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Examining Crime-Specific and Crime-General Theories of Crime Causation at Place: The Case of Property and Violent Crime on Street Segments in Tel Aviv-Yafo

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Abstract

We use data on street segments in Tel Aviv-Yafo to examine whether general or specific crime factors are key to understanding crime rates on street segments. We pose two questions. (1) What causal factors explain the property and violent crimes at the same locations? (2) What are the differences and similarities between the risk factors of the two crime types? Our study capitalizes on data drawn from the Israeli Central Bureau of Statistics (CBS) to identify social and opportunity data at the street segment level. The dependent variable is the average counts of violent and property crimes in Tel Aviv-Yafo between 2010 and 2014. Zero-inflated negative binomial (ZINB) regression explains violent and property crime variations. While many of the significant factors that explain crime are similar between the two crime types, there are also distinct criminogenic factors predicting violent and property crime. Overall, our results support the position of common or general crime causes at places, but at the same time, they suggest the importance of understanding specific causes for specific crime types.

Keywords: criminology of place; criminal opportunities; social disorganization theory; street segments

INTRODUCTION

Historically, criminological theory has been dominated by the search for underlying root causes common to all deviant behaviour. Some scholars have found these antecedents of criminality in the social disorganization that characterizes communities with high crime rates (Bursik, Grasmick and Chamlin 1990; Shaw and McKay 2010). Others have looked to the differential associations that provide both the normative and educational foundations of deviance (Sutherland, Cressey, and Luckenbill 1992) or the normlessness that follows from contradictions in the culture and aspirations of offenders (Merton 1938). Still others have been primarily concerned with the failures of social control (Akers 1991; Hirschi 2002) or, at times,

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its excesses (Erikson 1961). Common to all of these approaches is the assumption that most crime will fall within a single explanation for criminality. Indeed, even white-collar crime, which has often been seen to contradict conventional theorizing, was developed as a concept to illustrate the advantages of one general theory (see Sutherland 1973; Hirschi and Gottfredson 1993) and has been used to provide support for another (Hirschi and Gottfredson 1987).

In the last decades of the twentieth century, several criminologists shifted their focus to crime-specific rather than general analysis. Here, the concern was most often with crime prevention rather than criminological theory (see Poyner 1983; Poyner and Webb 1987; Clarke 1995; for an important exception, see Cohen and Felson 1979). Nonetheless, these findings have led some to challenge the focus of traditional explanations for the aetiology of crime and deviance. As Cornish and Clarke (1987) argue, crime-specific analysis leads us away from a unitary explanation of “divergent criminal behaviours” to one that identifies the vast differences between them as “crucial to the tasks of explanation and control” (see also Clarke and Cornish 1985). The debate between crime-general and crime-specific theories has generally been raised in the context of the behaviour of persons. For example, studies examined the degree to which individual offenders evidence degrees of crime specialization (e.g. see Bursik 1980; Kempf 1987; Wolfgang, Figlio, and Sellin 1987; Blumstein, Cohen, and Farrington 1988; Andresen and Linning 2016) or the extent to which there are similarities or differences like those who commit very different types of crimes (e.g. see Hirschi and Gottfredson 1987; Wheeler *et al.* 1988; Steffensmeier 1989; Tonkin *et al.* 2011).

Over the last few decades, scholars have begun to identify significant variability of crime within communities or neighbourhoods (e.g. see Groff, Weisburd, and Yang 2010; Hipp 2010; Tita and Radil 2010; Weisburd, Groff, and Yang 2012a; Taylor 2015; Steenbeek and Weisburd 2016; Schnell, Braga, and Piza 2017). Beginning in the late 1980s, a series of studies has shown that a very large proportion of crime occurs at a small proportion of addresses, street segments or clusters of street segments (e.g. see Pierce, Spaar, and Briggs 1988; Sherman, Gartin, and Buerger 1989; Weisburd *et al.* 1992, 2004; Weisburd and Green 1995; Brantingham and Brantingham 1999; Roncek 2000; Weisburd, Bernasco, and Bruinsma 2009; Andresen and Malleson 2011; Andresen and Linning 2012; Weisburd 2015), which are often termed crime hot spots. While interest in crime and its place at the micro-geographic level has grown in criminology over the last two decades, there has been relatively little interest in the general/crime-specific debate (for an exception, see Weisburd *et al.* 1992).

This paper examines the general crime/crime-specific debate in the context of street segments (intersection to intersection) in Tel Aviv-Yafo. We have access to unique data on street segments drawn from the Israeli Central Bureau of Statistics (CBS), which allowed us to characterize street segments in terms of social and opportunity variables. Such data are generally not available in the United States or other Western countries because of privacy concerns. We were able to link social data to street segments through a program at the CBS that allows researchers to examine such data in a secure room with strong security protocols. Our specific question is whether the models that explain property crime and violent crime are similar or different. If the general theory approach is correct, we expect to find that

the same variables are key causes of both types of crime. If the specific theory approach is correct, we expect to find very different variables associated with these two broad types of crime. Our findings suggest that understanding crime on street segments leads us to recognize the salience of both perspectives in understanding crime at the street segment level.

