
A GENERAL MODEL OF THE GEOGRAPHY OF ILLICIT RETAIL MARKETPLACES

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Abstract: *Sellers and buyers of illicit goods and services (e.g., drugs, sex, stolen merchandise, stolen and illegal firearms) must find ways of meeting each other and making exchanges in order to get the rewards they seek. However, they also risk having their money or illicit goods stolen by others or being apprehended by the police. There are two strategies that participants in illicit markets can use to balance risks and rewards. First, they can sell only to people they know or to people who know people they know. This substantially reduces the risk of being arrested or ripped-off, but it restricts sales and buying opportunities. Second, they can sell to strangers. For the seller, this approach provides access to more customers. For the buyer, this approach allows shopping. Nevertheless, it increases participants' risks of arrest and rip-off. The two strategies to marketing illicit goods and services result in very different geographical patterns of retail marketplaces, the types of places used and the relationship of illicit retailing to licit routine activities. The general model of the geography of illicit retail market places explains these two strategies and why they give rise to very different results. Data from a study of drug markets in San Diego, CA show the plausibility of the general model. Implications for prevention, control, displacement and re-search on illicit retail markets are discussed.*

Pity the plight of the retail drug dealer. He has valuable drugs that he wants to sell. He may also have some cash from previous sales. He wants to make more sales. But if he approaches a possible customer he may be approaching a cop, a person working for cops, or someone who is ready to take his drugs and cash by force. Our dealer must protect himself while

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contacting customers and making sales.

Consider the plight of the active retail drug buyer. She has cash and maybe other valuables. If she approaches the possible seller to make a buy, she may find that she is dealing with a cop, or someone who wants to take her money but provide no drugs. Our customer must protect herself while contacting sellers and making purchases.

The need to balance access to retail customers with security is the major problem for retail sellers of illicit drugs. Retail drug buyers face the same problem. Sellers and buyers of all illicit retail goods and services face this dilemma. This is the central dilemma of all participants in illicit retail markets. A prostitute wants to do business with potential customers. But these customers can be dangerous. Men looking for sexual services want access to men or women who are willing to provide these services. But they may become the victims of theft, robbery or police crackdowns. A person wanting to hire someone to kill their business partner must weigh the consequences of approaching a stranger who may be a police agent or informer instead of a hit man.

How retail sellers and buyers resolve the conflicting demands of access and security has major consequences for the geographical distribution of illicit marketplaces. These consequences, in turn, affect the policies that may be useful against illicit transactions and whether these policies will displace marketplaces.

This paper sets forth a general model of the geography of illicit retail marketplaces. The model is based on three well-established criminological theories: rational choice theory (Clarke and Cornish, 1985); routine activity theory (Cohen and Felson, 1979; Felson, 1986); and offender search theory (Brantingham and Brantingham, 1991, 1993). Goal-seeking behavior by sellers and buyers of illicit goods and services is central to this model. Rational decision-making processes of sellers and buyers in illicit markets—like in licit markets—influence the geography of these markets. But as Reuter (1983:132) states, illicit markets have two features not present in licit markets: threats of police action, and an inability of participants to rely on "state-provided facilities for settlement of disputes." These two illicit market features structure rational decision making.

Routine activity theory is important to this model because the everyday patterning of legitimate activities helps structure the decision making of people in illicit markets. As will become clear later, Brantingham and Brantingham's (1991) theory of predatory offender target search has been adapted to consensual crimes in this model.

The model is also based on empirical evidence from San Diego, CA and discussions with patrol officers and narcotics investigators there. Nevertheless, this model stretches the existing theories and goes far beyond the

empirical observations. Some data are presented in this paper to demonstrate the plausibility of the model. These empirical findings are consistent with the model, but should not be considered a strong test of it.

This general model is advanced for three reasons. First, gains in our understanding of illicit retail marketplaces are impaired by the absence of a coherent theory model of these phenomena. This general model provides a basis for organizing research on a variety of illicit retail markets. Second, by providing a target for tests of this model our knowledge of the geography of illicit marketplaces will increase, regardless of the outcome of the tests. Third, carefully constructed tests of this model will reveal deficiencies and spur the creation of new models advanced to overcome these problems. In short, this model is proposed as both an aid to research and a challenge to researchers.

Before proceeding, the limitations of this model must be explained. First, the model does not describe non-retail markets. No claims are made as to its validity for describing wholesale transactions. The model is meant only to apply to transactions between a seller and an ultimate consumer. Nevertheless, it might be worthwhile to expand this model to illicit non-retail markets in order to determine if it has broader scope. Second, the model does not explain why people become sellers or buyers of illicit goods or services. Thus, it cannot account for the size of the market in a given area. Third, the model does not describe the geographical distribution of the residences of customers and sellers; it only explains the places where goods or services are exchanged for money or other goods or services. Reuter and MacCoun (1992) organized a typology of drug markets around whether dealers and sellers are mostly neighborhood residents or outsiders. Integrating their typology with the general model proposed here may help explain how the geography of illicit retail marketplaces is influenced by the geography of participants' residences. Other restrictions on the scope of this model will be described throughout this discussion.

The next section introduces the people whose behaviors are important to the general model. In the third section, the model itself is described. In the fourth section, evidence from San Diego, CA is used to illustrate how the model works in practice. Section five examines a number of testable propositions derived from the model and suggest several research strategies to test it. Several implications for the prevention of illicit marketplaces

are discussed in the sixth section. The paper concludes with some comments on the value of testing this model.

