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## **An Analysis of California Drug Crimes**

## I. Introduction

The drug market has a huge impact on California. Even though marijuana and methamphetamines are produced in large amounts within the state, cocaine, heroin, methamphetamines, and marijuana are also trafficked to California from Mexico, making San Diego as well as Los Angeles large distribution centers for a variety of drugs. The ingenuity of drug traffickers was recently popularized when an underground tunnel was discovered beneath the United States-Mexican border. Mexican authorities reportedly seized about 2 tons of Marijuana and it is suspected that the tunnel was used by a drug cartel (Pomfret). Methamphetamine use is skyrocketing in rural parts of Northern California, while San Francisco still faces a large number of heroin addicts and Oakland is crippled by a crack cocaine epidemic<sup>1</sup>.

Roughly 40% of all arrests in California result from drug or alcohol violations. In 2002, there were 257,801 drug related arrests. Among all forms of drugs, including alcohol, heroin is the most widely used substance. Among illicit drugs heroin drugs, heroin accounts for approximately 27% of all illicit substance use. The combined social cost of drug and alcohol abuse in California is estimated to be \$35.0 billion annually.<sup>2</sup>

Many people have many different beliefs about what factors are correlated with drug crimes. Income inequality, low levels of education, high levels of gang activity, unstable and dangerous community environments, and lax border security have all been suggested to contribute to high levels of drug crime in California. Because so many factors are involved, it is difficult to pinpoint whether drug crimes are a sociological, political, or economic issue.

In this paper, I attempt to determine whether the motivation for drug offenses is purely rational and "economic" or also influenced by social factors and/or other deviations from the economic conception of rationality. Because an individual's family, friends, and members of their community influence an individual's lifestyle and aspirations, the decision to commit a drug crime may be irrational. If this is the case,

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<sup>1</sup> Drug Enforcement Agency:

<sup>2</sup> California Department of Drug and Alcohol Programs:  
[http://www.adp.cahwnet.gov/FactSheets/Facts\\_and\\_Figures\\_on\\_Alcohol\\_and\\_Other\\_Drugs\\_7\\_28.pdf](http://www.adp.cahwnet.gov/FactSheets/Facts_and_Figures_on_Alcohol_and_Other_Drugs_7_28.pdf)

economic cost-benefit calculations will lead to misleading results.

I develop a framework for analyzing the roots of drug crimes based on a general crime model and model of social distance previously developed by Gary Becker (1968) and George Akerlof (1997) respectively. While the results from my framework are far from exact, the combination of both sociological and economic motivations offers a more realistic and inclusive means for analysis.

In section II, I provide a basic summary of the models developed by Becker and Akerlof. In the first part of section III, I analyze what factors were largely responsible (and not responsible) for the fall in national crime rates between 1990 and 2000, which also offers the opportunity to study the viability of imprisoning drug offenders and pricing in drug markets. In the second part of section III, I discuss the effect of the crack epidemic on gang organized drug sales and the implications of increased drug activity on the general crime levels and community structure in areas affected. In section IV, I test assumptions made in sections II and III as I try to address the causes of high levels of drug crimes in California. I base this analysis on drug and socioeconomic data from 30 California cities. I discover that both sociological and economic factors are important. Thus combining Akerlof's and Becker's models offers a better framework for analysis than simply using one model independently.

## **II. A Crime Model and a Social Interaction Model**

In order to address drug crimes, it is important to understand the foundations of the "criminal economy." Like any other market, the various costs and benefits of a particular crime determine the number of criminal offenses. In face of these crimes, society must choose the number of arrests, the number of convictions given these arrests, and the severity and type of punishments. While one might assume that zero crime is best, generally speaking this is not socially optimal because it would be very costly to reduce crime rates to zero through enforcement and deterrence measures. Although there are many models of crime existing in economics, I have chosen to use Becker's model as a basis for further discussion of drug crimes. This model is based on the assumption that individuals make rational decisions as to whether to commit a crime. I will also incorporate George Akerlof's model of social interaction theory. While social interaction

theory does not specifically address drug crime, models of social networks, social conformity, and status seeking may help examine major impetuses driving individuals into criminal activity. The decision to engage in criminal activity may be irrational. Perhaps it is the case that the influence of social networks, be it positive or negative, preempts rational economic analysis. By combining the insights of Becker and Akerlof, I hope to unravel some of the major forces that lead to drug crime.

### **A. A General Model of Crime**

A balance must be struck between the cost of crime and the cost of preventing it. Society faces a tradeoff between the costs of law enforcement, courts, and prisons (all of which prevent and deter crime) or the costs to individuals against which crimes are committed. Becker's model attempts to minimize this social cost. Becker's analysis focuses on the question "How many offenses *should* be permitted and how many offenders *should* go unpunished?" where *should* is defined as what minimizes total social cost, without regard to distributional issues. The answer is not simple. According to Becker's model, there are five defining relationships that are crucial in understanding the costs and benefits of crime. There is an important link between (1) the number of crimes and the cost of the offense, (2) the number of offenses and the number of punishments, (3) the number of offenses, arrests and convictions and public expenditure on police and courts, (4) the number of convictions and the cost of punishment, and (5) the number of offenses and private expenditure on protection and apprehension. By expanding upon these relationships, one can achieve perhaps a better understanding of the factors drawing individuals into the illegal sector and the costs potential criminals and society face.

#### **1) Damages**

Perhaps most obviously, criminal activity can be viewed as a negative externality that creates disutility within a society. It can be assumed that crime harms individuals and the level of harm increases with the number of criminal offenses. In essence, criminal activities create diseconomies because they contribute to increased cost for society, and this cost increases with the number of offenses. Therefore, the number of offenses can be

used to measure the level of criminal activity. Let  $H_i$  be the harm from the  $i$ th activity and  $O_i$  be the activity level.

$$H_i = H_i(O_i), \text{ where } H_i' > 0 \quad (1)$$

Criminals earn a benefit equal to the amount of loot they steal or in our case perhaps the amount of drugs they sell or consume. A criminal's economic benefit increases with the number of offenses. Let  $G$  be equal to the offender's economic gain.

$$G = G(O), \text{ where } G_i > 0 \quad (2)$$

Then it must be the case that the cost to society is equal to the amount of harm individuals experience as a result of crime minus the economic benefit that the offenders gain.

$$D(O) = H(O) - G(O) \quad (3)$$

It can be assumed that there are diminishing marginal returns to crime and increasing marginal harm to individuals who are affected by crimes (so  $G''$  is negative while  $H''$  is positive). Although the sign of  $D'$  depends on the relative magnitude of  $H'$  and  $G'$  since both are greater than zero, it must be the case that  $D'' = H'' - G''$  is positive, which implies that damages are increasing at an increasing rate as the number of offenses grows.

This result seems very clear cut; nevertheless, it is difficult to place a value on the costs and benefits of a crime. For instance, the social cost of a murder is measured by the victim's forgone earning, but this is a very dry and cold valuation of human worth. Indeed, a minimum wage man's family would undeniably claim that this measurement is lacking. The costs of gambling does not incorporate the utility the gambler receives or the disutility, say Jerry Falwell, would receive just from knowing that others are engaging in such an activity.

These ambiguities are very apparent in measuring the social damages and criminal benefits of drug crimes. Damages neglect to measure the cost of drugs physically on individual users and rehabilitation costs of intensive usage to society. Nor do such measurements account for the user's utility from consuming the drugs. Arguably, many claim that making drugs illegal magnifies such social maladies as intensive rather than extensive use. On the supply side, although the cost to the supplier may include the opportunity cost of foregone income earned in the legitimate sector, it may not

incorporate all the dangers surrounding the sale of drugs. For instance, gang violence and turf wars are often a tool used by drug dealers to enforce contracts and maintain markets (Levitt and Venkatsh). This violence, in turn, has implications for the safety and quality of life within the community. How would one even begin to quantify such far-reaching and intangible costs and benefits?

## 2) Cost of Apprehension and Conviction

Society's main resources for apprehension and conviction of offenders are the police and the judicial system. Likewise, police and court activity also are a major social cost. Police and court activity is a function of three inputs: manpower, materials, and capital. These inputs in turn are a function of technology or "the state of the arts."

$$A = f(m, r, c) \quad (4)$$

Increased police and court activity increase the costs. The amount by which costs increase depends on input prices and f

$$C = C(A), \text{ where } C' > 0 \quad (5)$$

Police and court activity can be measured by determining the number of offenses that actually result in conviction. Let p equal the probability of conviction.

$$A \cong pO, pO \neq 0 \quad (7)$$

$$C_p = \frac{\partial C(pO)}{\partial p} = C'O > 0 \quad (8)$$

$$C_o = \frac{\partial C(pO)}{\partial O} = C'p > 0 \quad (9)$$

Thus an increase in either the number of offenses or the probability of conviction would increase the total costs. The marginal cost of increased activity is assumed to be positive, so each additional criminal conviction becomes more expensive.

More generally, police and court activity can be measured by the probability of being convicted, number of offenses and arrests and other determinants of activity.

$$A = h(p, O, a) \quad \text{or} \quad (10)$$

$$C = C(p, O, a) \quad (11)$$

This transformation was easily made because police and court activity is a function of cost. Again, police and court active increases as the probability of conviction and the number of offenses increase. As a result, it can be assumed that costs increase as the

probability of arrest, the number of offenses and other determinants increase (that is,  $C_p$ ,  $C_o$ , and  $C_a$  are also greater than zero).

### 3) Supply of offenders

Intuitively, an offender's probability of being convicted and punished increases as they commit more offenses. Potential criminals weigh the costs and benefits when deciding to engage in crime. They choose to engage in criminal activity if the expected utility from the crime is greater the utility he could earn elsewhere. Although all individuals undergo an intrinsic cost benefit analysis of sorts, the cost and benefits are not evenly distributed among groups. For example, Paris Hilton, like many intercity youths, did not go to college, yet one would be surprised to see Paris Hilton committing armed robbery at a convenience store.

The number of offenses an individual commits is dependent on his probability of conviction, his punishment if convicted, and other variables such as available income in legitimate sectors, other illegitimate sectors and moral convictions. Let  $O_i$  be the number of offenses an individual commits during period. Let be his  $P_i$  probability of conviction,  $f_i$  be his punishment per offense, and  $U_i$  be other variables that influence the number of offenses such as education and income.

$$O_i = O_i (P_i, f_i, U_i) \quad (12)$$

Presumably, an increase in  $f_i$  or  $p_i$  would decrease an individuals expected utility from a committing an offense (that is,  $O_{p_i}$  and  $O_{f_i}$  are both negative). Any increase in the probability of getting caught or in the punishment would increase the cost of committing a crime. An increase in education or income, as is the case with Paris Hilton, would increase opportunities and wages in other sectors and likely decrease the person's chances of entering the illegitimate sector.

Although an increase in  $P_i$  paired with an equal decrease in  $f_i$  would not change the expected income from an offense it would alter an individuals expected utility from committing the offense because the levels of risk would now be changed. Although the punishment is less, the probability of being caught has now increased.

$$EY_i = P_i(Y_i - f_i) + (1 - P_i)Y_i = Y_i - P_i f_i \quad (13)$$

If a person were risk adverse, an increased probability of conviction would reduce expected utility more than the increase in expected utility resulting from lower punishments. The risk adverse individual would likely commit fewer offenses. If the person were risk loving, however, the opposite would be true. The positive effects of reduced punishment on expected utility would outweigh the increased probability of conviction, and the number of offenses would increase. Of course if a person were risk neutral, the respective changes in  $p$  and  $f$  would have equal effects, leaving the number of offenses unchanged.

The total number of offenses is the sum of each of the offenses committed by all individuals. Aggregate offenses depended each individual's probability of getting caught, punishment per offense and other influencing variables, where  $p$ ,  $f$ , and  $u$  vary greatly across individuals.

$$O = O(p, f, u) \quad (14)$$

More recent studies have further examined the supply of offenders. Analyzing why there is more crime in cities, Glaeser and Sacerdote divide the relation between crime and cities into 3 main categories: (1) higher monetary returns to crime in urban areas, (2) lower probability of arrest in urban areas, and (3) urban areas' attraction or creation of crime prone individuals. Using various regression analyses with various data sets, Glaser and Sacerdote test these claims. What is most compelling about their crime analysis is they focus on the individual attributes and the very characteristics of the urban areas in addressing the roots of crime. According Glaeser and Sacerdote, the probability of arrest and the lower probability of recognition explain one fifth of urban crime while one third to one half of crime can be explained by the presence of more female heads of household in the city. Indeed, half of all families in poverty in 1998 were single mother families with children (Blank).

#### **4) Punishment**

There are two important effects generated by imprisoning offenders. One is the incapacitation effect. When convicted offenders are placed in prison, they are not free to commit crimes, preventing potential and future offense, at least temporally. The second effect is the deterrence effect (Levitt).

In 2002, the prison inmate population in California including men and women totaled 152,225. Accounting for the total number of male and female facilities, California institutions were designed to hold a capacity of 80,587 inmates. Thus, in 2000 California prisons faced a 188.9% occupancy rate<sup>3</sup>. The Criminal Justice Department Fiscal Expenditures in 2001-2002 totaled \$21,880,014,000<sup>4</sup>.

