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Defining the Drug Market:
The Case of the Jersey City DMAP System

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Table of Contents

	Page
List of Tables.....	(i)
List of Figures.....	(ii)
 Introduction.....	 1
Section 1: Data Sources Used in Identifying Drug Markets.....	2
Section 2: Identifying Active Drug Areas.....	6
Section 3: Identifying Active Street Segments and Intersections....	9
Section 4: Identifying Drug Markets.....	13
Section 5: Characteristics of Drug Markets in Jersey City.....	22
What types of markets exist and how are they distributed throughout the city?.....	22
What are the social and physical characteristics of drug markets?.....	24
What are the different "activity" levels found across the markets?.....	30
 Section 6: Conclusions.....	 33
References.....	35

(i)
List of Tables

	Page
<u>Table 1:</u> Number of Official Markets by Drug Type.....	22
<u>Table 2:</u> Drug Markets by District.....	23
<u>Table 3:</u> Drug Markets by Size.....	24
<u>Table 4:</u> Number of Selected Physical Characteristics that occur within the market boundaries by District.....	25
<u>Table 5:</u> Housing Census Information (1985) for Jersey City Drug Markets.....	26
<u>Table 6:</u> Housing Occupation Details for Drug Markets compared to Jersey City.....	27
<u>Table 7:</u> Percent of white, black and spanish residents living in Drug Markets compared to sales arrestees arrested in the markets by District.....	28
<u>Table 8:</u> Percent of Age Categories of market sales arrestees	29
<u>Table 9:</u> Average Number of Narcotics Arrestees per Market.....	31
<u>Table 10:</u> Number and Percentage of Arrests by Time of Day and by District.....	32
<u>Table 11:</u> Number and Percentage of Arrests by Time of Day and by Type of Drug.....	33

(ii)
List of Figures

Page

Figure 1: Pipeline for choosing segments and intersections to identify and develop drug market boundaries.....11

Figure 2: Map of Contaminated segments and intersections.....12

The drug problem in America's cities occupies a central place both in the public's perceptions of the crime problem and in the allocation of police resources (Church, 1988; I.A.C.P., 1988). Every year a growing number of stories about drug related crime and violations of public order occurring at drug sale locations leads to calls for effective action to clean up the streets and rid the inner city of one of its most intractable problems. In response to public concern, police departments throughout the country have enlarged their narcotics units, established special strike forces and developed new strategies for fighting street level drug dealing. Nonetheless, most of these strategies and programs have developed without reference to systematic information on the nature of drug markets and few have included any systematic evaluation of what works in combatting the drug problem and under what circumstances (Hayeslip, 1989).

The Drug Market Analysis Program (DMAP) in Jersey City developed in great part as a response to these concerns about the effectiveness of police response to the drug problem. We sought to develop a systematic, location based information system that would facilitate the identification of street level drug markets and allow an experimental evaluation of strategies to combat them. While we are just beginning our experimental study, our basic system for defining the boundaries of drug markets is complete.¹ This paper describes how we went about this process, and provides

¹ That process is now being automated by staff at the Center for Crime Prevention studies in collaboration with outside consultants from Aerospace Design Incorporated.

some initial insights we gained into the distribution of drug market activity in Jersey City.

Data Sources Used in Identifying Drug Markets

In developing our basic description of the distribution of street level drug markets we relied upon three data sources. The first of these, arrest information, reflects the official police view of where drug markets are concentrated in Jersey City and were drawn from the Jersey City Police Department's Uniform Crime Reporting (UCR) system. While arrests are made both for drug sales and possession, we restricted our analysis to "sales" arrest events.² This decision was consistent with our basic goal of identifying areas which served as centers of drug distribution (see later). To identify the location of drug markets we analyzed data over a six month period, between June and November of 1990.³ There were 1227 narcotics sales arrests in Jersey City during that period.

While we suspected that the main areas of drug distribution would be revealed by these information sources, we also wanted to allow for identification of places with street level drug activity

² In Jersey City there is no "amount of drug" restriction for distinguishing sales from possession. The decision is made at the discretion of the officer based on observations of the transactions. If officers identify a person as a seller, they arrest them for sales regardless of the amount of drugs found on the person at the time of arrest.

³ In developing a view of the type of drug activity at places, as well as offender movement patterns we used data for an entire year (see later).

2
that had escaped police attention. To do this we conducted a narcotics phone-in and a large scale location based community survey. The less comprehensive of these citizen based data sources was the phone-in conducted on July 25th, 1990 between 10 am and 10 pm⁴. The police department advertised the phone-in using two local cable television stations, 6 radio stations (2 Spanish speaking), 2 local newspapers, and by distributing 10,000 flyers throughout Jersey City during the week preceding the event. The advertisements emphasized that the police department wanted to hear from citizens about drug locations in their area, and that all callers would be guaranteed confidentiality.⁵ One hundred and fifty two people called to identify 191 places as active drug locations.

3
A much more comprehensive view of citizen perceptions of drug markets in Jersey city was gained through a community survey conducted between July and September of 1990.⁶ In the survey we sought to identify more obscure drug locations in lower density

⁴ In updates of the drug markets as part of the DMAP experiment, we use data from a routine tipline. The tipline takes regular calls on a 24 hour, 7 day a week basis. However, to boost the calls prior to updates of the drug markets, we advertise the tipline intensely for one week on cable TV, radio stations and by distributing flyers about the tipline.