THE ACTORS

There are five actors in this model. The lead actors are the buyers and sellers of illicit goods or services. Buyers are interested in the personal consumption of the goods or service, and possibly, for illicit goods, giving some to a few close friends. Though I will assume that resale is of little importance, in some circumstances this assumption may not be valid. However, it is not clear that this will make any difference in the outcomes of the model; this assumption merely makes discussions easier. Sellers may also be users, but for the purposes of this discussion we will assume that they sell much more than they consume.

There are three supporting actors. The first are other offenders. These people may or may not be sellers or buyers, but they are interested in taking the goods or services without paying or stealing cash from buyers or sellers. Their interest may be simply to make a quick gain, or to drive a competitor out of business. For our purposes, the motivation does not matter. What matters is that offenders are a threat to sellers and buyers. They disguise themselves as sellers to rip off buyers, and pose as buyers to steal from sellers.

The second group of supporting actors are the police. They are interested in controlling the sale and use of illicit goods and services through law enforcement. They use undercover agents and informants to identify and collect evidence against sellers. Like offenders, the police often use subterfuge. Police disguise themselves as sellers to arrest buyers, and pose as buyers to catch sellers.

The third group of supporting actors are managers. Originally, Cohen and Felson (1979) stated that guardians protect targets. Later, Felson (1986) showed that handlers control offenders. Finally, Eck (1994) proposed a third controller, managers. Managers regulate places. They either own the place or are appointed by the owner. They include landlords and apartment managers, store owners and employees, park rangers and maintenance workers, and other people who have the authority to regulate who has access to property and the behavior of people who use the place. As will be seen below, the general model suggests that the importance of

managers varies by the type of market (see papers by Eck and Weisburd, and Felson, in this volume for additional discussions of place managers).

THE GENERAL MODEL OF ILLICIT RETAIL MARKETPLACES

The Problem

I began this paper with the central dilemma faced by the two lead participants—buyers and sellers—in illicit retail markets. Unless this dilemma can be resolved to the satisfaction of buyers and sellers, illicit retail markets cannot exist. This dilemma is simple; how to exchange illicit goods or service when the exchange process is very risky. To sell illicit goods and services the seller must be accessible to buyers. To purchase illicit goods and services the buyer must be accessible to sellers. The need for mutual accessibility is common to both licit and illicit markets. But if this were the only feature driving the geography of illicit markets, there would be no dilemma and there would not be much to say about them that would be different from licit markets.

Illicit markets are different because they are illicit. Participants in illicit markets face two risks not faced by participants in licit markets. First, they risk the enforcement of laws by the police. Sellers cannot be certain that the customers before them are just interested in making a transaction. If sellers are offering goods or services to an undercover police officer or an informant working for the police, the sellers could lose a great deal. Though enforcement actions have traditionally been directed against sellers, since the 1970s police have used undercover tactics against buyers as well (Marx, 1988). Thus, buyers also cannot be certain that the persons before them are real sellers, police officers, or police informants.

The second type of risk is created by the inability of participants in illegal markets to rely on third parties to enforce the rules of the market (Reuter, 1983). Drug dealers whose products are stolen cannot rely on the police to protect them. Customers of prostitutes will be constrained from calling the police if they are not given the services demanded once they turn over their cash. Buyers and seller can, and do, steal from each other in illicit markets. The absence of third-party control and regulation in these markets makes chicanery, duplicity and violence serious threats to the lead participants. The heightened risk in illicit markets makes it

difficult for sellers and buyers to be fully accessible. The more accessible a participant is, the less security he or she has.

Given the need for both security and access, the best situation for a seller would be to have a place for selling goods or services that provides security against bogus customers. In such an ideal setting the seller could screen potential customers, check for possible weapons and have minimal direct contact with customers. Such a situation, though possibly ideal from the seller's point of view, is not particularly attractive to buyers in illicit retail markets. Customers would face much greater risks of being forced to hand over their money before getting the goods or services and then not receiving them. To customers, these secure places may appear threatening and they would, therefore, avoid them.

Customers, on the other hand, have just the opposite preference. Ideally, for customers, the seller would come to them in a secure place and provide the goods or services in a manner that allows the buyer to screen the potential seller and to remove any potential threats. However, sellers would not like such situations. These situations would put sellers under an increased risk of being ripped off. Although both the buyer and the seller would dearly love access to each other they are also very threatened by each other.

Under these circumstances, how do sellers and buyers come together to make transactions? How they simultaneously balance access and security gives rise to the geographic patterning of illicit retail marketplaces. Note that if there is no risk in illicit markets, none of the following will apply. That is, if the police do not enforce the law (for whatever reason), and the other participants do not steal or threaten each other (for whatever reason), the proposed model will not operate.

There are only two solutions to the dilemma faced by sellers and buyers in illicit retail markets. Sellers and buyers can use a social network to communicate their accessibility, screen potential exchange partners and assess the potential partner's threat to security. A second possible solution is that sellers and buyers use the routine activities of everyday life to find locations that are suitable for making exchanges. The model of the geography of illicit retail marketplaces claims that these are the only solutions to the dilemma. Though these are the only two solutions, it is possible to mix them.

Solution 1—Social Networks

In the network solution, a buyer only purchases goods or services from screened sellers. That is, a buyer knows who the seller is, or knows someone who knows a seller and can vouch for her. The seller only sells

to screened buyers. They too know who they are transacting business with or know someone who can vouch for him or her.

