4. HEAVY DRUG USE

Introduction

In this chapter, we analyze drug use, specifically heavy cocaine use. Our analysis is separated into the following components:

- Age of first use
- Prediction of heavy cocaine use
- Correlates of number of years of drug use
- Summary

Age of First Use

Our analysis also explored the relationships of heavy cocaine use and substance use by age. In particular, we examined the ages at which NLSY youth first smoked a cigarette, started smoking daily, started drinking twice a week, first smoked marijuana, first tried cocaine, and first tried crack cocaine. For a set of age ranges for which we have sufficient data, we report the percentage of heavy cocaine users among those who tried the drug by each particular age compared to the percentage of heavy cocaine users among those who had not tried the drug by that particular age. Our results are presented in Exhibits 4.1 through 4.6.

Exhibit 4.1 shows that 1,236 youth had smoked their first cigarette by age 10 (7,469 had not). Out of these 1,236 youth, 110 (8.90 percent) satisfied our conditions as a heavy cocaine user. This compares to a heavy cocaine user rate of only 5.73 percent among those who had not smoked their first cigarette by age 10. The highest rate of heavy cocaine users was among those who smoked their first cigarette at age 11 (43 out of 298 = 14.1 percent). After age 11, the longer a youth waited to smoke their first cigarette, the less likely they were to become a heavy cocaine user. This is shown by the declining percentages in the YES column as age increases. The declining percentages in the NO column also show that the longer a youth waits to smoke their first cigarette, the lower the chance that the youth will become a heavy cocaine user. For example, even if a youth has not started smoking by age 11, there is still a 5 percent chance that s/he will become a heavy cocaine user. This risk is less than 3 percent if the youth has not started smoking by age 17.

The ratio of percentages is also a measure of how much smoking cigarettes is associated with heavy cocaine use. Youth who have started smoking by age 10 are about 55 percent more likely to become heavy cocaine users as those who did not start smoking by age 10 (8.90 %/5.73% = 1.55). This ratio steadily increases, such that youth who have started smoking by age 17 are 2.5 times as likely (150 percent more likely) to become heavy cocaine users as those who have not started smoking by age 17. The increasing ratios are really just a facet of this particular presentation, which is designed to allow a comparison at any age cut-off. While the table shows that those who have started smoking by age 18 still have a 7.25 percent chance of becoming a heavy drug user, those who start at age 18 only have a 4.07 percent chance (15/369) of becoming a heavy drug user, which is closer to the risk of those who have not smoked by age 18 (2.78 percent) than it is to those who started by age 16 (7.62 percent).

Exhibit 4.1: Heavy Cocaine Use among those who had/had not smoked first cigarette by given age

	YES	NO
Used by age 10?	8.90% (110/1236)	5.73% (428/7469)
Used by age 11?	9.97% (153/1534)	5.37% (385/7171)
Used by age 12?	9.82% (241/2454)	4.75% (297/6251)
Used by age 13?	9.12% (301/3301)	4.39% (237/5404)
Used by age 14?	8.56% (356/4160)	4.00% (182/4545)
Used by age 15?	7.93% (397/5008)	3.81% (141/3697)
Used by age 16?	7.62% (444/5826)	3.27% (94/2879)
Used by age 17?	7.44% (465/6253)	2.98% (73/2452)
Used by age 18?	7.25% (480/6622)	2.78% (58/2083)
Ever Reported?	7.08% (494/6982)	2.55% (44/1723)

Exhibit 4.2 shows that 464 youth had started smoking daily by age 12 (8,188 had not). Out of these 464 youth, 62 (13.36 percent) satisfied our conditions as heavy cocaine users. This compares to a heavy cocaine user rate of only 4.96 percent among those who had not started smoking daily by age 12. The highest rate of heavy cocaine users was among those who started smoking daily by age 12. After age 12, the decreasing percentages in the YES column as age increases indicates that the longer a youth waits to start smoking daily, the less likely s/he is to become a heavy cocaine user (though it does seem to stop decreasing after age 18). The declining percentages in the NO column also show that the longer a youth waits to smoke daily, the lower the chance that the youth will become a heavy cocaine user. For example, even if a youth has not started smoking daily by age 12, there is still a 5 percent chance that s/he will become a heavy cocaine user. This risk is less than 3 percent if the youth has not started smoking daily by age 18.

