-op busts as a function of resources spent**

To see how this affects the framework developed above, assume that the number of busts,  $B$ , is a product of the number of grow-ops,  $T$ ; the number of police assigned to the "grow-busters,"  $N$ ; the amount of security installed by the grow-ops themselves,  $S$ ; and other stuff,  $x$ . This leads to an expression:

7.  $B = \exp(b_0) \cdot T^{b_1} N^{b_2} S^{b_3} x^{b_4}$

that can be rewritten in log-linear form as:

8.  $\ln(B) = b_0 + b_1 \ln(T) + b_2 \ln(N) + b_3 \ln(S) + b_4 \ln(x)$ .

Since we know that the number of busts is related to the total number of grow-ops as:

9.  $T = B \left( \frac{1}{1 - \left( \frac{C(1+R^*)}{P} \right)} \right)$

or, for simplicity write as:

10.  $T = B \cdot v$

where the expression in equation 9 in large brackets is  $v$ .<sup>58</sup>

Now take the natural log of both sides of 10 and substitute from 8 so that we have:

<sup>56</sup> That is,  $P_b = \sum_{t=0}^{\infty} \frac{(1-\pi)^t}{(1+r)^t} = 1$

<sup>57</sup> Clearly this is a better approximation, the smaller is  $\pi$ .

$$\ln(T) = b_0 + b_1 \ln(T) + b_2 \ln(N) + b_3 \ln(S) + b_4 \ln(x) + \ln(v)$$

This leads to a reduced form for the total number of grow-ops,  $T^*$ , as:

$$\ln(T^*) = \left( \frac{1}{1-b_1} \right) (b_0 + b_2 \ln(N) + b_3 \ln(S) + b_4 \ln(x) + \ln(v))$$

Without further identification of the coefficients, little can be said. However, if we assume that all except  $b_1$  are positive, and that only a fraction of grow-ops are busted so that  $0 < b_1 < 1$ , then the number of grow-ops will be greater than those developed by our formula by an amount, proportional to  $v$  raised to the power  $[1/(1-b_1)]$  for given values of the other variables.

Since  $b_1$  is such an important number, we may want to know something about it. It is the scale effect of grow-ops on the number of busts. It is not obvious that it is a large number. Suppose that there was plenty of "space" and an additional grow-op faced no constraints that were different than those that had gone before. Holding everything else constant, the coefficient is the change in the number of busts because of a change in the number of grow-ops. This is likely to be a small number. Unless there is crowding or congestion—as has been alleged in some locales—the change in the number of busts because of an additional grow-op is likely to be small.

Suppose, for example, that  $b_1 = 0.01$ . That is, an increase of 100 grow-ops increased the likelihood that 1 additional bust would take place. In this case, the estimates in the table would have to be increased as a function of  $v$  raised to the power

$[1/(1-b_1)]$ . If  $v$  is 5, then the estimate is increased by 1.6 percent. If  $b_1 = 0.1$ , then the estimates would increase substantially. If the value of  $b_1$  is not too large, it is not likely to impart much of a downward bias to the estimates.

Notice that we can, in fact, estimate a relationship that calculates  $b_1$  in principle. Writing the equation for the number of busts,  $B$ , which is at least partially observable, as a reduced form, that is as a function of  $T^*$ , the equilibrium number of grow-ops, we have an estimating equation:

$$\ln B = \ln T^* - \ln(v)$$

that reduces to the measurable:

$$\ln B = \left( \frac{1}{1-b_1} \right) (b_0 + b_2 \ln(N) + b_3 \ln(S) + b_4 \ln(x) + \ln(v)) - \ln(v)$$

or,

$$\ln B = \left( \frac{b_0}{1-b_1} \right) + \left( \frac{b_2}{1-b_1} \right) \ln(N) + \left( \frac{b_3}{1-b_1} \right) \ln(S) + \left( \frac{b_4}{1-b_1} \right) \ln(x) + \left( \frac{b_1}{1-b_1} \right) \ln(v)$$

that permits identification of the coefficients and a reduced form estimate of the impact of the different variables on the number of busts.

Since we can know at least the number of police,  $N$ , tasked to finding grow-ops, and we have our estimates for  $v$ , subject to the vagaries of  $S$  and  $x$ , we can estimate  $b_1$ . A first step in this analysis is in Appendix D below.

58 Note that the value of  $v$  is likely to lie somewhere between 1.2 and 3 and depends entirely on the cost of production, revenue, and yield on alternative opportunities.

## Appendix D: Delay Times and the Number of Grow-Ops

To get an estimate of the delay times we use data from Plecas *et al.* for 32 regions. In the regression we have the log of the time to bust, D, regressed against the log of the number of busts, B. The panel data are based on eight regions and four years of data using a fixed effect model since the regions do not change and may have individual characteristics. The coefficient on D tells us the effect of delay on the number of busts. In this case, a

10 percent increase in the time of delay results in a 1.4 percent decrease in the number of busts. In terms of the model, it suggests that the effect of the number of grow ops measured is affected by the number of grow ops. With more delay, fewer grow-ops are discovered. Although there may be many reasons for this, the subtleties of the model in appendix C are clearly an issue that should be investigated.

Dependent Variable: LOG(B?)

Method: GLS (Cross Section Weights)

Sample: 1997 2000

Included observations: 4

Number of cross-sections used: 8

Total panel (unbalanced) observations: 51

One-step weighting matrix

White Heteroskedasticity-Consistent Standard Errors & Covariance

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOG(D?)	-0.14	0.017	-8.48	0.0000
YEAR	0.22	0.013	16.7	0.0000
Fixed Effects				
C=C				4.14
K=C				4.44
M=C				6.80
NC=C				2.70
T=C				5.40
V=C				5.95
NE=C				1.86
NK=C				2.26
Weighted Statistics				
R-squared	0.998	Mean dependent var		6.73
Adjusted R-squared	0.997	S.D. dependent var		4.33
S.E. of regression	0.256	Sum squared resid		0.98
F-statistic	12060	Durbin-Watson stat		2.49
Prob(F-statistic)				0.00
Unweighted Statistics				
R-squared	0.988	Mean dependent var		4.45
Adjusted R-squared	0.98	S.D. dependent var		1.66
S.E. of regression	0.278	Sum squared resid		0.996
Durbin-Watson stat	2.81			

## Appendix E

The regression underlies the remarks in the text. It is a regression of sentenced days in jail on prior offences and the value of the grow-op as estimated by the police. The coefficient on PRIORS tells us the effect of a change in the number of prior offences on the length of sentence. On average, an additional prior offence adds about 3.58 days to the sentence. The number of priors runs from 0 to 25 so in the extreme, priors may add 90 days to a sentence. Looking at the coefficient on the value of grow-ops (measured in units of \$100,000 as reported by police), an increase of \$100,000 implies an increase of about 16 days in

sentenced jail time. Since the estimated value of the marijuana grow operations runs between \$75,000 and \$3.6 million, the effect on sentencing can be substantial. At the extreme, the value can add 540 days to the jail sentence.

Also of interest is the adjusted  $R^2$  that indicates that about 16 percent of the variance of days sentenced can be explained by the two variables in the regression. This is the basis for the remarks in the text suggesting that there is much left to explain: 84 percent, to be precise.

Dependent Variable: SENDAYS

Included observations: 111

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-8.85	15.8	-0.56	0.58
PRIORS	3.58	1.79	1.99	0.05
VALUE/100000	16.2	4.09	3.97	0.00
R-squared	0.17	Mean dependent var		82.1
Adjusted R-squared	0.16	S.D. dependent var		106.
S.E. of regression	93.1	F-statistic		11.2
Log likelihood	-659.	Prob(F-statistic)		0.00

## Appendix F: The Demand for Marijuana

Although not used in this analysis, a critical value for many problems with respect to marijuana is the elasticity of demand. The elasticity of demand measures the percentage change in the quantity consumed associated with some percentage change in price. Although conventionally expressed as numbers like 0.5 or 1 or 1.5, elasticities are negative since an increase in price reduces the quantity demanded. An elasticity of 1 implies that a 10 percent fall in price is associated with a 10 percent increase in quantity. An elasticity of less than one means that a fall in price of say, 10 percent, engenders an increase in the quantity consumed of less than 10 percent.

One approach to finding a value for the elasticity of demand for the consumption of marijuana is to use an analogy. We can measure the demand for other addictive substances that are legal and com-

monly used, such as tobacco, for which the elasticity of demand is about 0.5; and for alcohol, another addictive substance, for which the measured elasticity is between 0.18 and 0.86 in the short run.

Estimates for marijuana use span values between 1.4 and 0.1. However, it is important to recall that these estimates are not of the usual kind. They estimate some form of usage rather than quantity. The fact that you smoke once a month is recorded rather than the quantity of marijuana that you purchase. Survey data suggest a very inelastic demand for marijuana (0.2), while purchase-related data tend to find elasticities around 1.0 (Nisbet and Vakil, 1972) although Clements and Daryal (1998) and Daryal (2002) find elasticities between 0.5 and 0.1. Saffer and Chaloupka (1999) estimate an elasticity for marijuana use of 0.28 and 0.44.

### About the Author

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**Appendix O: Plecas et al. (2005) Marijuana Growing Operations in British Columbia Revisited**

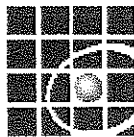
**MARIHUANA GROWING  
OPERATIONS  
IN BRITISH COLUMBIA  
REVISITED**

**1997-2003**

Darryl Plecas  
Aili Malm  
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**International Centre for Urban Research Studies  
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March 2005



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University College of the Fraser Valley*

AND

*International Centre for Urban  
Research Studies (ICURS)*

**Marihuana Growing Operations in British Columbia Revisited (1997-2003)**

by

Darryl Plecas, Aili Malm and Bryan Kinney

**EXECUTIVE SUMMARY**

This report contains the results of a comprehensive study of marihuana cultivation in British Columbia undertaken and completed in two parts. The first part, which covered the four-year period of 1997 – 2000 was completed in the summer and fall of 2001. The results from that time period were first reported in *Marihuana Growing Operations in British Columbia: An Empirical Survey (1997-2000)* by Plecas et al. (2002). The methodology of the second part of the project, covering the period from 2001 through 2003, remained unchanged. The second part of the project was conducted over the summer and fall of 2004. Overall, the project involved a review of all cases of alleged marijuana cultivation coming to the attention of the police from January 1, 1997 to December 31, 2003. In all, 25,014 cases from this seven-year period were reviewed. The main findings are summarised below.

First and foremost, the study re-confirms the main conclusion from the Plecas et al. (2002) study that British Columbia has a serious problem with marihuana growing operations. Although Statistics Canada has already published figures indicating that the rate of grow operations of 79 per 100,000 population in B.C. is nearly three times the national average of 27, this study

provides more detailed evidence that these operations are increasing in size and sophistication and continue to be dispersed throughout the province. Over the length of this project, a total of 15,436 founded cases were identified within 149 police jurisdictions across all regions of the province, although 10 specific jurisdictions accounted for slightly more than half (54%) of all of these instances. Generally, the number of individual incidents of marihuana grow operations increased by over 220% from 1997 to 2000, but appeared to level off over the period 2001 to 2003. However, the recent plateau in the number of incidents should not be taken as a signal that marihuana production in British Columbia has ceased to increase. On the contrary, from figures applied in the current study, the amount of marihuana produced each year in British Columbia is estimated to have increased from 19,729 kilos in 1997 to a seven year high of 79,817 in 2003.

Over the period studied, the evidence indicates that marihuana grow operations have become larger and increasingly sophisticated, involving more technological enhancements. For instance, the average number of plants seized in an indoor grow operation in 1997 was 149, but that average grew to 236 plants by 2003. Similarly, the

average number of kilograms of harvested marijuana seized per grow operation tripled from 2.4 kilos in 1997 to 7.2 kilos in 2003. Further, the average number of high intensity lights seized per operation grew steadily from 9 in 1997 to 16 in 2003. This increase in the size of operations has led to an associated increase in the average amount of electricity theft per incident. Approximately one in five founded grow operations involved theft of hydro, a pattern of theft that has remained relatively stable over the past seven years. Where the hydro theft could be determined, the average cost associated per operation was approximately \$2,880 in 1997 and \$3,740 in 2003. Overall, it is estimated that growers stole more than \$3,200,000 from BC Hydro in 2003 alone.

Aside from electricity by-passes, 15% of indoor grow operations contained at least one hazard (i.e. weapons, booby traps, explosives, chemical products, other drugs, and fire). The likelihood of a marijuana grow operation resulting in a fire was 24 times higher than it was for ordinary house fires. The hazards are of particular concern considering indications that children were present in 21% of indoor grow operations.

It is also important to note that the vast majority of cases coming to the attention of the police were as a result of public complaints, usually from anonymous complainants, landlords, neighbours, or, on occasion, from B.C. Hydro. Even those discovered by police were, in most cases, identified as a result of some unrelated police action, such as the serving of a warrant. In other words, the increase in marijuana cultivation

cases in B.C. is not due to increased proactive police enforcement. The dynamics involved in cases coming to the attention of the police did not change over the entire seven-year period studied.

In terms of a profile of known offenders, 77% of the 15,588 suspects involved were male, 69% were Caucasian, and the mean age was 35 years old. Further, most suspects had a prior criminal history. On average, suspects had a 13 year criminal history which included seven prior convictions across multiple jurisdictions. Evidence presented in the report suggests that many suspects relocated to B.C. from other parts of Canada, as well as from outside the country. In particular, especially in the areas with the greatest rate of increase in the number of marijuana grow operations, there has been a significant increase in the number of suspects of Vietnamese origin.

Analyzing the criminal justice system's response to marijuana cultivation offences in B.C. is fraught with difficulty. Cases are complex, varying widely in size, value, and whether or not other related criminal activities are involved. They often involve multiple suspects and multiple charges and result in a wide array of dispositions (and combinations of same) at the court stage. Of the 25,014 cases coming to the attention of the police, 16,675 were fully investigated. Of these, 14,483 proved to be founded. About half of these cases (54%) were dealt with informally (i.e. as "no case" seizures), with this being a particularly likely outcome in smaller operations (i.e., under 10 plants). There was a positive correlation between the size of the grow

operation, the severity of the penalty handed down in court, and, at the Crown decision-making stage of the process, there were significant numbers of stays of proceedings and plea bargains, both of which resulted in a considerable attrition of charges and suspects.

Overall, some 3003 of the founded cases led to at least one offender being convicted. More specifically, a total of 3364 offenders were convicted representing 52% of those charged and 22% of suspects initially associated with a founded operation. The majority of convictions, however, did not result in a custodial disposition. In fact, approximately 16% of offenders were sentenced to prison with an average sentence length of 4.9 months.

In the final analysis, the results of this study are more disconcerting than those presented through the Plecas et al. 2002 report. Indeed, as of 2003, the number of marijuana grow operations is still high and the overall estimated production associated to those incidents is four times higher in 2003 than in 1997. Despite this reality, and despite the fact that it has become increasingly apparent that grow operations pose a risk to public safety (especially through fire), the criminal justice system has become increasingly unable to respond. Specifically:

- \* police agencies overall are less likely to fully investigate incidents coming to their attention and less likely to move cases forward with recommended charges to Crown Counsel;

- \* prosecutors are less likely to accept charges recommended by police and less likely to move forward with charges; and
- \* judges are less likely to send an offender to prison for their participation in a grow operation, despite offenders becoming more prolific and more violent.

A recent announcement by the Premier of British Columbia (January 2005) to provide monies to law enforcement agencies to increase their capacity to respond to the risks posed by grow operations may assist in increasing the police's ability to respond. The relatively recent establishment of the R.C.M.P.'s Coordinated Marijuana Enforcement Team to direct a more strategic, intelligence driven approach to the problem also gives reason to be optimistic about a more effective law enforcement response in the future. However, the authors would expect that any enhancements to the law enforcement capacity will only translate into improved effectiveness where there is a corresponding improvement in the action taken at the prosecutorial and judicial level.

The main findings in the areas summarised above are described in detail in the report. The report includes a description of incidents of marijuana grow operations coming to the attention of the police; the characteristics of marijuana growing operations; the suspects involved; the action taken by the police and the courts; and sentencing. Also included are the supporting data tables and other documentation.

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## Chapter 1

### INTRODUCTION

There is no question that the issue of marijuana grow operations in Canada deserves serious attention. In fact, Anne McLellan, Canada's Deputy Prime Minister and Minister of Public Safety and Emergency Preparedness, in addressing the first National Conference on Illegal Marijuana Grow Operations<sup>1</sup>, described illicit marijuana growing operations as one of the most serious problems faced in communities across the country. At the same time, the Minister cited the need for governments, the criminal justice system, and communities in general to do more to combat the problem.

In British Columbia, the province of focus for this report, the problem of marijuana grow operations has been particularly serious. According to Statistics Canada, 70% of all drug offences in Canada in 2003 involved cannabis<sup>2</sup> and 14% of all cannabis offences were for cultivation, the largest volume of which took place in British Columbia<sup>3</sup>. As illustrated in Table 1.1, 39% of all marijuana cultivation incidents reported to Statistics Canada are in British Columbia. Moreover, the rate of cultivation incidents in British Columbia (79 per 100,000 population) is nearly three times the national rate (27 per 100,000 population) (again see Table 1.1).

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<sup>1</sup> Held in Ottawa, Ontario on November 2<sup>nd</sup> and 3<sup>rd</sup>, 2004

<sup>2</sup> Cannabis includes both marijuana and hashish.

<sup>3</sup> Canadian Centre for Justice Statistics (2004). *Canadian Crime Statistics 2003*. Ottawa: Statistics Canada, December 2004, Catalogue no. 85-205-XIE.

## Chapter 2

### INCIDENTS OF ALLEGED MARIHUANA CULTIVATION COMING TO THE ATTENTION OF THE POLICE

The number of incidents of marihuana cultivation coming to the attention of the police from 1997 to 2000 steadily increased; however, from 2000 to 2003, there appears to be a leveling off of marihuana growing operations in British Columbia. There are a number of possible reasons for this occurrence. One possible explanation is that marihuana growing operations are becoming more difficult to detect, while another is the impact of international security initiatives as a result of the terrorist attacks in New York and Washington on September 11<sup>th</sup>, 2001. These initiatives may have made it more difficult to export marihuana across the Canada - United States border. Another explanation is that current initiatives (i.e. green teams, Growbusters, etc.) in the criminal justice system have made it more difficult for marihuana cultivation to occur in British Columbia. Still another explanation could be that individuals are not reporting suspected marihuana cultivation as often as they were prior to 2000. However, the data presented in this research on source of complaint to the police does not support this explanation. It has also been speculated that the plateau in the number of marihuana growing operations may be due to a saturation of the retail market. However, as will be described in Chapter 3, given estimated production has not leveled off but has continued to increase, the authors would not agree that the market has become saturated. Finally, given police are getting to fewer incidents coming to their attention, and hence dismantling fewer grow operations, there is less need for growers to set up new operations.