CRIME CAUSATION THEORY, CRIME AT PLACES AND CRIME-SPECIFIC/ GENERAL THEORIZING

Some of the earliest theorizing about places was carried out at the Chicago School in the early decades of the twentieth century. Chicago sociologists identified “interstitial areas” in Chicago where social control was weak and social disorganization pervasive (Warner 2003) and theorized that such factors were more generally responsible for variations in urban crime rates (Burgess 2008). They coined the term “social disorganization” to refer to the relationship between low levels of informal social control in neighbourhoods and crime. While these scholars often centred their interests on juvenile delinquency, their work sought to demonstrate the roles of economic deprivation, ethnic heterogeneity and high social mobility rates in producing crime rates (Shaw and McKay 2010). They focused on social structural variables that reflected concentrated disadvantages in specific neighbourhoods and residential instability.

Social disorganization also played a key role in developing more recent general theories of the causes of crime in meso-geographic units like neighbourhoods and communities (e.g. Bursik and Webb 1982; Bursik 1988; Sampson and Groves 1989). For example, Sampson, Raudenbush, and Earls (1997) extended the concept of social disorganization to emphasize the capacity of a neighbourhood to realize common values and regulate behaviour through cohesive relationships and mutual trust among residents (see also Sampson 2012). They coined the term “collective efficacy” or the “willingness [of residents] to intervene for the common good” to emphasize how a community can prevent crime (Sampson et al. 1997, 919). Key to this perspective is the idea of “delinquency areas” or communities that have consistently high crime levels regardless of changing demographics (Shaw 1929). Collective efficacy and social disorganization are seen to operate as broad, general underlying causes of crime in neighbourhoods and communities.

Over the last three decades, criminologists have begun to explore crime at micro units of geography (Sherman et al. 1989; Eck and Weisburd 1995; Weisburd et al. 2012a). Places in this micro context are specific locations within the larger social environments of communities and neighbourhoods (Eck and Weisburd 1995). They are sometimes defined as buildings or addresses (e.g. see Sherman et al. 1989; Green 1996), sometimes as block faces or street segments (e.g. see Taylor 1997; Smith, Frazee, and Davison 2000) and sometimes as clusters of addresses, block faces or street segments (see, for example, Sherman 1995; Weisburd and Green 1995; Weisburd et al. 2012a). Perhaps the key finding in this area of study is that there is significant clustering of crime at places, irrespective of the specific unit of analysis that is defined (e.g. see Pierce et al. 1988; Sherman et al. 1989; Weisburd et al. 1992, 2009; Weisburd and Green 1995; Brantingham and Brantingham 1999; Roncek 2000; Braga,

Papachristos, and Hureau 2010; Andresen and Malleson 2011; Weisburd and Amram 2014; Curman, Andresen, and Brantingham 2015; Weisburd 2015; Gill, Wooditch, and Weisburd 2017; Haberman, Sorg, and Ratcliffe 2017). Such concentrations have been found across time within cities and across cities (Weisburd 2015). Weisburd (2015) argued that the consistency of such concentrations is so strong that they suggest a “law of crime concentration at places”, where in larger cities, about 50% of crime is concentrated at 5% of the streets and 25% of crime at just 1% of streets. This finding of strong crime concentrations at micro-geographic hot spots has become one of the key regularities of research on crime in place (Telep and Weisburd 2018).

The predominant theoretical focus of crime and place research has been drawn from opportunity theories of crime. Routine activities theory (Cohen and Felson 1979), situational prevention (Clarke 1995) and crime pattern theory (Brantingham and Brantingham 1993) all place emphasis on the opportunities for crime offered by specific places and situations. There is strong evidence that opportunities for crime are indeed a major factor in understanding why crime occurs on particular streets in a city (e.g. Weisburd *et al.* 2012a, 2021; Groff and Lockwood 2014; Weisburd, Groff, and Yang 2014; Hipp and Kim 2019). While some scholars (Braga *et al.* 2010; Braga and Clarke 2014) have found support for a general application of opportunity principles to micro-geographic places, several others argue that opportunity theory is by its nature a specific theory approach since it sees particular types of opportunities as leading to specific kinds of crime. This latter concern forms the basis for Clarke and Cornish’s critique of conventional sociological theories of crime causation, such as social disorganization theory (Clarke and Cornish 1985; Cornish and Clarke 1987). Following up on a series of situational crime prevention studies for specific offences (e.g. burglary, theft and vandalism), they argue that there is a substantial body of evidence challenging attempts to develop a unitary theory for explaining crime. Cornish and Clarke (1987) suggest that a more crime-specific focus is called for, which would develop models of criminal decision-making “in relation to particular types of crime”. While they provide a general framework for developing such models, they argue that the “desire to construct general statements about crime, deviancy and rule-breaking has consistently diverted attention from the important differences between types of crime – the people committing them, the nature of the motivations involved and the behaviors required” (Clarke and Cornish 1985, 165).

Much of the research on crime and place has examined broad general measures of crime and tried to identify the underlying factors that are related to crime rates at places (Weisburd *et al.* 2004, 2012a, 2017; Andresen and Malleson 2011; Andresen and Linning 2016; Jones and Pridemore 2019), assuming in some sense that the underlying causes of different types of crime are similar. We could not identify any studies that tried to compare directly whether similar or different variables underlie crime rates for hot spots of different types. At the same time, some studies have looked at whether general or specific crime patterns evidence crime hot spots. In an early study, Weisburd *et al.* (1992) sought to use this approach to contribute to the debate over crime in general and crime-specific causes. They argued that if general causes were dominant, crime hot spots should show a mix of crimes rather than specializing in specific crime types. Examining correlations between very specific crime types at crime hot spots in Minneapolis, Minnesota, they did not find strong support for the crime-specific model of crime causation:

The crime-specific perspective would predict that there would be a concentration of particular crimes at particular hot spots: for example hot spots for burglary or auto theft are distinct from one another. Yet, our data indicate relatively little crime concentration at hot spots. Only in the case of thefts is there any hot spot in which more than 60 per cent of the total crime calls are generated by one crime category, and except for thefts and domestic disturbances, there are very few hot spots where even 30 per cent of the crime calls can be attributed to a specific crime type (Weisburd et al. 1992, 56–7).

