How the physical landscape of the urban environment affects drug dealing

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Many illegal drugs are sold in open air markets on the street. But what determines where drug transactions take place? In new research, Jeremy D. Barnum, Walter L. Campbell, Sarah Trocchio, Joel M. Caplan, and Leslie W. Kennedy examine how drug dealers and buyers can take advantage of features of the urban environment in Chicago to find more effective places to make drug deals. Assessing 28 of these environmental features, they find that drug deals were much more likely to take place near to foreclosures, problem landlords and broken street lighting. They write that their findings could be used to inform more place-based policing strategies aimed at tackling drug markets.

Drugs are often sold on the streets in open-air drug markets. Open-air drug dealing is a complex endeavor between buyers and sellers, who are frequently strangers or only loosely acquainted, and yet must find a way to balance a competing set of demands: access and security.

Like sellers and buyers in the legitimate marketplace, drug dealers and consumers in the illicit marketplace must be able to easily access one another to conduct business. However, this is made more difficult in an illicit market where advertising a legally prohibited product would put all parties at risk of formal sanction. Furthermore, and in contrast to legitimate marketplaces, dealers and consumers must always consider security. The degree of security is both a function of risk of arrest by law enforcement for buying or selling an illegal substance and risk of dispute with other dealers or consumers, because illegal markets lack a formal third party (e.g., courts) to resolve disagreements.

One way to respond to the competing demands of operating in the open-air illicit marketplace is to conduct business only at certain locations. Research has found that nearly half of all drug transactions occur on less than 5 percent of street segments. Studies have suggested that some locations are better suited for open-air drug dealing than others because of their particular environmental features, such as hotels, bars, or public transportation stops. These have been termed "ecological advantages" because they can be exploited to enhance both accessibility and security when buying and selling drugs. For example, locations where certain ecological advantages exist are easy to get to, familiar, and draw a large number of persons who could potentially purchase drugs. Moreover, these locations often produce legitimate activity that allows dealers and consumers to blend in to their surroundings.
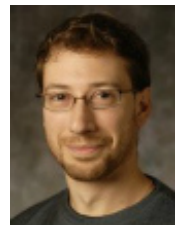
Our research takes advantage of freely available municipal data and a new technique for crime analysis called risk terrain modeling (RTM) to explore the environmental features that create ecological advantages for drug dealing in Chicago, Illinois. We disaggregate our analysis by drug type to directly examine and compare the ecological advantages associated with specific types of drug markets. This is important because ecological advantage may transcend drug type, leading to various types of drugs being sold at the same suitable locations. Conversely, ecological advantage may be drug specific given different sellers, consumer populations, and legal penalties, leading to different drugs being sold at different locations.

We assessed the relationship between 28 environmental features that were likely to bolster accessibility or security in open-air drug markets for four drug types: cannabis, heroin, crack, and cocaine. The main results of our four risk terrain models are presented in Table 1. Overall, we identified 11 environmental features related to cannabis

dealing, 12 for heroin dealing, 11 for crack dealing, and 3 for cocaine dealing. The riskiest feature for markets of all drug types in Chicago was foreclosures; the relative risk values indicate that the risk of drug dealing near foreclosures alone was higher by a factor of between 5 and 16.5 compared to other features in each model.

Table 1 – Environmental Features Associated with Cannabis, Heroin, Crack, and Cocaine Dealing in Chicago, Illinois, 2010 – 2014

Environmental Features	Relative Risk Values			
	Cannabis	Heroin	Crack	Cocaine
Security Features				
Broken Street Lights	1.63	2.43	1.88	-
Affordable Housing	1.52	1.73	1.46	-
Foreclosures	10.21	4.95	11.12	16.56
Parks	-	1.17	-	-
Problem Landlords	2.48	2.85	3.62	-
Accessibility Features				
Filling Stations	1.69	1.57	1.61	-
Late Hour Establishments				
Retail Food	2.22	1.37	1.60	3.11
Bus Stops	1.78	1.63	1.37	-
Grocery Stores	2.07	2.65	2.47	2.26
Homeless Shelters	-	2.20	-	-
Liquor Stores	2.09	1.33	1.95	-
Schools	1.39	1.45	1.41	-
Variety Stores	1.46	-	1.32	-

Across all drug market types, our models highlighted several environmental features that are likely to enhance security and accessibility for open-air drug transactions. Security for drug transactions was enhanced in locations with broken street lighting, affordable housing, foreclosures, and problem landlords were at higher risk for cannabis, heroin, and crack dealing. In terms of accessibility, locations with gas stations, retail food establishments, bus stops, grocery stores, liquor stores, and schools were at higher risk for cannabis, heroin, and crack dealing. While our models do not allow us to establish whether environmental features associated with accessibility are more or less important than those associated with security, they do make it clear that, consistent with theory and prior research, both components of ecological advantage are important at locations of drug sales of any type.

The results are fairly similar across each of our risk terrain models, which would suggest that ecological advantage is a universal concept and that a suitable location for selling one type of drug is likely to be suitable for selling other types of drugs. However we do note a few differences in the particular set of environmental features associated with each drug type and the amount of risk they pose for drug dealing. For example, parks and homeless shelters increase the risk for heroin dealing, but not cannabis, crack, or cocaine dealing. These divergences suggest that certain environmental features provide the necessary ecological advantage for selling certain types of drugs, meaning that the locations where different drugs are sold could also vary.