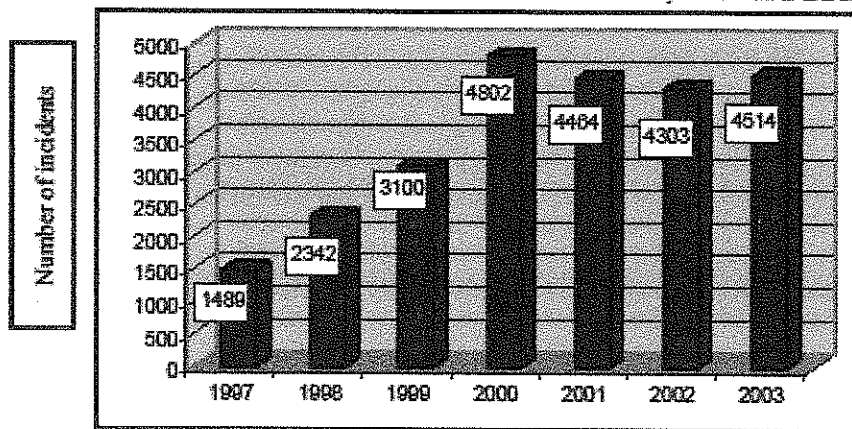
The current study also shows that while the number of cases in the Lower Mainland increased from 1997 through 2000, and decreased since then, the number of cases in more rural areas of British Columbia actually increased. The top ten police jurisdictions, in terms of the

number of marihuana grow operations, as found by the Plecas et al. (2002) study, continues to account for over half of all cases in British Columbia.

### Suspected Cases of Marihuana Cultivation

A total of 25,014 incidents of alleged marihuana cultivation came to the attention of police in British Columbia between January 1997 and December 2003. As seen in Figure 2.1, the number of marihuana grow operation incidents increased each year from 1997 through 2001 and then remains relatively stable between 2000 and 2003. Despite the drop in incidents from 2000, the number of cases in 2003 was still more than three times that of 1997.

**FIGURE 2.1: NUMBER OF MARIHUANA CULTIVATION INCIDENTS WHICH CAME TO THE ATTENTION OF POLICE AGENCIES IN BRITISH COLUMBIA BETWEEN JANUARY, 1 1997 AND DECEMBER 31, 2003**



N = 25,014

Table 2.1 illustrates the frequency of marihuana cultivation cases in each of the eight development regions of the province: Mainland/Southwest, Vancouver Island/Coast, Thompson/Okanagan, Cariboo, Kootenay, North Coast, Nechako, and the Northeast. Not surprisingly due to population size, the Lower Mainland and Vancouver Island account for the majority of the grow operations in the province (72%). However, there seems to be a shift away from the Lower Mainland toward Vancouver Island and more rural areas. This is not surprising as the authors predicted the shift away from the urban centres of the lower mainland is related to the demand for larger properties to increase production and minimize police and community detection.

while the criminal history coding sheet is presented in *Appendix 3*. The information coded included data about the suspect, the location of the growing operation, the nature and origin of the complaint, the police investigation, the size and type of the growing operation, the amount of marihuana seized, the presence of other drugs, the presence of various cultivation equipment, decisions made by the prosecution, and the sentencing outcome.

In addition to the information collected from the files, criminal histories were run on every suspect involved in the files based on their FPS number (fingerprint identification number). The information on the suspect's criminal record was coded and linked to the incident form using a unique identifier. After the data entry was completed and verified (i.e. "cleaned"), all identifiers were removed from the researcher's database. The primary database, an intelligence database including all suspect and incident identifiers, is held with R.C.M.P. "E" Division. The statistical analysis program, SPSS, was used to analyze the data.

It is important to briefly discuss the nature of police data and the information that can be gathered from grow operation case files. Police data rarely contain complete information for every variable of interest. For example, one of the variables of interest in this study is the number of children present at grow operations when the police were at the scene. Most detachments and departments do not consistently record this type of information for the file. However, when a systematic process is put into place, the numbers become far more reliable. For instance, Vancouver Police now record every instance that child protection attends a crime scene, thereby making the data for number of children present at grow operations more reliable. Due to the nature of police data, the authors believe that many of the numbers presented in this report, particularly surrounding the hazards of grow operations, are an underestimation.

Obtaining complete information on criminal histories is also a problem. In some cases, convicted offenders are not fingerprinted and, therefore, it is not always possible to confirm that a conviction exists. Further, there is a significant time lag between dates of conviction and the actual placement of that conviction on record. In the final analysis, the data presented in this report likely underestimates the reality of certain reported results.

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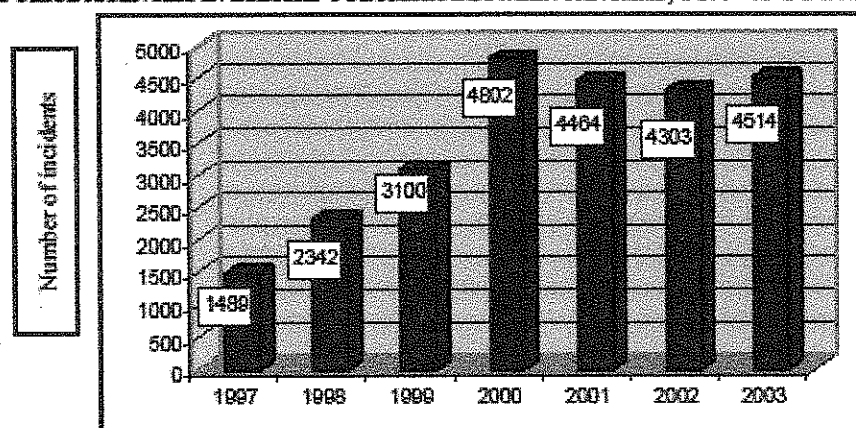
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**TABLE 2.1: CASES THAT CAME TO THE ATTENTION OF POLICE IN BRITISH COLUMBIA BETWEEN JANUARY 1, 1997 AND DECEMBER 31, 2003 (BY DEVELOPMENT REGION AND REGIONAL DISTRICT)**

<i>Development Region / Regional District*</i>	1997	1998	1999	2000	2001	2002	2003	<i>Increase since 1997</i>
Greater Vancouver	548	916	1299	2497	1787	1719	1929	252%
Fraser Valley	177	234	306	494	375	485	408	131%
Squamish-Lillooet	13	18	22	33	44	48	42	223%
<b>Mainland/Southwest Overall</b>	<b>738</b>	<b>1168</b>	<b>1627</b>	<b>3024</b>	<b>2206</b>	<b>2252</b>	<b>2379</b>	<b>222%</b>
Comox-Strathcona	84	131	173	212	224	211	198	136%
Sunshine Coast	20	59	52	50	78	47	49	145%
Mount Waddington	6	18	15	15	12	20	10	67%
Cowichan Valley	56	108	130	139	149	145	98	75%
Nanaimo	122	156	218	259	252	207	197	61%
Powell River	0	16	16	19	47	42	75	100%
Alberni-Clayoquot	21	21	25	35	50	63	70	233%
Capital	111	111	150	143	139	125	184	66%
<b>Vancouver Is./Coast Overall</b>	<b>420</b>	<b>620</b>	<b>779</b>	<b>872</b>	<b>931</b>	<b>860</b>	<b>831</b>	<b>110%</b>
Northern Okanagan	30	53	50	91	126	99	95	217%
Thompson-Nicola	49	109	104	139	169	169	148	202%
Central Okanagan	40	63	90	96	322	281	260	550%
Okanagan-Similkameen	34	42	51	70	85	84	87	156%
Columbia-Shuswap	26	29	39	39	74	48	70	169%
Thompson Okanagan Overall	179	296	334	435	776	681	660	269%
Fraser-Fort George	27	42	64	155	129	98	195	622%
Cariboo	25	57	50	92	54	42	34	36%
<b>Cariboo Overall</b>	<b>52</b>	<b>99</b>	<b>114</b>	<b>247</b>	<b>183</b>	<b>140</b>	<b>229</b>	<b>340%</b>
Central Kootenay	36	57	114	98	161	163	159	342%
East Kootenay	14	21	23	34	45	62	51	264%
Kootenay Boundary	13	43	52	26	39	45	49	277%
<b>Kootenay Overall</b>	<b>63</b>	<b>121</b>	<b>189</b>	<b>158</b>	<b>245</b>	<b>270</b>	<b>259</b>	<b>311%</b>
Kitimat-Stikine	10	13	12	28	42	18	46	360%
Central Coast	1	2	2	2	2	7	4	300%
Skeena-Qs. Charlotte	7	7	10	6	5	9	10	43%
<b>North Coast Overall</b>	<b>18</b>	<b>22</b>	<b>24</b>	<b>36</b>	<b>49</b>	<b>34</b>	<b>60</b>	<b>239%</b>
Hulkley-Nechako	14	8	13	21	28	29	22	57%
Stikine (region)	1	1	2	0	0	1	1	0%
<b>Nechako Overall</b>	<b>15</b>	<b>9</b>	<b>15</b>	<b>21</b>	<b>28</b>	<b>30</b>	<b>23</b>	<b>53%</b>
Peace River	4	6	12	7	26	36	23	475%
Northern Rockies	0	1	6	2	0	0	0	0%
<b>Northeast Overall</b>	<b>4</b>	<b>7</b>	<b>18</b>	<b>9</b>	<b>26</b>	<b>36</b>	<b>23</b>	<b>475%</b>
<b>Province Overall</b>	<b>1489</b>	<b>2342</b>	<b>3100</b>	<b>4382</b>	<b>4464</b>	<b>4393</b>	<b>4514</b>	<b>203%</b>

\* Source of population statistics: Population Estimates 1996-2004, Ministry of Management Services, Government of British Columbia. Accessed January 5, 2005 from [www.bcstats.gov.bc.ca/data/pop/popfrom/Mim9604a.htm](http://www.bcstats.gov.bc.ca/data/pop/popfrom/Mim9604a.htm)

In order to compare the regions and regional districts, Table 2.2 and Table 2.3 control for population by comparing the frequency of cases in 2003 to the population in each region. Figure

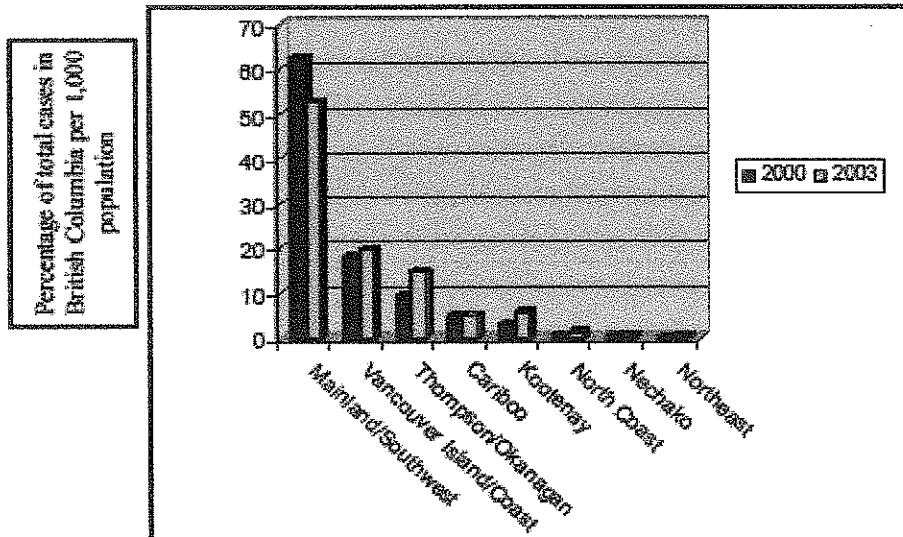
**TABLE 2.3: MARIJUANA CULTIVATION CASES KNOWN TO THE POLICE IN 2003: RATES PER 1,000 POPULATION IN EACH DEVELOPMENT REGION AND REGIONAL DISTRICT OF BRITISH COLUMBIA AND LOCAL RATE VARIANCE FROM PROVINCIAL RATE**

<i>Development Regions and Regional Districts</i>	<i>Rate per 1,000 population in 2003</i>	<i>Percentage variance from provincial rate of 1.09 per 1,000</i>
Greater Vancouver	0.91	-17
Fraser Valley	1.61	+48
Squamish-Lillooet	1.17	+7
<b>Mainland/Southwest Overall</b>	<b>0.98</b>	<b>-10</b>
Nanaimo	1.45	+33
Coomox-Strathcona	1.94	+78
Capital	0.53	-51
Cowichan Valley	1.28	+17
Sunshine Coast	1.79	+64
Alberni-Clayoquot	2.20	+102
Powell River	3.62	+232
Mount Waddington	0.74	-32
<b>Vancouver Island/Coast Overall</b>	<b>1.17</b>	<b>-7</b>
Thompson-Nicola	1.18	+8
Central Okanagan	1.62	+49
Northern Okanagan	1.22	+12
Okanagan-Similkameen	1.07	-2
Columbia-Shuswap	1.37	+26
<b>Okanagan/Okanagan Overall</b>	<b>1.33</b>	<b>+22</b>
Fraser-Fort George	1.94	+78
Cariboo	0.49	-55
<b>Cariboo Overall</b>	<b>1.55</b>	<b>+34</b>
Central Kootenay	2.64	+142
East Kootenay	0.85	-22
Kootenay Boundary	1.48	+36
<b>Kootenay Overall</b>	<b>1.69</b>	<b>+55</b>
Kitimat-Stikine	1.08	-1
Central Coast	1.03	-6
Stikine-On. Charlotte	0.45	-59
<b>North Coast Overall</b>	<b>0.87</b>	<b>-20</b>
Bulkley-Nechako	0.52	-52
Stikine (region)	0.73	-33
<b>Nechako Overall</b>	<b>0.52</b>	<b>-52</b>
Peace River	0.39	-64
Northern Rockies	0.00	-100
<b>Northeast Overall</b>	<b>0.55</b>	<b>-68</b>

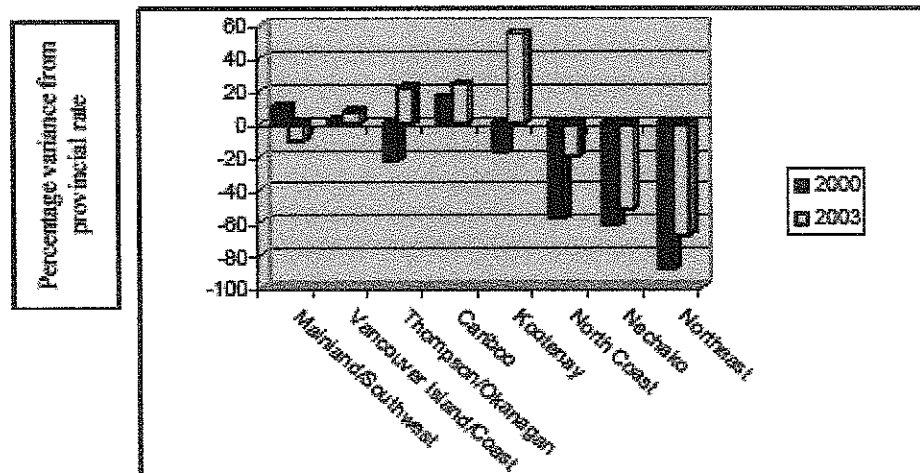
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**FIGURE 2.2: PERCENTAGE OF TOTAL CASES IN BRITISH COLUMBIA PER 1,000 POPULATION IN EACH DEVELOPMENT DISTRICT IN 2000 AND 2003**



**FIGURE 2.3: DEVELOPMENT DISTRICT PERCENTAGE VARIANCE FROM PROVINCIAL RATE IN 2000 AND 2003**



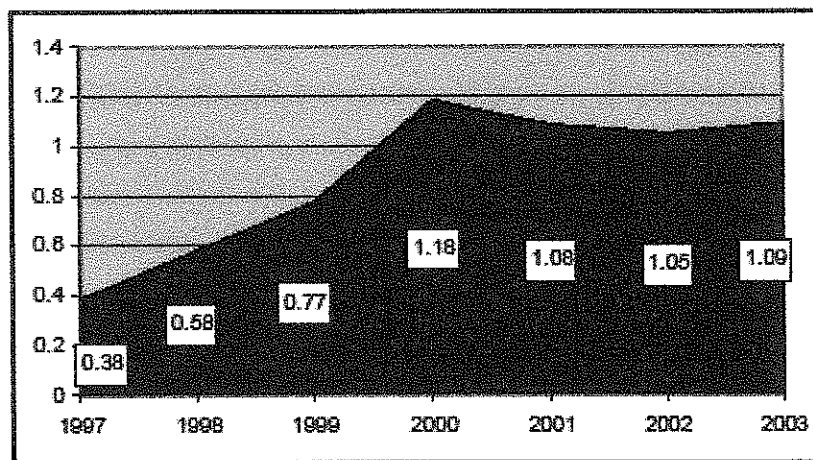
As indicated in Table 2.3, the district rates in the Lower Mainland, North Coast, Nechako, and Northeast are lower than the provincial rate when controlled for population. The five highest local rates, in comparison with the provincial rate, are shown in Table 2.4. Figure 2.4 charts the provincial rate per 1,000 population of marijuana cultivation in the seven year period. The dramatic rise from 1997 through 2000, and the plateau thereafter, is evident in this figure. Since 2000, the provincial rate of marijuana cultivation has remained over three times the rate seen in

1997. Figure 2.2 and Figure 2.3 show that marijuana cultivation cases have decreased in the Lower Mainland and increased in Vancouver Island/Coast, Thompson/Okanagan, and Kootenay areas since 2000. The rest of the jurisdictions are relatively stable from 2000 to 2003.