In contrast, in a study of crime hot spots in Philadelphia, PA, Haberman (2017) examined 11 crime types. His approach was different, looking to see whether hot spots are hot spots for multiple types of crime. In this case, the assumption was that if a general theory were correct, hot spots for crime generally would also be hot spots for specific types of crime. This is not what his data suggest:

As my findings reveal that hot spots of different crime types are mostly independent, then crime-specific geographic criminology theories are likely to be most fruitful for explaining the existence of hot spots and developing tactics to address them. If all geographic crime patterns stemmed from a common theoretical mechanism, greater overlap in crime hot spots would have likely been found (Haberman 2017, 652).

It is important to note that Haberman did not look specifically at the mix of crimes but rather at whether crime hot spots for different crime types overlapped. Amram (2021) looked at distinct, though broader, crime categories representing violent and property crime and found strong correlations at hot spots and a strong overlap of hot spots of violence and property crime. This is an area where more research is needed.

THE CURRENT STUDY

The current study uses data on residential streets.¹ Segments in Tel Aviv-Yafo for the years 2010–14 were used to examine whether similar variables explain both property crime and violent crime rates or whether there are different relevant variables for each. We had access to a large number of potential measures that were drawn from the Israeli Census Bureau, the Israeli National Police (INP), the City of Tel Aviv-Yafo (TLV) (Tel Aviv-Yafo Municipality 2017) and the national mapping agency in Israel (Survey of Israel; SOI). We note that our study is one of the first studies to be able to use census data for the study of crime at micro-geographic units since the Israeli Census Bureau (the CBS) allowed us to link data to street segments in the secure room of the CBS.

Geographic Unit of Analysis and Data

The geographic unit for the present study is the street segment, including both block faces between two intersections. The choice of street segments as a

¹A residential street in our study is defined as a street with at least three residential addresses.

micro-geographic analysis unit reflects theoretical and practical concerns. Scholars have long recognized the relevance of the street segment in organizing life in the city (Jacobs 1961; Appleyard 1980; Taylor 1997; Smith *et al.* 2000; Weisburd *et al.* 2004, 2012a; Weisburd and Amram 2014). Taylor (1997), for example, argues that the visual closeness of block residents, interrelated role obligations, acceptance of certain common norms and behaviours, common regularly recurring rhythms of activity, the physical boundaries of the street and the historical evolution of the street segment make the street block or street segment a particularly useful unit of analysis of place (see also Hunter and Baumer 1982; Taylor, Gottfredson, and Bower 1984; Weisburd *et al.* 2004). Weisburd *et al.* (2012a, b), as well as Weisburd *et al.* (2014), argue that the street segment is a type of micro-community, forming a first layer in the complex arrangements of community life at varying levels of the community in a city (see also Sampson 2012). In this sense, the street segment is an important theoretical unit for studying crime in place (Weisburd *et al.* 2012a).

The choice of street segments over smaller units, such as addresses, also minimizes the error likely to develop from miscoding of addresses in official data (see Weisburd and Green 1995; Klinger and Bridges 1997; Weisburd *et al.* 2004, 2012a). It is one thing to get the specific address of a crime wrong, but it is another to miscode that a crime occurred on a street between two intersections. Following Weisburd *et al.* (2012a; see also Groff *et al.* 2010), the present study operationalizes the definition of street segments by referring directly to the geography of streets in Tel Aviv-Yafo. Street segments refer to both block faces of a street between two intersections.

Our interest was in residential streets since we sought to identify social variables relevant to streets where people lived. Social disorganization theories are very much linked to residential populations. We estimated that there are 16,446 street segments in the city based on a geographic file for 2014.² Yet, many of these street segments are not residential streets. The 1995 census, the most recent census that covered all residents of Tel Aviv-Yafo (see below), includes only 5,781 residential street segments (i.e. segments with at least one residential household).

The current study only examines data on people residing in such street segments who are aged 18 years and older. In addition, for reasons of privacy, the Israel CBS only allowed us to examine street segments where there were at least three households in the 1995 census, the last survey enabling the determination of the population number in each street in the city (see below).³ This left 4,781 street segments (after deleting 23 streets because of geocoding problems; see below). Finally, due to privacy considerations, we deleted any street segment that contained fewer than three individuals in the 2005 Civil Registry database (see below). This led to a final sample of 4,638 street segments. The mean length of these street segments is 77 metres. The majority of the street segments (roughly 75%) are under 100 metres long, and only 2.5% of the street segments are more than 200 metres long.

²Provided by GISRAEL. Retrieved 18 May 2023 (www.gisrael.co.il), a geographic information database in Israel.

³“Household” refers to one person or a group of people living together in one apartment permanently during most of the week and having common expenses such as a budget for food. Households can include people who are not relatives or family. Retrieved 18 May 2023 (www.cbs.gov.il/EN/Pages/default.aspx).