For example, if Joe wants to purchase methamphetamine, he might approach his friend Bill. Bill knows that Susan has methamphetamine to sell but Joe does not. Bill can go to Susan and set up a meeting in which Susan sells directly to Joe. Or, if Susan or Bill prefer, Susan can deal indirectly with Joe through Bill so that Bill passes the product and money back and forth. It is because Bill is known to both parties that this transaction can take place. Bill's ability to vouch for the reliability of each participant (as occurs when Susan and Joe directly make the exchange), or Bill's willingness to assume much of the risk himself (as occurs when he acts as a middle man), makes this transaction possible. Without Bill, Susan would have drugs she cannot sell and Joe would have the desire and money for drugs that he cannot obtain.

The network provides security. It tells participants in the market that they are dealing with someone who is willing to go through with the transaction and who is not a police officer or an agent of the police. Networks are not infallible, but they are much more secure than operating without information about the customer or buyer.

The network also provides a mechanism for buyers and sellers to communicate with each other. Susan does not know that Joe wants to make a purchase, and Joe does not know that Susan is selling the drug he is interested in. But both know Bill, and he knows. The network provides information on who is buying and selling, their locations, prices, and other information necessary for the market to function.

Markets using a network solution will have several characteristics. First, since security and access are provided through the network, there is low place attachment. That is, there is little investment in places by buyers or sellers for the purposes of exchanging illicit goods or services. Any place is equally well-suited to the transaction, and selling and buying can take place anywhere as long as both the customer and the dealer can find the place. Thus, marketplaces can be spread out over a wide area. Enforcement actions against these marketplaces are likely to result in wide spatial displacement.

Second, there is no need for managers of marketplaces to be involved in the transactions, either tacitly or explicitly. The lead participants can operate under complete cover without involving place managers. There is no need to corrupt or threaten place managers on a routine basis. This is not to say that bribes and threats will not take place. Instead, bribes and

threats in these types of markets will be relatively rare and most likely to occur when the network fails to keep place managers in the dark.

Third, as implied above, the geography of the market will be widespread, covering a large area. The geography of illicit retail marketplaces will be dictated by extra-market factors, rather than the requirements of the illicit market. Such factors include: the ethnicity of the participants; housing discrimination; housing preferences; rental prices; transportation costs; and the opportunity costs of travel time. For example, a network drug market in which sellers and buyers are from the same neighborhood will have its marketplaces concentrated in a very small area. If the sellers and buyers come from throughout a metropolitan area, the marketplaces will be very spread out.

Fourth, though illicit retail markets using a network solution can cover a wide geographic area, they will involve relatively few sellers and customers. This occurs because it will be difficult for potential customers and sellers outside the network to enter the network and become involved in the market. The density of illicit marketplaces will be low. These types of markets will be relatively invisible and will require considerable effort on the part of the police to detect. Consequently, participants in the market will become prime assets for the police in attempts to learn about the inner workings of the market.

Solution 2—Routine Activities

Though the network solution provides a great deal of security, it has the deficiency of restricting the number of customers a seller has access to and the number of sellers that a buyer can find. Many buyers and sellers who want to participate and who are not involved with the police will be kept out of the market. Consequently, there is an incentive to use another strategy to exchange illicit goods and services.

In markets organized around a routine activity approach, sellers sell to strangers and buyers buy from strangers. This approach increases the number of potential sales for the sellers. It also increases the number of places where buyers can contact sellers. Two problems are created by this approach.

First, sellers and buyers cannot rely on a network for communication. Unless they come to the same areas it is difficult for them to make contact with each other. The most likely such areas are those in which both already conduct legitimate routine activities.

Areas of routine activities that facilitate the establishment of marketplaces have three attributes. First, they are familiar to both sellers and buyers. To the extent that familiarity makes one feel secure, sellers and

buyers are going to feel less threatened and more willing to make contact than if one of the parties is located in an area familiar to the other. The second attribute is that these areas allow communication. Buyers know that this is where they can find the sellers, and sellers know that the buyers will be in the area. Third, these marketplaces are not likely to be spread out. Instead, they will be located along major thoroughfares and at nodes of major activities, such as shopping centers, places of employment, recreation areas or schools. In short, illicit retail market areas where stranger-to-stranger selling takes place are likely to be near where people naturally concentrate.

The second problem created by the routine activity approach is that sellers and buyers cannot rely on the network to provide security. Making transactions in familiar areas reduces the perception of risk to the participants. But they will use a number of defensive tactics. Both parties can blend into the activities around them to avoid attracting suspicion. A buyer uncertain about a seller may circle the block and scan the surroundings to look for signs that things are as they should be. A seller or buyer can feign ignorance of being engaged in illicit trade until he or she is certain the person in front of him or her is a legitimate customer. Both sellers and buyers can look for verbal and physical cues that suggest that a prospective exchange partner is relatively safe to deal with. Sellers and buyers may also engage in verbal jousting to test the possible partner's intentions. And in some cases the buyer or the seller may employ third parties to make the exchange.

These are not foolproof strategies, so there will be additional efforts to increase security. Even if sellers and buyers are in the same area, they will have difficulty locating each other. One of the participants will have to sit still. In practice, the seller has a greater incentive for establishing a location to attract customers. The reason is that searching for customers is costly, and if a seller moves a great deal he or she will miss many opportunities to transact business. So it is more efficient for the many customers to find the relatively few sellers rather than have the sellers search for the more numerous buyers. Relatively immobile sellers can establish physical security at the point-of-sale. The less frequently the point-of-sale moves, the better the security that can be employed. The seller will use physical security to supplement any social means he or she has for testing the veracity of customers.