The cost of punishing convicted offenders places a large burden on state spending. Although fines would generate a positive source of revenue for the state, most major crimes are punished by imprisonment. The cost of imprisonment to the offenders is equal to the discounted value of forgone earnings and the opportunity cost of lost freedom. These values vary from person to person since people have different wages and values on freedom. The total cost of punishments is the cost to the offenders (mentioned above) plus or minus the gains to others. Imprisonment raises total social costs while the cost from other punishments, like fines, would reduce total costs. There is a social cost tied to such punishments as imprisonment or probation while society can earn income from other punishments, namely fines. Usually, the social cost is larger than the individual cost faced by the offender.

$$\text{Social cost: } f' = fb \quad (15)$$

$b$  is the coefficient that transforms  $f$  into  $f'$ . It is approximately 0 for fines but is generally greater than 1 for other punishments because social costs are often greater than individual costs to criminals.

## 5) Optimality Conditions

If society's goal was deterrence, the probability of conviction could be made equal to 1 and the punishment could be raised to high enough levels to outweigh any benefits. This would undeniably reduce the number of offenses, but the social cost would be tremendous. High police and court activity would increase costs (as seen in equations (11) and (15)).

Alternatively,  $p$  could be set close to one and  $f$  could be set equal to the harm imposed on the rest of society. In terms of drug crimes, this option would be especially

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<sup>3</sup> Prison inmate population/capacity data: <http://ca.rand.org/stats/community/prisons.html>

<sup>4</sup> California Department of Justice: [http://stats.doj.ca.gov/cjsc\\_stats/prof03/00/10.htm](http://stats.doj.ca.gov/cjsc_stats/prof03/00/10.htm)

difficult. Both users and sellers free-willingly choose to internalize a majority of the ‘social costs’ inflicted by drug crimes. Can this be construed as social harm? As Levitt describes, the violence induced by drug crimes is largely born by the individual sellers, in this case gangs members. Under Becker’s assumption, individuals rationally weigh the costs and benefits of engaging in crime. So in this case, drug crimes must yield some positive level of utility to individuals greater than costs. More generally, Becker views such a policy is non-optimal because it ignores increasing social costs.

A balance needs to be struck between the cost of apprehension, conviction, and punishment with the benefits of reduced social harm. Let the social loss function from crime equal

$$L=D(O)+C(p,O)+pbfO \quad (16)$$

$$\frac{\partial L}{\partial D}, \frac{\partial L}{\partial C}, \frac{\partial L}{\partial f} > 0 \quad (17)$$

$pbfO$  is total social loss from punishments since  $bf$  equals the lose per offense and  $pO$  equals the number of offenses punished. Social harm can be measured by the reduction in income form offenses, convictions, and punishments. To minimize costs, you must find the values of  $f$ ,  $C$ , and  $b$  that minimize this function. Society can only control the amount of money spent on apprehension ( $C$ ), the punishment per offenses if convicted ( $f$ ), and the type of punishment ( $b$ ). By setting specific levels of  $C$ ,  $f$ , and  $b$ , society can indirectly affect the probability of conviction ( $p$ ), the number offenses ( $O$ ), and the net social damage ( $D$ ). These factors in turn determine total social loss ( $L$ ).

Since cost is partly a function of the probability of conviction, the assumption is made that  $C$  can only be changed indirectly though changes in  $p$ . Therefore, the only tools for public policy decisions are the probability of arrest and punishments per offenses decisions. Society can minimize social loss by choosing the values of  $p$  and  $f$  that minimize (16). Differentiating  $L$  with respect to  $p$  and  $f$ , it is found that

$$D' + C' = -bpf \left(1 - \frac{O}{O_f}\right) \quad (18)$$

$$D' + C' + C_p \frac{1}{O_p} = -bpf \left(1 - \frac{O}{O_p}\right) \quad (19)$$

The left hand side of the equations gives marginal cost of reducing the number of offenses. It can be seen that the marginal cost to society of increasing the number of offenses is less when  $p$  rather than  $f$  is reduced. It is more effective to combat crime by raising  $f$  rather than  $p$ . Since the marginal cost of changing  $O$  through a change in  $p$  is less than that of changing  $O$  through  $f$ , the equilibrium marginal revenue from  $p$  is less than that from  $f$ .

These results can be applied in such a way as to make crime unprofitable. It is also important to account for risk preferences of potential offenders if attempts to deter individuals away from crime are going to be successful. Assume that the supply of offenders is equal to  $pf$ . If offenders are risk neutral,  $p$  should be reduced and  $f$  should be raised by the same amount.  $pf$ ,  $O$ ,  $D(O)$ , and  $bpfO$  would be unchanged but total social loss would be reduced since society would be now spending less on apprehension and conviction. The increase in  $f$  acts as a deterrent.

If offenders are risk adverse, society could minimize loss by setting  $p$  close to 0 and increasing  $f$  by the same amount. This would greatly reduce  $C$ ,  $O$ ,  $D$  and  $bpfO$ , in turn minimizing total social loss. Similarly if  $f$  offenders are risk loving,  $p$  should be increased with a compensated decrease in  $f$ . If offenders are risk loving the effect of  $p$  will be greater than  $f$ .

## **B. Social Interaction Theory**

Becker provides a purely economic analysis of crime, emphasizing that potential offenders intrinsically, if not unknowingly, measure the costs and benefits when deciding whether to commit a crime. From there, the model suggests possible public policy solutions to minimize social losses from crime that are dependent on these criminal mindsets. It is presumptuous, however, to assume that all crime is driven by rational thought and purely economic cost-benefit economic calculations. Recently hip-hop mogul Master P went on trial for gun charges. According to Becker's analysis, an increase in income increases opportunities in other sectors, making crime comparatively less profitable; nevertheless, Master P's income, legitimately earned in the music industry, is unquestionably in the millions.

Perhaps social interaction theory can shed some light on this puzzle. As Akerlof writes, “Social interaction theory can explain why social decisions- such as the demand for education, the practice of discrimination, the decision to marry, divorce, and bear children and the decision whether or not to commit a crime- are not simple choices based on primary individual considerations.”

Akerlof’s model of social interaction is a blend of economics and sociology. Agents have inherited positions in social space. The expected value of trade between two individuals depends on the difference in agents’ initial positions. Agents who are initially close interact strongly with one another while those who are socially distant have little interaction. These externalities created by social interaction result in coordinating problems within a social network. Conformist behavior, for instance, results in multiple equilibria as social groups become trapped in behavioral patterns. While some of these patterns can be positive, like going to college, others can be negative, such as committing crimes. A community could possibly benefit if these negative behavioral patterns were broken in a coordinated breakout.

Becker’s rational choice model of decision making does not account for these externalities. There are many social forces influencing the course of an individual’s life. As a result, individuals take part not only in rational choice decision making but also in social decision making. By weaving social influences into rational choice models, it is possible to analyze the social consequences of decision-making that a purely economic analysis may fail to address.

An individual’s social network contains their family, friends, and members of their community. While minor choices may not affect or be affected by social networks, important decisions that shape an individual’s lifestyle and aspirations do. Such decisions include level of education, career, marriage, childbearing, discrimination, and, in our case, the use and sale of drugs. Akerlof argues that perhaps social networks are the primary determinant of decisions while rational analysis of utility is not quite as important. Akerlof presents three models of social interaction theory that are important for analyzing drug crimes: the status seeking model, the conformist model, and the model of social distance

Externalities are generated by two forms of behavior: status seeking behavior, “when people try to distance themselves in social space from their friends and relatives,” and conformist behavior, “when [people] try to move themselves closer” to their social networks.”

### 1) Simple Models of Status and Conformity

Akerlof develops a rational agent model in which agents choose a variable  $x$  to maximize their indirect utility function.  $X$  can be any number of things such as educational attainment, level of discrimination, or drug use/sale. The utility function is indirect because other individuals in their social network affect an individual’s overall utility. While both the status and conformist utility behavior is a function of the distance between an individual’s status as compared to others in their social network, a status seeker’s utility will increase as the distance between themselves and their social network increases whereas a conformist’s utility will decrease as this distance increases. Externalities are generated by individuals’ aspirations to overtake or conform to their social network. As a result, status seeking individuals are induced to over invest in  $x$ , to a point where the marginal benefit is less than the marginal cost. Conversely, conformists are induced to under invest in  $x$ , stopping at the point where marginal benefit is greater than the marginal cost.

Status seeking individuals choose the amount of  $x$  that maximizes their indirect utility function.

$$U = -d(\bar{x} - x) - ax^2 + bx + c \quad (20)$$

Utility is lost when  $\bar{x}$  is increases or  $x$  a decrease, implying that the distance between the status seeker and his social network is narrowing.  $ax^2 + bx + c$  is the intrinsic value of  $x$  to the status seeker, that is the value of  $x$  to the individual when they are not influenced by social interaction. Utility is maximized by taking the first derivative, such that  $x=(b+d)/2a$ . Because of the desire to advance beyond friends and family, status-seeking individuals over invest in  $x$ , past the optimal point by the amount  $d/2a$ . An external cost, equal to the amount  $b/2a$ , is imposed by status seeking individuals on their friends and family as a result of their rising social position.

Conformist individuals choose the amount of  $x$  that maximizes their indirect utility function.

$$U = -d|x - \bar{x}| - ax^2 + bx + c \quad (21)$$

Utility is lost when the social distance between a conformist and their friends and families grows  $d|x - \bar{x}|$ . Again,  $ax^2 + bx + c$  is the intrinsic value of  $x$  to the conformist. There is discontinuity in the marginal utility of  $x$ , resulting in the possibility of multiple equilibria. Anywhere below  $\bar{x}$  conformist will choose to acquire more  $x$  because an additional unit will increase their utility and anywhere above  $\bar{x}$  individuals will choose to acquire less  $x$  because an additional unit will decrease their utility.  $d$  is the parameter describing the taste for conformity. Because  $x$  can fall between  $(b-d)/2d$  and  $(b+d)/2d$ , as  $d$  increases the range for possible equilibria will also grow.

Unlike Becker, Akerlof shows a case where individuals invest in non-economically optimal points. Social conformists and status seekers choose values of  $x$  where the marginal benefit does not necessarily equal the marginal cost. This irrationality generates externalities, and, in the case of conformists, creates a kinked the utility function causing in a discontinuous marginal utility.

## 2) Social Distance Model

The problem with representative agent models is that they do not account for individual differences between the agents. It would be hard to demonstrate the existence of subgroups with such a model. Subgroups can be thought of as subcultures or social classes. Examples include groups like blue-collar workers or Spanish speaking immigrants. It is important to recognize how social interaction can produce subgroups that are separated from the mainstream.

Akerlof creates heterogeneity into his model by introducing several individuals who each hold a different position in social space. Social interaction can be viewed as a mutually beneficial trade between individuals. The benefits from trade increase as the individuals become closer in social space. Thus, the level of trades and the groups that individuals trade with is dependent on individuals' social position. Social interaction can have both negative and positive influences. While social networks can provide support, companionship and fun, they can also promote jealousy, envy, low investments in

education and perpetuate negative behaviors like drug crimes. Individuals have incentives and a bias to conform to individuals who are initially close them in social space. These temptations may outweigh any intrinsic valuation of  $x$ . Individuals can be viewed as “consumers of social exchange.” Investment in  $x$  may distance individuals from their initial social networks, and without friends and family, individuals lose their support system and means of interaction.

Developed from the Newtonian theory of gravity, social exchange is proportional to the respective masses of objects and inversely proportional to the square of the distance between them.

$$\sum_{j \neq i} \left[ \frac{e}{(f + |x_{ii} - x_{ij}|)(g + |x_{ji} - x_{ij}|)} \right] + [-ax_{fi}^2 + bx_{fi} + c] \quad (22)$$

Akerlof makes two modifications to Newton’s theory, (1) As the distance approaches zero, the benefits from trade will rise but are limited.  $f$  and  $g$  dampen the affects of changes in  $d$ . (2) social exchange depends on both the difference between both individuals’ current positions and individuals’ inherent positions ( $i, j$  intrinsic and current positions respectively). Perhaps modeling social interaction with quantum field theory and a massive scalar field (which naturally dampens the affects as distance approaches zero) would be a more realistic but comparable model to Akerlof’s simpler model with arbitrary limits.

Akerlof finds that the expected value of the benefit of trade between  $i, j$

$$e / (f + e / (f + d_{I,ij}^e)(g + d_{F,ij}^e)) \quad (23)$$

$d_{I,ij}^e$  is the initial social distance between  $i$  and  $j$  and  $d_{F,ij}^e$  is the expected final social distance between  $i$  and  $j$ . It is clear from (23) that the marginal benefits from closer relations increase (as  $d$  approaches 0) but are not infinite. As either the inherited or expected final social distance between increases, the expected benefits of social exchange decrease.