The ratio of percentages is also a measure of the extent to which smoking cigarettes daily is associated with heavy cocaine use. Youth who start smoking daily by age 12 are about 2.7 times as likely to become heavy cocaine users as those who have not (13.36%/4.96% = 2.69). This ratio stays constant until it rises consistently after age 16, such that youth who have started smoking daily by age 21 are almost four times as likely (8.85%/2.27% = 3.90 times as likely) to become heavy cocaine users as those who have not started smoking daily by age 21. In this case, the increasing ratios are associated with a decrease in the NO column percentages, while the YES column percentages stay roughly constant (just under 9 percent). Those who start smoking daily at the age of 19, 20, or 21 still have a 8.15 percent (49/601) chance of becoming a heavy cocaine user, which is quite close to the percentage for those who started by age 18 (8.97 percent), and is much higher than those who have not started by age 21 (2.27 percent).

Exhibit 4.2: Heavy Cocaine Use among those who had/had not started smoking daily by given age

	YES	NO
Used by age 12?	13.36% (62/464)	4.96% (406/8188)
Used by age 13?	12.56% (100/796)	4.68% (368/7856)
Used by age 14?	11.01% (136/1235)	4.48% (332/7417)
Used by age 15?	10.58% (196/1853)	4.00% (272/6799)
Used by age 16?	9.81% (252/2570)	3.55% (216/6082)
Used by age 17?	9.48% (286/3018)	3.23% (182/5634)
Used by age 18?	8.97% (316/3522)	2.96% (152/5130)
Used by age 19?	8.78% (331/3768)	2.81% (137/4884)
Used by age 20?	8.83% (349/3953)	2.53% (119/4699)
Used by age 21?	8.85% (365/4123)	2.27% (103/4529)
Ever Reported?	8.56% (392/4582)	1.87% (76/4070)

Exhibit 4.3 shows that there are 170 youth in our sample who had started drinking alcohol twice a week by age 12 (8,618 had not). Out of these 170 youth, 30 (17.65 percent) satisfied our conditions as a heavy cocaine user. This compares to a heavy cocaine user rate of only 5.96 percent among those who had not started drinking alcohol twice a week by age 12. The highest rate of heavy cocaine users was among those who started drinking alcohol twice a week by age 12, since after age 12, the percentages in YES column decrease as age increases, indicating that the longer a youth waited to start drinking alcohol twice a week, the less likely they were to become a heavy cocaine user. The declining percentages in the NO column show that the longer a youth waits to start drinking alcohol twice a week, the lower the chance that the youth will become a heavy cocaine user. For example, even if a youth has not started drinking alcohol twice a week by age 12, there is still an almost 6 percent chance that s/he will become a heavy cocaine user. This risk is less than 2 percent if the youth has not started drinking alcohol twice a week by age 21.

The ratio of percentages is also a measure of the extent to which drinking alcohol twice a week leads to heavy cocaine use. Youth who have started drinking alcohol twice a week by age 12 are about 3.0 times as likely to become heavy cocaine users as those who have not started drinking alcohol twice a week by age 12 (17.65%/5.96% = 2.96). This ratio stays constant until it rises consistently after age 18, such that youth who have started drinking alcohol twice a week by age 21 are almost four times as likely (7.32%/1.95% = 3.75 times as likely) to become heavy cocaine users as those who have not started drinking alcohol twice a week by age 21. The increasing ratios are really just a facet of this particular presentation, which is designed to allow a comparison at any age cut-off. While the table shows that those who have started drinking alcohol twice a week by age 18 still have a 7.98 percent chance of becoming a heavy drug user, those who start at age 18 only have a 4.35 percent chance (81/1863) of becoming a heavy cocaine user, which is closer to the risk of those who have not started

drinking twice or more per week by age 18 (2.60 percent) than it is to those who started by age 16 (11.58 percent).