Third, since sellers will have to deal with many customers, and since any special physical security measures will be visible, sellers in routine activity illicit retail markets will have to reach some sort of accommodation with the people who manage the place. Thus, these types of marketplaces are likely to be located in run-down areas. Place managers in these areas

will have less ability to regulate the behavior of people using their property. In many circumstances, place managers will have every incentive to tacitly cooperate with sellers and buyers. The manager of an old strip motel on a thoroughfare that was once a major inter-city arterial is likely to turn a blind eye to prostitution on the property, as long as the prostitutes pay the rent. The owner of a small apartment building in an inner-city neighborhood is less likely to have the resources to hire a resident manager to control drug dealing than the manager of a large complex in an upper-middle-class area. Thus the sites of illicit marketplaces will be locations where place management is weak or corrupted.

Markets using a routine activity solution will have four geographical characteristics. First, in contrast to retail illicit markets using a network solution, those using a routine activities solution will show evidence of high place attachment. Sellers will try to stay at specific places and, if required to move, will try to limit the distance they move. High place attachment will occur for both security and access reasons. Displacement will be much more limited. When spatial displacement occurs it will be restricted to the high routine activity area and to places within this area that are suitable for selling the goods or services in question (i.e., locations that allow customers to find the place and that provide reasonable security).

Second, people who control places will be critical to the functioning of these markets. Since the marketplace is likely to draw attention, place managers who are attentive and control illicit behaviors on their property will reduce the chances of an illicit retail marketplace being established on their turf. Sellers will be found disproportionately at locations where place managers are not attentive or do not attempt to control behaviors. Corruption and intimidation of place managers will be more common than in places used in network markets.

Third, when a routine activity solution is applied in an illicit retail market, the marketplaces will be distributed along arterial routes and near nodes of high legitimate activities. Not all such routes and nodes will be equally vulnerable. Because of the need for weak place management, the arterials and nodes in economically depressed areas will be particularly vulnerable. It is in these areas that place managers have the least ability to control behavior on their property and the least incentive to do so (see Green, in this volume, for data consistent with this hypothesis).

Fourth, these kinds of markets can be very large because they can serve many people. Note that when combined with the third characteristic, this implies that there will be a relatively high density of illicit retail marketplaces compared to markets operating through networks. The concentration of illicit market activity in a small area will be hard to hide. Because

it will be well-known to the police, public and others, there will be a variety of information for the police to use to identify such marketplaces. Consequently, though undercover operations may be used, overt tactics can also be employed effectively.

Overview of the Model

The geographic pattern of illicit retail marketplaces is the shadow cast by the market. The shape of this shadow reveals a great deal, though not everything, about the market. The shadow suggests how sellers and buyers handle security and access, how place managers will be involved, the types of enforcement that are practical, and how the marketplaces may react to enforcement pressure.

This model does not explain why one solution may be selected rather than another, or what combination of these two solutions might be useful in particular circumstances. However, since the model explicitly rules out other possible solutions it does imply that illicit markets may oscillate from one solution to the other.

This model does not apply if security is not a concern to sellers and buyers. If a third party regulates transactions, so that a wronged seller or buyer has some recourse, then this model makes no predictions about the geographic shadow it throws. If the police do not enforce the laws regarding the sales of the goods and services, the model does not apply. Thus, the results predicted by this model are a consequence of the lack of regulation on one hand and of enforcement on the other.

AN APPLICATION OF THE GENERAL MODEL

This model can be illustrated with data describing drug dealing places in San Diego that were collected as part of the U.S. National Institute of Justice's Drug Market Analysis Project conducted jointly with the San Diego Police Department. This section contrasts findings for the methamphetamine market with those for the cocaine market. Details of the methods, data and findings of this study can be found in Eck (1994).

Five contiguous beats in San Diego were examined. The area was one of two in the city that the police felt had a high concentration of drug dealing. Though a variety of drugs were sold (powder and crack cocaine, heroin, marijuana and methamphetamine), the two dominant drugs—cocaine and methamphetamine—illustrate the two solutions to balancing access and security. Both types of drug dealing were subjected to consid-

erable enforcement pressures by patrol officers, special uniformed tactical squads and narcotics investigators.

Narcotics detectives and patrol officers serving the area described two different styles of drug dealing. Methamphetamine dealers in the area sold through networks of friends. Both the dealers and the buyers were usually young white men and women. Several officers noted that it was not uncommon to find the same people in widely scattered drug houses in the area. Selling to strangers who could not be vouched for was uncommon. To a lesser degree, marijuana was also available within this market.

Crack and powder cocaine dealers were more likely to sell to strangers, according to police officials. The dealers were usually African American or Hispanic, though the customers came from a variety of ethnic groups. Heroin may also have been marketed in the same way. Thus, crack and powder cocaine appeared to be distributed following the routine activity solution. Methamphetamine and cocaine may not always be distributed in these ways in all settings. But in this San Diego setting during the early 1990s, this appears to have been the case.

The Police Executive Research Forum and the San Diego Police Department conducted a case-control study of drug dealing places in the five beats. Police records revealed 303 addresses with two or more instances of drug dealing on different dates. These dealing locations were located on 132 census blocks. Observers recorded the physical characteristics of a probability sample of 189 drug dealing places on these blocks. Observers also recorded the characteristics of a probability sample of 181 non-dealing places on the same 132 census blocks as the dealing places.

Several findings support the general model. First, observations of the blocks and of drug places and interviews with patrol officers and narcotics investigators suggested that methamphetamine dealing locations were more likely to be in isolated locations than cocaine dealing places. Data showed that the latter were almost always found on blocks adjacent to arterial routes. This was less often the case with methamphetamine places (Eck, 1994). Data showed also that though cocaine dealing places were often found on the same blocks as methamphetamine places, the latter were less likely to be found on the same blocks as cocaine places. In short, methamphetamine dealers were found in a wide area throughout the five beats. Their area overlapped the cocaine dealers' area but included many blocks with no cocaine dealing. The cocaine dealers were more concentrated along the arterial routes.