$x$  determines the expected final social position and has intrinsic economic value equal to  $-ax^2 + bx + c$ . Again  $x$  can be any number of things like education, marriage, or discrimination. Each individual  $i$  must choose  $X_{if}$  based on their original social position  $X_{ij}$ . The individual makes decisions regarding investments in  $x$  by creating assumptions

about their social network's choice of  $x$ . The easiest option is to have static expectations such that the acquired social positions of potential trading partners is equal to an individual's original social position. Each individual  $i$  chooses the value of  $X_{if}$  to maximize utility. The first part of the equation represents the expected value of the benefits of social exchange between 2 individuals  $i,j$  and the second part is the intrinsic value of  $x$  to  $i$ . Again the equilibrium found is non-optimal if the long run value of  $x$  to each agent is not equal to  $b/2a$ . The intrinsic returns to the choice of  $x$  are tempered by influences from one's social network. Moreover, since final social position is dependent on initial social position, many equilibria are possible.

**Figure 1. Akerlof's Model of Social Interaction**



Source: Akerlof, "Social Distance and Social Decisions"

In this example the inherited social distance between 1 and 2 is small but the inherited social distance between 1 and 3 and 2 and 3 is large. Unlike 1 and 2, 3's social distance is close to the socially optimal point at  $b/2a$ . One possible outcome, is that 1 and 2 will not move that much because the benefits of social exchange with one another are large while 3 might choose a final expected point closer to the socially optimal point because the benefits of social exchange is much smaller than the marginal intrinsic value of  $x$ . In a rational expectations equilibrium, an assumption that Becker would make, all agents choose the socially optimal point of  $b/2a$ . Alternatively, one could assume static expectations, such that inherited and acquired positions for all three individuals are the same. This assumption is only reasonable when people are close enough in social space. While static expectations would be reasonable for 1 and 2, they would be unreasonable for 3. Persons 1 and 2, provide evidence of social clustering which may strengthen the isolation of various subculture groups.

Assume that 1, 2, and 3 are members of a poor community. Let the variable  $x_1$  be education and let the variable  $x_2$  be drugs. 1 and 2 are the conformist members of the

community, investing in too little education or perhaps over consuming drugs. 3 would be a status-seeking member of the community investing in too much in education and under consuming drugs.

The assumptions above again challenge the idea of regression towards the mean. Akerlof shows how ties for social networks may encourage individuals to invest less in  $x$ . If  $x$  is thought of as education or training, Akerlof's theory may explain why subcultures persist and are not eventually enveloped by average standards of education, and income.

According to human capital theory, wage gaps result from both differences in ability and education. There is a correlation between education and ability, in that more able individuals have higher returns to receiving education. If more able individuals do not receive more education, it will be harder for them to realize higher wages in the future (Borjas). There may be other factors besides social networks influencing educational attainment. Out-of-pocket expenses and quality of local schools are other factors that may contribute to decisions on educational attainment. Many studies have shown that education has a positive direct influence on reducing crime levels. Becker emphasized such an outcome in his model. A 2000 study of inequality and crime by Morgan Kelly further stressed the importance of not only education but also such factors as female heads of household in predicting crime levels.

### **III. General Crimes, Drug Crimes and the Evolution of the US Drug Market.**

#### **A. An Analysis of the Fall in Crime Rates Between 1990 and 2000.**

Levitt cites 6 factors inappropriately credited with decreasing crime levels. Instead, he argues that increased imprisonment rates and the fall of the crack epidemic are two possible factors that did play an influential role. After discussing what factors are insignificant from Levitt's perspective (and how this differs from the assumptions made in Becker's model), I will turn to studying the effects of rising imprisonment and the crack epidemic on crime. Analyzing the effect of imprisonment on crime levels offers readers an opportunity to consider both the benefits and consequences of imprisoning both general offenders and drug offenders in particular. In addition, studying of the waning crack epidemic of the mid 1990s (and its effect on decreased crime levels) offers

readers a glimpse into the pricing mechanisms of the crack market in particular and the drug markets in general.

Crime rates tumbled throughout the 1990s. Even in 2001, violent crimes, with the exception of murder, fell by 9%, the lowest levels witnessed since 1973 and 50% lower than violent crime levels observed in 1993<sup>5</sup>. Understanding why crime rates fell can be useful for several reasons. First, the fall in crime is closely related to trends in drug crimes levels. Second, analyzing why general crime rates fell will be useful in understanding the link between general crime rates and drug crime rates in particular but may also highlight what tools may be the most effective in preventing and eradicating drug crimes. USA today wrote in 2002, “Experts discussing the new report on violent crime said the decrease, part of a decade-long trend, is the result primarily of the strong economy in the 1990s and the prevalence of tougher sentencing laws.” Is this really the solution?

According to Becker’s analysis, improvements in wages increase the opportunity cost of participating in crime. If his model is correct, crime rates should fall as the economy becomes stronger. Stephen Levitt, however, comes to a different result, when analyzing U.S. crime data from 1991 to 2001, Levitt finds that there are six factors that had little effect on the decreasing crime rates in the 1990s: changing demographic composition of the population, better policing and policy strategy, new gun control laws, new laws regarding carrying concealed weapons, increased capital punishment, and, counter to Becker’s suggestion, a stronger economy. It seems that the aging baby boomers and the antics of local, state, and federal lawmakers had a statistically small or insignificant impact on crime levels. Indeed, while the population as a whole is aging, most crimes are committed by young minority men, a portion of the population that maintains a relatively large growth. In regards to the economy in particular, Levitt argues that the national economy does not affect crime directly but rather influences crime indirectly by infiltrating into local, state, and national budgets.

Levitt also directs readers to studies that have found a statistically significant but small relationship between unemployment rates and crime. In one such study, Meghir and Meaner analyze the relation of economic incentives and crime. Using data on

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<sup>5</sup> USA Today:

victimizations as a substitute for the returns to criminal earnings, they find the association between wages and crime to be much stronger than the association of unemployment and crime, which is a potential blow to very foundations of Becker's theory.

Nevertheless, Levitt's research does support some of Becker's assumptions. Levitt finds that the increase in the number of police during the 1990s helped decrease overall levels of crime at a yearly cost of \$60 billion. The number of police (Uniform Crime Reports) increased by 50,000 – 60,000 officers, or approximately 14% in the 1990s, which can account for a 5-6% reduction in crime with an estimated \$20-25 billion estimated benefit (Levitt). Similarly, Levitt also finds that the rising prison population also plays an important role in decreasing overall crime levels. By 2000, more than two million individuals were incarcerated at any point in time, roughly four times the number incarcerated in 1972 (Levitt). Supporting the Becker's assumptions, Levitt argues that both the incapacitation and deterrence affect negatively impact crime because the increased threat of punishment influences rational criminals not to commit crimes.

Many criminologists question this result, believing that imprisonment may actually increase crime in the long run. They argue that prison gives convicted offenders the opportunity to become further immersed in the culture of crime. In a report published in the California Policy Seminar Brief, Joan Peterilla, examining California crime and victimization data as well as imprisonment rates and criminal justice expenditures during the 1970s and 1980s, found that the “the doubling and redoubling of the prison population in recent years” had an insignificant effect on California crime rates. More specifically, she found that the increased sentencing of drug offenders to prison was also ineffective since “offenders taken off the streets seem to be immediately and completely replaced by other drug offenders.” Moreover, she discovered that imprisoned drug offenders were 11% more likely than comparable probationers to have additional criminal charges filed against them.

Another explanation Levitt gives for the decline in crime levels is the slowing crack epidemic. This idea highlights the tie between general crime and drug crime. During the 1980's the popularity of crack grew. The higher level of consumption, and presumable growth in addiction, caused a rise in demand. A rise in demand for any good has direct effects on price. An increase in demand for crack, however, may also increase

crime, as individuals' must expand their budget in order to pay for their addiction. Users who are unable to find legitimate employment may turn to the illegitimate sector.

Demand for drugs has major implications for the price. The more inelastic demand or supply of a good, the greater is the social cost of reducing its production by increasing arrests. Many individuals, including Becker, Murphy, and Grossman, use this principle to support arguments in favor of taxing drug use rather than making it illegal. The demand for drugs is also related to government punishments against users in addition to price, which itself is a function of costs. An increase in enforcement and punishments increases the market value of drugs by increasing the marginal cost to suppliers in terms of avoidance of arrest and additional risk.

Regardless if the drug market is perfectly competitive or monopolistic, when the demand for drugs is elastic, the total amount of resources used to produce and supply drugs will decrease. As total costs increase (in terms punishments, risk, etc.- all which affect price), consumers will demand less. Alternatively, if demand is inelastic, the total amount of resources will increase. The waning of the national crack epidemic has led to a decrease in demand for crack but also a decrease in total resources used to traffic crack- not necessarily because consumer demand is inelastic but because there are less consumers overall; nevertheless, generally speaking, most estimates predicted that demand for drugs to be inelastic (approximately -.5). Thus even if "the war on drugs" may decrease demand, it also augments the total amount of resources used in trafficking drugs (Becker, Murphy and Grossman).

## **B. The Crack Epidemic and the Transition to Gang Organized Drug Sales**

After describing the basic facts of the crack epidemic, describing how crack is made and pricing in the market, I will discuss how the increase in crack sales and use restructured the crack market, giving way to large organizations, many gang operated, controlling a majority of manufacturing and distribution. Levitt and Venkatesh's paper, "An Economic Analysis of a Drug Selling Gang's Finances," offer an enlightening case study of this. I will then discuss how the crack epidemic altered the norms and standards of the criminal subculture. This transformation, as manifested in the activities of drug selling gangs such as the one described by Levitt and Venkatesh, resulted in the use of

violence as a marketing tool, which in turn had negative side effects in communities affected.

Crack became popular in the early 1980s and by 1990 the U.S. was facing a nationwide crisis. Dealers quickly captured a wide consumer base and established the foundations for a very lucrative market in part because crack is so easy to make and cheap to buy.

Most commonly, crack is made by mixing cocaine hydrochloride, baking soda, and water. The mixture is heated, allowing the freebase cocaine “rocks” to float to the top. It is that simple. The goal is to create a sustained chemical reaction between the hydrochloride and the baking soda. The name crack comes from the “cracking” sound that occurs while the mixture boils.

Crack-cocaine prices are dependent on purity. On average nationwide, cocaine purity fell from 86% pure in 1998 to a 78% pure in 2001<sup>6</sup>. The decrease in purity indicates a decrease in the supply of cocaine in the United States. Cocaine prices in 2001 remained low and stable, suggesting a steady supply to the US. Nationwide, wholesale cocaine prices ranged from \$12,000 to \$35,000 per kilogram. Crack rocks, however, sold for \$3 to \$50 with median prices of \$10 to \$20. Today crack-cocaine is the second most commonly used illicit drug in the U.S. It is estimated that 10% of Americans over the age of 12 have used cocaine.<sup>7</sup>

Crack not only expanded the pool of drug consumers but also essentially altered the social structure of drug dealing. Sales moved from a confederation of freelance sellers and dealers to vertically integrated dealing organization, making it more difficult for the police to stem sales (Johnson, Williams, Dei, and Sanabria). Even if an individual seller is arrested and convicted, there are many more individuals within the organization ready to take his place. In response to more sophisticated and vigilant policing techniques, organizations have become increasingly mobile (Johnson, Williams, Dei, and Sanabria). Although these changes might be equally true of an independent freelance dealer, organized drug dealing within gangs and cartels allows for the systematic distribution of drugs and narcotics and recruitment of dealers on a larger scale, thus having a more

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<sup>6</sup> Drug Enforcement Agency: [http://www.dea.gov/concern/cocaine\\_factsheet.html#5](http://www.dea.gov/concern/cocaine_factsheet.html#5)

<sup>7</sup> Drug Enforcement Agency: [http://www.dea.gov/concern/cocaine\\_factsheet.html#5](http://www.dea.gov/concern/cocaine_factsheet.html#5)

substantial impact on a given community. Indeed, the hierarchy in the gang drug distribution business is quite sophisticated, ranging from a servant (a temporary employee) to a store clerk (a door to door or phone salesmen) to an assistant manager, security chief, accountant and “retail store owner” (see table 1).

The CRIPS and the Bloods, prominent street gangs based in Los Angeles, are perhaps the most famous example of this. Both gangs have become increasingly involved in the manufacturing, sale and distribution of heroin, crack and cocaine. According to the Drug Enforcement Agency, the CRIPS and Bloods, in addition to Jamaican organizations and Dominican gangs, are largely responsible for the spread of crack-cocaine in the U.S. and the related violence. The drug activities of street gangs are not isolated to metropolitan areas. Street gangs have spread to rural areas, bringing with them increases in homicides, armed robberies, and assaults as gang members use physical violence to maintain their drug distribution monopolies<sup>8</sup>.

Levitt and Venkatesh offer another glimpse into the activities and organizational structure of drug selling gangs. Using data from a range of individuals within a particular gang hierarchy, the authors analyze the economic incentives of gang drug dealing. The hierarchical structure is similar to that described by Johnson, Williams, Dei, and Sanabria (See table 2). Within the community Levitt and Venkatesh studied, half the children were below the poverty line, median family income was \$15,077, half of the adults in the community did not have a high school degree and 1 in 20 had a degree from a four-year college.