⁵ Narcotics squad personnel answered the four phones and prompted callers for specific information using a standardized data collection form. Their involvement increased their commitment to DMAP and allowed us to utilize their familiarity with drug areas in the city.

⁶ For a more comprehensive discussion of the survey and its design, see Center for Crime Prevention Studies, Project Report # 2, 1991.

residential areas (in which there is comparatively little police presence) and where official police records generally fail to reveal the presence of drug activity. Two households⁷ on each occupied block in the city were selected randomly for this purpose,⁸ a strategy which cast a net for drug market identification across the entire city. The survey sample included 3601 respondents from over 2120 occupied street segments.⁹

The survey was conducted by the police department, under the supervision of staff from the Center for Crime Prevention Studies. Seven police officers (who worked in uniform because of departmental regulations and safety concerns) and one graduate student from Rutgers University acted as interviewers for the study. While we were initially concerned that citizens would fear reporting drug activity to uniformed police officers, analysis of responses to the uniformed police compared to the responses to 182 interviews conducted by the civilian interviewer showed generally small and insignificant differences. The only areas of divergence were the reports of satisfaction with police services and the survey non-response rate. Citizens were less likely to give

⁷ When households were not available businesses were selected.

⁸ We could not sample more than two people per block due to economic constraints. We also could not return to houses. Rather, we chose the next random household on that same street segment if someone was not at home. This was also an economic decision but does not bias our general goal to identify drug activity. Indeed, we suspect that those more likely to be home are also more likely to be good observers of drug activity.

⁹ On 30% of the occupied street segments, only one household was available to be interviewed. On more than half of these segments, only one business or house existed.

negative responses concerning satisfaction with the police to police officers, but they were more likely to let the police interviewers in the door to conduct the survey. The response rate for those who were identified as home by interviewers was over ninety percent.

Each survey respondent was given the option of identifying a drug location on their block. If they did not know of a location on their block, they were asked if they knew of a drug location nearby. Only 5.9% of the 3601 citizens interviewed identified drug activity on their block and an additional 8% identified a drug location off their block yet in their neighborhood.

These results were very different from what the Police Department expected when the survey was commissioned, namely that drug dealing was spread throughout this densely populated city. Therefore, we looked closely at the possibility that citizens feared reporting drug actions and thus that the survey had seriously underestimated drug problems. We compared where citizens identified drug activity to where offenders were arrested. We found that survey respondents consistently identified drug prone areas (as identified by narcotics arrest data), particularly those places existing in the most crime ridden neighborhoods of Jersey City. While we suspect that some citizens were indeed hesitant about providing information to the police (even under a guarantee of confidentiality), these data suggest that most were not afraid to provide information to the police. Arguably, it is in high activity drug areas that citizens would be most afraid of

retribution from dealers and others involved in the drug trade.

Identifying Active Drug Areas

We sought to develop a process for identifying drug markets in Jersey City which satisfied a series of criteria. First, the process had to reflect the reality of distribution patterns in the city. Second, we aimed to identify places in Jersey City which evidenced significant ongoing drug activity. Third, our goal was to develop a process that could be replicated at routine intervals by the police.¹⁰ Finally we wanted to take into account the realities of drug dealing as they are understood by narcotics officers who would utilize the DMAP system.

Our first task was to choose a base unit analysis for identifying drug markets. While the street address is used to define the location of drug activity in the arrest, the link of information to specific addresses was likely to include a number of small errors. Both for the police and for citizens, there is often little difference between addresses located next to or near each other. For this reason, the address was too specific a unit to begin the process of selecting drug markets. Alternatively, because much drug activity is linked to intersections in Jersey City, and dealers often drift up and down blocks connected with intersections, the block or street segment also provides a potentially misleading base unit for identifying areas with

¹⁰ We are now automating the drug market identification process described below for this purpose.

significant drug problems. In this case, drug activity that is actually linked would be separated onto different street segments.

Recognizing these problems, we chose the "intersection area" as our base unit for identifying "active" drug areas in Jersey City. The "intersection area" links each of the 1553 intersections in the city with its related four street segments or blocks, and provides a unit of analysis that avoids the difficulties we associated with the address or block. First, in contrast to the address, it is not sensitive to small coding errors or short movements of offenders. Second, the "intersection area" unit of analysis avoids the need to decide the direction of drug sales activity on a particular block, and thus allows us to link activity on different blocks that could reflect related movements of offenders away from central intersections.

Once we had defined these "intersection areas" on a computer map of Jersey City, we linked narcotics sales arrests, community survey and narcotics phone-in data to them. Of the total of 1553 intersection areas in the city, 479 (30.8%) were linked to some type of narcotics activity. Two hundred and forty two of these contaminated intersection areas (50.5%) showed some narcotics sales arrest activity. Tipline callers identified 126 intersection areas as having drug activity, and survey respondents identified 311.

Recognizing the concerns of narcotics officers, we sought to distinguish between bogus "active" intersection areas and places with significant ongoing drug problems. We understood that a lone narcotics arrest assigned to an intersection area was not a good

indicator of ongoing activity. Even multiple arrests at a specific location over a week or two could represent an isolated series of events that would not last beyond arrest actions. Similarly, we understood that one community respondent perceiving a place as a drug location did not provide solid evidence of an on-going drug problem. Indeed, narcotics officers commonly felt that citizens often confused social activity by young people hanging out on a corner with narcotics activity.