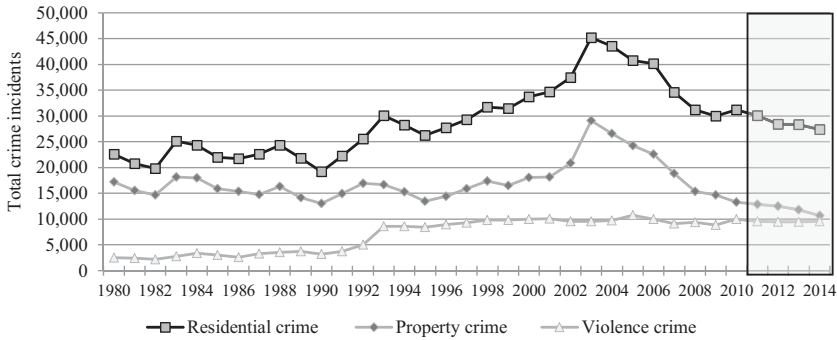


Figure 1. General crime, property and violent crime, in residential street segments, Tel Aviv-Yafo, 1980–2014 ($n = 4,781$).

The year 2005 is the base year for identifying independent variables in the model; we include crime in 2005 as one of those measures. Accordingly, we estimate the residualized change in crime between 2005 and the average of the 2010 to 2014 years (our dependent variable, see below). Accordingly, our interpretation of the other coefficients reflects the contributions of those variables to changes observed in property or violent crime between these two time periods.

Dependent Variables: Crime Data

The dependent variable of interest for the current study is the average crime count of violent crime incidents (e.g. robbery, any assaults, public order, arson and violent extortion) and property crime incidents (e.g. criminal damage, any form of theft, burglary, vehicle theft and theft from vehicles) on the street segment between 2010 and 2014. Crime incidents are used as an outcome because they reflect crimes found after investigation by the police and because they have commonly been used as an outcome in prior studies (e.g. Andresen and Malleon 2011; Weisburd et al. 2014). We use 2010–14 crime data as our outcome measure to ensure that our independent measures occurred before our outcome. Crime incident reports obtained from the INP were geocoded and joined to the street segments in our sample (average match rate > 90%, ordinarily seen as reflecting an acceptable matching rate; see Ratcliffe 2004).

Figure 1 shows the trends of overall crime, property crime and violent crime in residential street segments between 1980 and 2014. The most common type is property crime, which includes any form of theft, burglary, property destruction, theft from vehicles and theft of cars, and accounts for an average of 71% of the reported crime incidents. Violent crime (an average of 29%) includes aggravated assault, sex offences and personal crimes (murder, any assault, robbery). The trend for all crimes and property crimes rose until 2003, with 29,086 cases, then decreased until 2014. Violent crimes increased in 1993, and the level has remained more or less stable since then. In 2014, the last year of the investigation period, the total of property crimes in residential street segments was the lowest in the 35 years studied.

To increase stability in our analyses, we combined the last five years into an aggregate crime measure and calculated the average crime for those years about street segments. The mean number of violent crime incidents in our sample is 2.17 (SD = 4.31), ranging from 0 to 101.2, while the mean number of property crime incidents is 2.57 (SD = 4.90), ranging from 0 to 138.2. Crime measurement for the different types of crime is provided in Table 1.

DATA SOURCES FOR INDEPENDENT VARIABLES IN THE MODEL

CBS Data

In Israel, a census is conducted about once every decade, six times since the establishment of the state: 1948, 1961, 1972, 1983, 1995 and 2008. The sample is based on population counts for 1995. The 1995 census was a “traditional census” in that it included all households in Tel Aviv-Yafo and therefore allowed for the estimation of the number of residents in each street.⁴ The final data were aggregated for each street segment in the residential street segment sample.

The main information from the CBS is drawn from the civil registry and includes data from the “Education” and “Employer–Employee” databases. The employer–employee database is drawn from salaried employees’ “Internal Revenue Service – IRS” files. This dataset refers to the employee population over the years 2000–12. It is important to mention that we only received such data for individuals aged 18–65 years. The Education files include information about formal and non-formal education tracks.⁵ Overall, we have the full sample of street segments with three or more households in the 1995 census, with small deviations, probably due to the lack of evidence of employment or school attendance in some street segments. Because of the missing data, the *n* varies between 4,641 and 4,654 street segments, with information on 335,000 individual residents, aged 18 years or older, nearly 88% of all residents in the city in 2005.

Housing Prices

The SOI, the national mapping agency in Israel, provided data on housing prices. The data included transactions of new residential property sold obtained from the Ministry of Construction and Housing and all property transactions obtained from the Israel Tax Authority. The cross-sectional data were provided for the period from 1998 to 2016. The data included 111,611 transactions all over the city. For our analysis, we only included deals about residential property larger than 20 square metres in our residential street segments. This left us with 38,707 property deals.

⁴By contrast, the 2008 census is an “integrated census”, in which the CBS first defined sampling areas (enumeration areas) and then took a random sample from those areas. The average enumeration area included 270 households. Thus, 20% of the enumeration areas were included in the 2008 census. This approach naturally leads to many street segments being excluded from the sample census. This is why we used the 1995 census for identifying social characteristics.

⁵Formal education files include all the schools run by the state or a local authority. In the Israeli education system, there are three supervision types: “state” (Jewish/Arab); “religious state”; and other schools. The last category mainly includes the Ultra-Orthodox Jewish education system and the non-governmental Arab education system. The data also included students who dropped out of the education system.