**TABLE 2.4: MARIHUANA CULTIVATION CASES KNOWN TO THE POLICE 1997-2003: TOP FIVE REGIONAL DISTRICTS BY LOCAL RATE VARIANCE FROM PROVINCIAL RATE**

<i>Development Regions and Regional Districts</i>	<i>Percentage variance from provincial rate 1997-2003</i>
Powell River	+232
Central Kootenays	+142
Alberni-Clayquot	+102
Fraser-Fort George	+78
Comox Strathcona	+78

**Figure 2.4: RATE PER 1,000 POPULATION OF MARIHUANA CULTIVATION INCIDENTS KNOWN TO THE POLICE IN BRITISH COLUMBIA 1997-2003**



As mentioned above, of the 149 jurisdictions in British Columbia, ten jurisdictions in British Columbia account for over 50% of all police cases in the province for the year 2003. Each of these jurisdictions have had at least a 150% increase in marijuana cultivation incidents from 1997. The average number of cases of marijuana cultivation in 2003 in each of the top ten jurisdictions was 245 (see Table 2.5). Notably, Surrey has surpassed Vancouver as the most prolific jurisdiction in the province. New entries (since 2000) to the top ten list include Kelowna, Prince George, and Ridge Meadows. The largest increases over the seven year period are in Prince George, Kelowna, and Coquitlam, each with increases of over 500%.

**TABLE 2.5: JURISDICTIONS IN BRITISH COLUMBIA WITH HIGHEST VOLUME OF MARIHUANA CULTIVATION FILES OPENED IN 2003**

<i>RCMP Detachment/ Police Department</i>	<i>Number of cases of marihuana cultivation in 2003</i>	<i>Percentage increase over the seven-year period</i>	<i>Number of files as a percentage of all files opened in BC in 2003</i>
Surrey	441	385 %	9.8 %
Vancouver	335	162 %	7.4 %
Coquitlam	297	624 %	6.6 %
Kelowna	260	550 %	5.8 %
Burnaby	218	169 %	4.8 %
Chilliwack	204	214 %	4.5 %
Prince George	189	722 %	4.2 %
Richmond	180	339 %	4.0 %
Langley	170	170 %	3.8 %
Ridge Meadows	152	375 %	3.4 %
Average	245	304 %	5.4 %

As was the case in the Plecas et al. (2002) study, taken together, the top ten jurisdictions, based on a raw count of the number of marihuana cultivation cases, account for over 50% of the provincial total of marihuana growing operations; however, three of the top ten jurisdictions have rates, based on per 1,000 population, below the provincial rate. These are: Vancouver (47% below the per capita provincial rate), Richmond (5% below the per capita provincial rate) and Burnaby (2% below the per capita provincial rate). Table 2.6 shows the top ten jurisdictions and how they vary from the provincial rate of marihuana growing operations in 2003. Interestingly, the largest variance from the provincial rate can be seen in Chilliwack, Prince George, and Kelowna, each of these being relatively rural locations compared to the other jurisdictions in the top ten. In effect, Vancouver is currently 47% below the provincial rate, while in 2000 it was 1% above the per capita provincial rate. The jurisdictions of Delta, Nanaimo, and Abbotsford were in the top ten jurisdictions in 2000 and have since dropped off the list for 2003. An interesting note is that Delta, Nanaimo and Abbotsford have active 'green teams' to increase the enforcement against marihuana growing operations.

**TABLE 2.6: JURISDICTIONS IN BRITISH COLUMBIA WITH HIGHEST VOLUME OF MARIHUANA CULTIVATION CASES IN 2003**

<i>RCMP Detachment or Police Department</i>	<i>Number of cases in 2003</i>	<i>Population*</i>	<i>Rate per 1,000 population</i>	<i>Percentage* variance from provincial rate (1.09)</i>
Surrey	441	378,578	1.16	+ 6%
Vancouver	335	577,962	0.58	- 47%
Coquitlam	297	175,496	1.69	+ 55%
Kelowna <sup>4</sup>	260	110,167	2.36	+ 117%
Burnaby	218	202,852	1.07	- 2%
Chilliwack <sup>7</sup>	204	80,719	2.53	+ 132%
Prince George	189	76,597	2.47	+ 127%
Richmond	180	172,032	1.04	- 5%
Langley	170	117,366	1.45	+ 33%
Ridge Meadows <sup>3</sup>	152	84,933	1.79	+ 64%

\* All percentages have been rounded to the nearest whole number.

### Sources of Information

Table 2.7 outlines the source of information leading to the opening of a marihuana cultivation file in British Columbia. The 25,014 files reviewed for this report contained information on the source of that information in 87% of the cases. The majority of information derives from Crimestoppers or anonymous informants (57% over the seven year period). All of the categories have remained relatively stable across the seven year study period with the exception of reports coming from neighbours, which have increased by 7% between 1997 and 2003 (see Table 2.7). Reports from BC Hydro have decreased from 8% in 1997 to 2% in 2003. Notably, despite bylaws in many municipalities concerning landlord liability in rental growing operations, information received from landlords has not increased over the past seven years. There has been an increase in the number of calls from neighbours as a source, and this may suggest that public awareness campaigns, such as Growbusters, a Crimestoppers-like tip line

<sup>4</sup> In 2002, the Kelowna detachment was amalgamated to include Lake Country.

<sup>7</sup> In 2002, the Chilliwack detachment was amalgamated to include Agassiz, Hope and Boston Bar.

used solely for the reporting of marijuana grow operations in Vancouver, have started to impact the number of grow operations in the province, specifically in the Lower Mainland.

TABLE 2.7: SOURCE OF THE INFORMATION LEADING TO OPENING OF MARIHUANA CULTIVATION FILE: PERCENTAGE\* FROM EACH SOURCE BY YEAR IN BRITISH COLUMBIA 1997-2003

Source**	1997	1998	1999	2000	2001	2002	2003	Overall
Crimestoppers or anonymous informants	55 %	57 %	55 %	59 %	57 %	58 %	51 %	57 %
While responding to other crime	12 %	11 %	12 %	10 %	8 %	7 %	7 %	9 %
Landlord	7 %	7 %	8 %	8 %	7 %	7 %	7 %	8 %
Neighbour	3 %	4 %	3 %	6 %	7 %	8 %	10 %	7 %
General investigation	4 %	4 %	6 %	5 %	5 %	5 %	7 %	6 %
Routine check (including road stops)	5 %	6 %	6 %	5 %	4 %	4 %	2 %	4 %
While serving a warrant	3 %	3 %	4 %	2 %	2 %	2 %	5 %	3 %
BC Hydro	8 %	4 %	4 %	3 %	1 %	2 %	2 %	3 %
Other (e.g. fire, government officials)	3 %	3 %	3 %	3 %	8 %	8 %	8 %	5 %

N=21,762

\* All percentages have been rounded to the nearest whole number.

\*\* Information identifying a type of source was available in 87% of all cases.

### Investigations

Marihuana cultivation cases are very complex and there are a number of variables that determine whether an investigation will proceed to charge. Search warrants demand solid grounds and there have been court decisions, most notably the decisions surrounding the use of the FLIR<sup>9</sup>, that have affected police ability to obtain a search warrant in cultivation cases. Table 2.8 illustrates how the number of cases where the initial information received by the police did not lead to further action seems to have increased significantly over the seven-year period. Figure 2.5 shows how the percentage of cases in which the information received led to a full investigation (i.e. usually a search of the premises/property) has decreased steadily since 1997. This decrease in full investigations is mirrored by an increase in initial investigation and 'no action' cases.<sup>10</sup>

<sup>9</sup> Includes the municipalities of Maple Ridge and Pitt Meadows.

<sup>9</sup> Forward Looking Infrared device used for thermal imaging.

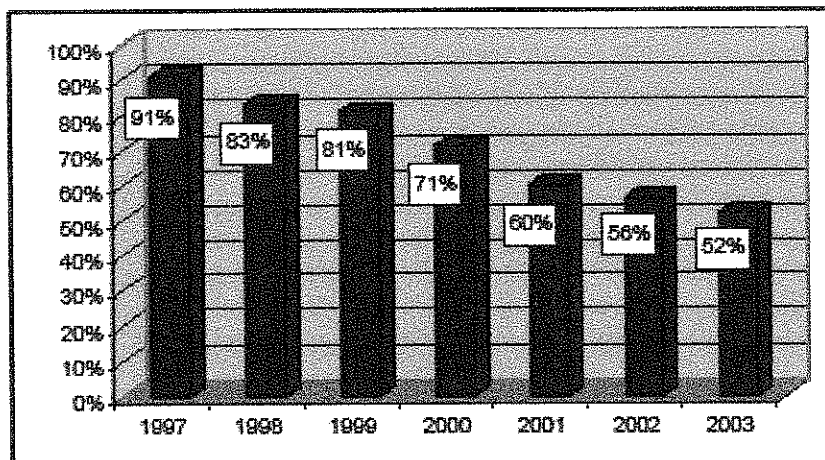
<sup>10</sup> Initial investigation would include the cases where there was insufficient evidence to obtain a search warrant. The classification 'no action' denotes cases for which no police investigation has occurred.

**TABLE 2.8: ACTION TAKEN BY THE POLICE AFTER RECEIVING INFORMATION ON SUSPECTED MARIHUANA GROWING OPERATIONS AND THE PERCENTAGE OF CASES IN WHICH A FULL INVESTIGATION WAS CONDUCTED IN BRITISH COLUMBIA 1997-2003**

YEAR	Percentage of Cases Where Action was Taken After Information was Received		
	Full investigation	Initial investigation only	No action taken
1997 (n = 1489)	91 %	2 %	7 %
1998 (n = 2342)	83 %	2 %	15 %
1999 (n = 3100)	81 %	4 %	15 %
2000 (n = 4302)	71 %	6 %	23 %
2001 (n = 4464)	60 %	25 %	15 %
2002 (n = 4303)	56 %	27 %	17 %
2003 (n = 4514)	52 %	26 %	22 %

N = 25,014

**FIGURE 2.5: PERCENTAGE\* OF FULL INVESTIGATION MARIHUANA CULTIVATION CASES IN BRITISH COLUMBIA 1997-2003**



\*All percentages rounded to the nearest whole number

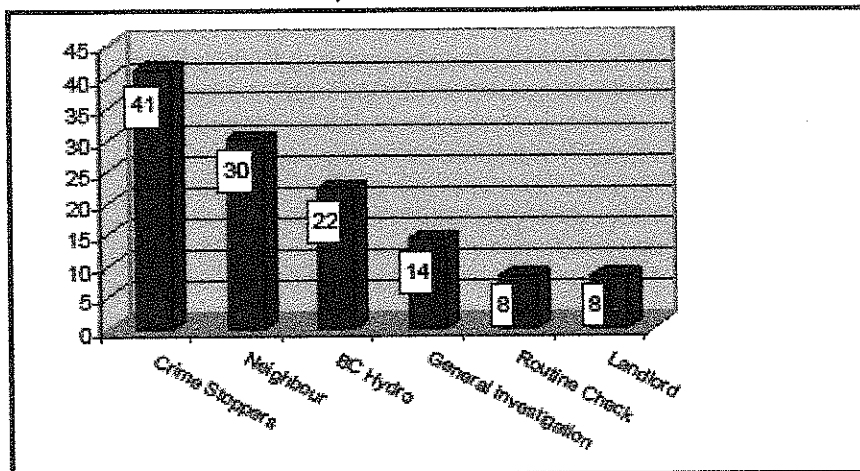
Table 2.9 indicates the average number of days elapsed from opening a marijuana production file to the date of search has decreased between 2000 to 2003, from 29 days to 18 days. The source of complaint to the police also affects the length of time between the complaint and police attending the scene. In Figure 2.6, Crimestoppers or anonymous informants have the longest length of time between report and attendance, with an average of 41 days across the seven year period. The average time elapsed for a neighbour report is also lengthy at 30 days.

Reports from BC Hydro, general investigation, routine check, and landlords are substantially shorter. A reason for this may be the increased time needed to collect evidence for a search warrant in cases involving an anonymous informant.

**TABLE 2.9: AVERAGE NUMBER OF DAYS ELAPSED FROM OPENING MARIHUANA CULTIVATION FILE TO SEARCH BY YEAR IN BRITISH COLUMBIA 1997-2003**

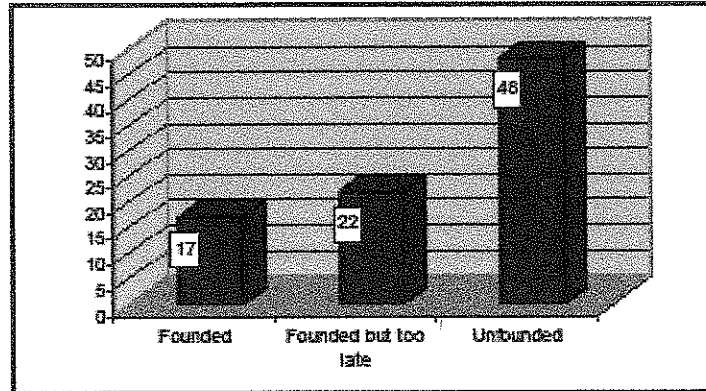
Year	Average Number of Days Elapsed
1997	17
1998	17
1999	24
2000	29
2001	21
2002	21
2003	18

**FIGURE 2.6: AVERAGE NUMBER OF DAYS ELAPSED FROM OPENING OF A MARIHUANA CULTIVATION FILE TO SEARCH (BY SOURCE OF COMPLAINT) IN BRITISH COLUMBIA**



Another important finding regarding police investigation of marijuana growing operations is the large amount of unfounded cases (see Figure 2.7). The fact that the days elapsed in getting to “unfounded cases” is nearly three times as long as the time elapsed for founded cases, and more than twice as long as cases “founded, but too late”, may suggest that a large number of unfounded cases are perhaps not unfounded at all. Rather, a large number of unfounded cases may be nothing more than cases founded very, very late.

**FIGURE 2.7: AVERAGE NUMBER OF DAYS ELAPSED FROM OPENING OF A MARIHUANA CULTIVATION FILE TO SEARCH (BY STATUS OF CASE) IN BRITISH COLUMBIA**



\* All figures rounded.

### Founded Cases

During the seven years included in this study, 87% of the cases where a full investigation was conducted were founded cases. In a further 6% of the cases where a full investigation was conducted, there was evidence that a marijuana cultivation operation had taken place, but the search occurred too late to produce formal evidence. During the year 2003, 45% of all the cases that came to the attention of the police and 86% of the cases where a full investigation was conducted, proved to be founded. As mentioned above, the percentage of founded cases appears to be consistently declining 1997 through 2003 (see Table 2.10 and Table 2.11).

**TABLE 2.10: PERCENTAGE OF ALL MARIHUANA CULTIVATION CASES THAT CAME TO THE ATTENTION OF THE POLICE WHICH PROVED TO BE FOUNDED IN BRITISH COLUMBIA 1997-2003**

<i>Year Cases brought to police attention</i>	<i>Cases founded and marijuana was seized</i>	<i>Evidence of cultivation, but a search occurred too late</i>
1997 (n = 1,489)	84 %	3 %
1998 (n = 2,342)	75 %	3 %
1999 (n = 3,160)	71 %	4 %
2000 (n = 4,002)	59 %	5 %
2001 (n = 4,464)	53 %	3 %
2002 (n = 4,282)	49%	4 %
2003 (n = 4,524)	45%	4 %

N = 25,014

\* All percentages rounded.



**TABLE 2.11: PERCENTAGE OF FULL INVESTIGATION WHERE THE CASE OF MARIHUANA CULTIVATION PROVED TO BE FOUNDED IN BRITISH COLUMBIA 1997-2003**

<i>Year Number of full investigation</i>	<i>Case was founded, marijuana was seized</i>	<i>Evidence of cultivation, but a search occurred too late</i>	<i>Unfounded**</i>
1997 (n = 1345)	93 %	3 %	4 %
1998 (n = 1959)	90 %	4 %	6 %
1999 (n = 2509)	88 %	5 %	7 %
2000 (n = 3419)	82 %	6 %	12 %
2001 (n = 2667)	88 %	5 %	7 %
2002 (n = 2416)	87 %	7 %	6 %
2003 (n = 2360)	86 %	7 %	7 %
<b>Overall Average</b>	<b>87 %</b>	<b>6 %</b>	<b>8 %</b>
<b>N = 16,675</b>	<b>14,483</b>	<b>933</b>	<b>1259</b>

\* All figures rounded.

\*\* Unfounded cases did not necessarily involve a formal search (i.e. search warrant). Some cases coming to the attention of the police were classified as "unfounded" by officers following, for example, a follow-up meeting with a landlord, or an inspection on crown land.

## Chapter 3

### DESCRIPTION OF MARIHUANA GROWING OPERATIONS

Between 1997 to 2003, more than 2.4 million marihuana plants and 19,325 kilograms of harvested marihuana were seized in British Columbia. In general, the operations are becoming larger every year, as indicated by the number of plants and weight of harvested marihuana seized. With the increase in size and sophistication, communities are faced with progressively more harmful consequences related to marihuana growing operations. Specifically, grow operations result in an increased incidence of fires and children are present in 21%<sup>11</sup> growing operations.

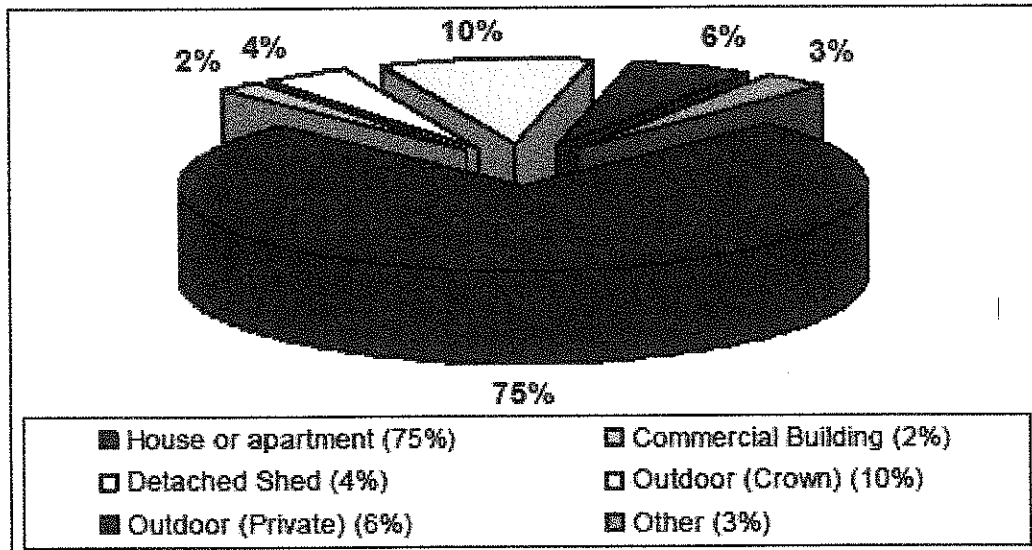
#### Characteristics of Growing Operations

As was the case in the Plecas et al. (2002) study, the vast majority of the cases reviewed were indoor operations. As indicated in Figure 3.1 three quarters of founded grow operations are located within a house or apartment, while 16% are outdoors, located either on Crown (10%) or private (6%) land.