Following these concerns, only intersection areas with multiple indicators -- either within or across the data bases -- of drug activity were included in the identification of drug markets. In the case of citizen information, we set a threshold of one additional "event" either official or citizen identified for inclusion of a street segment as an "active" area. In the case of arrests we set a threshold of at least one arrest in two of the six months examined.¹¹ The six criteria for identification of active street segments are:

- 1) The presence of at least one drug sales arrest in two or more of the six months examined.
- 2) At least one narcotics phone-in response and one drug sales arrest.
- 3) At least one community survey response and one drug sales

¹¹ We examined the stability of using a threshold of one, two, three, four, five and six months of arrest data in conjunction with the other criteria to include intersection areas. If we had used just one month, we would have included 66% of all intersection areas. Alternatively, varying the number of sales arrest months from two through to six months only changed the number of intersection areas from 44% to 49% of the total contaminated intersection areas. Therefore, we set the threshold conservatively at two months.

arrest.

- 4) At least one community survey response and one narcotics phone-in response.
- 5) Multiple community survey responses.
- 6) Multiple narcotics phone-in responses.

Some 239 (15.4%) intersection areas in Jersey City out of 1553 potential intersection areas met these selection criteria.

Identifying Active Street Segments and Intersections

The intersection area as the preliminary unit of analysis successfully prevented loss of drug locations due to both slight deviations in arrest recording procedures or casual movement of offenders along street segments. Nevertheless, it was a problematic unit to use in identifying specific drug markets in the city. This is because drug activity on the segment had been linked to the two adjoining intersection areas,¹² and thus single events could be counted twice. Accordingly, we identified all active street segments or intersection included in the 239 active intersection areas. This process identified 399 (9%) "active" intersections and segments, out of a total of 4404 in the city.

When we mapped these places we noticed that many of the unofficially defined segments and intersections were adjacent to locations with narcotics sales arrest activity. We thought it

¹² While it made sense not to make a decision about the direction of segment activity in deciding upon which locations to include in the intersection area data base, it was not reasonable to continue that process once we sought to identify drug markets.

unlikely that these adjacent segments or intersections were new points of drug distribution that had gone unnoticed by the police, a view that was strongly stated by Jersey City narcotics officers. Rather, we suspected that either citizens identified the casual movement of offenders away from drug areas (especially buyers leaving the drug market) as activity on their block, or they were prone to define drug activity on their block as a means of increasing the likelihood of police presence. In these "close match" cases we felt that the official data more accurately captured the specific location of drug sales. Therefore, we deleted the 77 unofficial sites that were adjacent to other official sales locations.¹³ These deletions left 322 active segments and intersections, representing 135 (8.7%) of all intersections and 187 (6.6%) of all street segments in Jersey City. The pipeline that led us to these final active intersections and street segments is summarized in Figure 1.

The final map of these 322 active intersections and segments used to define drug markets is presented in Figure 2. As is apparent, the vast majority of the city landscape is free of ongoing drug activity as we have defined it. Even in the South District which contains 44.4% of the segments and intersections identified as active, the majority of the street segments and intersections did not meet our inclusion criteria.

¹³ We deleted street segments and intersections that were only identified by unofficial sources and were directly adjacent (within a block) to areas with official arrest histories. We then marked these sites as "subsidiary locations" for later verification.

Figure One: Pipeline for choosing segments and intersections to identify and develop drug market boundaries

Intersection Area Database
(N = 1553)

|

Find contaminated intersection areas using
narcotics sales arrests (June -> November, 1991),
Community Survey and Tipline
(N = 479)

|

Use threshold criteria to select
Category A intersection areas
(N = 239)

|

List and map all contaminated
segments and intersections that
are part of the Category A intersection areas
(N = 399)