Table 1. Descriptive Statistics^a

Variable	Definition	Mean	Standard Deviation	Minimum	Maximum	Source ^b
Crime counts						
Property average (2010–14)		2.57	4.90	0	138.2	INP
Violent average (2010–14)		2.17	4.31	0	101.2	INP
Property (2005)	Square root of property crime	1.63	1.40	0	5	INP
Violent (2005)	Square root of violent crime	1.00	1.16	0	8.30	INP
Social disorganization (for the year 2005)						
Male (%)	Proportion male	0.50	0.09	0	1	CBS
Age (mean)	Average age of people in years	46.74	5.97	22.66	86.67	CBS
Married (%)	Proportion married	0.45	0.16	0	1	CBS
Divorced (%)	Proportion divorced	0.11	0.08	0	1	CBS
Born in Israel (%)	Proportion of residents born in Israel	0.59	0.18	0	1	CBS
High education level (%)	Percentage with BA, MA, PhD, MD	11.10	9.22	0	71.42	CBS
Muslim (%)	Proportion Muslim	0.039	0.14	0	1	CBS
Unemployed (%)	Percentage unemployed	31.88	14.56	0	94.73	CBS
Property price per square metre in new Israeli shekels (NIS)		4,194.75	7,620.02	0	129,592.9	SOI
Opportunity						
Length – of the street segment in metres		77.52	48.00	0	523	TLV
Entertainment – does the street segment have entertainment open until midnight? (yes/no)		0.88	0.32	0	1	TLV
Number of bus stops (2006)		0.10	0.35	0	3	TLV
Number of businesses (2012)		4.82	13.04	0	366	TLV
New buildings – percentage of buildings that were built within the past 10 years		1.96	7.09	0	100	SOI
Number of transactions – transactions of new residential property (2005)		21.12	23.10	0	1,568	SOI
Garden within 150m (yes/no)		0.90	0.29	0	1	TLV
Community centre – is there a community centre within 500m from the centre of the street segment?		0.78	0.76	0	4	TLV

(Continued)

Table 1. (Continued)

Variable	Definition	Mean	Standard Deviation	Minimum	Maximum	Source ^b
Educational buildings – number of educational buildings (schools and kindergartens) within 500m from the centre of the street segment		11.26	5.80	0	33	TLV

^a*n* = 4,638 street segments.

^bINP, Israeli National Police; CBS, Israeli Central Bureau of Statistics; SOI, Survey of Israel; TLV, City of Tel Aviv-Yafo.

Housing prices for the year 2005 were also calculated. The average price in residential street segments is 15,014 new Israeli shekels (NIS) per square metre (about US\$ 4,620).

Tel Aviv-Yafo Municipality Data

We also collected data from the Tel Aviv-Yafo municipality. These data are not linked to specific years but are up to date to 2014. The measures included in the Tel Aviv-Yafo municipality database will probably be stable for long periods since they relate to land use and zoning characteristics. Data were available for all sample street segments. The geocoding rate for these data was 90%.

THE MODEL

Summary statistics for all variables used in the analyses are displayed in Table 1. For each model, we include the square root crime count for the associated type of crime in 2005 as an independent variable, which allows us to assess residualized change at the street segment level.

Social Disorganization Measures

Social disorganization theory has often focused on variables reflecting concentrated structural and economic disadvantage in communities that are hypothesized to inhibit the development of informal social controls and thus to make crime more likely (Sampson and Groves 1989; Krivo and Peterson 1996; Sampson et al. 1997; Shaw and McKay 2010). If social disorganization theory is relevant at the street segment level, it would be expected that economic and social advantage would act as a protective factor against crime (Kubrin and Weitzer 2003; Smargiassi et al. 2006; Connolly et al. 2010). Theorists have assumed more generally that poorer and more disadvantaged populations will have more difficulty in exercising informal social controls. We have several measures of this dimension, including employment, housing assistance and housing prices.

An increasing amount of empirical research on the positive connection between unemployment, property crime and violent crime has been carried out in recent years (Levitt 1996; Gould, Weinberg, and Mustard 2002; Edmark 2005). Theory

predicts the crime–employment link to be strongest for property crimes, and this is what the empirical studies show at higher geographic levels, with little evidence of a link between violent crime and unemployment rates (Raphael and Winter-Ebmer 2001).

We also include a measure of the proportion of residents on the street with a Bachelor of Arts (BA) or higher degree and the proportion that had dropped out of school before completing high school. Finally, we have the proportion of Muslims on a street segment, reflecting a disadvantaged minority population in Israel (Brauer, Antonaccio, and Tittle 2013; Baier 2014; Seto 2021). We also measure immigrant status by assessing the percentage of residents whose fathers were born in Israel. We also include variables reflecting other components of social disorganization. We measure the percentage of residents who are married and the percentage who are divorced. Marital status and marital stability have also reflected social organization and social disorganization in communities (Sampson and Groves 1989; Sampson and Laub 1993).

Opportunity

Reflecting the opportunity features of the street, we draw both from the SOI data and the Tel Aviv-Yafo Municipality data. We identify several characteristics that reflect the opportunities for crime created by potential crime targets on a street segment. In prior studies, estimates of the number of residents on the street are the most predictive measure of crime (e.g. see Weisburd et al. 2012a, 2014, 2021). We directly measure the number of residents on the street from the CBS data.