Second, cocaine and methamphetamine dealers were found in different types of places. Cocaine dealers were seldom located in single family homes. The methamphetamine dealers were located in apartments, but many of them were located in single-family homes. Single-family homes

were usually located further from arterial routes than apartment buildings. Again, the methamphetamine places showed greater range than the cocaine places.

Third, analysis of the place data revealed the predicted outcomes regarding the types of places (see Table 1). The proportion of cocaine dealing sites in apartments was not significantly different from the proportion of non-dealing sites in apartments. However, the proportion of methamphetamine sites in apartments was significantly below that of the non-dealing sites. This is consistent with the prediction that the methamphetamine dealers work in a wider range of locations than the cocaine dealers.

	Non-dealing	Cocaine	Methamphetamine
Apartment buildings	77.0% (139)	78.4% (58)	59.6%(28)*
Apartment buildings with locked gates	28.1% (13)	56.9% (33)*	32.1% (9)
Apartment buildings with >15 units	51.7% (24)	15.5% (9)*	25.9% (7)
*Percent significantly different from non-dealing places at .05 level.			

Given sites in apartment buildings, cocaine sites were significantly more likely to have locked gates than the non-dealing sites. This was not the case with the methamphetamine apartment sites. The association of physical security with cocaine dealing is as one would expect based on the model.

The cocaine apartment sites were significantly less likely to be in the larger apartment complexes (over 15 units) compared to the non-dealing sites. Again, the methamphetamine sites were not statistically different from the non-dealing sites with regard to apartment building size. Because owners of larger apartment buildings can better afford to have vacant units than owners of smaller buildings, we would expect them to have fewer incentives to tolerate drug dealing. Thus, based on the general model, it is not surprising to find that cocaine dealers seem to avoid the larger complexes. The methamphetamine dealers are less likely to be detected

given their style of dealing, so they are more likely to be located in the larger complexes.

Fewer than 7% of the cocaine sites were in single-family homes, but 28% of the methamphetamine sites were in such structures. The methamphetamine places in single-family homes showed no association with security features. In fact, methamphetamine places in single-family homes had fewer security measures than single-family homes without any type of drug dealing. Again, this is consistent with the predictions of the general model.

Fourth, using another data set covering all of San Diego, it was possible to test the general model's prediction about economic viability of properties used in illicit markets. The model claims that sellers using a network solution are likely to be spread over a wide area. It also claims that the sellers involved in the routine activity markets will be concentrated in economically depressed areas. We should see evidence of this if we compare illicit retail marketplaces used by sellers taking a network solution to places occupied by sellers taking a routine activities solution.

Comparing the methamphetamine places to non-methamphetamine drug places throughout San Diego offers this opportunity. In this second study, owners of properties used for drug sales were interviewed. Though only 63% of the owners provided both the price they paid for the property and its estimated value, we can still use these figures to show how this model can be applied.

If methamphetamine places are more spread out, then many will not be in economically depressed areas, though many will be. Places in economically depressed areas should not increase in value as much as those in more economically viable areas. We would expect a bigger positive difference between the current valuations of methamphetamine places and their purchase prices than we would for other drug places. We should also see greater variation in property value changes for drugs sold using a network solution than for those sold using a routine activities solution.

Table 2 (second column) shows the results. The mean difference for the methamphetamine places is over five and half time greater than the mean difference for the other places. Additionally, the standard deviation for the methamphetamine places is twice as large as the standard deviation for the differences for the non-methamphetamine places.

Because changes in value reflect the length of time property has been owned and the type of structure located on the property, the data were adjusted to take these into account (see Appendix). The third column displays the adjusted means and standard deviations. The results again are as the general model predicted, but more dramatic. Properties with methamphetamine dealing rose in value while properties where other

drugs were sold dropped in value. And again, the standard deviations of the mean change in value was over twice as large for the methamphetamine places as the other drug places.

In summary, though the market places for cocaine and methamphetamine shared some of the same area, they served different markets and used different strategies to balance access and security. The patterns of drug dealing described by the police suggested that the methamphetamine dealers and customers used a network solution and the cocaine dealers and customers used a routine activities solution. The geographic patterns of the dealing places and the characteristics of the places themselves were compatible with the general model of illicit retail marketplaces.

	Mean Difference between Current Valuation and Purchase Price (Standard Deviation)	Adjusted Mean Difference between Current Valuation and Purchase Price (Standard Deviation)
Methamphetamine (21)	\$46,047.62 (\$254,115.42)	\$49,481.84 (\$225,958.39)
Other Illicit Drugs (61)	\$8,262.30 (\$125,725.12)	-\$17,034.73 (\$111,439.83)

These findings are not a hard test of the general model. The general model was developed while conducting much of this research, so the model and the data are not independent of each other. Hard tests of this model will only occur when other data sets are used. Nevertheless, these analyses are useful for several purposes. First, they show the plausibility of this model. Second, they show a number of ways one can operationalize the model. Third, they show that the two approaches to balancing security and access can operate in the same areas.

USING THE MODEL FOR RESEARCH

Testing the Model

Testing this model requires that researchers demonstrate that the sellers and buyers are threatened by the police or others. They must show that the police are actively trying to arrest the sellers or buyers, or that

dealers or sellers face risks from non-police sources. If sellers and buyers face risks and the predictions described earlier cannot be found, this will be evidence that the model is not valid.

If a researcher establishes that the sellers and buyers face no security problems, and still finds the predicted geographical patterns, this too is evidence that the model is a poor explanation of illicit retail marketplace geography.