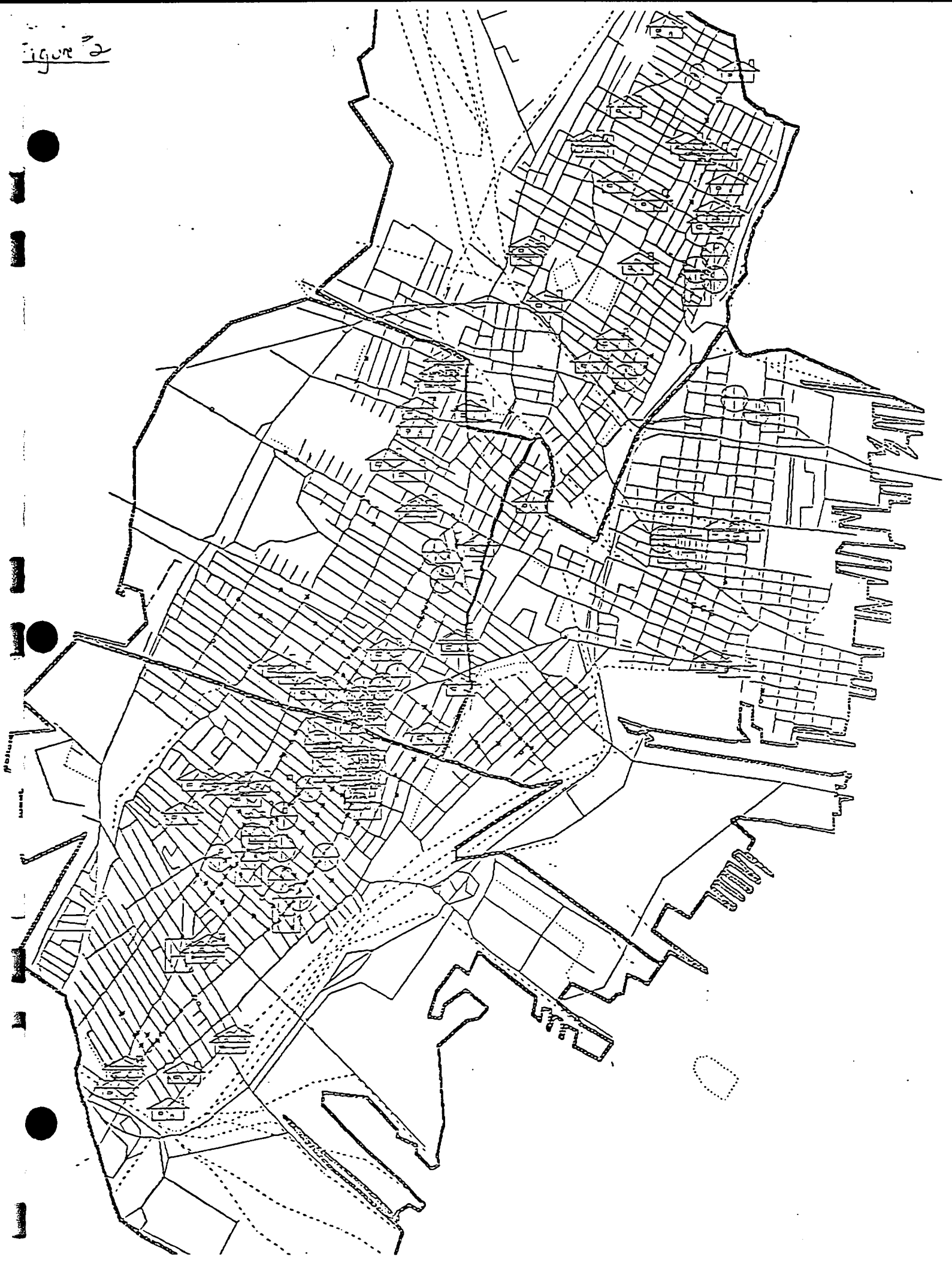
|

Identify "subsidiary" contaminated segments
and intersections for deletion and
later verification
(N = 77)

|

Map contaminated segments
and intersections and use to develop
drug market boundaries
(N = 322)

Figure 2



While Figure 2 provides a good view of where we believe drug activity is centered in the city, it also illustrates one of the major dilemmas confronted when trying to develop a location based definition of drug markets. How does one treat continuous areas of drug activity? Given the clustering of street segments and intersections in Figure 2, we could conclude that Jersey City includes three or four very large drug markets, each covering 25 or more blocks. Alternatively, one might ask whether these large areas could be split up into distinct drug markets that are relatively close to each other, for example a block or two away? The following section discusses these questions and presents the process that we used to define drug market boundaries.

Identifying Drug Markets

Economic literature describes the term "market" as a set of arrangements by which buyers and sellers of a good or service are in contact to trade that good or service (Fischer, Dornbusch and Schmalensee, 1988, 11). Examination of market activity can focus either on the consumer or the seller. In the marketing literature, the market is generally discussed in terms of the forces that result in a particular group of consumers converging in space and time to form a market for a particular commodity. Alternatively, the term "market" could be used to examine the convergence in space and time of sellers. Examination of the relationship between sellers and marketplace activities appears more often in the literature when the focus is on black market economies (see for

example Wisotsky, 1986).

Consistently, the term "market" depicts some geographic concept of "place", although the reference to a marketplace is often applied to different levels of analysis. For example, some markets are global, whereas other markets refer to particular stores or mall settings.

In the criminological literature the term "drug market" is generally used to describe aggregate market behavior in response to drug interdiction efforts (see for example Reuter, 1989) or to elasticities of supply and demand in response to hypothesized general strategies of law enforcement (see Kleiman, 1988; Moore, 1977; Reuter and Kleiman, 1986). More recently, journalistic accounts have casually used the term "drug market" focusing on small geographic areas where street level drug activity is high. In our study, we needed to identify drug markets so that they could be used in an experimental evaluation of innovative enforcement strategies targeted at specific places. Consequently, the definition of a drug market in our study was driven by the need to identify discrete geographic areas. Nevertheless, we did not want to ignore links between people and places or set an arbitrary unit of analysis, such as a block or intersection, to define a "drug market."

To construct an operational definition of a drug market in the Jersey City experiment, we undertook a series of ride-alongs and conducted unstructured interviews with members of the Jersey City narcotics squad. These experiences suggest first, that detectives

generally characterize active places by the type of drug being sold. Second, detectives perceive that individuals tend to sell the same drug in the same area, often the same intersection. Detectives believe that one "street boss" controls three or four consecutive intersections and recruit people to work their area, although occasionally, individual operators set up a "market" near to a main drug distribution area.