More public facilities on or near a street segment that bring people to places (see Roman 2003; Cromwell, Alexander, and Dotson 2008; Groff and McCord 2012) are also seen to increase opportunities for crime. One measure provided by the Tel Aviv-Yafo municipality examines whether a garden is within 150 metres of the centre of a street segment. We include this as an opportunity measure since it may increase guardianship. We also note that such gardens are not developed by the community in the city but are defined from the time of the original city planning. They do not reflect collective efficacy.

We assess whether a community centre or school (including kindergarten) is within 500 metres of the centre of a street reflecting crime attractors at least in terms of bringing people to these places (Clarke 1983; see also Brantingham and Brantingham 1995). We also assess whether entertainment facilities can be open until midnight. The presence of facilities such as clubs with entertainment or restaurants open late are likely to represent what have been termed crime attractors (Brantingham and Brantingham 1995). We also examine the number of private parking spaces on the street segments as an indicator of opportunities for car theft. Finally, we measure the number of businesses on the street, reflecting the relationship between companies and crime opportunities. As illustrated by the work of Miethe and Wilcox (Miethe and McDowall 1993; Wilcox, Land, and Hunt 2018), the influence of land use on victimization is a multifaceted phenomenon. By measuring “busy places” based on the density of various types of public places within proximity to residents’ homes, they discovered a significant positive effect on the risk of violent victimization. However, the impact on burglary victimization risk

was found to be non-significant. This observation suggests that the relationship between land use and victimization may vary based on the type of victimization under consideration.

A street being an arterial or main road, or including bus stops, is expected to increase both the number of suitable targets on a street segment and the ease with which motivated offenders can access such targets, thus increasing the likelihood of crime events (Roman 2003; Wilcox *et al.* 2004; Weisburd *et al.* 2021). We identified bus stops using Tel Aviv-Yafo Municipality data. We controlled for the length of a street segment since this may make an impact on the number of crimes there.

While we have no direct measures of motivated offenders, we use two proxy measures that we expect would reflect a greater likelihood of potential to be involved in a crime event on the block. It is well known that age and gender are risk factors for crime. Importantly, offenders are much more likely to be young and male (Tanner-Smith, Wilson, and Lipsey 2013). At the same time, we recognize that these variables may also reflect “suitable” victims on the street.

We also assess the proportion of buildings built within a decade of our observation year, though this does not fall easily into the theoretical perspectives we identify.

ANALYTIC APPROACH AND REGRESSION FINDINGS

As shown in Table 1, the dependent variable in our model is a mean of counts of crime events for the years 2010–14 (Property and Violence). We found significant overdispersion in these data, and we have many zeros (for violent crime, $n = 966$ and for property crime, $n = 781$) across street segments. Accordingly, we estimate our regression models using zero-inflated negative binomial (ZINB) regression using Stata v. 16.1.⁶

Table 2 presents the results of the two ZINB regression models examining the observed average count of violent and property crime incidents for 2010–14 per street segment as the geographic unit. The coefficient, the incident rate ratio (IRR) and the standard error are reported for each item. IRRs represent the change in the dependent variable in terms of a percentage increase or decrease associated with a one-unit increase in the independent variable of interest.

Six social-disorganization variables significantly affect property crime and violent crime models: “male”; “married”; “born in Israel”; “high degree”; “Muslim”; and “unemployed”. The relationships follow the predictions of social disorganization theory – that concentrated disadvantages are key factors in crime causation. Being married, having been born in Israel and having a high degree reflect an advantage in Israeli society; being a Muslim minority or unemployed reflects a disadvantage. Streets with higher levels of these traits have higher crime. The significant effect of gender perhaps reflects the higher likelihood of males being involved in criminal behaviour. Regarding the opportunity variables, two strongly and significantly make an impact on both models: the length of the street segments

⁶We checked for any multicollinearity by variance-of-inflation (VIF). The results do not indicate multicollinearity problems. No VIF values are above 4.

Table 2. Zero-Inflated Negative Binomial (ZINB) Regression Model Results

Name of Variable	Model 1: Property 2010–14			Model 2: Violent 2010–14		
	Coefficient	Standard Error	Incident Rate Ratio	Coefficient	Standard Error	Incident Rate Ratio
Crime measures						
Property 2005	0.054***	0.001	1.731			
Violent 2005				0.423***	0.012	1.527
Social disorganization						
Male 2005	0.387*	0.162	1.472	0.665***	0.173	1.945
Age 2005	0.003	0.003	1.003	-0.011***	0.002	0.988
Married 2005	-0.799***	0.193	0.449	-0.211*	0.119	0.809
Divorced 2005	0.143	0.193	1.154	0.752***	0.203	2.122
Born in Israel 2005	-0.485***	0.093	0.615	-0.900***	0.095	0.406
Higher degree 2005	-0.008***	0.002	0.991	-0.023***	0.002	0.976
Muslim 2005	0.427**	0.129	1.532	0.546***	0.124	1.727
Unemployed 2005	0.005***	0.001	1.005	0.003***	0.001	1.003
Property price 2005	0.000	0.000	0.999	0.000	0.000	0.999
Opportunity						
Length	0.001***	0.000	1.001	0.001***	0.000	1.001
Residents 2005	0.001***	0.000	1.001	0.001***	0.000	1.001
Number of transactions 2005	-0.000	0.000	0.999	-0.000	0.000	0.999
Entertainment	-0.234***	0.042	0.790	-0.038	0.044	0.962
Bus stops 2006	0.071*	0.032	1.074	0.051	0.033	1.052
Businesses	0.003**	0.000	1.003	0.000	0.000	1.000
Year built (10 years)	-0.005*	0.002	0.994	-0.002	0.002	0.997
Garden within 150m	-0.021	0.042	0.978	-0.116**	0.044	0.889
Community centre within 500m	-0.033*	0.017	0.966	-0.004	0.018	0.995
Educational buildings within 500m	-0.005*	0.002	0.994	-0.000	0.002	0.999
ZINB regression						
Nonzero obs	3,857			3,672		
Zero obs	781			966		
Prob > chi2	0.000			0.000		

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.001$.

and the number of residents living in the street segments. Longer streets and more residents predict more crime.