If a researcher establishes that the sellers and buyers use a third approach to balancing security and access, this is evidence that the model is too limited. If repeated studies find that other solutions are used with far greater frequency than the network or routine activity solutions, then this will be evidence that the model may be a special case of a more general process. If alternative solutions are used only infrequently, then the basic model proposed above is probably sound and only minor alterations are required.

Given that a researcher establishes that a network solution is being used in a market, once non-market confounding variables are controlled, the following results should be found:

1. The marketplaces should be spread apart and not clustered.
2. In the majority of these places there should be a low level of physical security.
3. If marketplaces move, the new places for exchange should have little relationship to their old exchange places.
4. Crackdowns should result in substantial spatial displacement.
5. Investigations of landlords and other place managers should reveal low levels of collusion with sellers or buyers and few threats from buyers or sellers.

Given that a researcher has established that a routine activity solution is being used in a market, then the following results should be found:

1. The illicit retail marketplaces should be clustered along arterial routes or around nodes of routine legitimate activities.
2. The arterials and nodes with illicit retail marketplaces clustered around them should be in economically depressed areas.
3. Physical security should be present at the marketplaces.
4. If marketplaces move, they should relocate to places that are similar to the old places.
5. Crackdowns should result in limited spatial displacement, and what spatial displacement occurs should be along the vulnerable arterial routes and nodes and to vulnerable places.

6. Investigations of landlords and other place managers should show that these people have limited resources to control behavior at their properties, are economically vulnerable, and sometimes feel threatened by sellers and buyers or are in collusion with the sellers.

Repeated failures of these predictions to come true will be evidence that the model must be substantially revised or abandoned. Other predictions can be derived from the model and should be pursued as well.

This model should fit all instances of illicit retail markets. Research may show that it is limited to the sales of one type of illicit good or service. Comparative studies should be undertaken to determine if this claim for the universality of the model is well-founded.

Since this model is based on recent observations, it may not apply to historical illicit retail markets. I assert that it should, but this too should be tested. The discovery of other patterns for the distribution of illicit marketplaces would expand our understanding of the underlying forces that structure them.

Issues Raised by the Model

Even if the general model of the geography of illicit retail marketplaces is ultimately found to be insufficient, much can be gained by applying it as if it were a valid description of reality. Conjectures are useful if they suggest interesting and useful avenues of enquiry. There are several areas highlighted by this model that should receive research attention.

Pricing

This model makes no predictions for the prices of goods and services (controlling for quality) sold in markets using these two solutions. Networks may provide goods and services at lower cost, because risks are lower and thus sellers do not need as great a return to compensate them. There are fewer customers that dealers must compete for, and this too may drive down prices in illicit retail markets using networks. But there are likely to be fewer sellers, which would reduce competition and increase prices. Further, if participants in the network charge a fee for providing information, this can increase prices to the ultimate consumer.

Illicit retail markets using a routine activity solution may provide cheaper goods and services because they cater to a large market, and have many sellers and fewer transaction costs. But sellers may need more return to compensate for their risks (Reuter et al., 1990). Though not an

implication of the model, prices may be higher in network markets than in those using a routine activity solution.

Although this model cannot give a prediction as to how the strategies will affect prices, it may prove useful for examining how prices and quality are related to security. The finding of higher prices in markets using one strategy rather than another would have interesting implications for the expansion of markets for illicit goods and services, because cheaper illicit goods and services should result in more customers.

Communications

The ability of sellers and buyers to communicate is critical to the functioning of all markets. In licit markets, sellers can advertise their goods and services, prices, and locations. In illicit markets, overt advertising is difficult and uncertain.¹ Though police officers have a great many anecdotes about the various methods sellers and buyers use to communicate in illicit markets, systematic research is necessary.

If an illicit marketplace or cluster of illicit marketplaces are disrupted by police enforcement (or other circumstances) and are displaced, how do sellers and buyers reestablish contact? How long does it take to communicate the move? Are some communications media better than others and under what circumstances? What are barriers to communications and how do market participants cope with them?

Some illicit marketplaces have been in existence for long periods and have gotten reputations throughout an area. How are reputations acquired? How are reputations lost? How strong are reputations and what is their role in maintaining marketplaces?

Security

Another central feature of the general model is the need for security by participants. Though much attention has been paid to the hypothesized link between drug selling and inner-city violence, the possibility of violence is a feature of all illicit markets. Violence is both a threat to security and a means for obtaining security. There are other ways of obtaining security besides violence. This paper has highlighted the utility of physical security. Much more research is needed on how participants in illicit markets provide security. Since the security measures employed by a prostitute are likely to be different from those used by a gun merchant, much can be learned from comparing different types of illicit markets.

How much of a threat are other offenders? In many situations they may be a bigger threat than the police. If so, they may have a greater

influence on the geography of illicit retail marketplaces than the police. If non-police threats are substantial and important, then we must know more about them if we are to gain an understanding of these markets.

Police are a threat to security. It is quite likely that the security measures used against the police are different from those used to protect against other offenders.² Again, comparative studies would aid our understanding of the ways in which security is used to thwart enforcement and of how security concerns shape the illicit market.

Place Managers

The study of drug places in San Diego proposed that routine activity theory could be usefully expanded by incorporating the concept of place managers in the theory (Eck, 1994). Place managers have a substantial role in the general model of the geography of illicit retail marketplaces. Nevertheless, there is virtually no criminological research on these people. For example, no studies have explored the role of apartment management in the control of crime in and around rental property. Even minimal research on this topic is likely to be highly profitable.