Ride-alongs and interviews also suggest that "drug markets" are part of the street milieu in several ways. First, the geographic boundaries of markets fit with the street layout. For example, market boundaries are consistent with natural boundaries of bridges, curved streets and other land use changes. Second, the points of distribution for each market do not drift considerably from one day to the next, because if they did customers could not find the market. This suggests that geographic distance should be a criterion in developing drug market boundaries. Third, narcotics detectives suggest that the type of market is generally a function of land use and land use decay. For example, heroin markets generally exist in the most dilapidated areas, cocaine is often sold in bars, and marijuana is usually found near high schools.

Using these ideas and perceptions we decided to operationalize the term "drug market" as a "point of drug distribution" because we believe this phrase provides a more accurate description of our active segments and intersections. We define these points of drug distribution as the convergence in space and time of sellers to geographically small places that are differentiated by the type of

drug sold. As such, type of drug categories, geographic distance and seller movement patterns form our three criterion for defining points of drug distribution in our study. The physical characteristics of each point of drug distribution were then used to fine tune drug market boundaries.

Type of drug is the first criterion we used to separate geographically close active locations. Type of drug information was coded for 68% of all narcotics sales arrest made in Jersey City during 1990, and only 50 (19%) of the officially defined active segments and intersections meeting our threshold criteria failed to reveal the type of drug that was seized.¹⁴

Nonetheless, we feared that the method would not be particularly useful if a large number of locations (defined in our data base by street segments and intersections) evidenced little specialization by drug type. However, in Jersey City only 38 (12%) of the 322 contaminated segments and intersections had two types of drugs that each accounted for more than 30% of arrest activity and 29 of these mixed drug type segments and intersections had fewer than 10 sales arrest events during 1990. We treated these mixed drug locations in two ways. First, if two adjacent segments or intersections included the same mixed drug sales (as identified by arrests) and these places were at least a block and an intersection away from any other contaminated place, then the mixed locations would create a mixed drug market on its own. Second, if a mixed

¹⁴ See later for a discussion of the problem of segments and intersections for which no arrest data was available.

drug location fell within the boundary of a dominant drug type and one of the drugs identified was the same as the dominant drug type, then the mixed drug segment or intersection would be included within the larger market boundary.

The second criterion we used to define drug distribution boundaries was geographic distance. We separated active locations if at least one inactive street segment and one inactive intersection existed between two active places. This decision was consistent with the way narcotics detectives understood drug markets and was based on two assumptions. First, we assumed that drug activity from one drug location that moved across a series of blocks would result in at least some evidence of activity between the two places. Second, we assumed that if sellers did not cross the inactive segments and intersections, then the two locations could not be part of the same market.

This latter assumption was supported by examination of movement patterns of those arrested for drug sales. When we examined the pattern of arrests across the active segments and intersections, we found that only 15 (3.3%) out of the 448 people arrested more than once for selling narcotics during 1990 traversed an inactive segment or intersection to sell at an adjacent market as defined by our type of drug and geographic distance criteria. Further, 6 of these 15 people had to traverse more than 4 blocks to get to the adjacent market. Indeed, if a person was arrested in two separate markets, they were more likely to be arrested in two separate districts in the City.

It should be noted that we did not have type of drug data for locations identified by just unofficial sources.¹⁵ Recalling that we had deleted the unofficial locations that were adjacent to officially identified active places, the remaining unofficial locations were generally isolated from other drug areas and seldom went beyond two street segments. Consistent with the way we linked officially defined places, we linked unofficial hits that were within a block and an intersection of one another.

These criteria allowed us to construct nearly 100 drug markets in Jersey City, covering about 85% of the contaminated segments and intersections in the city. However, the remaining 15% of contaminated segments and intersections were places either where just one arrest with drug identifier information appeared in the middle of an otherwise drug dominant series of streets and intersections (N = 5) and places where the type of drug information was missing (N = 50). To deal with these problems, we created two exceptions to the rules used to identify drug markets. First, we linked places with missing drug information to the adjacent segment with type of drug data. These places were most often on the outskirts of an otherwise drug dominant market and did not include very many arrest events. In places with no drug type data that were more than a block and an intersection away from another market, we created a separate market that did not have a distinguishing type of drug. By the time we had identified our drug

¹⁵ Though citizens were asked what type of drug was being distributed in areas they identified, this data was often missing and was likely when present to be inaccurate.

markets by type of drug, only six markets did not have a distinguishing type of drug to characterize the market.

The second exception related to "stray" drug type hits in otherwise clearly defined drug markets. Consistent with the data, narcotics detectives highlighted the fact that on some occasions they would arrest a person for selling a type of drug that was unusual for the area. For example, in the North District the data show one cocaine arrest on a segment between two intersections with numerous PCP arrests. In the South district we found evidence of a stray marijuana sales arrest in the middle of a cocaine market. Again in the South district, we had one heroin arrest on the outskirts of a cocaine market. In these cases we decided to create an exception to the rule for dividing drug markets by type of drug and we counted these stray arrests within the boundaries of the dominant drug type market.