The decision to join a gang is combination of many social and economic factors. While economic conditions within the community are an important in this decision, they find that social and non-monetary factors are also important.

In the gang studied, gang revenue comes from three sources: proceeds from drug sales, dues from gang members, and street taxes that gang members collect from individuals conducting business on the gang’s turf. In general, the expansion of turf brings about an increase in prices, since gang turf implies a gang monopoly in the sale of drugs in that area. This in turn increases a gang’s revenue. Gang costs include four major

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<sup>8</sup> Drug Enforcement Agency: <http://www.usdoj.gov/dea/pubs/cngrtest/ct980226.htm>

categories: costs of drugs sold, payments to higher up gang members, payments of mercenary fighters (hired for short periods of time during gang wars), and funeral cost and payments to families of the deceased (See table 3).

Costs, namely death and lost profits, increase with gang wars. These wars create a negative demand shock because consumers are obviously scared away by thought of being shot. In the gang they studied, Levitt and Venkatesh observe that the quantity of drugs sold falls 29%, price falls 25%, and net profits are slightly negative. The per person likelihood of death during turf wars in the sample Levitt and Venkatesh was 1 to 2% during gang, which in part supports Becker's initial assumption that criminal offenders are less risk adverse than the average population (See table 4).

Despite the high cost of conflicts, violence remains the main way to resolve disputes and expand market power using a strategic form of non-price competition. For example, gangs often use violence against rival gangs to shift demand to their own territory. The lack of property rights and legally binding contracts create bargaining problems and violence.

Levitt and Venkatesh suggest that gang drug dealing organizations can be thought of as franchises. Although franchise owners are comparable to gang leaders, the wages of foot soldier are much less than franchise employees. The annual wage of gang leaders in the gang studied by Levitt and Venkatesh ranges from \$50,000-\$150,000, much higher than the wages most leaders could earn in the legitimate sector given their education and experience. A former leader, no longer affiliated with any gang, is now employed in the legitimate sector, earning an annual salary of \$16,000 a year

Officers consistently earn on average \$1000 per month; nevertheless, they are unlikely to be also legitimately employed, making their annual salaries approximately equal to the minimum wage. Wages of foot soldiers depend on number of the shifts and their position on the drug selling team (positions range from lookout to team leader). On average, foot soldiers earn only \$200 dollars per month, well below the minimum wage. 75-80% of foot soldiers hold jobs in the legitimate sector at any given time. This in part counters arguments that individuals have to necessarily choose between working in the legitimate and illegitimate sectors, supporting Meghir and Meaner's premise.

Facing low pay and high risks, why do foot soldier join gangs? A simple tournament model may help explain. In a tournament model, agents compete for a large awards that only a few will obtain. (See table 5). Many foot soldiers are motivated to join and remain in the gangs in hopes of elevating to a powerful position within the gang and by the prospects of higher wages in the future, even in spite of the risk of imprisonment and death. Social interaction theory may provide a partial explanation as well. Levitt and Venkatesh quote one gang member as saying, “It’s a war out here, man. We ain’t got no choice, and if that means getting killed, well shit, its what people do around here to feed their families.” People join gangs because everyone else does. It is not only a socially acceptable occupation, but also perhaps one of the few viable ways for individuals to support themselves and their families.

The increasing level of drug activities by gangs, accompanied by increasing levels of violence in areas affected, reflects a transformation in the behavior and practices of drug offenders. In addition to reorganizing the basic structure of the market, the crack epidemic altered the basic norms and standards fundamental to the criminal subculture. Johnson, Williams, Dei, and Sanabria describes a traditional set of values and standards for the criminal underclass subculture: illegal means are better than legal means to earn money, goods and money are to be taken for the offender’s benefit, threats should be used to gain and maintain reputation, expenditures of illicit money should be spent on the “fast living.”

Johnson, Williams, Dei, and Sanabria believe that these norms were further modified by sale of hard drugs. First, hard drugs lead to a rejection of conventionality and manipulation of others. Working class jobs were viewed negatively because the earnings paled in comparison to those from selling drugs. As some men began moving from legitimate to illegitimate sectors, women, or ‘hoes,’ were expected to provide food, shelter and clothes. If true, this premise has obvious implication for the productivity of individuals involved in drug crimes and those attempting to emulate the lifestyles of drug dealers. Second, the sale of hard drugs increased the use of violence. Violence is not only used as a threat to obtain money and maintain a ‘tough reputation’ but also used to protect economic interests and drug markets since legal venues of contract enforcement are unavailable. Third, the sale of hard drugs brought a new meaning to ‘fast living.’

Drug sales allowed for a middle class life style, but also allowed the successful and respected members of drug selling organizations to consume large amounts of the drugs they sell. Social interaction theory would suggest that “conformist” individuals within the community would invest too little in education and job opportunities and perhaps over-consume drugs and over-utilize violence to fit in with the values exemplified by the drug dealers. Indeed, Johnson, Williams, Dei, and Sanabria write that individuals involved in drug crime were admired for their “hustling ability” while individuals working in minimum wage jobs were viewed as earning mere “chump change.” (Johnson, Williams, Dei, and Sanabria)

It is clear that Levitt and Venketesh’s results and Johnson, Williams, Dei, and Sanabria’s observations provide strong evidence of an endogenous relationship between drug crimes and other forms of crime. As “financially sophisticated ‘corporate’ gangs” (Levitt and Venketesh) have become, the use of violence as a business tool on a large scale to maintain market power in day-to-day gang operations. Because the negative effects are far from contained within the market, the crack epidemic, tied closely with the emergence of drug selling gangs, hastened if not promoted increased levels of inner city crime and decay. Increased homicides rates, other violent crimes, and gang violence in particular are all at least partially rooted in increased drug activity.

Grogger and Willis demonstrated the spillover effect of drug crimes, specifically crack, into other crimes. Using data from 1971 to 1991, Grogger and Willis compared FBI data on crime to police chief reports and hospital reports regarding crack sales and user illnesses. They then used the difference in difference method to estimate the effect of crack on local crime. In urban areas, aggravated assault, the most prevalent form of crime, increased enormously. By their estimates, the arrival of crack increased aggregate assault by 19%. Although less dramatic but still startling, they estimate that the arrival of crack increases homicides by 9% (See table 6). Interestingly, crack had an insignificant effect on suburban crime levels even though the effect on urban areas was far from negligible. Michael Hays’ experiences in his hometown in Alabama reflect this result. He writes:

But the dentist who brings in his crack from Florida in his helicopter doesn’t know [where the crack houses are]; his dealers are the shunts in the channels. This system can no longer be described simply as abstract in the old sense of abstract wealth and abstract

power and need (where money flowed). Cracked space is actually that which emerges when the older, abstract space of capital hemorrhages.

While Hays family is directly affected by the social decay attributed to crack sales, the dentist can use crack without becoming involved in darker reality of actual drug exchange. Although his actions help sustain drug markets and its adverse effects on community wellbeing, his wealth insulates him from the social consequences. Social interaction theory would suggest that the dentist's wealth distances him in social space from the Hays' social network such that limited social interaction is a likely outcome.

In addition to the increased levels of violence, Johnson, Williams, Dei, and Sanabria purport that crack and cocaine selling by inner city youths has had a major effect on the income alternatives of poorer youths. Without training or skill, these individuals might find it hard to establish themselves profitably on any career latter. The sale of crack and other drugs offer economic opportunities that far exceed the opportunities available in legitimate, minimum wage jobs. According to Levitt and Venkatesh, meager wages alienate many young people from the legitimate labor market, weakening incentives to work in such jobs and encouraging gang members to pursue other financial options like selling drugs.

Johnson, Williams, Dei, and Sanabria also describe how the evolution of crack in particular further weakened the strength of the community, increasing urban unemployment, poverty and family disruption. Hays reflects

In what used to be downtown, there are seven pawn shops where once there were hardware stores, diners, and pool halls...The monetary economy of crack cocaine produces as a part of its spatialization these nodes of exchange where my grandfather's pistol and my brother's wife's new television are traded for nightlong highs.

Increased violence and drug activity not only has an adverse affect on those in the community directly effected by violence or involved in drug sales/use but also decreases the quality of life for everyone else. The increasing appeal of drug dealing draws youths away from more productive lines of work that help sustain and build the economy of the community, especially given the insubstantial wages available to individuals with low levels of education and skill. This exodus from the legitimate sector supports and reinforces the foundations of the 'economy of crack.'

#### **IV. Empirical Results**

Drug crimes are a particularly relevant topic in California. This is not simply because of California's proximity to Mexico, a gateway for drug entry into the US from Latin America, or because of the high level of drug activity by prominent gangs like the CRIPS and the Bloods, based in Los Angeles. Gang activity and Mexican drug trafficking are extreme examples of a greater problem. In 2003, there were 1,571,724 arrests in California of which 141,766 (or 29%) of which were drug related (see tables 7-8). Men 20-29 are predominately responsible for the majority of drug offenses, accounting for 40,200 of all arrests in 2003. Nevertheless, drug crimes are not restricted to this age group. Older age groups are also actively involved in drug crimes. Individuals 30-39 and 40-69 account for 39,247 and 37,090 arrests respectively (see table 9).

What causes these high levels of drug crimes in California? To address this question, I will refer back to Becker's general crime model and Akerlof's model of social interaction, presented earlier in this paper. While neither purely economic nor social indicators can fully predict crime levels, together these models produce a clearer picture of what basic factors may induce high levels of drug crime in the state.

After explaining how Becker's and Akerlof's models can be adapted to analyze drug crimes, I will compare data on socioeconomic factors, general crime, and drug crime between cities to test whether purely economic or sociological factors can better explain crime levels, finding both to be important and relevant. Next, I compare these findings to statewide trends in California unemployment, poverty, income, felony drug arrests, and imprisonment levels between 1982 and 2001. Finally, I have constructed a multi-linear regression to further validate the assumptions made earlier in this section and throughout the paper.

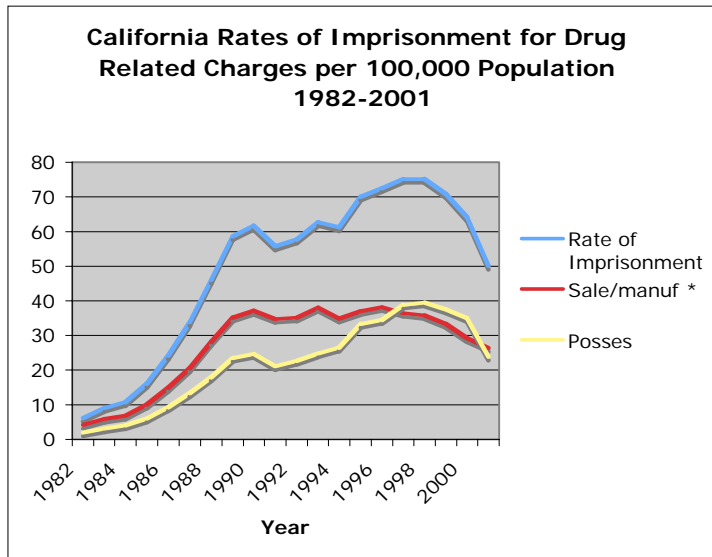
Becker's general crime model can be applied to drugs in California, leaving the basic assumptions and results of the model unchanged. In Becker's model, the social damages equal the harm created by all criminal activities minus the proceeds that offenders gain. Social damages increase as the number of offenses grows. Obviously, the social damages resulting from drug use and sales are encompassed by the physical, social and familial degradation described by Johnson, Williams, Dei, and Sanabria, Willis, and Grogger.

The quantifiable gain can be considered to be the profit from sale of drugs. When thinking of total drug dealing revenues as equal to total consumer expenditures on drugs, total cocaine, heroin, methamphetamines and marijuana revenues in 2000 (equal to total consumer expenditures in 2000) were \$36.10 billion, \$11.90, \$2.20 billion, and \$10.40 billion respectively. Price per gram of cocaine, heroin, and methamphetamines sold in 2000 were \$149, \$1029, and \$140 respectively and price per ounce of marijuana sold was \$293 (see table 10).

The supply of offenders is a function of the probability of conviction, the punishment if convicted, and other variables such as available income in legitimate sectors versus other illegitimate sectors and moral conviction. (Imprisonment rates for the possession and sale/manufacturing of drugs from 1982-2001 in California are listed in table 11 and total drug felony arrests in California are listed in tables 7-9).

The government has a choice between targeting dealers, users or both when enforcing drug laws. From a logistical perspective, it is easier and cheaper for law enforcement to focus on dealers since one dealer can supply hundreds of consumers (Miller, Benjamin, North). Moreover, sale and manufacturing of drugs are considered to be high-level offenses. Possession is considered a low-level drug offense involving small amounts of drugs for personal use (CJCJ). Between 1997-2000, however, California has been jailing individuals for possession at a higher rate than individuals for sale and manufacturing of drugs (see table 11, figure 2). One reason for this Miller, Benjamin, and North give is that “sting operations-in which police pose as illicit sellers- often make big headlines.” (Miller, Benjamin, North).