Exhibit 4.3: Heavy Cocaine Use among those who had/had not started drinking 2+/week by given age

	YES	NO
Used by age 12?	17.65% (30/170)	5.96% (514/8618)
Used by age 13?	16.76% (57/340)	5.76% (487/8448)
Used by age 14?	15.94% (99/621)	5.45% (445/8167)
Used by age 15?	14.96% (190/1270)	4.71% (354/7518)
Used by age 16?	11.58% (303/2617)	3.91% (241/6171)
Used by age 17?	9.67% (387/4003)	3.28% (157/4785)
Used by age 18?	7.98% (468/5866)	2.60% (76/2922)
Used by age 19?	7.65% (492/6434)	2.21% (52/2354)
Used by age 20?	7.46% (502/6728)	2.04% (42/2060)
Used by age 21?	7.32% (508/6942)	1.95% (36/1846)
Ever Reported?	7.24% (510/7045)	1.95% (34/1743)

Exhibit 4.4 shows that there are 358 youth had started smoking marijuana by age 12 (8,321 had not). Out of these 358 youth, 84 (23.46 percent) satisfied our conditions as a heavy cocaine user. This compares to a heavy cocaine user rate of only 5.34 percent among those who had not started smoking marijuana by age 12. The highest rate of heavy cocaine users was among those who started smoking marijuana by age 12, since after age 12, the decreasing percentages in YES column as age increases indicate that the longer a youth waited to start smoking marijuana, the less likely s/he was to become a heavy cocaine user. The declining percentages in the NO column also show that the longer a youth waits to start smoking marijuana, the lower the chance that the youth will become a heavy cocaine user. For example, even if a youth has not started smoking marijuana by age 12, there is still a 5 percent chance that s/he will become a heavy cocaine user. This risk is just over 1 percent if the youth has not started smoking marijuana by age 21.

The ratio of percentages is also a measure of the extent to which smoking marijuana is associated with heavy cocaine use. Youth who have started smoking marijuana by age 12 are about 4.4 times as likely to become heavy cocaine users as those who have not started smoking marijuana by age 12 (23.46%/5.34% = 4.39). This ratio varies around 4.5 until it eventually rises consistently after age 17, such that youth who have started smoking marijuana by age 21 are almost eight times as likely (8.11%/1.05% = 7.72 times) to become heavy cocaine users as those who have not started smoking marijuana by age 21. The increasing ratios are really just a facet of this particular presentation, which is designed to allow a comparison at any age cut-off. While the table shows that those who have started smoking marijuana by age 18 still have a 8.88 percent chance of becoming a heavy cocaine user, those who start at age 18 only have a 3.81 percent chance (34/892) of becoming a

heavy cocaine user, which is closer to the risk of those who have not smoked marijuana by age 18 (1.81 percent) than it is to those who started by age 16 (11.37 percent).

Exhibit 4.4: Heavy Cocaine Use among those who had/had not used marijuana by given age

	YES	NO
Used by age 12?	23.46% (84/358)	5.34% (444/8321)
Used by age 13?	19.74% (149/755)	4.78% (379/7924)
Used by age 14?	16.12% (211/1309)	4.30% (317/7370)
Used by age 15?	13.78% (295/2141)	3.56% (233/6538)
Used by age 16?	11.37% (385/3385)	2.70% (143/5294)
Used by age 17?	9.92% (432/4354)	2.22% (96/4325)
Used by age 18?	8.88% (466/5246)	1.81% (62/3433)
Used by age 19?	8.47% (481/5679)	1.57% (47/3000)
Used by age 20?	8.23% (492/5980)	1.33% (36/2699)
Used by age 21?	8.11% (502/6191)	1.05% (26/2488)
Ever Reported?	7.76% (513/6607)	0.72% (15/2072)

Exhibit 4.5 shows that 137 youth had started using cocaine by age 15 (8,392 had not). Out of these 137 youth, 48 (35.04 percent) satisfied our conditions as a heavy cocaine user. This compares to a heavy cocaine user rate of only 5.93 percent among those who had not started using cocaine by age 15. The highest rate of heavy cocaine users was among those who started using cocaine by age 15, since after age 15, the decreasing percentages in the YES column as age increases indicate that the longer a youth waited to start using cocaine, the less likely s/he was to become a heavy cocaine user. The declining percentages in the NO column also show that the longer a youth waits to start using cocaine, the lower the chance that the youth will become a heavy cocaine user. For example, even if a youth has not started using cocaine by age 15, there is still an almost 6 percent chance that s/he will become a heavy cocaine user. This risk is under 2 percent if the youth has not started using cocaine by age 24.