We identified 107 drug markets in Jersey City using the process of linking adjacent street segments and intersections by type of drug, taking into account the exceptions as defined above¹⁶. While we believe that this process provides a useful view

¹⁶ Overall, Jersey City provided over \$100,000 in support outside the DMAP budget to carry out the community survey and the phone-in. To determine whether this expense was justified, we needed to calculate how much extra we learned from these data sources. Some 34 (31.8%) of the 107 drug markets identified by DMAP were identified exclusively by unofficial data. 20 of these were identified by the survey only, 4 were identified by the tipline only and 10 were identified by both the survey and the tipline. Importantly, the majority of these unofficial sites are located in the predominantly white and middle class districts of the city (North and West Districts) where there is much less official enforcement than in the predominately black, South District.

of drug market activity, we were concerned that the drug markets we identified be generally consistent with the ways in which narcotics officers in Jersey City view the drug problem, as well as the physical characteristics of the city. Therefore, we verified the construction of our markets by (i) consulting interviews conducted with each of the 36 narcotics officers in Jersey City, and (ii) undertaking a series of physical observations of all 107 drug markets.

In the interviews conducted with narcotics officers, they were shown blank maps of Jersey City and asked to identify three separate drug markets. Some linked several contiguous areas, others identified just one intersection or block as a drug market. Focussing on these drug market areas, we discussed their boundaries. These interviews provided further verification (often multiple times) for 23 of the 107 markets we identified. Generally in the smaller, more isolated markets, detectives were in agreement about where boundaries were drawn and the market boundaries they defined were almost always similar to those we developed. For larger markets, detectives sometimes identified just one intersection as the market, while others clearly linked a series of intersections which sold the same drug. When detectives linked several adjacent intersections into one market area, they were generally consistent with the DMAP market boundaries.

Physical observations also provided a means to examine the drug market boundaries. As a verification tool, each street segment and intersection of the drug markets were videotaped, street maps

were drawn to detail the features of the drug market streets and aggregate information about each street was recorded into a data base.

We aimed to first, discern whether the physical characteristics and land use factors associated with the markets related to the type of drug sold. For example, the seven marijuana markets are adjacent to other larger cocaine or heroin markets, which initially led us to suspect that these areas might be seen as part of these latter more serious drug areas. Nevertheless, our preliminary physical observations suggest that marijuana markets do in fact have fairly solid market boundaries. For example, we identified one marijuana market in the East District adjacent to a cocaine market. The physical observations revealed that the marijuana activity centered on a school playground and the cocaine arrests derived from a bar on an adjacent segment.

Second, we used the physical observations to examine whether the markets contained any unusual land use characteristics that would make the boundaries artificial. For example, we were concerned that our identification process might have defined single markets that included such structures as bridges or dead end streets that would in reality divide up activities in a drug area even if the type of drug sold extended across those barriers. We found that no unusual structures or land use characteristics fell within the market boundaries. This suggests that our market boundaries are consistent with some very basic features of the physical environment in the city.

Characteristics of Drug Markets in Jersey City

One of the aims of the first phase of the Drug Market Analysis Program in Jersey City was to develop a systematic description of the nature, form and intensity of drug market activities. This section first examines the form and distribution of the 107 drug markets identified. Second, the section describes the physical and social characteristics of the markets. Third, we examine different levels of drug activity across drug markets.

What types of markets exist and how are they distributed throughout the city?

A key criterion used to identify drug markets in Jersey City was type of drug. As illustrated by Table 1, a majority of the "official markets" (those with information on type of drug derived from narcotics arrest data) were dominated by cocaine sales. A much smaller number of markets evidenced primarily marijuana or heroin activity, though in the latter case, what markets did exist tended on average to be larger than markets of other drug types.

Table 1: Number of Official Markets by Drug Type:

	<u>N = 73</u>	<u>%</u>
Cocaine	42	57.5
Heroin	8	11.0
Marijuana	7	9.6
PCP	1	1.4
Mixed	9	12.3
No drug defined	6	8.2

The four police districts in Jersey City provide a means to differentiate types of areas within the city. The North District comprises predominately white, middle-class residential neighborhoods; the East District is the main central business district; the West District is mixed with residential areas, business clusters and several housing projects; whereas the South District contains low-income, predominately black neighborhoods. Table 2 below summarizes the breakdown of our 107 markets by District.

Table 2: Drug Markets by District

	N	%
South	35	32.7
North	27	25.2
East	15	14.0
West	30	28.1
Total	107	100.0

This table shows that of all the police districts in Jersey City, the greatest number of our markets (N = 35, 32.7%) exist in the South District, which contains the lower income and predominately black neighborhoods. In comparison, the East, business district includes only 14% of the markets in the city.

The South District also comprises some of the largest size

markets as measured by number of segments and intersections included in the market (see Table 3).

Table 3: Drug Markets by Size: (includes contaminated and non-contaminated segments that fall within the market boundaries)

	N	%
One intersection or segment only	49	45.8
2 - 4 intersections/segments	35	32.7
5 - 9 intersections/segments	11	10.3
10+ intersections/segments	12	11.2
Total	107	100.0

Many of our markets (45.8%) were small, covering only one segment or intersection. Some of these small markets were isolated and situated several blocks from any other activity. Other single block or intersection markets were adjacent to larger markets, but separated from them because of the different type of drug sold (N = 7). The physical observations reveal that these smaller markets are often playgrounds and sometimes large apartment buildings, or bars. In contrast to the small markets, twelve of our markets stretched across more than 10 blocks or intersections.