If Becker is correct, than individuals choosing to engage in drug crimes compare the profits against the opportunity costs. Therefore such factors as income and education play a critical role in decisions whether or not to commit a drug offense since these factors influence wages. Taking Becker’s model one step further, areas with relatively high poverty rates and a high proportion of single female heads of household might be expected to have high levels of drug crimes. Unemployment levels may or may not be a good indicator of drug crimes. While Becker’s model suggests that the unemployed have the lowest opportunity cost of committing any crime, Machin and Meghir and Levitt both cite unemployment as a somewhat insignificant predictor of drug crime, suggesting that

**Figure 2**

Source: California Department of Corrections

wages perhaps are more important. In Becker's model, society can dampen criminal activities by choosing the values of punishment and probability of conviction that minimize the social loss function. Thus for Becker's model it is important to take into account the normalized number of law enforcement in a particular area in addition to imprisonment rates and arrests.

The mechanism linking the level of drug crimes to crime in general is complex, with causation running in both directions on some dimensions. Existing research offers ambiguous results. Do high levels of general crime instigate high levels of drug crimes or is it the other way around? This ambiguity suggests that the causes and consequences of drug crimes cannot simply be boiled down into purely economic indicators.

Akerlof emphasizes that decisions are not based solely on an individual's pure economic analysis. Social networks are the primary determinant of decisions while rational analysis of utility is not quite as important. People who engage in status seeking or conformist behavior base decisions on their social networks. Utility is linked closely to positions within social space rather than traditional optimality conditions. According to Akerlof, education, income, and single motherhood are again important, but for different reasons than suggested by Becker. People will choose amounts of education, income, and other activities based on the education, income levels, and activities of those around

them. These decisions in turn affect the likelihood of an individual to commit a drug offense. However, social interaction theory has deeper sociological roots. Young, low income individuals, conforming to the behaviors of their peers, join gangs or become involved in drug sales/use as unthinkingly as a teenager from a middle class community chooses to go to college with the rest of his friends. Similarly, Levitt presents evidence of social interaction theory within gangs. Individuals choose to join a gang and work as a foot soldier selling drugs, even though their earnings were in some cases below minimum wage. Acting as status seekers, these individuals hoped to gain social status and future wealth by elevating through the gang hierarchy and separating themselves from their peers.

Because subcultures play an important role in influencing individual decision making, it is also important to understand the racial/ethnic and socioeconomic composition of California when discussing the roots of drug crimes. The minority composition of low income African Americans and Hispanics doubled between 1960 and 1980. Between 1968 and 1980 employment rates for nonwhite groups fell (Johnson, Williams, Dei, and Sanabria). According to the 2000 Census data, Hispanics and African Americans still experienced relatively high poverty rates when taken as a whole. Hispanics, African Americans and Caucasians accounted for 32.4%, 7%, and 46.7% of total 2000 California population respectively. Nevertheless, 22.1% of Hispanics and 22.4% of African Americans in California lived in poverty as compared to Caucasians (non Latinos), who experienced 7.8% poverty rates. Although labor force participation rates among single mothers increased by 34% among never married women between 1989 and 1999, in 1998 female heads of household and their dependents still accounted for 37% of all poor and almost 50% of all poor families (Black).

Using these models as a foundation for my analysis, I have gathered relevant data on 30 randomly selected California cities and examined to what extent Becker's general crime model and Akerlof's model of social interaction can explain drug crimes. For each city, I have collected the number of felony drug arrests and various socioeconomic data (see table 11).

Examining the statistics for San Bernardino and San Rafael, Becker's general crime model seems to do a decent job predicting relative drug crime levels. While the

number of law enforcement officers to every 10,000 people in the population is approximately similar, the unemployment rate in San Bernardino is 3% higher than that in San Rafael. San Rafael has a more educated population, both in terms of high school and bachelor's degrees received. The median household income in San Bernardino is almost \$30,000 less per year. Finally, 26.8% of San Bernardino's population lives in poverty as opposed to 9.61% of San Rafael. According to Becker's line of thought, one would think that the significantly higher poverty and unemployment levels in conjunction with the lower education levels, and drastically lower income levels in San Bernardino might be associated with more drug crimes. Since higher education and income increase opportunities and wages in other sectors, individuals with lower income and education may be more likely to enter the illegitimate sector. For instance, it may be more profitable to sell drugs than work in a minimum wage job. Looking at the number of felony drug arrests, San Bernardino does in fact have a significantly higher level of drug activity. San Rafael recorded 11.42 drug felony arrests for every 10,000 people, but San Bernardino recorded 86.79 such arrests for every 10,000 people. Similarly, La Habra and Oceanside, which have almost identical unemployment and poverty rates, education and income levels, and number of law enforcement officers per 10,000 people, have essentially the same number of drug felony arrests - approximately 32 arrests out of 10,000 people.

Nevertheless, Becker's methodology is far from perfect. Perhaps the biggest problem is that it fails to encompass many demographic and social characteristics that may also be correlated with crime. As Akerlof points out, the lifestyle, educational, occupational, and social choices of family, friends, and members of their community influence the course of an individual's life. The community and family environment affects decisions like whether or not to join a gang or even to engage in sexual activity at a young age. The latter decision may result from and perpetuate proportionally high levels of female heads of household.

Comparing Oakland and Sacramento, the flaws in Becker's logic become more apparent. Both cities appear to be very similar in terms of Becker's basic indicators (with the exception of unemployment). Median household income in Oakland is just slightly above Sacramento at approximately \$44,000 per year. Likewise, poverty rates for both

cities are 19%. Although Oakland has relatively more police, with 20 law enforcement officers for every 10,000 people, Sacramento is still quite close with 16 law enforcement officers per 10,000 people. All else equal, Becker's model would predict that the crime levels in Sacramento and Oakland would be quite similar. If there were to be a major discrepancy, Becker would predict that Oakland would most likely have lower drug felony arrests since the city has both higher median income and a larger relative police force. The actual levels are contrary to this prediction. Not only are they far from similar, but also Oakland, not Sacramento, has a higher level of drug activity. In 2000, Oakland recorded 111 total drug felony arrests for every 10,000 people while Sacramento recorded only 70 arrests for every 10,000 people.

Maybe social interaction theory can fill in the discrepancies left unexplained by Becker's model. Perhaps racial composition and conformist behavior within racial communities might play a role explaining drug crime levels. Indeed the racial composition of each city is very different. While Sacramento is almost 50% Caucasian, Oakland is only 31% Caucasian. Sacramento is 15.5% African American and 21.6% Hispanic. Alternatively, Oakland is 36% African American and 21.6% Hispanic. Surprisingly, 30% of Oakland's population has a bachelor's degree but Sacramento only has 23% (both Sacramento and Oakland have approximately 77% citizens with high school diplomas).

Although education is an important component of Becker's model, social interaction theory would also suggest that higher levels of college degrees would be correlated with lower levels of drug crime. Social interaction theory would predict that individuals make decisions regarding levels of educational attainment based on the education levels of their peers. If most of a person's friends only have a high school degree, it is likely that person will choose not to attend college since individuals have incentives and a bias to conform to peers within their social network. Nonetheless, the city with the higher crime level has higher educational attainment as well.

It is also important to point out that Oakland has a slightly higher level of female head of households, which may also help explain higher levels of drug crimes. This somewhat supports Glaser and Sacerdote's claim that higher crime levels are in part caused by relatively more female heads of households. Female heads of household can be

thought of as a proxy for “the breakdown of the family,” as Johnson, Williams, Dei, and Sanabria might suggest, reflecting the adverse side effects of drug crimes on family structure and stability within the community. Female heads of households can also be seen as a proxy for race in some cities. In this particular case, the larger portion of female heads of household in Oakland may at least be partially reflective of the racial composition within the city and the social norms and drug activities of those groups.

It is important to note, however, that the presence of relatively high proportion of female head of household in terms of total households does not necessarily imply that any area will have high levels of drug crimes. Oakland has the highest level of drug felony arrests and also has above average proportion of female heads of household (averages based on my sample of cities). Similarly Long Beach, Richmond, Sacramento, San Bernardino, and Vallejo also have above average drug felony arrests and above average proportion of female head of households. This is not always the case. El Cerrito, Los Angeles, National City, and Ventura all have above average proportions of female head of household but below average levels of drug felony arrests.

A similar comparison can be made between San Diego and Anaheim. They have almost identical unemployment and poverty rates. 4.3% of the population is unemployed in San Diego and 4.4% of the population is unemployed Anaheim. Likewise, the poverty rate in San Diego is 14.10% and is 13.90% in Anaheim. The median household income in San Diego is \$45,753 and \$53,060 in Anaheim. There are 16 law enforcement officers for every 10,000 people in San Diego and 11 officers for every 10,000 people in Anaheim. All in all, one would expect the drug crime rates to be comparable. Based on Becker’s model, the higher income in Anaheim is offset by the lower level of law enforcement relative to the population.

Again, Becker’s model fails. San Diego has higher levels of drug crimes in all major categories of felony drug arrests. The total number of felony drug arrests for every 10,000 people in San Diego almost 45% larger than in Anaheim. Examining education levels yields inconclusive results. San Diego has a significantly larger proportion of both high school graduates and college graduates in the population. Indeed, following both Becker's and Akerlof’s theories, one would expect that Anaheim, not San Diego, to have

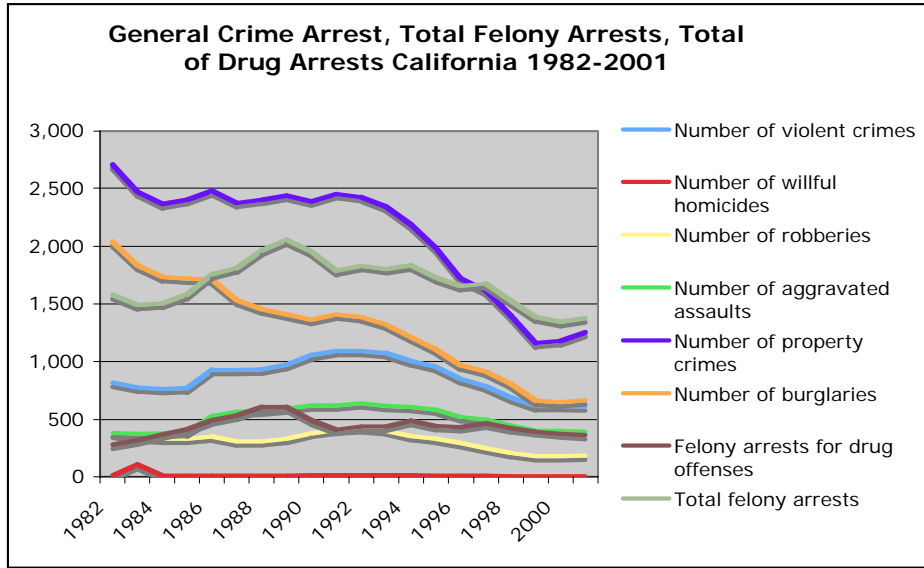
higher crime rates given this information on education levels. Can social interaction theory explain the deviation of actual drug crime levels from the predicted outcome?

The racial composition of the two cities is really quite similar. Both Anaheim and San Diego are over 50% Caucasian. While San Diego does have a larger proportion of African American individuals, the total African American population in each city is relatively small. The major difference in racial composition is total Hispanics. San Diego is 25% Hispanic and Anaheim is 47% Hispanic. Perhaps this difference can partially explain the high rate of felony drug arrests. Anaheim also has a larger proportion of female head of households relative to the total number of households. Although the level is not much greater than in San Diego, one might suspect that higher number of female heads of household would indicate higher rather than lower levels of drug crime.

The results in Anaheim and San Diego do support Grogger and Willis' findings of a spillover effect between general crimes and drug crimes. Both the property and violent crime rates, when normalized by population size, are much greater in San Diego than in Anaheim. This fact partially supports the idea that higher levels of general crime might lead to, result from, or at least be correlated with higher levels of drug crime arrests. This outcome is further supported by the trend of general crime rates, total felonies and total drug felonies arrests in California between 1982 and 2001 (see figure 3). Statewide, it seems to be the case that felony drug arrests follow total felony arrests and general crime rates.