The model accordingly suggests that general causes affect property and violent crime. However, these models also provide support for specific theories of crime causation. In the case of social disorganization measures, age is a significant variable only for violent crime, which supports the idea that younger people are more likely to be both victims and perpetrators of crime. Being divorced is also significant for violent crime but not for property crime, perhaps reflecting domestic violence crimes.

In the case of opportunity measures, several variables influence property crime but not violent crime. For the most part, these results are consistent with opportunity theories. Having more bus stops is associated with higher property crime, as is more businesses on the street. Interestingly, having a community centre or educational building nearby is associated with less property crime. We suspect this is because there are often armed security guards to prevent terrorism at the entrances to these facilities. There being entertainment facilities opening late leads to lower property crime. We are unsure of the explanation for this outcome but suspect it has to do with increased guardianship around these facilities. One interesting result is that where there are gardens on the street, there is less violent crime. This may also represent guardianship since such urban gardens often have residents carrying out activities or sitting in those areas, and they are likely to be visible to passers-by (these are not large parks!).

Street segments with newer buildings also have lower crime, and it is unclear whether this is an opportunity factor related to better security features or reflecting social disorganization elements.

DISCUSSION AND CONCLUSIONS

The major goal of this paper was to examine to what extent similar or different variables are found to be related to violent crime and property crime on street segments. While traditional criminological theory has generally focused on crime-general explanations (Bursik 1984; Sampson and Groves 1989; Bursik and Grasmick 1993; Sampson *et al.* 1997; Shaw and McKay 2010; Sampson 2012; Weisburd *et al.* 2012a), in recent years there has been an emphasis on the extent to which crime-specific theories are needed to explain specific crimes and crime situations (Clarke 1980, 1995; Lum *et al.* 2011; Connealy and Piza 2019). In turn, some scholars looking at the geographic distribution of crimes have argued that different types of crime hot spots are found in different places, suggesting a specific explanation for their causes (e.g. see Haberman 2017).

Because of our access to unique data at the street segment level, we could examine many possible correlates of violent and property crime, reflecting the two key theoretical perspectives in this literature – social disorganization and crime opportunities. Our findings provide general support for a crime-general approach to crime causation when looking at property and violent crimes. Our analyses show that common underlying factors relate to property and violent crime. And these are found both for social disorganization and opportunity perspectives. For example, elements of advantage and disadvantage strongly relate to violent and property

crime levels in places. These findings suggest that social disorganization is a key factor in understanding both property and violent crime rates.

Similarly, opportunity features of streets are significant common factors in understanding crimes for both property and violent crime on streets in Tel Aviv-Yafo. Longer streets have high levels of both types of crime, and having larger numbers of residents is strongly related to crime outcomes on both potential victims and offenders, as well as areas for crimes to be found.

However, having emphasized the extent to which variables are similar in understanding property and violent crime, our data suggest that specific causes are also relevant for understanding these two types of crime. Age is a key factor in understanding violent crime in our model. Streets segments with younger populations have higher levels of violent crime. There is a long tradition of recognizing the importance of risky lifestyles in understanding violent crime victimization (Hindelang, Gottfredson, and Garofalo 1978; Osgood et al. 1996; Schreck, Stewart, and Osgood 2008; Reisig and Golladay 2019). Our data reflect this. Younger people are much more likely to have lifestyles that keep them out late and active on the street. Similarly, we suspect that higher rates of divorced individuals on the street are related to less time at home and decreases in guardianship (Cohen and Felson 1979). Divorce is also likely to reflect domestic conflicts in prior periods.

Regarding property crime, it is unsurprising that business activity and bus stops strongly increase crime rates. Our results regarding entertainment venues, community centres and educational facilities contradict the idea that increases in crime will come from the presence of such places. However, we suspect that guardianship in Israel, due in part to increased risks of terrorism, may explain why such places are associated with less crime.

Most crime causation theories are consistent with the premise that crime is a unified phenomenon with a common set of general “causes”. Such criminological approaches have helped develop broad thematic themes about the causes of crime. Our study of street segments in Tel Aviv-Yafo provides general support for this approach. In particular, in the case of social disorganization variables, we find that they are predictive of both property and violent crime. This is not surprising given the fact that this perspective is meant to be a general explanation of crime. At the same time, observing this in our data supports a general theory perspective.

However, our analyses also support recent theorizing that has focused on specific causes for specific types of crime. Specific factors in our models are significant in understanding violent crime rates as contrasted to property crime rates. This is the case with several opportunity variables, but also in the case of divorce and age among social disorganization variables.