What are the social and physical characteristics of drug markets?

In phase one of DMAP we sought to collect both physical and social data for our drug markets. The social descriptions of the

markets derive from 1985 test census data from Jersey City. As noted earlier, we collected physical characteristic data by videotaping every street segment and intersection existing within our drug market boundaries. Table 4 below indicates some of the physical characteristics of our markets by district derived from these physical observations.

Table 4: Number of Selected Physical Characteristics that occur within the Market Boundaries by District*

	<u>North</u>	<u>South</u>	<u>East</u>	<u>West</u>	<u>Total</u>
Schools	2	16	0	9	27
Aban'd	2	36	10	32	80
Vacant lots	6	129	26	43	204
Bars	7	4	7	10	28
Graffiti**	37	138	18	84	277

* This table of physical observations includes only 70% of the street segments and intersections included within the drug market boundaries.

** Amount of graffiti per building.

The number of vacant lots, abandoned buildings, and the number of buildings with graffiti characterize the level of decay on the segments and intersections that fall within the boundaries of our drug markets. The data presented in Table 4 indicates the level of dilapidation in the South District, even taking into account the larger number of markets that exist there. For example, 36 buildings were abandoned in the markets in the South District.

Additionally, 129 vacant lots and 138 buildings with graffiti exist in the South District markets. In comparison, the North District markets reveal only 6 vacant lots, 2 abandoned buildings and 37 buildings with evidence of graffiti. Not surprising, given the link that police often make between bars and drug activity, 28 bars were identified within the market boundaries in Jersey City.

Table 5: Housing Census Information (1985) for Jersey City Drug Markets by District

<u>District</u>	<u>Median Housing Value</u>	<u>Mean Rent</u>
North	\$50,197	\$304
South	\$46,172	\$264
East	\$34,250	\$214
West	\$47,252	\$258
Jersey City	\$62,509	\$284

Census data provide one way of contrasting drug markets with other areas in the city. For example, the average median housing value for our 107 markets is significantly less than the median housing value for Jersey City as a whole. Further, the mean rental value for the drug markets is slightly less than the mean rental value for the whole City. Examining the differences in the median value and the mean rent by district reveals that the North District consistently shows indicators of social well-being in comparison

with the other districts. For example, the median housing value and mean rent in the North District markets is greater than the values for the markets in the other districts. Interestingly, the median value of the houses in the markets for all districts is less than Jersey City as a whole.

Another indicator of the social features of the drug markets is the level of occupancy and owner-occupied dwellings. We expected that the drug market level of owner-occupied homes would be lower than for Jersey City as a whole because we thought that people would have greater incentive to reduce the prevalence of drug selling on their block if they owned their own home. Table 6 below reveals the census comparisons between the drug market blocks and Jersey City as a whole.

Table 6: Housing Occupation Details for Drug Markets compared to Jersey City

	<u>Drug Markets</u>	<u>Jersey City</u>
One family	13.4%	13.9%
Occupied	90.2%	91.7%
Owner-occupied	24.7%	26.2%

Although fewer homes were owner-occupied in the drug market census blocks, overall the percent of one family, occupied and owner occupied homes did not differ significantly to Jersey City as a whole. However, some interesting differences were revealed when the home occupation details were examined by drug market type. For

example, 81.1% of the total housing units in the heroin markets were occupied. In comparison, 90.0% of homes in the cocaine markets were occupied. In marijuana markets, 89.0% of homes were occupied and in the PCP markets, 93.2% of homes were occupied.

The census data also indicate the racial and ethnic makeup of residents living in Jersey City. Overall, 51% of the city is white, 28% black and 21% of spanish origin¹⁷. Table 7 below describes the racial and ethnic makeup of the residents living within the market boundaries compared to the race and ethnicity of the sales arrestees arrested in the markets by district.

Table 7: Percent of white, black and spanish residents living in the drug markets compared to sales arrestees arrested in the markets by district

	<u>White</u>		<u>Black</u>		<u>Spanish</u>	
	<u>Res</u>	<u>Arr</u>	<u>Res</u>	<u>Arr</u>	<u>Res</u>	<u>Arr</u>
North	74	30	2	14	40	55
South	19	3	73	95	8	2
East	43	11	24	53	50	36
West	36	2	47	94	16	8

Percentages rounded to nearest whole number. Spanish origin persons can be of either white or black race. The sales arrestee category is mutually exclusive which makes the figures not exactly comparable. For this reason, the comparisons should only be taken as an indicator.

¹⁷ It should be noted that the spanish origin category presented in the census data is presented as an ethnic group of people who can be of any race.

As Table 7 shows, the greatest contrast in the racial and ethnic makeup of our drug market residents is between the North and South Districts. In the North District, market residents are predominantly white (74.0%) and hispanic (40.0%), while in the South, market residents are usually black (73.3%).

When we examined the racial composition of sales arrestees to market residents, the data revealed an over representation in every district of black people arrested for selling drugs. For example, in the South District markets, 73.3% are black residents and 95.5% of sales arrestees are black. In comparison, in the North District markets, 1.9% of the market residents are black and only 14.3% of the arrestees are black.