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<sup>11</sup> Based on Vancouver data from 2003 due to incomplete recording in other jurisdictions.  
Marihuana Growing Operations in British Columbia Revisited

**FIGURE 3.1: TYPE OF FOUNDED MARIHUANA GROWING OPERATIONS IN BRITISH COLUMBIA  
1997-2003**



Note: For the period 1997 to 2000, 73% of cases were in houses or apartments, and 2% were in commercial buildings, 5% were in detached buildings, and 16% were associated to outdoor operations (See Piccas et al. (2002).

Table 3.1 describes the regional differences in outdoor growing operations. The Kootenay and Vancouver Island/Coast regions each have a large proportion of outdoor operations over the seven-year period. The Vancouver Island/Coast region has experienced a rise in the percentage of outdoor cases in 2002 and 2003. In part, this observed rise is due to the large number of outdoor eradications in this region. Eradications are large, coordinated policing initiatives aimed at locating and dismantling outdoor marijuana cultivation. The eradications are occasionally proactive, in the sense that many operations are spotted from air or sea without prior knowledge of the location. However, it is more common that the outdoor location comes to the attention of the police from informants, in a similar fashion to indoor growing operations.

**TABLE 3.1: PERCENTAGE OF MARIHUANA CULTIVATION CASES INVOLVING AN OUTDOOR OPERATION IN EACH DEVELOPMENT REGION IN BRITISH COLUMBIA 1997- 2003**

<i>Development Region</i>	<i>Percentage of cases involving outdoor cultivation</i>							<i>7 years</i>
	1997	1998	1999	2000	2001	2002	2003	
Kootenay	28 %	56 %	36 %	39 %	36 %	32 %	41 %	39 %
Vancouver Island/Coast	25 %	34 %	24 %	24 %	33 %	41 %	45 %	33 %
Thompson/Okanagan	20 %	32 %	26 %	23 %	25 %	21 %	23 %	25 %
North Coast	25 %	17 %	0 %	26 %	14 %	40 %	8 %	20 %
Cariboo	7 %	16 %	7 %	8 %	9 %	4 %	7 %	8 %
Northeast	0 %	17 %	8 %	0 %	1 %	0 %	0 %	5 %
Mainland/Southwest	7 %	7 %	5 %	6 %	4 %	5 %	5 %	5 %
Nechako	0 %	0 %	0 %	11 %	0 %	0 %	0 %	2 %
Province Overall	15 %	22 %	15 %	13 %	15 %	16 %	19 %	16 %

N = 25,014

### The Size of Operations

The police case files indicate that marihuana was seized in both live plant and dried form. The average number of plants seized in marihuana growing operations has increased dramatically since 1997 (see Table 3.2). In fact, the average number of plants seized in indoor growing operations has increased each year since 1997. In 2003, the average number of plants per founded indoor grow operation was 236, an increase of nearly 60% from the average number per indoor growing operation in 1997.

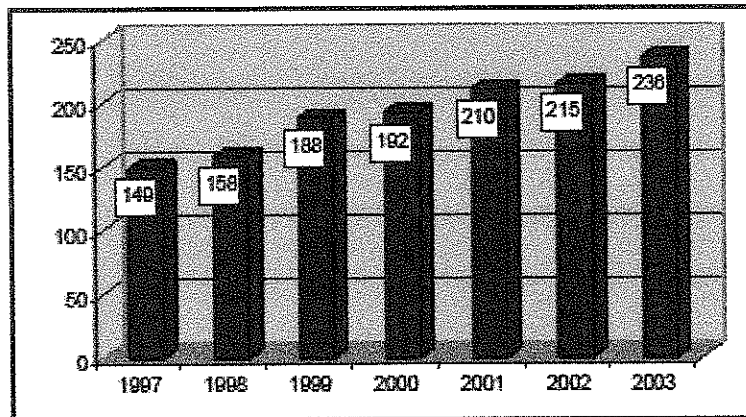
Table 3.3 reports the number of kilograms of harvested marihuana seized in the province in each of the seven years studied. Notably, the average quantity of harvested marihuana seized has tripled since 1997 in both indoor and outdoor operations.

**TABLE 3.2: AVERAGE NUMBER OF PLANTS INVOLVED WHEN PLANTS WERE SEIZED BY TYPE OF OPERATION IN BRITISH COLUMBIA 1997-2003**

<i>Type of Operation</i>	<i>Average Number of Plants Seized in the Province</i>							<i>7 Year Average</i>
	1997	1998	1999	2000	2001	2002	2003	
<b>Indoor</b>	149	158	188	192	210	215	236	198
<b>Outdoor</b>	76	103	106	134	118	106	93	106
<b>Other (bunker, trailer, vehicle)</b>	162	118	220	166	78	134	224	128
<b>All types combined</b>	141	140	182	180	194	195	208	180

\* All figures rounded.

**FIGURE 3.2: AVERAGE NUMBER OF MARIHUANA PLANTS SEIZED PER INDOOR MARIHUANA GROWING OPERATIONS IN BRITISH COLUMBIA 1997-2003**



**TABLE 3.3: AVERAGE NUMBER OF KILOGRAMS OF HARVESTED MARIHUANA SEIZED IN BRITISH COLUMBIA 1997-2003**

<i>Type of Operation</i>	<i>Number of kilograms of harvested marijuana seized</i>							<i>Total 7 years</i>
	1997	1998	1999	2000	2001	2002	2003	
<b>Indoor</b>	2.1	2.7	4.9	4.1	6.5	9.0	6.9	5.2
<b>Outdoor</b>	12.6	5.4	5.2	5.4	10.3	7.0	15.2	8.3
<b>Other (e.g. bunker, trailer, vehicle)</b>	2.1	1.8	3.9	3.3	1.3	3.5	1.7	3.2
<b>All types combined</b>	2.4	2.7	4.8	4.0	6.6	8.5	7.2	5.1

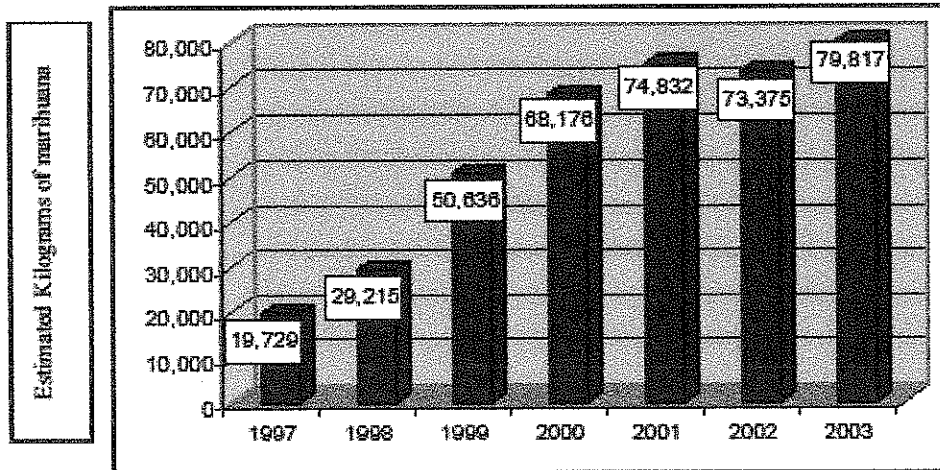
Table 3.4 shows the total quantity of marihuana seized between 1997 and 2003. The quantity of potentially harvestable substance per plant was conservatively estimated on the basis of 100 grams (or approximately 3.5 ounces) per plant.

**TABLE 3.4: TOTAL QUANTITY OF MARIHUANA SEIZED IN BRITISH COLUMBIA 1997-2003**

<i>Form in which marihuana seized</i>	<i>Estimated number of marketable kilograms of marihuana seized each year</i>							<i>Total</i>
	1997	1998	1999	2000	2001	2002	2003	
<b>In plant form (100 gm / plant)</b>	16,847	22,978	37,565	45,988	41,524	37,240	38,763	240,905
<b>In bulk form already harvested</b>	973	1,368	3,289	3,066	3,540	4,086	3,002	19,325
<b>Total Kilograms</b>	<b>17,820</b>	<b>24,346</b>	<b>40,854</b>	<b>49,054</b>	<b>45,069</b>	<b>41,326</b>	<b>41,765</b>	<b>260,229</b>

In any case, the most realistic and useful figures on the amount of marihuana associated with cultivation cases in British Columbia over the 1997 to 2003 period are estimates of yearly production within the population of calls coming to the attention of police. Indeed, using such an estimate makes sense because the figures in the amount of marihuana actually seized is skewed downward by the fact that over the seven year period, the percentage of calls for service which led to a full investigation by police has steadily declined (refer to Table 2.8). As can be seen from Figure 3.3, using such an estimate shows that the estimated amount of marihuana produced each year has consistently increased to the point where the total volume in 2003, nearly 80,000 kilograms, is four times the nearly 20,000 kilograms produced in 2003. The total estimated volume produced over the seven year period is 395,780 kilograms, and in considering that figure, it is important to note that it is calculated from only the population of calls coming to the attention of the police.

**FIGURE 3.3: ESTIMATED QUANTITY (IN KILOGRAMS) OF MARIHUANA PRODUCED FROM INCIDENTS COMING TO THE ATTENTION OF THE POLICE**



\* These estimates were derived using the following equation: (% founded cases in each year where full investigation occurred X total marihuana grow operations calls coming to the attention of police per year) X average quantity of marihuana seized in founded grow operations per year.

### Value of Marihuana Seized

There are many different techniques to calculate what the average market value of confiscated marihuana is and on how to estimate it<sup>12</sup>. The same estimation procedure used in the Plecas et al. (2002) report was used in this study. The authors have conservatively estimated that marihuana plants could yield approximately 100 grams per plant, and that the average wholesale market value of a kilogram of dry British Columbia marihuana, when sold in quantities of over one kilogram has been at least \$3,500 per kilogram.<sup>13</sup> Using this estimate, and based on the estimate of marihuana seized in British Columbia from January 1, 1997 through December 31, 2003 (see Table 3.4), at a cost of \$3,500 per kilogram the value of the marihuana seized would yield a market value of approximately \$910,801,500.

<sup>12</sup> See S. Easton's report for a full discussion of economic techniques on market estimation for marihuana production and distribution. Easton, S.T. (2004). *Marijuana growth in British Columbia*. Vancouver: Fraser Institute.

<sup>13</sup> Plecas, D., Dandurand, Y., Chin, V., & Segger, T. (2002). *Marihuana Growing Operations in British Columbia: An Empirical Survey (1997-2000)*. Abbotsford: University College of the Fraser Valley.

## Growing Sophistication of Operations

Marihuana growing operations have not only grown in size over the past seven years, the sophistication of the operations also appears to be increasing. In the last three years of this study, it appears that more specialized equipment (i.e. timers, advanced hydroponic systems, electrical bypasses) are being used. The concept of increasing sophistication is not empirically measurable through the current file review study, however, the variables of electricity bypasses, number of hydroponic stores, and average number of lights per grow operation are indicative of increasing sophistication of measures.

This growth in sophistication and the number of grow operations is reflected in the increasing number of hydroponic stores in the province. In 2000, there were 101 different hydroponic stores in British Columbia.<sup>14</sup> In 2004, this number increased to 149 unique hydroponic locations.<sup>15</sup> The rate of growth in the number of hydroponic stores in British Columbia is six times higher than Washington State and nearly four times greater than Alberta, British Columbia's two closest neighbours (see Figure 3.4). This nearly 50% increase in hydroponic shops in British Columbia since 2000 is particularly interesting when considered against the apparent leveling off of the number of complaints coming to the attention of the police over the same time period.

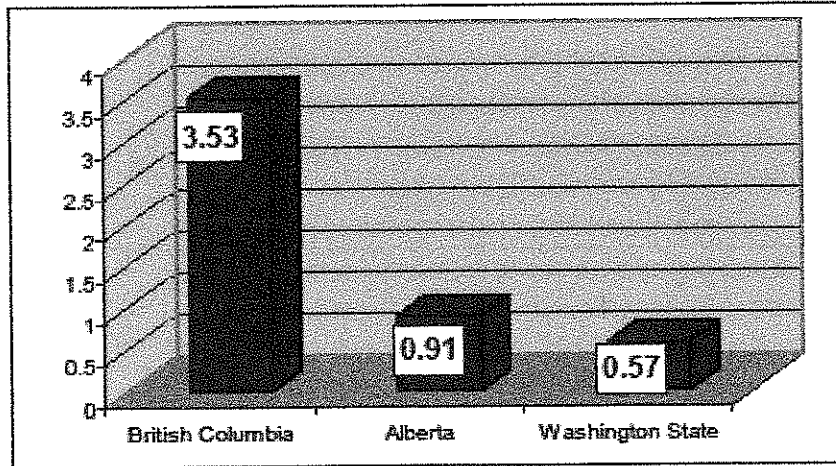
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<sup>14</sup> Kirkpatrick, S., Hansom, D., Plecas, D., and Dandurand, Y., (2002). *Hydroponic Cultivation Equipment Outlets in British Columbia, Alberta and the State of Washington*. Vancouver/Abbotsford: International Centre for Criminal Law Reform and Criminal Justice Policy and the Department of Criminology and Criminal Justice, University College of the Fraser Valley, January 2002.

<sup>15</sup> Determined through systematic online review of 2004 telephone advertisements in British Columbia, Alberta, and Washington State.

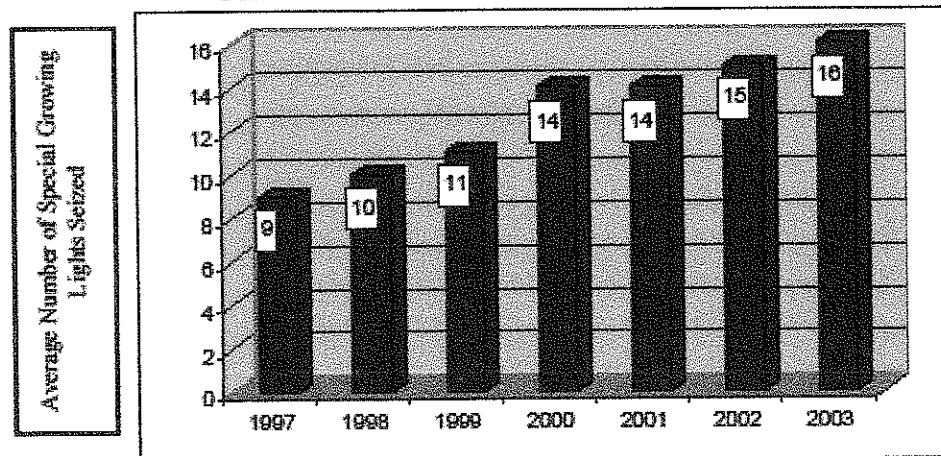


**FIGURE 3.4: RATE OF HYDROPONIC OUTLETS PER 100,000 POPULATION IN BRITISH COLUMBIA, ALBERTA AND WASHINGTON STATE 2004**



Another variable that measures the increasing sophistication of growing operations is the use of special high voltage light bulbs. Figure 3.5 shows that the average number of special lights seized per growing operation has consistently increased over the seven-year study period.

**FIGURE 3.5: AVERAGE NUMBER OF SPECIAL GROWING LIGHTS SEIZED FROM INDOOR MARIHUANA CULTIVATION OPERATIONS IN BRITISH COLUMBIA 1997-2003**



\* Includes some lights seized from trailers, bunkers, or lights boxed in vehicles.

Sophisticated indoor marijuana growing operations require large amounts of electricity to power high wattage lights which accelerate plant growth. In a few cases, special electric generators are used, while in others, particularly in small to medium size operations, electricity is

consumed and paid for, but the operation is frequently moved to avoid detection. Operators often attempt to avoid detection as a result of their high consumption of electricity by stealing the electricity or by "diverting it", tampering with the meter, or by-passing it altogether. According to available information on file, the percentage of indoor marihuana growing operations involving the theft of hydro services remained relatively stable over the seven years. During this seven-year period, an average of 20% of founded cases involved theft of electricity. Table 3.5 summarizes the limited data collected on the incidence of theft of electricity during the period reviewed. The estimated value of electricity theft was known in only 47% of all cases involving a theft of electricity. The average estimated value of electricity theft has increased steadily since 2001 indicating that more electricity is being used through a single bypass and/or that the bypass is active for a longer period of time. This suggests operations that are either using more bulbs or operations with a larger number of plants. However, due to the decline in the percentage of indoor cultivation cases involving theft of electricity since 2000, the total reported sum of hydro theft has correspondingly decreased from \$711,154 in 2000 to \$489,909 in 2002 (see Table 3.5).

**TABLE 3.5: THEFT OF ELECTRICITY INVOLVED IN CASES OF INDOOR MARIHUANA GROWING OPERATIONS IN BRITISH COLUMBIA 1997-2003**

	1997	1998	1999	2000	2001	2002	2003
Percentage of indoor cultivation cases involving theft of electricity	21 %	14 %	20 %	26 %	16 %	21 %	21 %
Average value of hydro theft per operation *	\$ 2,830	\$ 3,145	\$ 2,563	\$ 2,784	\$3,152	\$ 3,699	\$ 3,740
Total reported sum of hydro theft*	\$ 250,596	\$ 207,544	\$ 392,166	\$ 711,154	\$ 438,083	\$ 447,628	\$ 489,909

\* An assessment of the amount of electricity stolen was made in only 47% of the cases. The authors, extrapolating from what the data shows on founded cases and "no action" cases, estimate that the actual amount of hydro theft would have exceeded \$3.2 million in 2003 alone.

### The Potential Harm Associated with Indoor Growing Operations

Table 3.6 summarizes the information collected on some other characteristics of the founded marihuana cultivation cases investigated by the police in British Columbia between 1997 and 2003. Hazards were present in only 2.1% of founded cases, and its prevalence remained stable over the seven-year study time frame (see Table 3.6). The most common associated harm was the presence of a firearm (6.0%) which has increased since 2000. Overall, 15.3% of indoor grow operations had at least one harmful circumstance present (i.e. weapons,

fire, other drugs) and that figure ignores electricity by-passes (i.e. 20% of cases), the presence of mold, and the chance of home invasions. The likelihood of harmful circumstances being present is particularly disturbing in view of the significant number of instances where children have been present at a grow operation. As Table 3.6 shows, children were recorded as being present in 21% of founded marihuana grow operations in 2003.