The ratio of percentages is also a measure of how much using cocaine is associated with heavy cocaine use. Youth who used cocaine by age 15 are almost six times as likely to become heavy cocaine users as those who have not started using cocaine by age 15 (35.04%/5.93% = 5.91). This ratio actually decreases to about 5 until it starts increasing after age 19, such that youth who have started using cocaine by age 25 are almost eleven times as likely (15.61%/1.46% = 10.69 times as likely) to become heavy cocaine users as those who have not started using cocaine by age 25. In this case, the increasing ratios are associated with a decrease in the NO column percentages, while the YES column percentages stay more constant (around 16 percent). Those who start using cocaine at the age of 22, 23, 24, or 25 still have a 10.93 percent (99/906) chance of becoming a heavy cocaine user, which is closer to the percentage for those who started by age 21 (17.66 percent) than those who have not started by age 21 (2.79 percent).

Exhibit 4.5: Heavy Cocaine Use among those who had/had not used cocaine by given age

	YES	NO
Used by age 15?	35.04% (48/137)	5.93% (498/8392)
Used by age 16?	25.57% (79/309)	5.68% (467/8220)
Used by age 17?	25.58%(132/516)	5.17% (414/8013)
Used by age 18?	21.72% (199/916)	4.56% (347/7613)
Used by age 19?	20.32% (252/1240)	4.03% (294/7289)
Used by age 20?	18.50% (314/1697)	3.40% (232/6832)
Used by age 21?	17.66% (366/2073)	2.79% (180/6456)
Used by age 22?	16.67% (393/2357)	2.48% (153/6172)
Used by age 23?	16.29% (416/2554)	2.18% (130/5975)
Used by age 24?	15.67% (431/2750)	1.99% (115/5779)
Used by age 25?	15.61% (465/2979)	1.46% (81/5550)
Ever Reported?	15.44% (521/3374)	0.48% (25/5155)

Exhibit 4.6 shows that there were 107 youth who had started using crack by age 18 (8,204 had not). Out of these 107 youth, 25 (23.36 percent) satisfied our conditions as a heavy cocaine user. This compares to a heavy cocaine user rate of only 5.28 percent among those who had not started using crack by age 18. Unlike the other variables, the percentages in the YES column do not monotonely decrease as age increases. The highest rate of heavy cocaine users was among those who started using crack between the ages of 18 and 21 (46/127 = 36.22 percent), but the percentage of crack users who become heavy cocaine users stays around 30 percent, even for those who start after age 30. The declining percentages in the NO column also show that the longer a person waits to start using crack, the lower the chance that the youth will become a heavy cocaine user. For example, even if a youth has not started using crack by age 18, there is still a 5 percent chance that s/he will become a heavy cocaine user. This risk is only about 3 percent if one does not start using crack by age 30.

The ratio of percentages is also a measure of how much smoking crack is associated with heavy cocaine use. Youth who have started using crack by age 18 are 4.4 times as likely to become heavy cocaine users as those who have not started using crack by age 18 (23.36%/5.28% = 4.42). This ratio steadily increases, such that youth who have started using crack by age 30 are 9.3 times as likely (28.72%/3.08% = 9.32) to become heavy cocaine users as those who have not started using crack by age 30. In this case, the increasing ratios are associated with a decrease in the NO column percentages, while the YES column percentages stay roughly constant (around 30 percent). Those who start using crack have a 30 percent chance of becoming heavy cocaine users no matter what age they start, while those who do not start by a certain age have their likelihood of becoming a heavy cocaine user decrease steadily with age.

Exhibit 4.6: Heavy Cocaine Use among those who had/had not used crack cocaine by given age

	YES	NO
Used by age 18?	23.36% (25/107)	5.28% (431/8204)
Used by age 21?	30.34% (71/234)	4.79% (385/8032)
Used by age 24?	30.19%(112/371)	4.36% (344/7895)
Used by age 27?	27.84% (169/607)	3.75% (287/7659)
Used by age 30?	28.72% (226/787)	3.08% (230/7479)
Ever Reported?	29.12% (272/934)	2.51% (184/7332)

It is not surprising that the largest differentials (rates of future heavy cocaine use for users are five or more times those for non-users) are among cocaine (Exhibit 4.5) and crack cocaine use (Exhibit 4.6), since these form the criteria for our heavy cocaine users. However, marijuana users are generally about four times or more as likely to become heavy cocaine users as those who have not tried marijuana at a young age (Exhibit 4.4). Those drinking alcohol twice a week by a certain age are generally about three times or more as likely to become heavy cocaine users as those who have not started drinking at least twice a week (Exhibit 4.3). Interestingly, smoking one cigarette by a certain age seems to at least double one's odds of becoming a heavy cocaine user (Exhibit 4.2), and smoking every day seems to triple the odds of one becoming a heavy cocaine user (Exhibit 4.1).