Overall, 89.0% of sales arrestees in the drug markets were males. Interestingly, an over representation of women were found in the heroin markets (15.6%) and markets with a diversity of drugs (18.9%). Table 8 below shows the age category of sales arrestees.

Table 8: Percentage of Age Category of Sales Arrestees

<20	41.5
20-24	24.2
25-29	17.6
30-39	12.9
40-49	2.8
50+	1.0

As table 8 shows, 41.5% of sales arrestees are less than 20 years of age. This result concurs with perceptions of narcotics officers who suggest that young people are actively recruited to sell drugs because they are cheap to bail out of jail and they generally receive more lenient penalties than older people arrested for selling drugs. Overall, the mean age of sales arrestees was 21.3 years. In comparison, the grouped median age of people living in the markets in Jersey City was 30.7. The grouped median age of Jersey City residents as a whole was 31.8.

What are the different "activity" levels found across the markets?

Rengert and Wasilchick's (1985) portrayal of the evolution of drug markets suggests that particular details of activity at different drug markets such as the quantity of sales, the range of hours that drugs are available and the distance that people travel to buy drugs from the markets, are indicators of it's stage in the development process. While we are just beginning to develop an understanding of such development in Jersey City, we have a number of initial indicators of the level of drug activity in the markets we identified.

Table 9 below describes the average number of narcotics arrestees in each of the 73 official markets, during the period we used to develop and verify the market boundaries (January through November of 1990).

Table 9: Average number of narcotics arrestees per market

All arrestees	37.0
"Sellers"	19.6
"Buyers"	17.4

The average number of narcotics arrests per official market was 37. Most of these arrests were of sellers, reflecting in great part a preference among narcotics officers to focus on those they define as "key players" in drug areas.

One key factor that Rengert and Wasilchick (1985) suggest as an indicator of the degree of development of the market is the range of hours that drugs are sold at the market place. One proxy measure of this indicator is the hours of the day that people have been arrested at the markets. Table 10 below shows the number and percentages of narcotics arrests by time of day for the four districts in Jersey City.

In the North and East Districts, the majority of sales arrests were made in the evening hours between 6pm and midnight. In comparison, in the West and South Districts, most sales arrests were made in the afternoon and evening. This suggests that the markets with the highest sales activity are also those "open" for the longest hours.

Table 10: Number and Percentage of Sales Arrests by Time of Day and by District (for official markets)

	North		South		East		West	
	N	%	N	%	N	%	N	%
Night	7	8.5	61	8.7	5	6.3	49	9.4
Morning	0	0.0	68	9.7	0	0.0	64	12.3
Afternoon	19	23.2	277	39.6	20	25.3	161	30.9
Evening	56	68.3	294	42.0	54	68.4	247	47.4
Total	82	100	700	100	79	100	521	100

Time of day categories are as follows -- night is midnight to 6am; morning is 6am to midday; afternoon is midday to 6pm; and evening is 6pm to midnight.

Missing time of arrest N = 46.

When we examined the different hours when different types of drug markets were active, we found suggestive data on the importance of seeing drug activity as a series of distinct problems (see Table 11). While arrests were found primarily in the afternoon and evening hours for cocaine, marijuana and PCP markets, heroin markets appear to be active all the time. This suggest to us that recreational users play a much more important role in non-heroin drug markets. Conversely, the all hours character of heroin markets would imply a larger number of addicts are involved who need constant access to the drug.

Table 11: Number and Percentage of Sales Arrests by Time of Day and by Type of Drug (for official markets)

	Heroin	Cocaine	Marijuana	PCP	Mixed
Night	3.7	9.2	4.3	0.0	9.8
Morning	25.0	5.7	0.0	0.0	14.7
Afternoon	31.5	36.2	40.4	53.3	31.1
Evening	39.8	48.9	55.3	46.7	44.4

The time of day categories are as follows -- night is midnight to 6am; morning is 6am to midday; afternoon is midday to 6pm; and evening is 6pm to midnight.

Conclusions

We developed the drug market identification process described above to facilitate an experimental evaluation of drug enforcement strategies in Jersey City. Nevertheless, we believe that the decisions we made in developing a portrait of drug markets fits the reality of street level drug distribution in the city. Our attention to the geographic character of markets, as well as our reliance on the drugs that predominate in an area for drug market identification, are consistent with our observations and analyses of drug market characteristics as well as those of Jersey City narcotics detectives. While we recognize that a fuller understanding and identification of drug markets would need to draw information from those who sell and buy drugs in these areas, the process we have defined provides a relatively straightforward method for distinguishing drug areas one from another and pointing out likely centers of drug distribution.

Looking at drug markets in this way, we are led to two preliminary conclusions about the nature of the drug problem in Jersey City, and we suspect in other cities as well. First, the drug problem is not endemic to the whole city, but is concentrated in a relatively few discrete market areas in the city (see also Sherman, Gartin and Buerger, 1989; Weisburd, Maher, and Sherman, forthcoming). While such markets are overrepresented in poorer minority areas, even in the most socially disorganized parts of the city there are many places free of drug markets, and a number of markets are found in the "nicer neighborhoods." Second, there is wide variability in the intensity, size and social character of drug markets. This variability suggests that the drug problem must be approached as a series of discrete types of crime rather than as a generic social problem to be fought by the police and the public.

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