**TABLE 3.6: OTHER CHARACTERISTICS OF MARIHUANA GROWING OPERATIONS IN BRITISH COLUMBIA 1997-2003**

<i>Circumstances</i>	<i>Percentage of founded cases</i>
Hazards present (e.g., booby trap, explosives, dangerous chemical product)	2.1 %
Fire involved in indoor grows	3.7 %
Firearms seized	6.0 %
Other drugs seized (e.g. cocaine, heroin)	3.6 %
Other weapons seized (e.g., knives)	2.9 %
Children present (Vancouver 2003)	21 %*

\* Due to the lack of consistent record keeping on children present in most other jurisdictions, this figure is based Vancouver 2003 data only.

Indoor growing operations are substantially more likely to catch fire than other residences. As Table 3.7 shows, there were 419 fires related to indoor grow operations in British Columbia between 1997 and 2003. Notably, the percentage of indoor grow operations associated to a fire has slightly increased year over year since 1999. In 2003, that percentage reached a seven-year high of 4.7%.

**TABLE 3.7: NUMBER AND PERCENT OF FIRES OCCURRING IN FOUNDED INDOOR MARIHUANA GROWING OPERATIONS IN BRITISH COLUMBIA 1997-2003**

	1997	1998	1999	2000	2001	2002	2003	Overall
<b>Number of Fires</b>	32	48	51	69	72	67	80	419
<b>Percent of Indoor Grow Operations Resulting in a Fire</b>	3.5 %	4.1 %	3.1 %	3.4 %	3.5 %	3.7 %	4.7 %	3.7 %

Occurrences of fires, however, are not evenly dispersed among jurisdictions. In order to examine grow operation fires in more detail, the authors obtained data on all fires occurring in the City of Surrey, official incident reports on these fires, and the number of single family residences in the City of Surrey from January 1, 1997 through December 31, 2003. Their data are important because they allow for an analysis of the incidence of fires at grow operations relative to the incidence of fires in general. Equally important, both the official fire data and the individual fire reports allowed cross-referencing between the police-based database on grow operation fires to confirm that the analysis would only include those cases that made explicit reference to fires originating from an electrical problem associated to the presence of a grow operation within a single-family dwelling. Accordingly, the analysis excluded all individual reports of grow operation fires occurring in anything other than a single-family dwelling (i.e. sheds, barns, commercial buildings, apartments, or multiple family dwellings). The analysis also excluded any incident reports of grow operation fires if the suspected cause of the fire was not clearly and specifically tied to an electrical issue.

Using the data provided by the Surrey Fire Service, from 1997 to 2003, Surrey averaged 133 single family house fires per year. Given the number of single family homes in Surrey, this translates into an average of one fire per year per 525 homes (see Table 3.8). Given the likelihood of fire associated to grow operations is one in 22, it is fair to say that the probability of a fire in a home with a grow operation is 24 times as great as it is for a home in general.

**TABLE 3.8: INCIDENCE OF FIRE AT SINGLE FAMILY RESIDENCES (SFR) IN SURREY FOR THE PERIOD 1997-2000**

<i>Year</i>	<i>Population of SFRs</i>	<i># of SFRs catching fire</i>	<i>Incident Ratio</i>
1997	66,637	107	1 in 623
1998	68,152	128	1 in 532
1999	68,703	112	1 in 613
2000	69,703	135	1 in 514
2001	70,599	135	1 in 523
2002	71,777	142	1 in 505
2003	73,118	173	1 in 423
<b>Average</b>	<b>69,766</b>	<b>133</b>	<b>1 in 525*</b>

\*Includes fires involving grow operations. The incident ratio for fires among the population of grow operations at single family residences for data available for the 1997-2003 period is one in 22 (i.e. based on 23 fires within a population of 513 grow operations).

Table 3.9 describes the percentage of all fires in single family homes in the municipality of Surrey that appear to be directly attributable to an electrical problem associated with a grow operation. Out of a total of 173 fires in single family residences in Surrey in 2003, 8.7% involved electrical issues connected to marijuana grow operations. Equally noteworthy is that the average value of property loss in electrical fires involving grow operations in single family residences between 1997 and 2003 was nearly twice as high (i.e. \$59,307) as for house fires in general in Surrey over that same time period (i.e. \$31,282).

**TABLE 3.9: TOTAL NUMBER OF FIRES AND PERCENT OF FIRES ASSOCIATED TO ELECTRICAL ISSUES INVOLVING GROW OPERATIONS IN SURREY, BRITISH COLUMBIA 1997-2003\***

Year	# of Fires	% Involving Grow Operations
1997	107	9
1998	128	6.3
1999	112	6.3
2000	135	5.2
2001	135	3.0
2002	142	1.4
2003	173	8.7
Average	932	4.7

\*Figures based on a review of individual Surrey RCMP police files and cross-checked against individual fire incident reports from Surrey Fire Service. Only grow operations involving single family residences and only those fires confirmed to be associated with electrical issues were considered.

In considering the risk of fire associated to grow operations, it is important to keep in mind that not all fires involving grow operations are associated with an electrical by-pass issue. Rather, they can better be described as being associated with a number of electrical issues (including by-passes), most of which appear to be associated to a failure on the part of the individual(s) in control of the grow operation to comply with electrical standards.

## Chapter 4

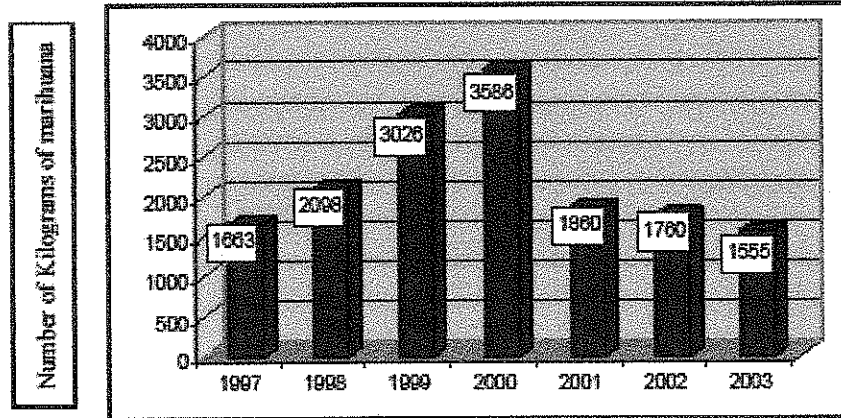
### THE SUSPECTS

The researchers found just under 16,000 suspects involved in marijuana cultivation operations in British Columbia between 1997 and 2003. For BC as a whole, the majority of suspects were Caucasian males and in their mid-thirties. A more recent demographic shift has been the substantial increase in the number of Vietnamese suspects since 1997. Overall, the characteristics of suspects over the 1997 to 2000 period has remained relatively stable.

#### Description of Suspects

A total of 15,588 suspects were identified out of the 14,483 founded cases of marijuana cultivation. Figure 4.1 represents the constant rise in suspects from 1997 through 2000 and then a dramatic drop in the number of suspects in 2001 through 2003. The increase and subsequent drop in number of suspects can be related to the concomitant rise in the number of founded cases that proceeded to investigation from 1997 through 2000, and the subsequent rise in "no case" seizures (see Chapter 5) and "no action" files with no suspects 2001 through 2003. As mentioned earlier in this report, identical data collection methods were strictly adhered to in both phases of the research, thereby excluding the possibility of collection procedures influencing the number of suspects recorded over the two phases of the study.

**FIGURE 4.1: NUMBER OF SUSPECTS IDENTIFIED IN RELATION TO FOUNDED MARIHUANA CULTIVATION OPERATIONS IN BRITISH COLUMBIA 1997-2003**



Characteristics of the suspects involved can be seen in Table 4.1. Seventy-seven percent of all suspects were male, 2% of all the suspects identified were under the age of 18, and the average age of suspects was 35 years old.

**TABLE 4.1: NUMBER, AGE, AND ETHNIC GROUP OF SUSPECTS INVOLVED IN FOUNDED MARIHUANA CULTIVATION OPERATIONS WITH SUSPECTS PRESENT IN BRITISH COLUMBIA 1997-2003**

<i>Characteristics</i>	<i>1997</i>	<i>1998</i>	<i>1999</i>	<i>2000</i>	<i>2001</i>	<i>2002</i>	<i>2003</i>	<i>Overall</i>
Average number of suspects per case	2.1	2.1	2.3	2.3	1.9	2.0	2.1	2.1
Percentage of suspects who were male	79 %	80 %	78 %	75 %	77 %	74 %	77 %	77 %
Percentage of suspects who were female	21 %	20 %	22 %	25 %	23 %	26 %	23 %	23 %
Average age of suspects	34	34	34	35	35	36	36	35
Percentage of suspects under the age of 18	1 %	2 %	2 %	2 %	2 %	1 %	1 %	2 %
Percentage of suspects from any minority ethnic groups	6 %	9 %	25 %	43 %	41 %	48 %	46 %	31 %
Percentage of suspects of Vietnamese origin	2 %	5 %	21 %	39 %	32 %	39 %	36 %	26 %

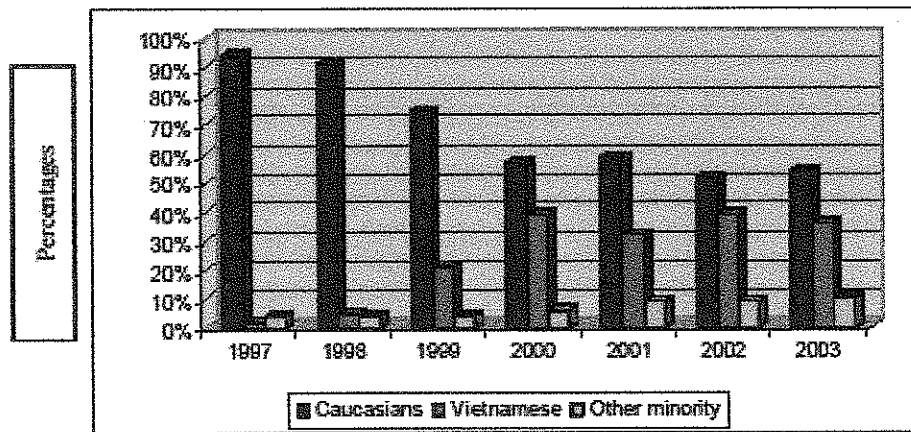
N= 15,588

Figure 4.2 shows a steady decline in Caucasian suspects and a corresponding increase in Vietnamese suspects. For 1997 and 1998 and, to large degree, 1999, the most frequently occurring ethnicity reported in the suspect data is Caucasian. However, Vietnamese suspects.

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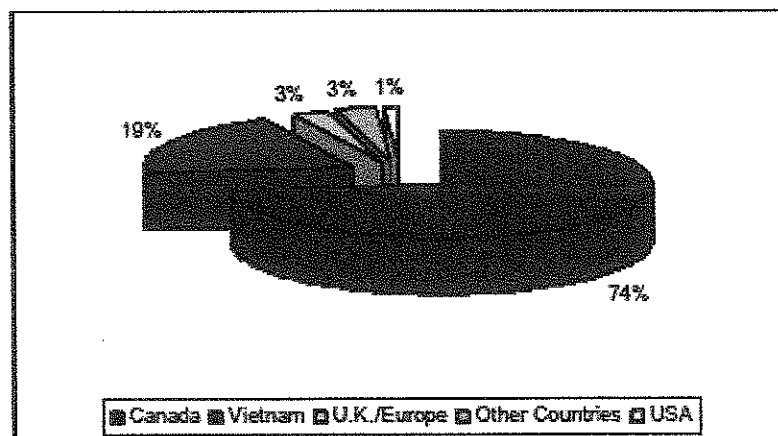
represented 2% of all suspects associated to growing operations, but by 2003, they represented 36%. Other minority groups have increased from 4% in 1997 to 10% in 2003, many of these from Mainland China. However, Caucasians remain the most common ethnicity.

**FIGURE 4.2: ANNUAL PERCENTAGES OF SUSPECTS INVOLVED IN MARIHUANA CULTIVATION OPERATIONS BY ETHNIC GROUP IN BRITISH COLUMBIA 1997-2003**



In terms of the distribution of suspects by place of birth, 74% percent of all known suspects were born in Canada (see Figure 4.3). As expected, due to their substantial increase as suspects since 2000, Vietnam is the second most common country of origin among suspects. Very few foreign born suspects were from the United States or Europe.

**FIGURE 4.3: PLACE OF BIRTH OF SUSPECTS INVOLVED IN MARIHUANA CULTIVATION OPERATIONS IN BRITISH COLUMBIA 1997-2003\***



\*All percentages rounded to the nearest whole number



### Criminal History of Suspects

Each of the 15,588 suspects were checked against the CPIC database to determine if he or she had a record of prior criminal convictions. For approximately 20% of these suspects, it was not possible to determine previous criminal history due to incomplete or unmatchable file information. The most common reason for not being able to match suspects was because of incomplete, missing, or erroneous recording of the suspect's name, date of birth, fingerprint identifier number (FPS), or, because there was more than one offender with identical details on file. In order to avoid double counting of suspects, imperfectly populated suspect forms were dropped from the criminal history analysis.

Marihuana cultivation suspects typically had a substantial criminal history. Excluding missing cases, 47% of all suspects had prior criminal convictions at the time of investigation. In total, 57% of all suspects had at least one prior conviction for a drug offence and 41% had a prior conviction involving some form of violence.

The percentage of suspects with a criminal record was lower for suspects of Vietnamese origin (28%), all other suspects (53%). A possible reason for this may be that many Vietnamese suspects are first generation, as indicated by their country of birth, and information on their criminal histories prior to arriving in Canada was not available.

TABLE 4.2: PERCENTAGE OF SUSPECTS WITH A CONFIRMED PRIOR CRIMINAL CONVICTION  
MARIHUANA CULTIVATION CASES IN BRITISH COLUMBIA 1997-2003

<i>Category of suspects</i>	<i>Percentage of suspects with at least one prior criminal conviction</i>
All suspects	47 %
All suspects excluding those of Vietnamese origin	53 %
Suspects of Vietnamese origin	28 %

N = 15,588

Table 4.3 presents a comparison between suspects of Vietnamese origin and other suspects. The average length of the criminal history of the former is a little less than one-half the average length of the criminal history of other offenders (6 years versus 13 years, respectively). Moreover, criminal histories involved, on average, approximately half as many offences for Vietnamese suspects. The criminal records of suspects of Vietnamese origin also have almost

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half the number of prior violent offences and are convicted in fewer jurisdictions than non-Vietnamese suspects. The average period of time between each conviction, however, is shorter among Vietnamese suspects than others. Regardless of country of birth, over one-half of all suspects, regardless of country of birth, were guilty of at least one Controlled Drugs and Substances Act offence prior to their suspected involvement with a marijuana production facility. The number of suspects involved in previous drug offences, particularly marijuana production, has increased since 2000, suggesting that many of the suspects are setting up another grow operation after they are initially caught. This will be explored in future research by the authors, examining the number of repeat offenders over the seven-year study period and the effect that the action taken by the criminal justice system has had on these offenders.

**TABLE 4.3: COMPARISON BY ETHNIC AFFILIATION OF THE CRIMINAL HISTORIES OF SUSPECTS INVOLVED IN MARIHUANA CULTIVATION OFFENCES IN BRITISH COLUMBIA 1997-2003**

<i>Characteristic of suspects' criminal record considered</i>	<i>Suspects of Marijuana Cultivation</i>		
	All suspects	Non-Vietnamese	Vietnamese origin
Average length of criminal history	13 yrs	14 yrs	6 yrs
Average number of prior convictions	7	7	3
Percentage with prior drug convictions	57 %	59 %	54 %
Percentage with prior conviction for possession for the purpose of trafficking	27 %	27 %	33 %
Percentage with a prior marijuana cultivation conviction	22 %	22 %	27 %
Percentage with conviction for violent offence	41 %	43 %	23 %
Percentage with conviction for non-compliance offences*	28 %	30 %	16 %
Average number of jurisdictions in which suspects were convicted	2.3	2.5	1.5
Percentage of suspects convicted in Ontario, the most frequent province other than BC where suspects were previously convicted	11 %	10 %	20 %

\* Non-compliance offences: (e.g., failure to appear, breach of probation, escape, parole violation, etc.)

## Chapter 5

### Action Taken

This chapter explores the criminal justice system's response to marihuana growing operations over the seven-year study period. Data on searches and seizures of growing operations, police charging of suspects, and court dispositions are discussed in order to better understand the way in which the system reacted to marihuana cultivation. An important caveat is that data could only be collected in cases where information was known at the time of data collection.

#### Searches and Seizures

Not all searches and seizures of marihuana growing operations have the same results. In most founded cases, police officers seize and dispose of all plants, harvested marihuana, and growing equipment from the location. However, differences occur in how suspects are dealt with. In some cases, after the equipment and marihuana is seized, no further action is taken against the suspect. These "no case" seizures are based upon police discretion and have been constantly increasing since 1997.

As indicated by table 5.1, more than half of all cases in the seven-year study period where marihuana was seized were dealt with as "no case" seizures. As in the previous study (Plecas et al. 2002), "no case" seizures were considerably less likely in cases where a suspect was present (35%). The number of plants present in a growing operation also effected the likelihood that a search would result in a "no case" seizure (see Table 5.2). Close to two thirds (64%) of cases with less than 10 plants resulted in a "no case" seizure. This percentage drops consistently as you increase the size of the growing operation. At the same time, it was found that different

police jurisdictions use "no case" seizures at widely varying rates, ranging from 0 to approximately 75 % of all founded incidents.

**TABLE 5.1: PERCENTAGE OF FOUNDED MARIHUANA CULTIVATION CASES CLASSIFIED AS 'NO CASE' SEIZURES IN BRITISH COLUMBIA 1997-2003**

Year	Percentage Which Were "No Case" Seizures*	
	All founded cases	Founded cases where a suspect was identified
1997	35 %	23 %
1998	50 %	36 %
1999	43 %	30 %
2000	48 %	34 %
2001	62 %	38 %
2002	66 %	45 %
2003	64 %	42 %
Overall average	54 %	35 %

\* All percentages have been rounded to the nearest whole number.