Timing

The general model makes no explicit predictions with regard to when illicit marketplaces are open for business. Clearly, however, many of the reasons for the geographical distribution of retail illicit marketplaces could apply to the temporal distribution of these places. Though not a direct test of the model, this prediction implies that the illicit marketplaces will be open when the arterials and nodes have a great deal of licit routine activities, and will be closed when the routine activities of the area are at their lowest. If this is the case, the limits of temporal displacement are set by the legitimate routines of the area in which the marketplaces are found. Regardless of the outcome of a test of this hypothesis, more research needs to be conducted on the timing of marketplaces and how these are related to the activities in the surrounding area.

Research Designs

The research designs that can be used to test this model must take into account that the illicit retail marketplaces are not independently distributed. Instead, places are either linked by the participants or by the routine activities of the area. Because these links are critical to the model, research techniques designed for use with independent observations will

have limited utility and may even preclude testing of this model. Thus, random sampling may not be applicable unless the sampling strategy takes into account the relationships involved. Similarly, randomized experiments will disguise the underlying relationships and could lead to fallacious conclusions. The experimenter must take into account the underlying relationships among places and people if such a design is to be used.

Case-control studies may be particularly useful for testing this model. In a case-control study, the sampling process stratifies on the dependent variable (e.g., an illicit marketplace) rather than an independent variable (e.g., the level of place management at the location). These studies are particularly useful for examining rare outcomes (Schlesselman, 1982). Since most places in an area are unlikely to be illicit marketplaces, a case-control design will be more efficient than alternative designs. Further, one can design a sampling process for cases (illicit marketplaces) and controls (places that are not illicit marketplaces) that is suitable for testing this general model (Eck, 1994).

Mapping may be very useful for testing this model. However, the researcher must establish a predicted map pattern against which the observed map pattern can be compared. This is analogous to the difference between exploratory factor analysis and confirmatory factor analysis (Kim and Mueller, 1978). Exploratory mapping involves examining mapped observations and trying to make sense of the pattern. Confirmatory mapping involves predicting what the pattern of observations will look like based on a pre-existing model, and comparing this prediction with the actual observations. Confirmatory mapping could be a valuable tool for testing this model.

Longitudinal designs and evaluations will help us determine how the geography of retail marketplaces changes in response to external pressures. This model asserts that only two solutions to the security-access dilemma are possible. If true, then longitudinal studies should help us understand whether the failure of one solution to provide security and access will result in fewer marketplaces and /or a shift to the other solution. If there are more than two solutions, then longitudinal studies may reveal them.

Finally, ethnographic studies could reveal useful information. Field interviews and observations of sellers, users and place managers can be

used to directly measure the decision-making processes used by these people and how close they are to the model's predictions.

IMPLICATIONS FOR PREVENTION

It is difficult to make strong policy suggestions based on this model. The reason for this is that there is not a body of research supporting this study. Though it is based on several other theoretical perspectives that do have considerable support, this general model goes beyond the available evidence. Nevertheless, there are policy implications that follow from the model, if we assume it is a reasonable description of the geography of illicit retail marketplaces.

The two marketing solutions used to balance risk and reward suggest two different sets of policy recommendations. The routine activity solution provides many possible prevention and control opportunities. The social network solution provides many fewer. Thus, the prevention policies that will be most efficacious will depend on the solution being applied in a given market.

Retail markets organized around a routine activity solution may be controlled or prevented because the principle participants try to use the physical features and the routine activities of the licit world to their advantage. In theory, manipulation of the social flow of people and the physical environment can make retail illicit markets more difficult. Let us examine several of the most obvious approaches, starting with areas and working down to places.

Economic Redevelopment

The general model predicts that illicit retail marketplaces will form along arterial routes going through economically depressed areas. A long-term approach to reducing the number of illicit marketplaces is to make the area economically viable. Places run by managers who have the ability to control access and behavior will be able to keep illicit marketplace users to a minimum.

Area Planning

Mixed land use facilitates illicit marketplaces. Not all places in an area susceptible to illicit retail marketplaces will be used for such purposes. Some of the places that serve to draw people into the area are not good for illicit sales. Other places, which do not bring people to the area, may be good for illicit sales. For example, stores may draw people to an area while

adjacent apartment buildings serve as convenient drug dealing sites. The greater the heterogeneity of the land use the greater the chances that a mix of land use will develop that can support illicit markets. The type of mix will depend on the type of illicit market of most concern. Prostitutes and traders in stolen car parts are likely to need different types of places, for example. Increasing land use homogeneity and creating buffers between different types of land use may help reduce the number of illicit marketplaces.

Flow of People

Customers have to search for illicit marketplaces. This is made easier if they can cruise through an area repeatedly, following circular routes. Organizing the traffic flow so that circular movement patterns are not easy may help reduce the number of illicit marketplaces (Matthews, 1993).

Disrupting Communications

Sellers and buyers need to communicate with each other. This simple fact is often ignored in efforts to control illicit retail marketing. The process of communications is likely to be particular to the specific market. People confronted with a specific illicit retail market should invest some effort into discovering how communications are maintained and looking for ways of blocking them, disrupting them or rendering them unreliable.

Identifying Troubled Places

Within the marketplace area there will be some locations that are ideal for illicit trades. Eliminating these locations through the use of zoning laws, economic incentives, environmental regulation and civil law may reduce the opportunities for illicit marketplaces. For example, if an old motel used for prostitution can be changed to a mini-mall for antiques, crafts and used books, the opportunities for prostitution will have been eliminated.³

Identifying Troublesome Place Features

Redesigning places to eliminate those features most attractive to illicit market participants is another possible approach to preventing the formation of illicit marketplaces. If the presence of a public phone supports drug dealing in a parking lot, then removing the phone may help curb the dealing. Often there are a cluster of features at the place that need to be

addressed. For example, in addition to eliminating the phone, the positions of curb cuts connecting the lot to the streets, the installation of barriers to free pedestrian movement and the repositioning of lighting may be part of a package of efforts designed to reduce drug dealing.