One key result in Exhibits 4.1–4.6 is that the longer youth wait to use any of these drugs, the less likely they are to become heavy cocaine users. This is shown by the "NO" column percentages decreasing uniformly through all six exhibits. However, this decrease is most significant for smoking the first cigarette, drinking alcohol, and smoking marijuana. For these three, later starters have rates of later heavy cocaine use closer to non-starters than to early starters. For smoking daily, using cocaine, or using crack, even late starters have significantly higher rates of later heavy cocaine use than non-starters.

Prediction of Heavy Cocaine Use

Regression is a useful tool to model data. One of our main goals is to find variables that can predict future heavy cocaine use. In order to stress the prediction, our emphasis for explanatory variables was on early round variables (generally in 1979 and 1980, once in 1984) so that we could test their predictive power on heavy cocaine use. Whether or not the youth is a heavy cocaine user is a binary variable, so we use logistic regression. Logistic regression is similar to ordinary linear regression, except that the dependent variable is dichotomous rather than continuous. For example, if y is 1 for a heavy cocaine user and 0 otherwise, then a logistic regression model posits the relationship between the explanatory variables and the probability that y=1:

$$Log\left[\frac{\Pr(y=1)}{\Pr(y=0)}\right] = \beta_0 + \sum \beta_i x_i$$

The probability itself cannot be used as the dependent variable because it is bounded by 0 and 1, whereas the right side of the equation is not. The log odds ratio is used because it is unbounded. The only difference from linear regression is the dependent variable. Any explanatory variables that were used for linear regression can be used for logistic regression.

In interpreting our logistic regression results, no claim is made for a direct causal relationship among the variables used in the proposed analysis. Rather, the study seeks to explain covariation among the variables to assess whether certain behaviors or characteristics tend to coincide with the presence of a particular outcome (i.e., heavy cocaine use) to a greater or lesser degree than do other variables or characteristics. Our goal is prediction.

Logistic regression generates "odds ratio" estimates for each predictor. Such estimates are readily interpretable probabilities that indicate how much more likely it is that an outcome would be observed if, all other elements being the same, the predictor occurs compared to when the predictor does not occur. For example, all other things being equal, an odds ratio would estimate how much more (or less) likely a man than a woman is to become a heavy cocaine user. An odds ratio above 1.0 means that the activity becomes more likely, while an odds ratio below 1.0 means that this activity becomes less likely.

Our modeling procedure followed a very programmatic path. We first selected 140 variables of possible interest from the NLSY79 data. All variables were treated as, or converted into categorical variables (where a goal was to have only a few categories). We examined the bivariate relationship between each of these variables and our heavy cocaine use dependent variable through chi-square tests of independence. These 140 items are presented in Appendix A sorted by item number (which are sorted by questionnaire year). Ninety-eight of these variables had a significant *p* value of less than 0.05, including 79 with a *p* value of less than 0.0001.

Clearly, these are too many independent variables to put into a logistic regression model, but we selected 26 variables for both their significance and their coverage of the important topics among the 140 variables. We ran several logistic regression stepwise procedures to determine the best model, using the SUrvey DAta ANalysis (SUDAAN) software package. The best model shown below in Exhibit 4.7 included eight of these 26 variables.

The model in Exhibit 4.7 shows an R-square of only 0.08. However, logistic regression does not allow the full range of R-squares from zero to one. Instead, the R-square can be constrained quite strongly. Rescaling the R-square for logistic regression gives a fairer comparison to R-squares from linear regression. Cox and Snell's[14] max-rescaled R-square is 0.24, which indicates a moderate explanatory model.

The odds ratios in Exhibit 4.7 are easily interpretable. The strongest factor is that those who smoked marijuana or hashish more than 50 times in the last year (in 1980) are 6.7 times as likely to be heavy cocaine users many years later than those who did not smoke any marijuana or hashish. This model shows that those who are smoking marijuana as youth are more likely to be heavy cocaine users as adults. This model also shows that those who smoked marijuana at least monthly (11–50 times) in 1980 were more than three times as likely to be heavy cocaine users than those who did not smoke

[14] D. R. Cox and E. J. Snell, *Analysis of Binary Data*, 2nd Edition, London: Chapman and Hall, 1989.

any marijuana or hashish. Even occasional marijuana/hashish smokers (once or twice a year) were at least 50 percent more likely to become heavy cocaine users.