**TABLE 5.2: PERCENTAGE\* OF FOUNDED CASES THAT WERE CLASSIFIED AS 'NO CASE' BY THE NUMBER OF MARIHUANA PLANTS SEIZED IN BRITISH COLUMBIA 1997-2003**

Year	Percentage* Which Were "No Case" seizures			
	<10 plants seized	10-49 plants seized	50-99 plants seized	100+ plants seized
1997	48 %	29 %	14 %	11 %
1998	59 %	42 %	29 %	21 %
1999	63 %	39 %	25 %	17 %
2000	70 %	37 %	32 %	23 %
2001	63 %	43 %	43 %	29 %
2002	71 %	54 %	52 %	36 %
2003	82 %	54 %	39 %	32 %
Overall average	64 %	41 %	33 %	25 %

\* All percentages have been rounded to the nearest whole number.

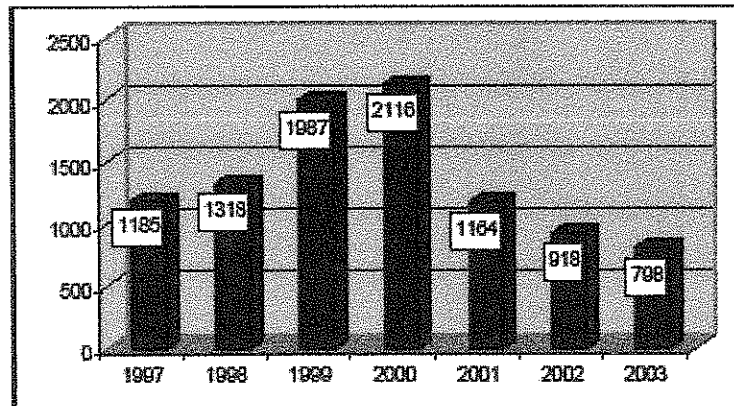
As indicated by Table 5.3, from 1997 through 2003, there was a consistently decreasing percentage of cases in which charges were laid. The number of cases where charges were laid dropped to 76% in 2003 from over 90% in 1997 through 2001. Figure 5.1 clearly demonstrates how the actual number of suspects charged has also dropped in 2001 through 2003. This is, however, relative to the decreasing number of suspects present at founded growing operations since 2001. Over the seven-year period of study, 9486 suspects in marihuana growing operations have been charged.

**TABLE 5.3: PERCENTAGE\* OF FOUNDED CASES THAT WERE NOT CLASSIFIED 'NO CASE' WHERE CROWN LAID CHARGES IN BRITISH COLUMBIA 1997-2003**

<i>Year</i>	<i>Percentage* of Cases in Which Charges Were Laid</i>	<i>Actual # of Cases in Which Charges Were Laid</i>
1997	96 %	682
1998	94 %	717
1999	94 %	997
2000	94 %	1153
2001	92 %	824
2002	89 %	633
2003	76 %	553
Overall average	91 %	5559

\* All percentages have been rounded to the nearest whole number.

**FIGURE 5.1: NUMBER OF SUSPECTS CHARGED IN BRITISH COLUMBIA 1997-2003**



## Charges

If a founded growing operation does not become classified as a "no case" seizure, a report is submitted to Crown Counsel. Once a Crown Counsel report is submitted, the likelihood of formal charges being laid against one or more of the suspects is very high (91%). During the seven-year research period, 6,109 cases resulted in at least one charge being laid. The total number of charges relating to marijuana cultivation is presented in Table 5.4. All charges show a substantial decrease since 2001, due, in large part, to the increasing number of "no case" seizures.

**TABLE 5.4 TOTAL NUMBER OF CHARGES RELATING TO MARIHUANA CULTIVATION INCIDENTS IN BRITISH COLUMBIA 1997-2003**

<i>Charge</i>	<i>Charges laid in relation to marijuana cultivation incidents</i>							<i>Overall</i>
	1997	1998	1999	2000	2001	2002	2003	
<b>Production/cultivation</b>	1113	1241	1900	2028	1063	843	732	8920
<b>P.P.T.*</b>	835	992	1539	1626	819	659	531	7001
<b>Simple possession</b>	240	210	262	235	156	100	85	1288
<b>Theft of electricity</b>	177	137	348	432	182	154	81	1511
<b>Firearms</b>	100	112	107	100	36	34	22	511
<b>Other Criminal Code</b>	102	67	144	90	64	74	53	594
<b>Total</b>	<b>2567</b>	<b>2759</b>	<b>4309</b>	<b>4511</b>	<b>2320</b>	<b>1864</b>	<b>1504</b>	<b>19,825</b>

\* Possession for the purpose of trafficking.

As illustrated in Table 5.5, the majority of the 9,486 suspects charged in British Columbia in relation to marijuana cultivation were given a primary charge of marijuana production (S.7 C.D.S.A). In the overwhelming majority (84%) of the cases, production was attended by other charges; the most frequent of these being possession for the purpose of trafficking. Only 194 suspects during the study period were charged solely with simple possession of marijuana. The average number of plants in the cases with a sole charge of possession was 83.

**TABLE 5.5 PERCENTAGE OF CHARGED SUSPECTS BY TYPE OF CHARGES: MARIHUANA CULTIVATION OPERATIONS IN BRITISH COLUMBIA 1997-2003**

Charge	Percentage* of offenders charged		
	By offence	In addition to a production charge	One offence and no other
Production	94 %	-	16 %
P.P.T.***	74 %	71 %	2 %
Simple possession	14 %	11 %	2 %
Theft of electricity	16 %	16 %	0 %**
Firearms	5 %	5 %	0 %**
Other Criminal Code	6 %	5 %	0 %**

N = 9486

\* All percentages have been rounded to the nearest whole number.

\*\* When combining theft, firearms related offences, and other Criminal Code offences, the total number of such of charges is 63, which is less than 1% of the total.

\*\*\* Possession for the purpose of trafficking

Due to the time frame of this research and the fact that not all suspects had completed their court appearance, 33% of the total number of charges (n= 6,487) were not yet disposed of at time of data collection. Therefore, the following analysis is based on 13,329 charges laid that had received a disposition at the time of data collection. These charges involved a total of 6,487 offenders.

### Dispositions

If criminal charges were laid by Crown Counsel, in slightly less than half of the time (44%), the suspect received a stay of proceedings (see Table 5.6). Moreover, there does not appear to be a substantial difference in the likelihood of having all charges stayed based upon the number of charges laid. Gender appears to have an effect on the likelihood of receiving a stay of proceedings. As seen in Table 5.7, female suspects have their charges stayed two times as often as male suspects. As reported in the Plecas et al. (2002) study, in cases with multiple suspects, charges were maintained against the male suspects and stayed for the female suspect(s). In the current study, in cases where a female was the only suspect, the proceedings were stayed in 33% of the cases, whereas only 22% of the cases were stayed for male suspects.

**TABLE 5.6: PERCENTAGE OF SUSPECTS WHOSE CHARGES WERE STAYED: MARIHUANA CULTIVATION CASES IN BRITISH COLUMBIA 1997-2003**

<i>Number of charges faced by suspect</i>	<i>Percentage* of suspects** and stay of proceedings</i>		
	<i>All charges stayed</i>	<i>Only some charges stayed</i>	<i>None of the charges stayed</i>
One charge	42 %	—	58 %
Two charges	46 %	42 %	12 %
Three charges	43 %	48 %	9 %
Four charges	48 %	46 %	6 %
Five charges	35 %	59 %	6 %
Six charges	0 %	0 %	100 %
Total suspects	44 %	36 %	20 %

\* All percentages have been rounded to the nearest whole number.

\*\* Includes only suspects in cases where charges had been disposed of at the time of data collection.

**TABLE 5.7: GENDER OF SUSPECTS IN WHOSE CASE PROCEEDINGS HAVE BEEN STAYED WITH RESPECT TO ALL CHARGES IN MARIHUANA CULTIVATION CASES IN BRITISH COLUMBIA 1997-2003**

<i>Number of charges faced by suspects</i>	<i>Percentage* of suspects** for whom all charges were stayed</i>		
	<i>Males</i>	<i>Females</i>	<i>Overall</i>
One charge	34 %	66 %	42 %
Two charges	37 %	74 %	46 %
Three charges	35 %	70 %	43 %
Four charges	39 %	83 %	48 %
Five charges	17 %	80 %	35 %
Six charges	0 %	0 %	0 %
Overall	36 %	72 %	44 %

\* All percentages have been rounded to the nearest whole number.

\*\* Includes only suspects in cases where charges had been disposed of at the time of data collection.

Table 5.8 presents a comparison of action taken on the charges, accused, and files associated with cases approved by Crown Counsel in cultivation cases. A very low percentage (4%) of charges, accused, and files result in not guilty verdicts and only 30% of approved charges resulted in convictions, 52% of the accused connected to those charges were found



guilty. However, 73% of the cases associated with those approved charges resulted in at least one accused being found guilty. In the final analysis, it would appear that Crown Counsel is trading off charges and the involvement of multiple accused to increase the likelihood of securing a conviction in individual cases.

**TABLE 5.8: SUMMARY COMPARISON OF ACTION TAKEN ON THE CHARGES, ACCUSED, AND FILES ASSOCIATED WITH CASES APPROVED BY CROWN COUNSEL IN MARIHUANA CULTIVATION CASES IN BRITISH COLUMBIA 1997-2003**

<i>Status</i>	<i>Charges Involved</i>	<i>Accused Involved</i>	<i>Files Involved</i>
Number approved	13,329	6487	4136
Number stayed	8748 (66%)	2863 (43%)	932 (23%)
Number referred to court	4581 (34%)	3624 (56%)	3204 (77%)
Number found not guilty	517 (4%)	230 (4%)	173 (4%)
Number resulting in conviction	4064 (30%)	3364 (52%)	3008 (73%)

\*Percentage in brackets represents percentage of number approved.

## Chapter 6

### SENTENCING

The patterns of sentencing that emerge in relation to marijuana cultivation operations are difficult to accurately interpret. This difficulty is due to a number of complicating factors. The first of these factors, as discussed in Plecas et al. (2002), involves suspects who were accused in relation to their involvement in a marijuana cultivation operation and charged with multiple offences. The initial charges usually include a marijuana production charge, found in 94% of the cases, and a possession for the purpose of trafficking charge, found in 74% of the cases. Other charges often included with marijuana growing operation suspects include simple possession of marijuana, the possession of other controlled substances, theft of electricity, firearm related offences, and various other Criminal Code offences. The second difficulty surfaces because suspects frequently plead guilty to one or more charges, not necessarily the drug production charge, based on an agreement with the Crown. Consequently, some offenders were convicted of only one of the offences that they had originally been charged with, while others were convicted of two or three charges relating to the same marijuana cultivation operation. Another difficulty occurs because convicted offenders often receive multiple dispositions for the various related charges. The last difficulty involves an offender being sentenced to several dispositions for different charges, these sentences could be ordered served either concurrently or consecutively. Despite these difficulties, this chapter makes an effort to clarify the patterns of sentencing involved with marijuana growing operations in British Columbia from 1997 through 2003.

## Type and Severity of Penalty Imposed

As shown in Table 6.1, the percentage of sentences that result in custody involving marijuana cultivation cases in British Columbia has dropped since 2000. Conversely, the percentage of conditional sentences has increased from 15% in 1997 to over 40% beginning in 2000. Firearms prohibition orders also increased dramatically from only 5% in 1997 to as high as 62% in 2002. Also, the proportion of conditional or absolute discharges doubled from 4% in 2000 to 8% in 2003.

**TABLE 6.1: PERCENTAGE OF CASES WHERE SELECTED PENALTIES WERE AWARDED AS PART OF A SENTENCE FOR ANY OF THE CHARGES INVOLVED IN MARIJUANA CULTIVATION CASES IN BRITISH COLUMBIA 1997-2003**

<i>Disposition</i>	<i>Percentage of cases*</i>							<i>Overall</i>
	1997	1998	1999	2000	2001	2002	2003	
<b>Prison</b>	19 %	17 %	19 %	18 %	10 %	9 %	10 %	16 %
<b>Conditional sentence</b>	15 %	26 %	33 %	42 %	45 %	57 %	41 %	34 %
<b>Probation</b>	28 %	27 %	25 %	23 %	25 %	18 %	22 %	25 %
<b>Fine</b>	48 %	46 %	37 %	38 %	44 %	34 %	49 %	42 %
<b>Community service order</b>	5 %	6 %	6 %	9 %	2 %	3 %	2 %	5 %
<b>Restitution</b>	8 %	4 %	7 %	9 %	30 %	27 %	25 %	12 %
<b>Firearms prohibition order</b>	5 %	12 %	34 %	55 %	49 %	62 %	58 %	34 %
<b>Conditional or absolute discharge</b>	3 %	3 %	4 %	4 %	7 %	7 %	8 %	5 %

\* All percentages have been rounded to the nearest whole number.

During the seven-year study period, conditional sentences increased. As was the case in the Plecas et al. (2002) study, these sentences were usually accompanied by other penalties. However, Table 6.2 indicates that a conditional sentence was the most serious disposition in 46% of cases in 2003, up from only 13% of cases in 1997. Since the percentage of cases where prison sentences were the most serious disposition has decreased from 18% in 2000 to only 10% in 2003, it would seem that a conditional sentence was being used as an alternative to prison sentences. Probation is utilized in 25% of charges involved in marijuana cultivation cases, however, the percentage of cases where probation was utilized as the most serious sentence

dropped fairly consistently since 1997. Probation, as the most serious sanction, was imposed in only 12% of the cases in 2003, down from 18% in 1997. The use of fines has fluctuated from a low of 34% in 2002 to a high of 49% in 2003 (see Table 6.1). The use of fines as the most serious disposition decreased from 1997 (34%) through 2000 (18%), and then increased in 2001 (26%) and 2003 (32%).

**TABLE 6.3: PERCENTAGE OF CASES WHERE PRISON OR ANOTHER PENALTY WAS THE MOST SERIOUS DISPOSITION AWARDED AS PART OF THE SENTENCE IN MARIHUANA CULTIVATION CASES IN BRITISH COLUMBIA 1997-2003**

<i>Disposition</i>	<i>Percentage of cases*</i>							
	1997	1998	1999	2000	2001	2002	2003	Overall
Prison	19 %	17 %	19 %	18 %	10 %	9 %	10 %	16 %
Conditional sentence	13 %	32 %	40 %	50 %	49 %	63 %	46 %	40 %
Probation	18 %	18 %	15 %	14 %	15 %	8 %	12 %	16 %
Fine	34 %	30 %	23 %	19 %	26 %	19 %	32 %	26 %
Community service order	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %
Restitution	0 %	0 %	0 %	0 %	1 %	1 %	0 %	0 %
Firearms prohibition order	0 %	0 %	4 %	4 %	1 %	2 %	2 %	2 %
Conditional/absolute discharge	1 %	1 %	1 %	0 %	1 %	1 %	0 %	1 %

\* All percentages have been rounded to the nearest whole number.

Table 6.3, Table 6.4, and Table 6.5 all illustrate the percentage of cases where a particular penalty was imposed for the offences of marihuana production, possession for the purpose of trafficking, and electrical theft, respectively. The penalties for marihuana cultivation have remained fairly stable over the seven-year study period. One noticeable trend is the reduction in the amount of restitution imposed since 1999 (see Table 6.3). The penalties for possession for the purpose of trafficking have also remained constant with the exception of a consistent increase in the length of conditional sentences and peaks in length of prison sentences in 2001 and 2003 (See Table 6.4). Table 6.5 reports that the penalties for theft of electricity have fluctuated over the seven-year study period, with substantial shifts in the length of conditional sentences (4.8 months in 1997, 16.0 months in 2003) and restitution (\$1,885 in 1997, \$13,046 in 2003). However, these numbers should be interpreted with the knowledge that there is a low number of

cases that receive sentences for theft of electricity, therefore the numbers are susceptible to dramatic fluctuations based on extreme values.

**TABLE 6.3: SEVERITY OF PENALTY IMPOSED FOR THE OFFENCE OF MARIHUANA PRODUCTION (C.D.S.A. S. 7) IN RELATION TO MARIHUANA CULTIVATION CASES IN BRITISH COLUMBIA 1997-2003**

<i>Type of Disposition</i>	<i>1997</i>	<i>1998</i>	<i>1999</i>	<i>2000</i>	<i>2001</i>	<i>2002</i>	<i>2003</i>	<i>Overall</i>
Prison (months)	3.9	4.2	5.1	5.2	4.7	4.2	4.3	4.9
Conditional Sentence (months)	6.9	7.3	7.1	8.5	8.8	8.4	8.5	7.9
Probation (months)	14.1	13.8	12.9	13.0	11.4	10.3	10.2	12.9
Fine (\$)	\$2,499	\$2,383	\$2,427	\$1,767	\$1,807	\$1,867	\$2,368	\$2,218
Community Service Order (hours)	70	95	66	65	59	104	33	73
Restitution (\$)	\$2,046	\$2,066	\$1,178	\$1,64	\$265	\$609	\$274	\$886

**TABLE 6.4: SEVERITY OF PENALTY IMPOSED FOR THE OFFENCE OF POSSESSION FOR THE PURPOSE OF TRAFFICKING (C.D.S.A. S. 5) IN RELATION TO MARIHUANA CULTIVATION CASES IN BRITISH COLUMBIA 1997-2003**

<i>Type of Disposition</i>	<i>1997</i>	<i>1998</i>	<i>1999</i>	<i>2000</i>	<i>2001</i>	<i>2002</i>	<i>2003</i>	<i>Overall</i>
Prison (months)	4.2	3.3	5.4	5.2	8.7	3.5	7.5	4.8
Conditional Sentence (months)	7.0	9.3	7.1	8.8	9.0	9.4	12.8	8.7
Probation (months)	13.4	13.8	12.9	11.2	14.6	10.3	10.5	12.9
Fine (\$)	\$2,899	\$2,329	\$2,445	\$1,495	\$1,491	\$765	\$1,591	\$2,075
Community Service Order (hours)	70	118	75	100	100	50	-	88
Restitution (\$)	\$1,525	\$1,792	\$795	\$296	\$266	\$130	\$4,582	\$945

**TABLE 6.5: SEVERITY OF PENALTY IMPOSED FOR THE OFFENCE OF THEFT OF ELECTRICITY (C.C.C. S. 326) IN RELATION TO MARIHUANA CULTIVATION CASES IN BRITISH COLUMBIA 1997-2003**

<i>Type of Disposition</i>	<i>1997</i>	<i>1998</i>	<i>1999</i>	<i>2000</i>	<i>2001</i>	<i>2002</i>	<i>2003</i>	<i>Overall</i>
<b>Prison (months)</b>	3.7	1.9	2.5	3.8	1.0	6.0	-	2.9
<b>Conditional Sentence (months)</b>	4.8	8.7	8.4	6.6	9.2	10.4	16.0	8.5
<b>Probation (months)</b>	12.7	9.0	15.8	14.0	17.1	10.5	6.0	13.0
<b>Fine (\$)</b>	\$1,294	\$618	\$796	\$840	\$1,477	\$2,126	\$500	\$1,100
<b>Community Service Order (hours)</b>	65	90	-	-	-	50	-	72
<b>Restitution (\$)</b>	\$1,885	\$2,657	\$1,718	\$1,138	\$822	\$3,069	\$13,046	\$1,947

### Severity of Penalties and Size of Cultivation Operations

The researchers conducted correlations in order to determine whether the size of growing operation, measured by number of plants seized and the amount of electricity theft, influenced the severity of penalties given. As indicated in Table 6.6, shows that the number of plants seized in a marihuana growing operation has been consistently related to the severity of the penalties imposed in every category except dollar value of restitution awarded. Notably though, it is only this category, restitution value, that is significantly correlated with amount of electricity theft.