Improving the Effectiveness of Place Management

If place managers are ignorant of what they can do, have standard operating procedures that support illicit markets or are unaware of the illicit behaviors, then the illicit market places can thrive. Training place managers to recognize illicit behavior, curb the behavior, and understand the relationship between management practices and illicit behavior may address this problem.

Civil Law Enforcement

Though the illicit behavior at places may be facilitated by place manager ignorance, it is often desirable to give place managers an incentive to make needed physical and operating changes. The threat of nuisance abatement (see Green in this volume) may be a useful incentive for compelling changes.

Criminal Law Enforcement

Saturation patrols around troublesome places and place clusters may curb illicit market activities. In the short run such efforts may be effective, but their effectiveness will not necessarily last forever (Sherman, 1990).

The appropriateness of each these strategies depends on the specific circumstances. In any given situation some may be more palatable than others. Some of these strategies can be contradictory. For example, changing the flow of traffic may undercut the economic viability of the legitimate businesses in the area. However, many of these strategies may be best used in tandem rather than separately. For example, criminal law enforcement builds a record that can be used in civil law enforcement. Both of these strategies are sticks that may be effectively used when the place managers are given the carrots of economic redevelopment and training. Training will be more effective if someone has already identified the types of places that are most vulnerable and the features that make them vulnerable. This same information can help drive redevelopment plans as well as criminal and civil enforcement. Matthews (1993) suggests that efforts to suppress prostitution activity using both criminal enforce-

ment and environmental changes may be more effective than efforts that use only one strategy.

A possible consequence of these efforts is that if they do control routine activity markets, they may leave behind a residual social network market. The residual market will be smaller by almost any measure (numbers of sellers, numbers of buyers, volume of goods or services sold and so forth). Generally, retail markets organized around a network solution will be much more difficult to prevent. The buyers and sellers are able to circumvent many prevention strategies because they do not take special advantage of the routines of everyday life and make little use of the physical environment. That is, the transactions among participants in these markets can take place in any neighborhood and in a great variety of places with many different features. Enforcement action may be able to keep such a market from expanding, but such efforts are unlikely to totally eliminate the market. The types of enforcement that are effective against such markets are covert operations, rather than the overt patrols that may be more effective against illicit marketplaces stemming from a routine activity strategy.

CONCLUSIONS

This paper has described a general model of the geography of illicit retail marketplaces. Its purpose was to create a highly testable set of predictions that will help us learn more about illicit retail markets, though much will be learned from a series of studies and evaluations designed to test this model. To this end, a number of predictions have been offered that can be compared to observations. In addition, several ways of testing these predictions have been suggested. Finally, a variety of strategies have been presented for the prevention of illicit marketplaces, assuming that general the model has some validity.

Ultimately, we will make greater headway in theory, research and practice if we examine micro-behaviors in micro-environments and search for a few simple underlying principles that can be combined to produce the complexity we see in the world. Rational choice, routine activity theory and offender search theory are three mutually compatible conjectures. Because they- are simple, they allow us to examine the puzzling variety and diversity of criminological phenomena.

APPENDIX

The unadjusted means and standard deviation for changes in property values may reflect the different types of buildings on the drug dealing sites.

They also may reflect how long the properties were owned. If owners of methamphetamine properties had types of buildings that rose in value more quickly, or owned the properties longer than owners of properties where other drugs were sold, then the results in the second column of Table 2 may have nothing to do with the way the drugs were sold.

To control for the type of building and the length of time properties have been owned, I estimated a regression model with structure and time since purchase as the independent variables and change in value as the dependent variable. I then saved the residuals. The adjusted means and standard deviations were calculated from these residuals.

The regression results are reported in Table A. "House" is a dummy variable (O=apartment, 1=duplex or single family home). The next four variables are dummy variables for years of ownership. They should be interpreted relative to zero to five years of ownership. The constant is the mean change for apartments owned zero to five years.

Table A: Regression Results—Change in Property Value as a Function of Structure Type and Length of Ownership				
	B	SE B	T	Signif.
Constant	-31387.31	29392.52	-1.069	.2885
House	8745.44	35497.55	.246	.8061
6-10 yrs	18165.30	43020.76	.422	.6740
11-20 Yrs	186538.83	46924.26	3.975	.0002
21-30 yrs	135475.16	92961.27	1.457	.1492
>30 yrs	90141.87	113869.64	.792	.4310
$R^2 = .18868$ $F = 3.54588$ Significance = .0063				



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NOTES

1. A broadcast on National Public Radio's *Morning Edition* (March 29, 1995) reported that many London prostitutes sometimes post their business cards, some quite lurid, in public telephone booths. A spokeswoman for the prostitutes claimed that banning the cards would only force the prostitutes onto the streets where they could make contacts with customers. The problem with prostitutes posting cards and stickers in phone booths has been an ongoing problem in London (Laycock, 1995).
2. Police like to display the guns they find in raids, and often use these weapons as evidence that the sellers are prepared to fight the police. This may be so, but the value of the guns to the sellers may have more to do with fighting off other offenders than protection against the police.
3. Of course, the creation of a mini-mall that includes antique shops increases the opportunity for using the place for the exchange of stolen goods.

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