Exhibit 4.7: Correlates of Heavy Cocaine Use: Results of Logistic Regression Model

Observations used in analysis	**8,033**
R-square	**0.08**
Max-rescaled R-square	**0.24**
Independent Variables (Variables are significant at *p*<0.05 level)	**Odds Ratios**
Smoked marijuana/hashish 51+ times in past year vs. none (1980)	6.67
Smoked marijuana/hashish 11–50 times in past year vs. none	3.23
Smoked marijuana/hashish 3–10 times in past year vs. none	2.38
Smoked marijuana/hashish 1–2 times in past year vs. none	1.54
Male vs. female (1979)	1.87
Had cigarette less than six months ago vs. never (1984)	1.41
Had cigarette more than six months ago vs. never	0.48
Has been suspended from school vs. has not (1980)	1.56
Significant amount of illegal income in last year vs. none (1980)	2.63
A little illegal income in last year vs. none	1.37
Attends religious services at least once a month vs. does not attend (1979)	0.67
Attends religious services infrequently vs. does not attend	0.76
Has sold hard drugs in past year vs. has not (1980)	2.00
Hispanic vs. non-black, non-Hispanic (1979)	1.59
Non-Hispanic black vs. non-black, non-Hispanic	1.61

Smoking cigarettes as young adults also has a strong relationship with heavy cocaine use. Current smokers in 1984 were 41 percent more likely to be heavy cocaine users than those who had never smoked. Interestingly, former smokers (those who had gone at least six months without smoking) were only half as likely to become heavy cocaine users as those who had never started smoking cigarettes.

Demographics also play a role. Males were 87 percent more likely than females to become heavy cocaine users, while non-Hispanic blacks and Hispanics were 61 percent and 59 percent, respectively, more likely than non-Hispanic, non-blacks to become heavy cocaine users.

Juvenile delinquent behavior is another valuable predictor of future heavy cocaine use. Youth who are suspended from school have a 56 percent greater chance in being a heavy cocaine user than those never suspended. Youth who received a substantial amount of illegal income were more than twice as likely to become heavy cocaine users. Those who reported "a little" illegal income were 37 percent more likely to become heavy cocaine users. Finally, those who sold hard drugs were twice as likely to become heavy cocaine users.

The final significant variable involves attendance at religious services. Those youth who attended religious services at least once per month in 1979 were 33 percent less likely to become heavy

cocaine users than those who did not attend religious services in 1979. Even those who attended religious services infrequently were 24 percent less likely to become heavy cocaine users than those who did not attend at all.

What is most striking about these relationships is that the explanatory variables were collected approximately five or more years (an average of 8 years) before the data were collected from which we classified the youth as heavy cocaine users. This suggests that it is possible to predict future heavy cocaine use several years in advance.

Correlates of Number of Years of Drug Use

We also ran linear regression analyses on the number of study years reported using marijuana, cocaine, and crack cocaine. The variables used in these regression analyses were not intended to be exhaustive of the data set or of other potentially meaningful relationships that could be assessed from this rich data resource. Instead, we used stepwise models with the same 26 variables we used in the heavy cocaine users logistic regression analysis to explore these three variables. Results for all three models are shown in Exhibit 4.8.

The modeling is much more effective for marijuana and cocaine than for crack. We believe this is due to the fact that there is much more marijuana use that can be modeled. While the weighted mean for marijuana is 1.15 years of use, the weighted mean for years of crack use is only 0.03, which is very small. None of the R-squares is as large as the max-rescaled R-square for heavy cocaine use (above), but marijuana is very close.

Some variables are important contributors to all three models. These are the same variables that are most important in predicting heavy cocaine use: smoking of marijuana/hashish, smoking status, and selling of hard drugs. Interestingly, ex-smokers (who are less likely to be heavy cocaine users) do tend to smoke more marijuana ($\beta = + 0.15$), but not more cocaine ($\beta = 0.00$) or crack ($\beta = –0.01$).

Several variables were important for two of the three models. Those who had at least one episode of "binge drinking" (at least 5 alcoholic drinks at one time) in the last month were heavier users of marijuana and cocaine but not crack. Attending religious services is also significant and inversely related to number of years of marijuana and cocaine use, but not related to crack use.

Also significant is whether youth expect to be married within five years (possibly a proxy for whether the youth is in a committed relationship) and whether youth are satisfied with themselves; both are inversely related to number of years of drug use.