**TABLE 6.6: ZERO-ORDER CORRELATIONS BETWEEN THE SEVERITY OF THE PENALTIES IMPOSED AND THE SIZE OF THE MARIHUANA CULTIVATION OPERATION - OFFENDERS SENTENCED FOR MARIHUANA CULTIVATION (C.D.S.A. S.7) OPERATIONS IN BRITISH COLUMBIA, 1997-2003**

<i>Penalties</i>	<i>Correlation between severity of penalties and</i>	
	<i>Number of plants seized</i>	<i>Amount of electricity theft</i>
Number of months prison awarded	.17*	.12
Number of months conditional sentence awarded	.26*	-.02
Number of months probation awarded	.16*	.14
Dollar value of fines awarded	.16*	.05
Number of hours of community service awarded	.26*	-.05
Dollar value of restitution awarded	.02	.51*

\* Correlation is significant at the .05 level.

### Severity of Penalty and Offenders' Criminal History

The authors compared the severity of the offenders' criminal history, as measured by the number of previous convictions and the number of previous drug convictions with the severity of the penalty imposed through sentencing. While the length of prison term does not seem consistent with the offenders' previous number of convictions or previous number of drug convictions, the likelihood of receiving a prison sentence does appear related. While the likelihood of receiving a prison term for an offence related to marihuana production was only 16%, this likelihood did increase as the length of criminal history increased (see Table 6.7). However, the length of prison sentence was not systematically affected by the number of prior offences in an offender's criminal history. On the other hand, as Table 6.8 shows, as the number of previous drug offence increased, so did the likelihood of receiving a prison sentence. However, the length of prison sentence was not consistently related to the number of previous drug convictions.

**TABLE 6.7: PERCENTAGE OF THE OFFENDERS WHO RECEIVED A PRISON TERM FOR MARIHUANA PRODUCTION (C.D.S.A. 5.7) AND AVERAGE LENGTH OF PRISON TERMS, BY AN OFFENDERS' NUMBER OF PREVIOUS CRIMINAL CONVICTIONS OF ANY TYPE IN BRITISH COLUMBIA 1997-2003**

<i>Offenders' number of previous convictions</i>	<i>Percentage* of convicted offenders sentenced to prison</i>	<i>Average length of prison term (in months)</i>
None	13 %	4.0
1	8 %	6.2
2	12 %	5.1
3	13 %	7.1
4	18 %	4.1
5	17 %	7.9
6	24 %	7.4
7	22 %	3.0
8	24 %	6.8
9 or more	17 %	5.3
All offenders	16 %	5.0

\* All percentages have been rounded to the nearest whole number.



**TABLE 6.8: PERCENTAGE OF OFFENDERS WHO RECEIVED A PRISON TERM FOR MARIHUANA PRODUCTION (C.D.S.A. S.7) AND AVERAGE LENGTH OF PRISON TERMS, BY OFFENDERS' NUMBER OF PREVIOUS CONVICTIONS FOR DRUG TRAFFICKING OR PRODUCTION RELATED OFFENCES IN BRITISH COLUMBIA 1997-2003**

<i>Offenders' number of previous drug related convictions*</i>	<i>Percentage** of convicted offenders sentenced to prison</i>	<i>Average length of prison term (in months)</i>
1	11 %	5.0
2	19 %	5.1
3	24 %	7.1
4	27 %	4.1
5	43 %	7.9
6	31 %	7.4
7	25 %	3.0
8	43 %	6.8
9 or more	54 %	10.7
All offenders	30 %	5.7

\* Refers to drug trafficking, cultivation, or production related convictions.

\*\* All percentages have been rounded to the nearest whole number.

Table 6.9 compares offenders' criminal history and length of prison term for cultivation charges with the size of the marihuana cultivation operation measured by the number of plants. The offenders' likelihood of being sentenced to prison is significantly affected by whether they were involved in a growing operation where more than 100 plants were seized. This finding is constant regardless of criminal history. Similarly, the length of the prison term is also related to the number of plants seized. Again, this finding is consistent regardless of the offender's criminal history. In the Plecas, et al. (2002) this multivariate relationship produced a similar relationship.

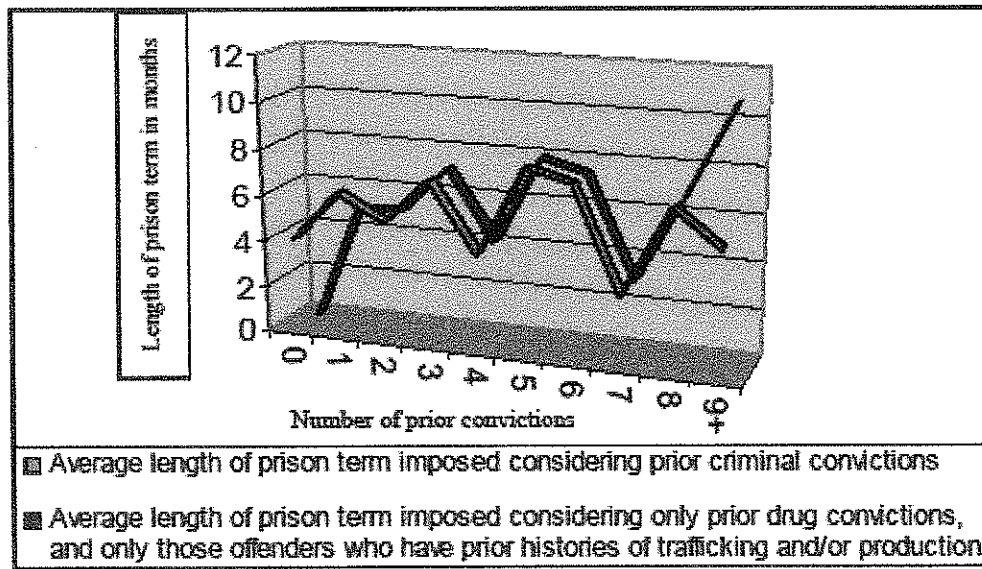
**TABLE 6.9: PERCENTAGE OF OFFENDERS SENTENCED TO A PRISON TERM AND AVERAGE LENGTH OF PRISON FOR A CULTIVATION CHARGE (C.D.S.A. S.7) BY SIZE OF THE MARIHUANA CULTIVATION OPERATION IN BRITISH COLUMBIA 1997-2003**

<i>Offenders' number of prior convictions</i>	<i>Cases involving less than 100 plants</i>		<i>Cases involving 100 plants or more</i>	
	Percentage* of offenders sentenced to a prison term	Average length of prison terms	Percentage* of offenders sentenced to a prison term	Average length of prison terms
None	8%	3.3	15%	4.7
1-4 convictions	8%	4.1	12%	4.6
5-7 convictions	14%	5.2	20%	6.1
More than 7 convictions	17%	4.8	29%	5.8

\* All percentages have been rounded to the nearest whole number.

Figure 6.1 graphically depicts the information presented in Table 6.7 and Table 6.8. As can be seen, to some extent criminal history has an inconsistent effect on the length of prison sentence a suspect receives for a crime related to a marihuana growing operation.

**FIGURE 6.1: AVERAGE LENGTH OF PRISON TERM IMPOSED IN MARIHUANA CULTIVATION CASES IN BRITISH COLUMBIA 1997-2003**



In terms of sentencing, it is interesting to look at what would have happened to convicted marihuana growers in British Columbia if they had been sentenced in Washington State, where sentencing guidelines are in place. Under Washington State sentencing guidelines, 49% of the suspects convicted on marihuana production in British Columbia would have been sentenced to at least five years in prison (see Table 6.10). In British Columbia, no person was sentenced to five years or more in prison. Moreover, under the guidelines, 77% of suspects would have served a sentence of at least three months in prison. In British Columbia, only 7% of prison sentences were for three months or more. Given that there are hardly any marihuana grow operations in Washington State, and given that British Columbia has thousands of grow operations every year, it is difficult not to wonder if British Columbia might not be more effective in reducing the incident of grow operations by increasing penalties for individuals convicted for involvement in marihuana growing operations. In the final analysis, the consequences for involvement in a grow operation in British Columbia, even where a person receives a prison sentence, are likely insufficient to reduce or prevent participation in marihuana grow operations.

**TABLE 6.10: PRISON SENTENCES THAT WOULD HAVE BEEN AWARDED UNDER SENTENCING GUIDELINES SIMILAR TO THOSE IN FORCE IN THE STATE OF WASHINGTON AS COMPARED TO SENTENCES IMPOSED IN BRITISH COLUMBIA: OFFENCES RELATED TO MARIHUANA CULTIVATION OPERATIONS IN BRITISH COLUMBIA 1997-2003\***

<i>Sentencing Range**</i>	<i>Percentage*** of offenders would have received prison sentence within range</i>	<i>Percentage of offenders whose actual prison sentence in BC fell within range</i>
Minimum 20 years	1 %	0 %
Minimum 10 years	16 %	0 %
Minimum 5 years	32 %	0 %
3 months – less than 5 years	28 %	7 %
0 – less than 3 months	23 %	93 %

\* Includes only cases where at least one plant was seized and there was a conviction for marihuana cultivation.

\*\* Note that under the Washington State Sentencing Guidelines, all prison sentences are accompanied by 12 months of community supervision. Washington State guidelines assessment here ignores enhancements concerning volume of drugs, weapons, and location of seizures. It also ignores prior trafficking and production offences.

\*\*\* All percentages have been rounded to the nearest whole number.

INCIDENT FORM

Var. #	Code	Variable Description and Values
1		ID # (Use assigned numbers)
2		File Year (1=1997, 2=1998, 3=1999, 4=2000, 5=2001, 6=2002, 7=2003)
3		File Number
4		Police Force/Detachment (Use code sheet)
5		Street Number
6		Street Name:
7	- -	Date offence reported (dd-mm-yy)
8	- -	Date offence attended (dd-mm-yy)
9		Time elapsed (days)
10		Source of complaint
11		Status of complaint (1=founded, 2=unfounded, 3=no action, 4=other, 5= founded but too late)
12		Type of facility
13		Rented (1=rented, 2=owned, 3=Crown, 4=other, 5=don't know)
14		Number of marijuana plants seized
15		Number of kg of marijuana seized
16		Other drugs seized (0=none, 1=cocaine, 2=heroin, 3=other)
17		Firearms seized (0=none, 1=prohibited, 2=restricted, 3=other, 4=mix)
18		Other weapons seized (1=yes, 0=no)
19		Equipment seized (1=yes, 0=no)
20		Number of lights seized
21		Amount of cash seized (Nearest C\$, 1US\$=1.5C\$)
22		Number of children present
23		Fire involved (1=yes, 0=no, D.K.=3)
24		Other hazards present (1= booby trap, 2=explosive, 3=toxin, 4 =other, 5=mix)
25		Guard dog present (1=yes, 0=no, 3=DK)
26		Presence of hydro by-pass (1=yes, 0=no)
27		Amount of theft of Hydro (In Cdn \$ - to nearest dollar)
28		Use of violence at time of arrest (1=yes, 0=no)
29		Type of seizure (1=case, 2=no case)
30	- -	Date of report to the Crown (dd-mm-yy)
31		Charges laid by Crown (1=yes, 0=no)
32		Number of suspects

Source of Complaint
1 = crime stoppers/informant
2 = routine check
3 = serving a warrant
4 = landlord
5 = other crime
6 = general investigation
7 = BC Hydro
8 = other
9 = missing
10 = neighbour
11 = traffic violation /incident

Type of facility
1 = house
2 = apartment/multiple units
3 = warehouse/commercial
4 = detached building e.g. shed, barn
5 = outdoors - Private
6 = outdoors - Crown land
7 = vehicle
8 = other
9 = missing

Conversions
1000 gm = 1 kg
28 gm = 1 oz
450 gm = 1 lb.

REMARKS


SUSPECT SHEET

ID# \_\_\_\_\_

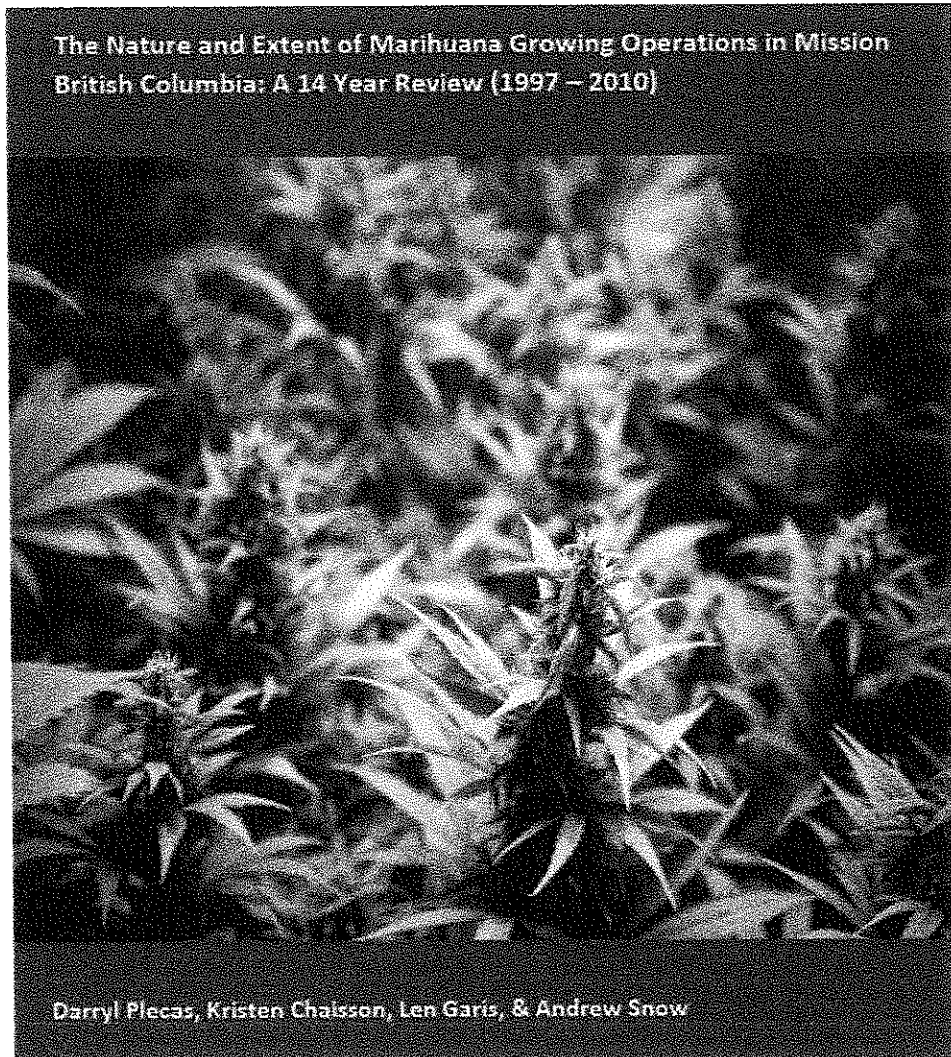
Number	Code	Variables Description and Values	Ethnicity:
1	Surname:		1= Caucasian
2	First given name:		2=Oriental (except Vietnamese)
3	Second given name:		3=East Indian
4		Number of aliases	4=Black/African
5		D.O.B. (dd-mm-yy)	5=Aboriginal
6		Place of birth (town/city)	6=Other
7		Gender (1=male, 2=female)	7=Vietnamese
8		Ethnicity	
9		Citizenship (1=Canadian, 2= Other)	
10		FP# Number	
11		Production charge - CDSA s.(7) (1= charged, 2=stay, 3=not guilty, 4=guilty), 5= warrant before charge, 6= warrant after charge	
12		Prison (No. of months)	
13		Conditional Prison (No. of months)	
14		Probation (No. of months)	
15		Fine (\$ amount)	
16		Community service order (No. of hours)	
17		Restitution (\$ amount)	
18		Prohibition order (1=yes, 0=no)	
19		Conditional or absolute discharge (1=yes, 0=no)	
20		Poss. for trafficking - CDSA s.(5) (1= charged, 2=stay, 3=not guilty, 4=guilty)	
21		Prison (No. of months)	
22		Conditional Prison (No. of months)	
23		Probation (No. of months)	
24		Fine (\$ amount)	
25		Community service order (No. of hours)	
26		Restitution (\$ amount)	
27		Prohibition order (1=yes, 0=no)	
28		Conditional or absolute discharge (1=yes, 0=no)	
29		Simple possession - CDSA s.(4) (1= charged, 2=stay, 3=not guilty, 4=guilty)	
30		Prison (No. of months)	
31		Conditional Prison (No. of months)	
32		Probation (No. of months)	
33		Fine (\$ amount)	
34		Community service order (No. of hours)	
35		Restitution (\$ amount)	
36		Prohibition order (1=yes, 0=no)	
37		Conditional or absolute discharge (1=yes, 0=no)	
38		Theft of Hydro - CCC s.326 (1= charged, 2=stay, 3=not guilty, 4=guilty)	
39		Prison (No. of months)	
40		Conditional Prison (No. of months)	
41		Probation (No. of months)	
42		Fine (\$ amount)	
43		Community service order (No. of hours)	
44		Restitution (\$ amount)	
45		Prohibition order (1=yes, 0=no)	
46		Conditional or absolute discharge (1=yes, 0=no)	
47		Firearms charges - CCC ss.84-96 (1= charged, 2=stay, 3=not guilty, 4=guilty)	
48		Prison (No. of months)	
49		Conditional Prison (No. of months)	
50		Probation (No. of months)	
51		Fine (\$ amount)	
52		Community service order (No. of hours)	
53		Restitution (\$ amount)	
54		Prohibition order (1=yes, 0=no)	
55		Conditional or absolute discharge (1=yes, 0=no)	
56		Other Criminal Code (1= charged, 2=stay, 3=not guilty, 4=guilty)	
57		Criminal Code Section Number	
58		Prison (No. of months)	
59		Conditional Prison (No. of months)	
60		Probation (No. of months)	
61		Fine (\$ amount)	
62		Community service order (No. of hours)	
63		Restitution (\$ amount)	
64		Prohibition order (1=yes, 0=no)	
65		Conditional or absolute discharge (1=yes, 0=no)	