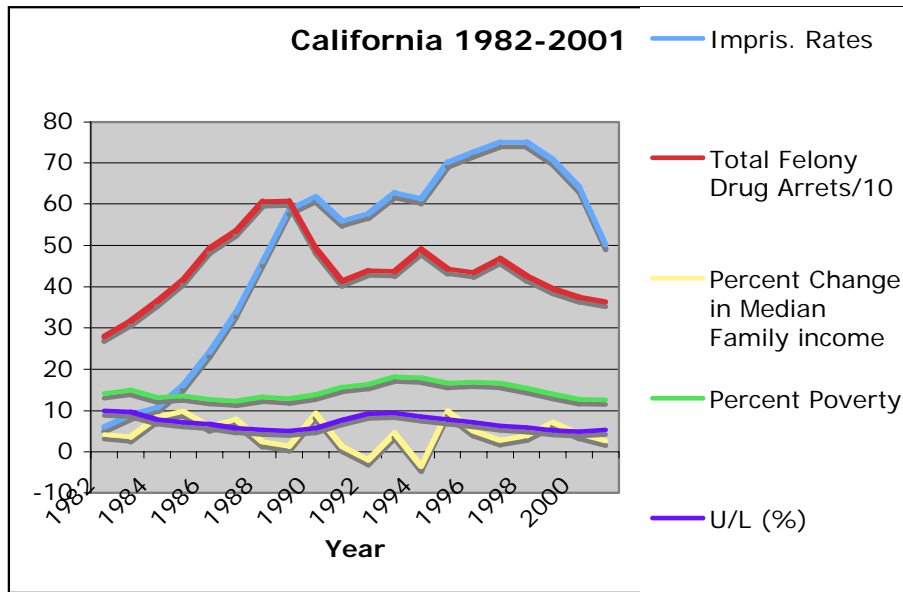
Statewide trends also support a correlation between unemployment, income and poverty with imprisonment rates and total drug felony arrests. Again looking at data between 1982 and 2001, it is clear that trends in unemployment and poverty rates are followed by lagged changes in the imprisonment rate. This makes sense according to Becker's hypothesis. Experiencing low income and/or job loss, individuals increasingly find it worthwhile to commit crimes. As the total amount of drug crimes increases, more arrests are made and eventually (but not immediately) drug imprisonment rates must also increase. Changes in felony drug arrests seem to follow changes in the unemployment rate and poverty rate more quickly. Percent change in median family income is jittery throughout the decades and is not closely linked to imprisonment rates or number of felony arrests.

Figure 3



Source: Rand California

Figure 4



Source: California Statistical Abstract, Rand California, and California Cities, Towns and Counties

In a final attempt to test the validity of the predictions regarding factors promoting drug crimes, I have used ordinary least squares estimation to construct a

simple multiple linear regression. While such a method is primitive since many of the factors may not even follow linear patterns and some coefficients may not be significant at a 95% confidence level, the application did yield some revealing results.

From the outset, one would expect, based on the past analysis and assumptions made in this section and throughout this paper, that factors like population, unemployment rate, the poverty rate, and proportion of female heads of household within a city would positively effect the level of felony drug arrests. Similarly, one would expect that levels of education (seen in higher proportions of high school and bachelors degrees within the population) and police officers would negatively affect crime.

After constructing a multi-linear regression, I was left with the following equation (see table 13):

$$\text{Felony drug arrests} = -7.6 \cdot 10^6 \text{pop} + .005 \cdot \text{unemployment} - 5.95 \cdot \text{HS} + 41.33 \cdot \text{college} + .0005 \cdot \text{income} + .875 \cdot \text{poverty} + 1.870 \cdot \text{officers} + 1.412 \cdot \text{female HH}$$

The assumptions made about unemployment rates, poverty rates, proportion of female head of household, and high school degrees are confirmed. However, it does not make sense based on Akerlof's and Becker's assumptions that the number of bachelors degrees and police officers would have a positive effect on drug arrests and that population would have a positive effect.

It may be the case that the number of police officers responds to drug offenses rather than the other way around. Policing may not be used as a preventive measure but rather may be reflective of the number drug crimes so that as the number of drug crimes increase so does the number of law enforcement officers.

Similarly, drug crimes may not be tied directly to the population of an individual city. Although the size of the city may help drug dealers develop more intricate and organized networks that serve a larger consumer base while remaining more elusive to law enforcement, drug organizations most likely operate in multiple cities. If this is the case, the population of an individual city does not really matter because decisions are based on the population (and consumer base) over many areas, allowing networks to operate across legal city boundaries when it is convenient. For instance, Anaheim may be a small city, but it is embedded in Los Angeles, and it is likely that the drug activities occurring in Los Angeles affect those in Anaheim.

It is hard to explain why higher levels of bachelor's degrees would lead to higher drug crime levels. It must be the case that the relation between college education and drug crimes is complex and at the very least does not follow a simple linear trend.

## **V. Conclusion**

The framework I have developed assumes that both social interaction and economic incentives are important in addressing the roots of drug crimes. Alone, Gary Becker's general of crime and George Akerlof's model of social distance provide insufficient explanations. Even though my results are far from perfect, combining the two models creates a more robust method from analysis since it accounts for both sociological and economic determinants.

Nevertheless, so many factors influence drug crimes that it is impossible to develop a full proof model. Moreover, many of these factors, be they economically motivated or not, are unquantifiable. Moral conviction, for instance, plays a huge role determining whether an individual will commit a crime. Although moral conviction undoubtedly stems from an individual's social network, how does one quantify these results in a model of drug crime?

Even though the framework is by no means complete, it does a good job predicting the basics. Using the predictions from this method, you can develop solutions to eliminate current drug crimes and also prevent them from happening in the future. Although it is idealistic to assume that drug crime can be completely eradicated, the model does offer several policy suggestions. While increasing police may lead to decreased drug crime levels, or at least less net social damage, policy that builds stronger social infrastructure or increases educational attainment in affected areas may also help to decrease crime.

## Tables

Table 1.

Roles and Functions at Various Levels of the Drug Distribution Business		
Approximate Role Equivalents in Legal Markets	Roles by Common Names at Various Stages of the Drug Distribution Business	Major Functions Accomplished at This Level
Grower/ producer Manufactur- er	Coca farmer, opium farmer, marijuana grower Collector, transporter, elaborator, chemist, drug lord	Grow coca, opium, marijuana; the raw materials All stages for preparation of heroin, cocaine, marijuana as commonly sold
Traffickers		
Importer	Multikilo importer, mule, air- plane pilot, smuggler, trafficker, money launderer	Smuggling of large quantities of substances into the United States
Wholesale distributor	Major distributor, investor, "kilo connection"	Transportation and redistribu- tion of multikilograms and single kilograms
Dealers		
Regional dis- tributor	"Pound and ounce men," "weight dealers"	Adulteration and sale of moder- ately expensive products
Retail store owner	House connections, suppliers, crack-house supplier	Adulteration and production of retail level dosage units ("bags," "vials," "grams") in very large numbers
Assistant manager, security chief, or accountant	"Lieutenant," "muscle men," transporter, crew boss, crack- house manager/proprietor	Supervises three or more sellers, enforces informal con- tracts, collects money, dis- tributes multiple dosage units to actual sellers
Sellers		
Store clerk, salesmen (door-to- door and phone)	Street drug seller, "runner," juggler, private seller	Makes actual direct sales to con- sumer; responsible for both money and drugs
Low-Level Distributors		
Advertiser, security guards, leaflet dis- tributor	Steerer, tout, cop man, look- out, holder, runner, help friend, guard, go-between	Assists in making sales, adver- tises, protects seller from police and criminals, solicits customers; handles drugs or money—but not both
Servant, temporary employee	Run shooting gallery, injector (of drugs), freebaser, taster, apartment cleaner, drug bag- ger, fence, launder money	Provides short-term services to drug users or sellers for money or drugs; not responsi- ble for money or drugs

Source: Johnson, Williams, Dei, and Sanabria, "Drug Abuse in the Inner City: Impact on Hard-Drug Users and the Community"

Table 2. Gang Organizational Structure

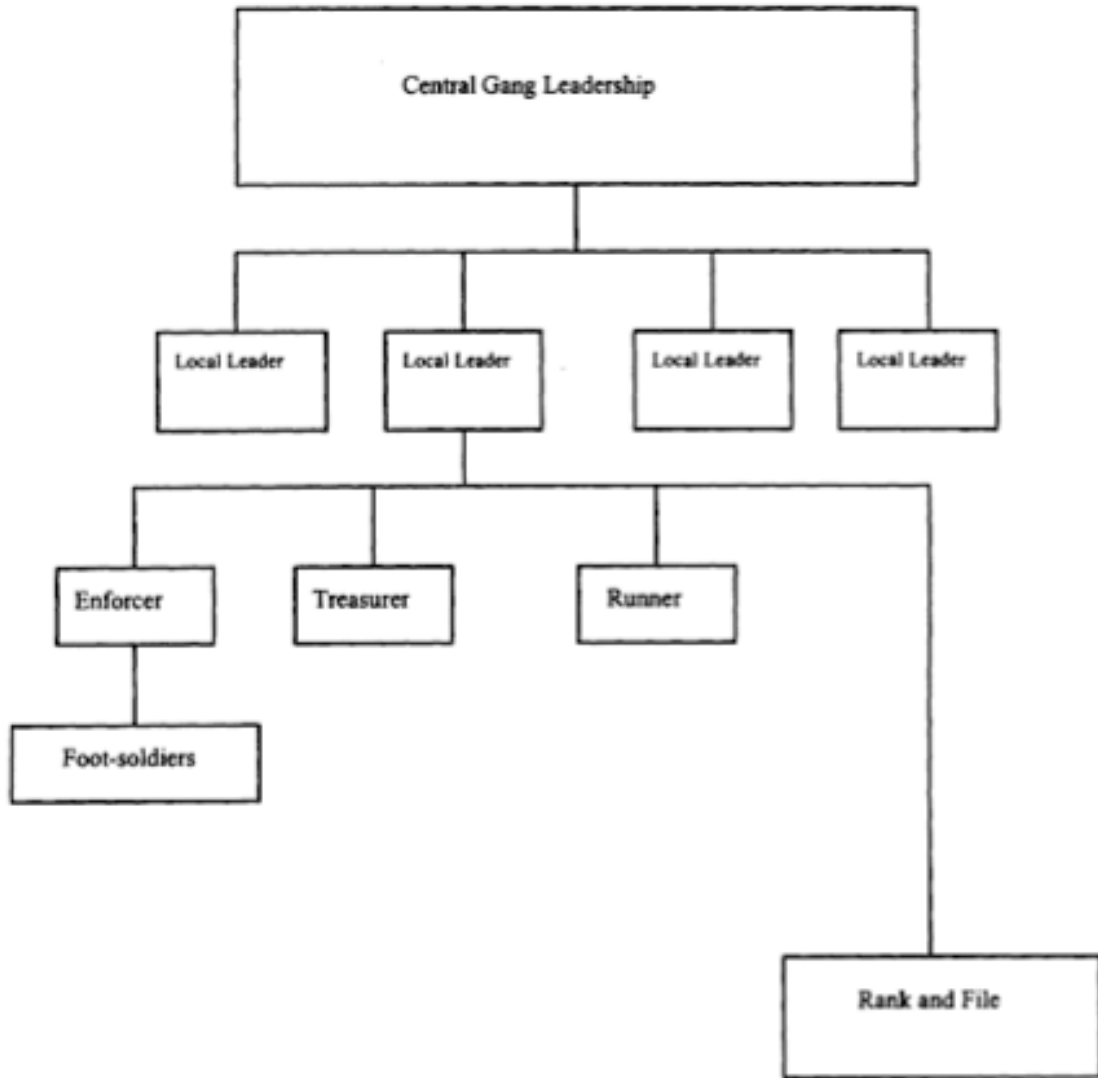


FIGURE I  
Organizational Structure

Source: Levitt and Venkatesh, "An Economic Analysis of a Drug Selling Gang's Finances"

Table 3.

**GANG FINANCES BY YEAR**  
Monthly Averages in 1995 Dollars

Category	Year 1	Year 2	Year 3	Year 4
Total revenues	18,500	25,600	32,000	68,400
Drug sales	11,900	19,100	24,800	53,000
Dues	5,400	5,200	5,100	9,600
Extortionary taxes	1,200	1,300	2,100	5,800
Total nonwage costs	8,100	11,600	14,000	25,200
Cost of drugs sold	2,800	4,000	5,000	11,900
Tribute to gang hierarchy	3,200	4,400	5,000	6,000
Mercenary fighters	1,000	1,000	1,300	1,200
Funerals/payments to families of the deceased	300	1,200	0 <sup>a</sup>	1,100
Weapons	300	400	300 <sup>a</sup>	1,800
Miscellaneous expenses	500	800	2,400 <sup>a</sup>	3,200
Total gang wages	6,200	8,000	9,500	32,300
Officers	2,600	2,600	2,100	3,300
Foot soldiers	3,600	5,400	7,400	29,000
Net profit accruing to leader	4,200	6,000	8,500	10,900
Monthly wage per foot soldier	140	200	180	470
Price and quantity of drugs sold:				
Quantity	1,310	2,054	3,109	7,931
Price	8.64	9.18	8.00	6.69

Data in the table reflect monthly averages for the year listed at the top of the table. Values are based on monthly data for the four-year period. Data are unavailable for 6 of the 48 months in the sample, with yearly averages based only on those months with data. Dollar values have been converted into 1995 dollars using the GDP deflator. All values are rounded to the nearest hundred dollars. Estimates include only revenue sources included in official gang records. The units on quantity are number of "bags," an artificial unit of measure that roughly matches the number of drug transactions that take place. The price is a price per "bag."

a. Detailed information on the breakdown of some cost categories is unavailable for five months of year 3; all such costs are allocated to the category "miscellaneous."

Source: Levitt and Venkatesh, "An Economic Analysis of a Drug Selling Gang's Finances"

Table 4.