Race/ethnicity differences are not significant for cocaine, but African-Americans tend to use marijuana and crack for more years. However, Hispanics use marijuana for fewer years, and crack for about the same number of years as non-Hispanic whites. Youth who were referred to court-related counseling used cocaine and crack more years than those who were not referred to court-related counseling.

Several variables were significant in only one of the regressions. With regard to marijuana, males and those who had been suspended from school were users for more years, while for cocaine, those who expect to go to college are likely to use for slightly fewer years, but still use for more years than those who expect to get only a high school diploma (as expected, those who do not expect to finish

high school have the highest usage of cocaine). Finally, those who had at least one drink in the previous month and those with illegal income were likely to use cocaine for more years.

Exhibit 4.8: Correlates of Number of Years Using Marijuana, Cocaine, and Crack: Results of Ordinary Least Squares Regression Models

Observations used in analysis **R-square**	Marijuana 4,490 0.23	Cocaine 4,391 0.18	Crack 8,293 0.04
Independent Variables (significant at $p<0.05$ level)	**values**[a]		
MEAN IN YEARS	**1.15**	**0.40**	**0.03**
Smoked marijuana/hashish more than 50 times in past year vs. none—(1980)	1.28	0.52	0.06
Smoked marijuana/hashish 11–50 times in past year vs. none	0.87	0.41	0.01
Smoked marijuana/hashish 3–10 times in past year vs. none	0.48	0.21	0.02
Smoked marijuana/hashish 1–2 times in past year vs. none	0.32	0.11	0.01
Had cigarette less than six months ago vs. never (1984)	0.53	0.14	0.03
Had cigarette more than six months ago vs. never	0.15	0.00	–0.01
Has sold hard drugs in past year vs. has not (1980)	0.39	0.26	0.05[b]
Had at least five alcoholic drinks at one time in last month vs. did not (1983)	0.36	0.20	
Attends religious services at least once a month vs. does not attend (1979)	–0.14	–0.07	
Attends religious services infrequently vs. does not attend	–0.08	–0.04	
Hispanic vs. non-black, non-Hispanic (1979)	–0.06[b]		0.01
non-Hispanic black vs. non-black, non-Hispanic	0.11[b]		0.07
Has been referred to court-related counseling vs. has not (1980)		0.23	0.06
Expects to be married in next five years vs. expects to not be married (1979)	–0.30	–0.12	
Respondent is very satisfied with self vs. not satisfied (1980)	–0.11[b]	–0.09	
Respondent is satisfied with self vs. not satisfied	–0.01[b]	0.01	
Expects to go to college vs. expects to not finish high school (1979)		–0.02[b]	
Expects highest grade to be HS diploma vs. expects to not finish HS		–0.10[b]	
Had at least one alcoholic drink in the last month vs. had not (1980)		0.09	
Has been suspended from school vs. has not (1980)	0.13		
Male vs. female (1979)	0.19		
Significant amount of illegal income in last year vs. none (1980)		0.29	
A little illegal income in last year vs. none		0.12	

[a] This effect is the additional years of drug use attributable to this level of the variable. Blank cells indicate variable was not significant in that regression.
[b] Only significant at $p < 0.10$.

Summary

- Youth who wait longer before their first use of alcohol, cigarettes, marijuana, cocaine, or crack are less likely to become heavy cocaine users.
- Youth who first used cigarettes, alcohol, and marijuana late more closely resemble non-users with regard to their heavy cocaine use.
- However, those youth who started smoking cigarettes daily, using cocaine, or using crack late have heavy cocaine use percentages more like early users than non-users.
- Those who smoked marijuana more than 50 times as adolescents are more than six times as likely to become heavy cocaine users as those who did not smoke marijuana as adolescents. The odds ratio decreases as marijuana use in adolescence decreases.
- Young male drug users are almost twice as likely as female drug users to become heavy cocaine users.
- Those who were suspended from school are one and one-half times more likely to become heavy cocaine users as those who were not suspended from school.
- Individuals reporting a significant amount of illegal income as adolescents are more than two times more likely to become heavy cocaine users than those who had no illegal income as adolescents.
- Those who attended religious services at least twice a month are one third less likely to become heavy cocaine users as those who did not attend religious services. Attending infrequently is associated with a one-quarter lower likelihood of becoming a heavy cocaine user.
- Those selling hard drugs during adolescence are twice as likely to become heavy cocaine users as those who did not sell drugs as adolescents.