## CRIMINAL HISTORY

VAR #	ASSIGNED CODE	VARIABLE DESCRIPTION AND VALUES
1.		ID #
2.		ID # Suspect
3.		Year of first offence (actual year)
4.		Type of prior drug offences
5.		Number of prior drug offences
6.		Number of violent offences
7.		Number of prior non-compliance
8.		Number of prior offences
9.		Total number of stays
10.		Number of jurisdictions on criminal record
11.		Most frequent jurisdiction on record
12.		Number of provinces on record
13.		Most frequent province on record
14.		Year of first offence in B.C.
15.		Year of cultivation # 1 (most recent)
16.		Jurisdiction of cultivation #1
17.		File # of cultivation # 1
18.		Year of cultivation # 2
19.		Jurisdiction of cultivation # 2
20.		File # of cultivation # 2
21.		Year of cultivation # 3
22.		Jurisdiction of cultivation # 3
23.		File of cultivation # 3
<b>NOTES</b>		

1 = possession  
 2 = trafficking  
 3 = cult/prod.  
 4 = 1 & 2  
 5 = 1 & 3  
 6 = 2 & 3  
 7 = 1, 2 & 3

**Appendix P: Plecas et al. (2011) The Nature and Extent of Marihuana Growing Operations in Mission British Columbia : A 14 Year Review (1997 2010)**



## Introduction

This report describes the nature and extent of marijuana growing operations in Mission British Columbia. The report is based on an examination of operations coming to the attention of police over the 14 year period of January 01, 1997 to the end of 2010. Using the same methodology of the 2002 research conducted by Plecas et al.<sup>1</sup> and the 2005 research conducted by Plecas et al.<sup>2</sup>, this examination joined data collected through that previous research with data collected through recent police file reviews of cases coming to the attention of police for the seven year period 2004 through 2010. Those police file reviews were completed in 2011 and collected data about the location of the grow operation, the nature and origin of the complaint, the police investigation, the size and type of the growing operation, the amount of marijuana seized, the presence of other drugs, the presence of various cultivation equipment, and decisions made by the prosecution with respect to criminal charges. Importantly, for comparison purposes, the researcher also had the benefit of being provided with police statistics on the number of marijuana growing operations coming to the attention of police in British Columbia overall for the period 2004 through 2010.

As the report will describe, the number and size of grow operations in Mission has grown dramatically over the last 14 years. Not unexpectedly considering the growth in the number and size of operations, the amount of electrical theft has also grown. As well, the likelihood of fires has grown substantially to where, in the last five years, on average, 9.1% of structures hosting indoor marijuana growing operations caught fire. Despite these increases, the percentage of cases where police fully investigated incidents of marijuana growing operations coming to their attention in Mission substantially declined, as did the percentage of founded cases moved forward for charges. None of this will be news to those familiar with the problem of marijuana growing operations in Mission. Instead, this report quantifies the extent of the problem and the need to seek out new prevention and response strategies.

## Incidents of Alleged Marijuana Growing Operations Coming to the Attention of Police

In Mission, not only has the number of marijuana grow operations coming to the attention of police increased substantially over the 14 year period studied, but the numbers have increased far more than for the province overall. As demonstrated in Table 1, the number of marijuana grow operations coming to the attention of police in British Columbia each year over the last five has doubled over what it was in the late 1990's. In effect, the average number of grow operations that came to the attention of police on average each year in the last five in Mission is nearly five times more than what it was in the late 1990's. While there has been a notable decline in the number of

<sup>1</sup> Plecas, D., Dandaneand, Y., Chin, V., & Segger, T. (2002). *Marijuana Growing Operations in British Columbia: An Empirical Survey (1997-2000)*. University of the Fraser Valley.

<sup>2</sup> Plecas, D., Malm, A., & Kinney, B. (2005). *Marijuana Growing Operations in British Columbia Revised, 1997 - 2003*. University of the Fraser Valley



marihuana grow operations across the province generally in the last five years over the previous five years, Mission has seen an increase in the average number of marihuana growing operations per year.

**TABLE 1: AVERAGE NUMBER OF MARIHUANA CULTIVATION INCIDENTS PER YEAR THAT CAME TO THE ATTENTION OF THE POLICE (1997 - 2010)**

	late 1990's	2000 to 2005	2006 to 2010
British Columbia	2,310	4,975	4,571
Mission	54	106	243

For further context, when considering Mission against the rest of British Columbia, controlling for population differences in 2010 (see Table 2), the number of marihuana grow operations coming to the attention of police per 1,000 population in Mission was seven times the provincial average.

**TABLE 2: RELATIVE NUMBER OF MARIHUANA GROW OPERATIONS COMING TO THE ATTENTION OF THE POLICE IN 2010**

	Population 2010*	% of Total BC Population	# of Cases as a % of the Total # of Cases in BC	Rate per 1,000 Population in 2010	Total # of Cases
Mission	57,574	.82%	5.4	7.10	267
BC Overall	4,530,960	100%	100	1.10	4,974

\*Source of population statistics: <http://www.bcstats.gov.bc.ca/data/pop/sep/BCPop.asp>

### How Marihuana Grow Operations Come to the Attention of Police

While marihuana grow operations come to the attention of police from a variety of sources, the most common source of that attention in Mission remains crime stopper tips and anonymous informants (71 per cent). As demonstrated in Table 3, the proportion of time crime stoppers and anonymous informants was the initial source of information climbed in the last five years from a minority of cases (44 per cent) in the late 1990's. Notably, these increases have replaced declines in the proportion of cases where marihuana grow operations came to police attention through police serving a warrant or investigating another crime. This is not surprising given changes in the size of grow operations and how individuals associated to operations are involved. As will be noted below, there are far fewer small grow operations in Mission than in the past and fewer instances where suspects are on site as often.

**TABLE 3: SOURCE LEADING TO OPENING A MARIHUANA CULTIVATION FILE IN MISSION**

Source	Late 1990's	2000 to 2005	2006 to 2010
Crime Stoppers/Informant	44%	70%	71%
BC Hydro	1%	2%	13%
Other = Crime	27%	8%	6%
Fire Department	0%	1%	4%
Other = Traffic Violation	3%	5%	2%
Neighbour	2%	3%	2%
Grow Rip	0%	0%	2%
Landlord	5%	4%	1%
General investigation	8%	5%	0%
Routine Check	5%	3%	0%
While Serving a Warrant	5%	1%	0%

### Investigations of Marihuana Grow Operations

Just because a grow operation comes to the attention of police does not mean that the police are able to fully investigate the incident. A lack of resources is often given as the reason police do not even conduct a preliminary investigation. Even where they do conduct a preliminary investigation, sometimes police are unable to find enough evidence to support obtaining a search warrant. Accordingly, a significant percentage of grow operations coming to the attention of police do not lead to a full investigation. Across the province, historically, the percentage of incidents in which the police took any action on a marihuana grow operation that came to their attention declined from 93% in 1997 to 78% in 2003 (Plecas et al., 2005). Further, the percentage of time a full investigation was conducted declined from 91% to 52% (Plecas et al., 2005). In Mission, the percentage of time any action was taken on a grow operation coming to the attention of police declined from 82% in the late 1990's to 49% in the last five years. Why the decline in Mission has been so substantial is not entirely clear, but no doubt part of the reason has been a lack of resources. Another reason would be related to the increasingly sophisticated nature of grow operations and the size of properties they are hosted on. Presumably, this has made it more difficult to get information to justify obtaining a search warrant.

In Mission, in cases that were fully investigated, they usually proved to be founded, as has been the case historically with marihuana grow operations throughout the province (see Plecas et al., 2005). The percentage of cases proving to be founded in the last five years is up to 87% of cases from 75% of cases being founded in the late 1990's, but down from 93% between 2000 and 2005. Included in these percentages are a relatively small number of cases in Mission where clear evidence of a marihuana grow operation was apparent, but the operation was founded too late (i.e. the operation was discovered after the marihuana had been harvested and, therefore, there was not enough evidence to proceed with charges). In terms of detail, the number of such cases averaged three in the 1990's, four over the 2000 to 2005 period, and 15 in each of the last five years. These numbers were consistent with the percentage of fully investigated cases historically across the province in which operations are discovered too late (see Plecas et al., 2005).

### Type of Marijuana Growing Operations in Mission

Similar to the rest of British Columbia, in Mission, the vast majority of marijuana grow operations have been located indoors (Plecas et al., 2005). As demonstrated in Table 4, approximately three-quarters (76 per cent) of grow operations in Mission known to police since 2006 were located in a house and another 19% in a detached building. In terms of change over time, the percentage of operations located within detached buildings was more than double in the last five years compared to the ten years prior. Moreover, the percentage of outdoor operations in the last five years was half what it was in the ten years prior.

TABLE 4: LOCATION OF FOUNDED MARIJUANA GROWING OPERATIONS IN MISSION

	Late 1990's	2000 to 2005	2006 to 2010
House	77%	82%	76%
Detached Building	7%	7%	19%
Outdoors - Private	4%	5%	2%
Outdoors - Crown	5%	2%	2%
Warehouse / Commercial	0%	1%	1%
Other / Vehicle	7%	0%	1%
Apartment / Multiple Units	1%	3%	0%

### The Size of Marijuana Grow Operations in Mission

The size of grow operations in Mission has increased substantially since the late 1990's. As demonstrated in Table 5, the average number of plants seized per indoor operation in the last five years (X = 775 plants) was at least a fourfold increase since the late 1990's.

TABLE 5: AVERAGE NUMBER OF PLANTS INVOLVED WHEN PLANTS WERE SEIZED BY TYPE OF OPERATION IN MISSION

	Late 1990's	2000 to 2005	2006 to 2010
Indoor	186	479	775
Outdoor	407	299	162
Other	80	220	185

Also noteworthy was the increase in the amount of harvested marijuana seized through indoor operations. As Table 6 shows, the amount of dried marijuana seized per operation on average is seven times more since the late nineties.

TABLE 6: AVERAGE NUMBER OF KILOGRAMS OF HARVESTED MARIJUANA SEIZED IN MISSION

	Late 1990's	2000 to 2005	2006 to 2010
Indoor	3.4	26.1	21.1
Outdoor	.06	.90	.94
Other	.75	0	0

Translating the amount of marijuana seized per operation into pounds and considering the number of seizures each year, the quantity of marijuana seized in Mission increased substantially over the past 14 years (see Table 7). Specifically, the volume seized annually increased essentially

six fold since the late 1990's to where the total seized averaged 2,987 pounds per year in each of the last five years; an amount nearly double the average number of pounds per year over the 2000 to 2005 period.

**TABLE 7. TOTAL AVERAGE AMOUNT OF MARIHUANA SEIZED PER YEAR IN MISSION**

	Late 1990's	2000 to 2005	2006 to 2010
Total Pounds Seized in Plant Form	419	1,005	2,530
Total Pounds Seized in Harvested Form	55	633	457
Total Pounds Seized	474	1,639	2,987

### Value of Marihuana Seized

The procedure to estimate the average market value of seized marihuana was the same as the one used in the Plecas et al. (2011)<sup>3</sup> study that provided a method of estimating the value of domestic and export marihuana production levels. That study conservatively estimated that the average wholesale market value of one pound of dried British Columbia marihuana was \$2,000 per pound. Using this estimate, and based on the estimate of marihuana seized in Mission, the value of marihuana seized per year over the last 5 years would yield a market value of approximately \$5,974,000 per year. This represents a six fold increase in the market value of marihuana seized per year in the late 1990's (\$948,000), and nearly a doubling (\$3,278,000) from the period between 2000 and 2005.

### Electrical Consumption – Fire and Theft

One significant issue with indoor marihuana growing operations is the matter of electrical consumption. Notwithstanding that it should be considered an issue because use of electricity for growing marihuana detracts from the provincial desire to conserve electricity in British Columbia, it is an issue because growers will often steal the electricity they need for their operations and, regardless of whether they are stealing or not, the electrical systems they put in place are commonly overloaded and do not conform to bylaw requirements. Consequently, there are risks to first responders and there is a risk of fire. In this regard, it is noteworthy that 9.1% of structures hosting founded indoor growing operations in Mission in the last five years caught fire. That is almost twice the percentage of fires associated to indoor grow operations since the late 1990's (4.8 per cent) and a slight increase from the 2000 to 2005 period (7.7 per cent). However, this increase should not be surprising in view of the increase in the size of marihuana grow operations in Mission.

<sup>3</sup> Plecas, D., Diplock, J., Garis, L., Carlisle, B., Neal, P., & Landry, S. (2011). *The Marihuana Indoor Production Calculator: A Tool for Estimating Domestic and Export Production Levels and Values. The Journal of Criminal Justice Research, 1(2)*.

In terms of electrical theft, this too has increased three fold in terms of the percentage of operations since the late 1990's that installed a bypass to steal power. Specifically, as demonstrated in Table 8, a majority (57 per cent) of operations over the last five years were stealing electricity.

**TABLE 8: THEFT OF ELECTRICITY IN CASES OF INDOOR MARIHUANA GROWING OPERATIONS IN MISSION**

	Late 1990's	2000 to 2005	2006 to 2010
% of Indoor Growing Operations Involving Theft of Electricity	17%	13%	57%
Average Value of electricity Theft per Operation	-	\$22,532	\$16,399

\*Data not available

Further, it is worth noting that those growing operations involving electricity theft have been consistently larger than operations that do not involve electricity theft.

**TABLE 9: TOTAL NUMBER OF LIGHTS SEIZED PER MARIHUANA GROWING OPERATION IN MISSION**

	Late 1990's	2000 to 2005	2006 to 2010
Lights Seized (No electricity theft)	*	21.4	20.9
Lights Seized (electricity theft)	*	50.9	37.1

\*Data not available

### Suspects Identified in Marihuana Grow Operations

The analyses conducted for this report did not include an analysis of the characteristics of suspects found at marihuana growing operations. Instead, it only considered the matter of whether suspects were present at the time police arrived on scene. The percentage of time a suspect was present upon police arrival over the last five years (82 per cent) was basically the same as in the late 1990's (80 per cent), but higher than between 2000 and 2005 (69 per cent). In any case, the issue of suspects' presence is important because, unless suspects are present, the police are generally required to treat the case as a no case seizure in the first instance.

### Case Seizures

Not every instance where police showed up at a founded grow operation led to a recommendation of charges. As already noted, if there are no suspects present, there will be no charges. Beyond that, there are often legal issues that preclude the police from doing anything more than seizing the marihuana and equipment found. In any case, it is interesting that the percentage of instances where the police treated the case as a "no case" seizure climbed substantially since the late 1990's. Specifically, as demonstrated in Table 10, the percentage of incidents of marihuana growing operations with suspects present that became case seizures was very low (46 per cent) in the late 1990's, but increased to, on average, 62% over the last five years. The percentage increase was even greater when considering those instances where suspects were present.

**TABLE 10: PERCENTAGE OF FOUNDED MARIHUANA GROWING OPERATIONS CLASSIFIED AS CASE SEIZURES AND PERCENTAGE WHERE SUSPECTS WERE PRESENT IN MISSION**

	Late 1990's	2000 to 2005	2006 to 2010
Percentage of Case Seizures	46%	43%	62%
Percentage of Case Seizures Where Suspects were Present	50%	55%	77%

Beyond the effect of suspects being present, it is also interesting to note that the likelihood of a marihuana grow operation being treated as a "case" seizure would also appear to be affected by the number of plants involved – with "case" seizures on average involving more plants (see Table 11).

**TABLE 11: AVERAGE NUMBER OF PLANTS SEIZED COMPARING 'NO CASE' AND 'CASE' SEIZURES IN MISSION**

	Late 1990's	2000 to 2005	2006 to 2010
No Case Seizures	131	252	524
Case Seizures	293	719	841

### Charges Laid For Marihuana Growing Operations

In cases where a founded growing operation was not classified as a 'no case' seizure, police recommended charges to Crown and those recommendations were usually accepted (see Table 12). Of note, this has been rather consistent since the late 1990's. While these percentages are impressive, they are, of course, less so when considering them against the total number of cases coming to the attention of police (see Table 12).

**TABLE 12: NUMBER OF CASE SEIZURES AND PERCENTAGE OF CASE SEIZURES THAT RESULTED IN CHARGES IN MISSION**

	Late 1990's	2000 to 2005	2006 to 2010
Number of Case Seizures	13	16	37
Percentage Case Seizures that Resulted in Charges	85%	93%	94%
Percentage of Total Number of Cases Coming to the Attention of the Police Which Resulted in Charges	20%	14%	14%

### Conclusion

As noted in the introduction to this report, the fact that marihuana grow operations in Mission have grown substantially in number and size over the last 14 years will be of no surprise to those tasked with dealing with the problem. It will also be no surprise that these operations often involve substantial electricity theft and pose a serious fire hazard. Moreover, we should expect that given the size of the average indoor grow operations in Mission (i.e. an average of 775 plants) and given the likelihood that each is set up to produce four crops a year, the offenders who operate them today are, on average, producing marihuana with a wholesale value of more than \$400,000 annually. Accordingly, offenders have a great incentive to remain in the business. This is especially so given that the likelihood of prosecution for operating a marihuana growing operation is relatively small. In this regard, it is noteworthy that the likelihood of a marihuana growing

operation that came to the attention of police in Mission leading to charges over the last five years was essentially one in seven. With the assumption that the actual number of marihuana grow operations in Mission is at least three times the number coming to the attention of police, the odds of any one grower facing charges is about one in twenty.

In considering the results of present examination it is interesting to compare them to the results of our near identical examination of marihuana growing operations in the Cariboo region of British Columbia.<sup>4</sup> Specifically, the Cariboo region has also experienced a dramatic increase in the number and size of marihuana growing operations and, like Mission, is still far from being able to deal successfully with the numbers involved.

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<sup>4</sup>Plecas, D., Chaisson, K., and Garis, L. (2011). The Nature and Extent of Marihuana Growing Operations in the Cariboo Region of British Columbia. University of the Fraser Valley.