**FREQUENCY OF ADVERSE EVENTS**

Adverse event	Likelihood of occurrence per person month					
	Preexpansion			Postexpansion		Cumulative frequency over four-year period
	Gang war	No gang war	Transition period	Gang war	No gang war	
Violent death	.012	0	.018	.021	.002	.277
Nonfatal wound or injury	.078	.033	.100	.075	.051	2.40
Arrest	.155	.103	.214	.219	.133	5.94
Number of months in sample	9	17	5	3	8	42

Data are based on interviews, research notes gathered over the course of the period, and gang records. Adverse events include only those affecting core gang members (i.e., leader, other officers, foot soldiers). The first four columns capture monthly frequencies; the final column is the cumulative frequency over the four years in our study, taking into account the fraction of months that fall into each category in the sample.

Source: Levitt and Venkatesh, "An Economic Analysis of a Drug Selling Gang's Finances"

Table 5.

**GANG PARTICIPATION AS A TOURNAMENT**

	Estimated hourly wage including only official income sources			Estimated hourly wage including both official and unofficial income sources		
	Average wage for all gang members	Gang leader wage	Foot soldier wage	Average wage for all gang members	Gang leader wage	Foot soldier wage
Year 1	\$4.80	\$25.20	\$1.70	\$ 5.90	\$32.30	\$2.50
Year 2	\$5.90	\$36.00	\$2.40	\$ 7.40	\$47.50	\$3.70
Year 3	\$5.60	\$51.00	\$2.20	\$ 7.10	\$65.90	\$3.30
Year 4	\$8.70	\$65.40	\$5.60	\$11.10	\$97.20	\$7.10

Estimates in the first three columns are based on the data reported in Table II. Estimates in the last three columns attempt to correct for possible underreporting of income due to either theft or "off-book" transactions. We assume that 10 percent of the value of drug sales is obtained "off-book" by the gang leader and that 15 percent of the value of drug sales is appropriated by the foot soldiers. We assume 20 hours a week of work by foot soldiers, and 40 hours a week by the gang leader and other gang officers. In addition, we assume that this gang is typical of the roughly 100 gangs operating within the larger organizational structure both in terms of tribute paid to the central leadership and with respect to the probability of advancement to the central leadership. The average wage for the organization as a whole includes the profit component of payments to the central leadership (assumed to be 75 percent of the overall tribute). All dollar values are in 1995 dollars.

Source: Levitt and Venkatesh, "An Economic Analysis of a Drug Selling Gang's Finances"

Table 6. Grogger and Willis Regression Estimates of Effect of Crack on Urban Crime

**TABLE 4.—REGRESSION ESTIMATES OF THE EFFECT OF THE INTRODUCTION OF CRACK ON URBAN CRIME RATES**

Crime: Variable	Murder (1)	Rape (2)	Robbery (3)	Aggravated Assault (4)	Burglary (5)	Larceny Theft (6)	Auto Theft (7)
<i>Panel A: Linear Specification</i>							
After	3.5 (1.1)	2.4 (3.3)	67.7 (30.7)	257.3 (29.6)	9.9 (59.8)	328.2 (93.9)	385.8 (62.4)
Uncertain	2.4 (1.7)	14.5 (5.2)	25.5 (48.2)	142.5 (46.6)	156.2 (93.9)	-65.0 (147.6)	250.2 (98.0)
R <sup>2</sup>	0.75	0.77	0.81	0.76	0.80	0.81	0.74
<i>Panel B: Log Specification</i>							
After	0.068 (0.054)	-0.117 (0.048)	-0.024 (0.047)	0.189 (0.046)	0.076 (0.032)	0.073 (0.023)	0.140 (0.041)
Uncertain	0.122 (0.085)	0.199 (0.077)	0.104 (0.074)	0.285 (0.073)	0.143 (0.050)	-0.004 (0.036)	0.114 (0.065)
R <sup>2</sup>	0.881	0.847	0.916	0.836	0.837	0.843	0.873
<i>Panel C: Box-Cox Specification</i>							
After	0.114 (0.068) [0.090]	-0.139 (0.066) [-0.102]	-0.002 (0.081) [-0.001]	0.210 (0.050) [0.194]	0.221 (0.111) [0.063]	0.178 (0.055) [0.074]	0.048 (0.019) [0.105]
Uncertain	0.173 (0.107) [0.136]	0.283 (0.105) [0.208]	0.182 (0.128) [0.105]	0.308 (0.079) [0.285]	0.471 (0.175) [0.134]	-0.014 (0.086) [-0.006]	0.042 (0.030) [0.093]
λ	0.109	0.082	0.097	0.013	0.172	0.108	-0.118
λ = 0	28.9	7.5	22.9	0.3	15.0	4.7	15.1
λ = 1	1056.9	612.2	1097.1	715.9	294.4	249.5	1006.4

Notes: In addition to the variables shown, all models include a central-city dummy and a full set of year dummies. Standard errors are in parentheses. Figures in square brackets are mean logarithmic derivatives. Sample sizes are 668 for rape, 694 for all others. See note for table 2.

Source: Grogger and Willis, "The Emergence of Crack Cocaine and the Rise in Urban Crime Rates"

Table 7. Total Felony Arrests in California by Offense 1996-2003

**FELONY ARRESTS, 1998-2003**  
By Category

Category	1998		1999		2000		2001		2002		2003	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Total.....	508,257	100.0	467,936	100.0	459,632	100.0	472,677	100.0	487,364	100.0	507,081	100.0
Violent offenses.....	144,233	28.4	135,930	29.0	131,897	28.7	136,023	28.8	132,059	27.1	131,218	25.9
Property offenses.....	145,028	28.5	126,108	26.9	126,182	27.5	134,126	28.4	138,142	28.3	144,200	28.4
Drug offenses.....	141,766	27.9	133,437	28.5	128,142	27.9	124,726	26.4	131,306	26.9	140,744	27.8
All other.....	77,230	15.2	72,461	15.5	73,411	16.0	77,802	16.5	85,857	17.6	90,919	17.9

Note: Percentages may not add to 100.0 because of rounding.

Source: California Office of Attorney General

Table 8. Total Arrests in California 1998-2003

**TOTAL ARRESTS, 1998-2003**  
By Level of Offense for Adult and Juvenile Arrests

Level of offense	1998		1999		2000		2001		2002		2003	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Total.....	1,571,724	100.0	1,496,459	100.0	1,424,893	100.0	1,420,680	100.0	1,426,233	100.0	1,471,083	100.0
Level of offense												
Felony.....	508,257	32.3	467,936	31.3	459,632	32.3	472,677	33.3	487,364	34.2	507,081	34.5
Misdemeanor.....	1,023,660	65.1	965,784	65.9	925,729	65.0	907,990	63.9	903,249	63.3	931,782	63.3
Status offenses <sup>1</sup> .....	39,807	2.5	42,739	2.9	39,532	2.8	40,013	2.8	35,620	2.5	32,220	2.2
Level of offense for adult and juvenile arrests												
Adult.....	1,301,765	82.8	1,238,334	82.8	1,181,803	82.9	1,180,194	83.1	1,196,599	83.9	1,247,763	84.8
Felony.....	432,153	27.5	399,433	26.7	395,743	27.8	408,684	28.8	425,825	29.9	446,203	30.3
Misdemeanor.....	869,612	55.3	838,901	56.1	786,060	55.2	771,510	54.3	770,774	54.0	801,560	54.5
Juvenile.....	269,959	17.2	258,125	17.2	243,090	17.1	240,486	16.9	229,634	16.1	223,320	15.2
Felony.....	76,104	4.8	68,503	4.6	63,889	4.5	63,993	4.5	61,539	4.3	60,878	4.1
Misdemeanor.....	154,048	9.8	146,883	9.8	139,669	9.8	136,480	9.6	132,475	9.3	130,222	8.9
Status offenses.....	39,807	2.5	42,739	2.9	39,532	2.8	40,013	2.8	35,620	2.5	32,220	2.2

Note: Percentages may not add to subtotal or 100.0 because of rounding.  
<sup>1</sup>Status offenses include truancy, incorrigibility, running away, and curfew violations. These offenses can only be committed or engaged in by a juvenile.

Source: California Office of Attorney General

Table 9. Drug Felony Arrests by Race/Ethnicity 2003

**GENDER AND RACE/ETHNIC GROUP OF FELONY ARRESTEES, 2003**  
By Category, Offense, and Age

Category, offense, and age	Total			White			Hispanic			Black			Other		
	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female
Marijuana.....	13,022	11,647	1,375	4,580	3,940	640	3,543	3,248	295	4,239	3,865	374	660	594	66
Under 10.....	1	1	0	0	0	0	1	1	0	0	0	0	0	0	0
10-17.....	1,947	1,746	201	600	511	89	745	688	57	448	407	41	154	140	14
18-19.....	1,800	1,648	152	647	576	71	521	459	62	525	487	38	107	96	11
20-29.....	5,607	5,093	514	1,777	1,578	199	1,546	1,420	126	1,993	1,829	164	291	266	25
30-39.....	2,142	1,871	271	776	638	138	471	420	51	833	762	71	62	51	11
40-69.....	1,506	1,270	236	773	630	143	252	224	28	436	376	60	45	40	5
70 and over.....	19	18	1	7	7	0	7	6	1	4	4	0	1	1	0
Dangerous drugs.....	74,775	58,250	16,525	36,692	28,356	10,336	30,418	25,655	4,763	3,979	3,273	706	3,686	2,966	720
Under 10.....	1	0	1	0	0	0	1	0	1	0	0	0	0	0	0
10-17.....	2,240	1,617	623	696	422	274	1,323	1,040	283	70	53	17	151	102	49
18-19.....	4,936	3,916	1,020	1,850	1,257	593	2,589	2,261	328	212	171	41	285	227	58
20-29.....	27,858	22,125	5,533	10,103	7,146	2,957	14,489	12,476	2,013	1,450	1,184	266	1,616	1,319	297
30-39.....	22,823	17,428	5,395	12,551	8,948	3,603	8,058	6,672	1,386	1,203	995	208	1,011	813	198
40-69.....	17,088	13,140	3,948	11,476	8,570	2,906	3,945	3,195	750	1,044	870	174	623	505	118
70 and over.....	29	24	5	16	13	3	13	11	2	0	0	0	0	0	0
Other drugs.....	2,507	1,781	726	1,460	965	495	723	566	157	242	189	53	82	61	21
Under 10.....	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10-17.....	46	34	12	25	19	6	13	8	5	7	6	1	1	1	0
18-19.....	95	72	23	35	23	12	46	37	9	10	9	1	4	3	1
20-29.....	701	504	197	323	202	121	299	244	55	58	43	15	21	15	6
30-39.....	836	585	251	519	329	190	223	184	39	64	51	13	30	21	9
40-69.....	620	579	241	555	390	165	140	92	48	90	76	23	26	21	5
70 and over.....	9	7	2	3	2	1	2	1	1	4	4	0	0	0	0

Drug offenses.....	140,744	112,234	28,510	52,790	38,582	14,208	50,818	43,774	7,044	31,321	25,104	6,217	5,815	4,774	1,041
Under 10.....	4	2	2	1	0	1	3	2	1	0	0	0	0	0	0
10-17.....	5,816	4,690	1,126	1,664	1,191	473	2,634	2,219	415	1,145	979	166	373	301	72
18-19.....	9,573	7,963	1,610	3,036	2,258	778	4,299	3,836	463	1,742	1,463	279	496	406	90
20-29.....	48,873	40,200	8,673	14,920	10,946	3,974	22,955	20,180	2,775	8,605	7,087	1,518	2,393	1,987	406
30-39.....	39,247	30,211	9,036	16,661	11,819	4,832	13,232	11,184	2,048	7,852	5,978	1,874	1,512	1,230	282
40-69.....	37,090	29,041	8,049	16,477	12,332	4,145	7,653	6,317	1,336	11,921	9,544	2,377	1,039	848	191
70 and over.....	141	127	14	41	36	5	42	36	6	56	53	3	2	2	0
Narcotics.....	50,440	40,556	9,884	10,058	7,321	2,737	16,134	14,305	1,829	22,861	17,777	5,084	1,387	1,153	234
Under 10.....	2	1	1	1	0	1	1	1	0	0	0	0	0	0	0
10-17.....	1,583	1,293	290	343	239	104	553	483	70	620	513	107	67	58	9
18-19.....	2,742	2,327	415	504	402	102	1,143	1,049	94	995	796	199	100	80	20
20-29.....	14,907	12,478	2,429	2,717	2,020	697	6,621	6,040	581	5,104	4,031	1,073	465	387	78
30-39.....	13,446	10,327	3,119	2,805	1,904	901	4,480	3,908	572	5,752	4,170	1,582	409	345	64
40-69.....	17,876	14,052	3,824	3,673	2,742	931	3,316	2,806	510	10,342	8,222	2,120	345	282	63
70 and over.....	84	78	6	15	14	1	20	18	2	48	45	3	1	1	0

Source: California Office of Attorney General

Table 10. Drug Consumption in the US 2000

	Cocaine	Heroin
Number of users (millions)		
Heavy	3325	977
Occasional	2155	514
Total expenditure (billions)		
Heavy	\$32.10	\$10.60
Occasional	\$3.90	\$1.30
Total	\$36.10	\$11.90
Median weekly expenditures	\$186	\$209
Price per gram (oz for pot)	\$149	\$1,029
Total amt used in metric tons	269	12.9

	Methamphetamine
Number of users (millions)	356
Median weekly expenditures	\$87
Price per gram	\$140
Total amt used in metric tons	15.4
Total expenditure (billions)	\$2.20

	Marijuana
Number of users (millions)	11.7
Joints used per month	18.7
Weight of a Joint (oz)	0.0136
Price/oz, 1/3 oz purchased	\$293
Total amt used in metric tons	\$1,009
Total expenditure (billions)	\$10.40

Data source: National Office of Drug Control, "What America's Users Spend on Illegal Drugs"

Table 11.