To explore this idea further, Figure 1 displays the spatial overlap and divergence of high-risk locations for drug dealing. Areas shaded black indicate that that location is high-risk for drug dealing of two or more types of drugs; areas shaded gray indicate locations that are high-risk for drug dealing of a single drug type; and areas shaded white are not considered high-risk for any type of drug dealing. Consistent with the results of our risk terrain models, Figure 1 clearly demonstrates both drug market agglomeration and specialization by drug type.

Figure 1 – Spatial overlap (i.e., areas shaded black) and divergence (i.e., areas shaded gray) of locations at high-risk for dealing cannabis, heroin, crack, and cocaine in Chicago, Illinois, 2010 – 2014
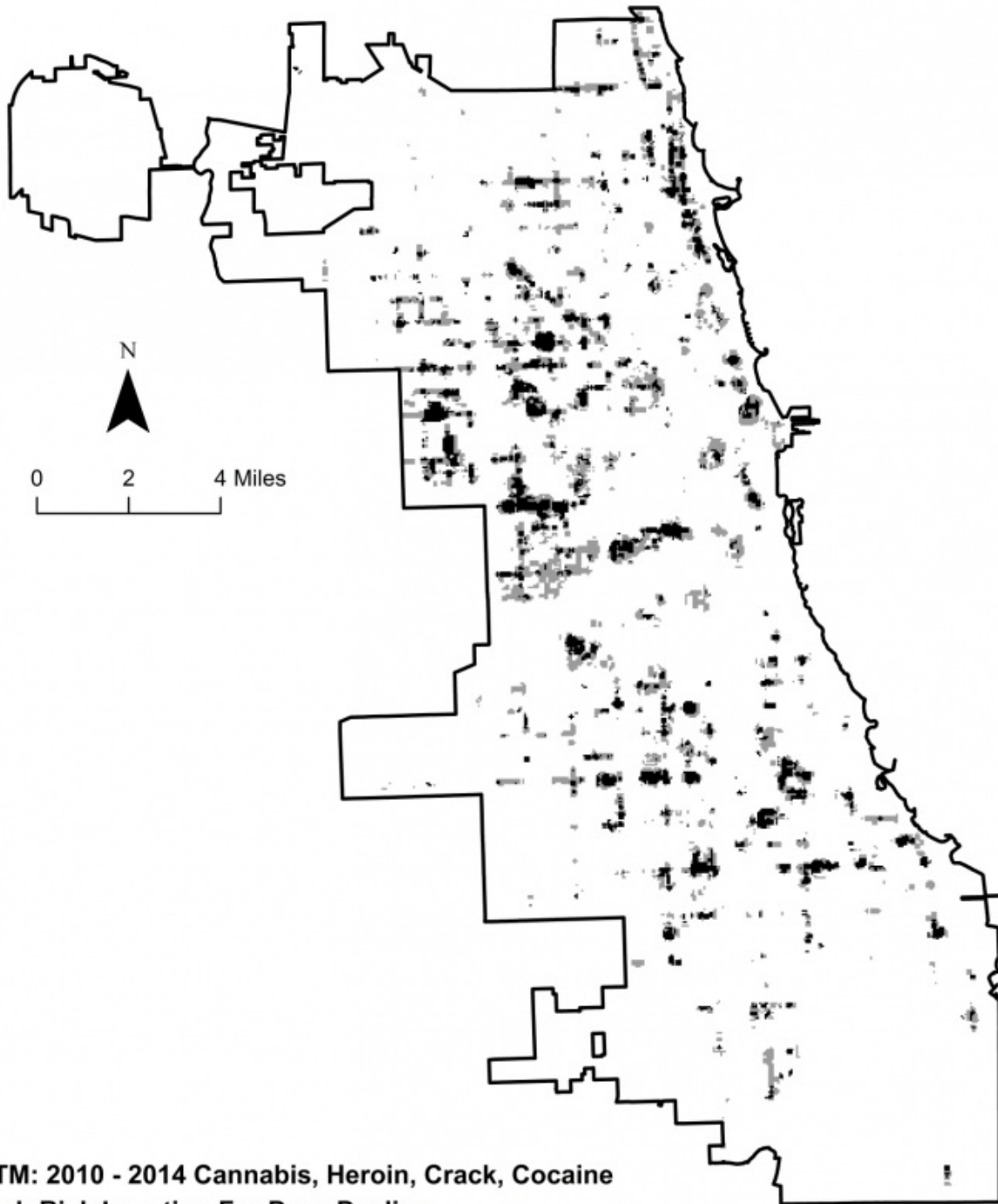
RTM: 2010 - 2014 Cannabis, Heroin, Crack, Cocaine
High Risk Location For Drug Dealing
  Not High Risk
  ▨ High Risk for One Drug
  ■ High Risk for Two or More Drugs

Our research demonstrates a practical approach for generating actionable intelligence to highlight the environmental features that facilitate different open-air drug markets. This can help to more effectively deploy traditional policing strategies, such as directed patrols. The methodology used here and the results of this analysis could also be utilized to guide the development of proactive and place-based policing strategies, such as problem-oriented policing, situational crime prevention, and crime prevention through environmental design, which focus on altering or otherwise removing ecological advantages. These interventions are most likely to be effective in addressing drug markets. As improvements in open source data and crime analysis continue to grow, we expect future research to build upon our current findings and further improve public safety efforts.

This article is based on the paper, 'Examining the Environmental Characteristics of Drug Dealing Locations', in Crime & Delinquency.

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