Table 2. California, new drug imprisonments and rates per 100,000 population, 1980-2001

	Rate per 100,000 population			Numbers			% Poss
	All	Sale/manuf *	Possess	All	Sale/manuf *	Possess*	
1980	4.5	2.9	1.6	1,076	697	379	35.2%
81	5.1	3.2	1.9	1,224	777	447	36.5%
82	6.1	4.1	2.0	1,498	1,005	493	32.9%
83	9.0	5.9	3.0	2,250	1,488	762	33.9%
84	10.8	6.8	4.0	2,767	1,747	1,020	36.9%
1985	16.1	10.1	6.0	4,210	2,634	1,576	37.4%
86	24.2	14.9	9.2	6,460	3,988	2,472	38.3%
87	33.8	20.5	13.3	9,255	5,603	3,652	39.5%
88	46.1	28.2	18.0	12,945	7,903	5,042	38.9%
89	58.2	35.1	23.1	16,750	10,101	6,649	39.7%
1990	61.7	37.1	24.6	18,243	10,974	7,269	39.8%
91	55.8	34.7	21.2	17,113	10,627	6,486	37.9%
92	57.7	35.1	22.6	18,063	10,983	7,080	39.2%
93	62.7	38.0	24.7	19,902	12,075	7,827	39.3%
94	61.3	34.8	26.5	19,692	11,185	8,507	43.2%
1995	70.1	36.9	33.2	22,472	11,816	10,656	47.4%
96	72.6	38.1	34.5	23,510	12,354	11,156	47.5%
97	75.1	36.4	38.7	24,748	11,984	12,764	51.6%
98	75.1	35.7	39.4	25,152	11,949	13,203	52.5%
99	70.8	33.3	37.5	24,092	11,343	12,749	52.9%
2000	64.1	29.2	34.9	21,707	9,902	11,805	54.4%
01	50.1	26.3	23.8	17,414	9,148	8,266	47.5%
<u>Combined-year averages</u>							
80-84	7.2	4.6	2.5				34.7%
85-89	36.2	22.1	14.1				39.0%
90-94	59.9	35.9	23.9				39.9%
95-99	72.7	36.0	36.7				50.5%
00-01	57.0	27.8	29.2				51.3%
<u>Change, 2000-01 rate vs rate in:</u>							
80-84	+692%	+504%	+1068%				
85-89	+58%	+26%	+107%				
90-94	+21%	0%	+54%				
* "Sale/manuf" refers to high-level drug offenses (drug sale, manufacture, or possession in quantity large enough to presume intent to sell). "Possess" refers to low-level possession of drugs in small quantity for personal use.							
Source: Data Analysis Unit, California Department of Corrections (imprisonments); Demographic Research Unit, California Department of Finance (populations used to calculate rates).							

Source: Center on Juvenile and Criminal Justice, "Drug Use and Justice 2002: An Examination of California Drug Policy Enforcement"

Table 12. City Data

City	Population	# Felony Drug Arrests	Drug Arrests/10,000	Unemployment	%HS degree or higher	% bachelors or higher
Anaheim	328,014.00	977	29.785	4.40%	69.30%	19.60%
Bakersfield	247,057.00	1,738	70.348	6.90%	75.90%	19.30%
Corona	124996	237	18.961	4.10%	80.60%	22.00%
El Cerrito	23,171.00	92	39.705	4.80%	92.60%	56.00%
Fremont	203,413.00	361	17.747	4.70%	88.40%	43.20%
Fresno	427,652	1,470	34.374	12.80%	69.10%	19.00%
Hermet	58,812	321	54.581	8.50%	73.50%	10.80%
La Habra	61,500	194	31.545	4.40%	73.40%	18.20%
Long Beach	461,522	2,659	57.614	6.50%	72.70%	23.90%
Los Angeles	3,694,820.00	11,493	31.106	8.00%	66.60%	25.50%
Milpitas	62,698.00	125	19.937	8.50%	83.20%	36.50%
Monterey	29674	88	29.656	3.80%	91.60%	46.20%
National City	54260	178	32.805	7.80%	57.20%	9.00%
Oakland	399,484	4,472	111.944	10.60%	73.90%	30.90%
Oceanside	161,029	539	33.472	4.60%	80.80%	22.20%
Redding	80,865	427	52.804	7.80%	85.20%	19.40%
Richmond	99,216	673	67.832	10.40%	75.40%	22.40%
Rocklin	36,330	74	20.369	64737.00%	94.40%	36.10%
Sacramento	407,018	2,848	69.972	6.80%	77.30%	23.90%
San Bernardino	185,401	1,609	86.785	8.30%	64.90%	11.60%
San Diego	1,223,400	5,178	42.325	4.30%	82.80%	35.00%
San Francisco	776,733	8,241	106.098	5.90%	81.20%	45.00%
San Rafael	56,063	64	11.416	5.40%	84.70%	43.60%
Santa Barbara	92,500	256	27.676	3.40%	81.30%	39.60%
Santa Paula	28,598	29	10.141	8.50%	57.80%	8.60%
Sierra Madre	10,578	2	1.891	2.30%	94.50%	49.70%
Sonora	4,423	20	45.218	6.30%	86.10%	16.20%
Stockton	269,100	1,173	43.590	11.90%	68.20%	15.40%
Turlock	26,870	210	78.154	7.20%	70.40%	19.10%
Vallejo	116,760	609	52.158	6.60%	81.70%	21.10%
Ventura	100,916	238	23.584	4.10%	85.70%	29.20%
AVERAGE	317834.6129	1503.064516	43.66420673	20.94729032	0.780774194	0.270387097
Note: all data for 2000 except number of law enforcement officers and violent/property crimes, which is for 2003						

Source: *California Statistical Abstract, Rand California, and California Cities, Towns and Counties*

Table 12. City Data (continued)

City	Median household Income	Median family income	Persons in Poverty	Poverty Rate	Sworn officers	Officers/10,000 ppl	#violent crimes
Anaheim	\$ 47,122.00	\$ 49,969.00	45,615.00	13.91	389.00	11.86	1,319.00
Bakersfield	\$ 39,982.00	\$ 45,556.00	43,781.00	17.72	292.00	11.82	1,948.00
Corona	\$ 59,615.00	\$ 63,505.00	10,244.00	8.20	163.00	13.04	269.00
El Cerrito	\$ 57,253.00	\$ 69,397.00	1,545.00	6.67	38.00	16.40	145.00
Fremont	\$ 76,579.00	\$ 82,199.00	10,915.00	5.37	186.00	9.14	433.00
Fresno	\$ 32,236.00	\$ 35,892.00	109,703.00	25.65	707.00	16.53	3,505.00
Hermet	\$ 26,839.00	\$ 33,579.00	9,374.00	15.94	70.00	11.90	438.00
La Habra	\$ 47,652.00	\$ 51,971.00	7,559.00	12.29	68.00	11.06	225.00
Long Beach	\$ 37,270.00	\$ 40,002.00	103,434.00	22.41	916.00	19.85	3,579.00
Los Angeles	\$ 36,687.00	\$ 39,942.00	801,050.00	21.68	9,265.00	25.08	48,823
Milpitas	\$ 84,429.00	\$ 84,827.00	2,983.00	4.76	92.00	14.67	200
Monterey	\$ 49,109.00	\$ 58,757.00	2,105.00	7.09	53.00	17.86	157
National City	\$ 29,826.00	\$ 31,497.00	11,233.00	20.70	87.00	16.03	546
Oakland	\$ 40,055.00	\$ 44,384.00	76,489.00	19.15	792.00	19.83	5,613.00
Oceanside	\$ 46,301.00	\$ 52,232.00	18,492.00	11.48	177.00	10.99	1,022.00
Redding	\$ 34,194.00	\$ 41,164.00	2,672.00	3.30	109.00	13.48	393.00
Richmond	\$ 44,210.00	\$ 46,659.00	15,873.00	16.00	184.00	18.55	1,078.00
Rocklin	\$ 64,737.00	\$ 72,245.00	1,639.00	4.51	41.00	11.29	71.00
Sacramento	\$ 37,049.00	\$ 42,051.00	79,737.00	19.59	660.00	16.22	3420
San Bernardino	\$ 31,140.00	\$ 33,357.00	49,691.00	26.80	295.00	15.91	2,864.00
San Diego	\$ 45,733.00	\$ 53,060.00	172,527.00	14.10	2,062.00	16.85	7,366.00
San Francisco	\$ 55,221.00	\$ 63,545.00	86,585.00	11.15	2,161.00	27.82	5,757.00
San Rafael	\$ 60,994.00	\$ 74,398.00	5,387.00	9.61	79.00	14.09	208.00
Santa Barbara	\$ 47,498.00	\$ 57,880.00	11846	12.81	142.00	15.35	562.00
Santa Paula	\$ 41,651.00	\$ 45,419.00	4,161.00	14.55	31.00	10.84	82.00
Sierra Madre	\$ 65,900.00	\$ 79,588.00	389.00	3.68	17.00	16.07	13.00
Sonora	\$ 28,858.00	\$ 39,722.00	709.00	16.03	13.00	29.39	23.00
Stockton	\$ 35,453.00	\$ 40,434.00	56,783.00	21.10	374.00	13.90	3,625.00
Turlock	\$ 39,050.00	\$ 44,501.00	8,798.00	32.74	59.00	21.96	372.00
Vallejo	\$ 50,030.00	\$ 56,805.00	11,588.00	9.92	156.00	13.36	997.00
Ventura	\$ 52,298.00	\$ 60,466.00	8,904.00	8.82	129.00	12.78	261.00
AVERAGE	46611.96774	52742.03226	57155.19355	14.120502	638.935484	15.93292809	3074.645161

Source: California Statistical Abstract, Rand California, and California Cities, Towns and Counties

Table 12. City Data (continued)

City	# property crimes	Total Households	# Female Head of Household	% Female Head of Households
Anaheim	5,616.00	96,969.00	9696900	13.13
Bakersfield	15,075.00	83,441	8344100	15.53
Corona	4,527.00	37,839	3783900	11.18
El Cerrito	1,503.00	11,439	1143900	18.67
Fremont	3,057.00	68,237	6823700	9.24
Fresno	13,049.00	140,079	14007900	17.60
Hermet	1,567.00	25,252	2525200	11.23
La Habra	858.00	18,947	1894700	13.54
Long Beach	9,210.00	163,088	16308800	16.14
Los Angeles	87,480.00	1,275,412.00	127541200	14.54
Milpitas	1,006.00	17,132	1713200	10.85
Monterey	609.00	12,600	1260000	8.42
National City	1,740.00	15,018	1501800	21.07
Oakland	12,455.00	150,790	15079000	17.71
Oceanside	6,115.00	56,488	5648800	11.02
Redding	1,672.00	32,103	3210300	13.01
Richmond	4,193.00	34,625	3462500	20.06
Rocklin	539.00	13,258	1325800	9.38
Sacramento	16,666.00	154,581	15458100	15.39
San Bernardino	7,611.00	56,330	5633000	21.11
San Diego	29,798.00	450,691	45069100	11.37
San Francisco	35,869.00	329,700	32970000	8.86
San Rafael	1,172.00	22,371	2237100	8.99
Santa Barbara	1,489.00	35,605	3560500	9.48
Santa Paula	269.00	8,136	813600	13.38
Sierra Madre	77.00	4,756	475600	7.70
Sonora	233.00	2,051	205100	14.04
Stockton	10,132.00	78,556	7855600	17.26
Turlock	4,652.00	18,408	1840800	13.09
Vallejo	2,708.00	39,601	3960100	16.54
Ventura	1,853.00	43,576	4357600	14.10
AVERAGE	9122.580645	112809	11280900	13.67

Source: California Statistical Abstract, Rand California, and California Cities, Towns and Counties

Table 13. Regression Results

	Population	Unemployment	%HS degree or higher	% bachelors or higher
Coefficients	-7.60533E-06	0.01	-5.95	41.23
SE	7.21923E-06	0.04	44.30	58.30
T-Stat	-1.05	0.14	-0.13	0.71
	Median household Income	Poverty Rate	Officers/10,000 ppl	% Female HH
Coefficients	0.00	0.88	1.87	1.41
SE	0.00	0.90	1.19	1.35
T-Stat	-0.98	0.97	1.57	1.04

Degree of Freedom: 23  
r-squared: 0.85

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