The results might have differed had we looked at more specific types of crimes. One problem with such an approach is that crime levels would become very small in this micro-geographic unit of analysis taking this approach. At the same time, as one becomes more and more specific, crime-specific theories may become more relevant. This is one of the reasons why Haberman (2017) may have dissimilar findings when looking at crime hot spot concentrations. Looking at 11 specific types of crime, as was the case with Haberman (2017), may create a rarefication in the data that naturally leads to particular kinds of concentrations. In the end, every crime may have a specific cause. However, the task of science is also to identify as

many commonalities across place and crime as possible. Finally, while drawing upon more extensive data at the micro-geographic level than currently available, our models are probably misspecified. At the same time, given our goal of comparing variables regarding their relationship to violence and property crime, we believe our overall findings still provide strong evidence of both general and specific theory relevance to understanding crime in micro-geographic units.

While our results are at first glance contradictory in that they do not support either position regarding the crime-specific/crime-general debate, they reflect a commonsense reality that both common and specific causes are related to crime problems. It is more a matter of polemic than of the reality of the distribution of crime across places that some have assumed the pre-eminence of either a general or specific approach to explaining crime. We find consistency in recognizing that specific and general causes are important in developing and distributing crime and criminality. The task for criminologists is to find the degree to which general causes are important and the degree to which specific causation theories are needed. Such an integrative approach is more likely to lead to stronger prevention outcomes. If the reality of crime causation draws from both general and specific theories, then we will be most effective in preventing and controlling crime by recognizing the value of each.

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TRANSLATED ABSTRACTS

Abstracto

Utilizamos datos sobre segmentos de calles en Tel Aviv-Yafo para examinar si los factores de delincuencia generales o específicos son clave para comprender las tasas de criminalidad en los segmentos de calles. Preguntamos: (1) ¿Qué factores causales explican los delitos contra la propiedad y violentos en los mismos lugares? (2) ¿Cuáles son las diferencias y similitudes entre los factores de riesgo de los dos tipos de delitos? Nuestro estudio capitaliza datos extraídos de la Oficina Central de Estadísticas de Israel (CBS) para identificar datos sociales y de oportunidades a nivel de segmento de calle. La variable dependiente son los recuentos promedio de delitos violentos y contra la propiedad en Tel Aviv-Yafo entre 2010 y 2014. La regresión binomial negativa inflada a cero (ZINB) explica las variaciones en los delitos violentos y contra la propiedad. Si bien muchos de los factores importantes que explican la delincuencia son similares entre los dos tipos de delitos, también existen distintos factores criminógenos que predicen los delitos violentos y contra la propiedad. En general, nuestros resultados respaldan la posición de causas de delincuencia comunes o generales en algunos lugares, pero al mismo tiempo, sugieren la importancia de comprender causas específicas para tipos de delincuencia específicos.

Palabras clave: criminología del lugar; oportunidades criminales; teoría de la desorganización social; segmentos de calles

Abstrait

Nous utilisons des données sur les segments de rue de Tel Aviv-Yafo pour examiner si les facteurs de criminalité généraux ou spécifiques sont essentiels pour comprendre les taux de criminalité dans les segments de rue. Nous demandons: (1) Quels facteurs causaux expliquent les crimes contre les biens et les crimes violents aux mêmes endroits? (2) Quelles sont les différences et les similitudes entre les facteurs de risque des deux types de crimes? Notre étude capitalise sur les données tirées du Bureau central israélien des statistiques (CBS) pour identifier les données sociales et d'opportunités au niveau des segments de rue. La variable dépendante est le nombre moyen de crimes violents et contre les biens à Tel Aviv-Yafo entre 2010 et 2014. La régression binomiale négative à inflation nulle (ZINB) explique les variations des crimes violents et contre les biens. Bien que bon nombre des facteurs importants qui expliquent la criminalité soient similaires entre les deux types de crimes, il existe également des facteurs criminogènes distincts prédisant les crimes violents et contre les biens. Dans l'ensemble, nos résultats soutiennent la position des causes communes ou générales de la criminalité à certains endroits, mais en même temps, ils suggèrent l'importance de comprendre les causes spécifiques de certains types de criminalité.

Mots-clés: criminologie de lieu; opportunités criminelles; théorie de la désorganisation sociale; segments de rue

抽象的

我们使用特拉维夫-雅法街道段的数据来研究一般或特定犯罪因素是否是了解街道段犯罪率的关键。我们要问，(1) 什么因素可以解释同一地点的财产和暴力犯罪？(2) 两种犯罪类型的危险因素有何异同？我们的研究利用以色列中央统计局 (CBS) 提取的数据来识别街道层面的社会和机会数据。因变量是 2010 年至 2014 年间特拉维夫-雅法的暴力和财产犯罪平均计数。零膨胀负二项式 (ZINB) 回归解释了暴力和财产犯罪的变化。虽然这两种犯罪类型之间解释犯罪的许多重要因素是相似的，但预测暴力犯罪和财产犯罪也有不同的犯罪因素。总体而言，我们的结果支持了地方常见或一般犯罪原因的立场，但同时，它们表明了解特定犯罪类型的特定原因的重要性。

关键词: 地方犯罪学；犯罪机会；社会解体理论；街道段

ملخص

نحن نستخدم البيانات الممتدة بقطاعات الشوارع في تل أبيب-يافا لفحص ما إذا كانت عوامل الجريمة العامة أو المحددة هي المفتاح لفهم معدلات الجريمة في قطاعات الشوارع. ونحن نساءل: (1) ما هي العوامل السببية التي تفسر جرائم الملكية وجرائم العنف في نفس المواقع؟ (2) ما هي أوجه الاختلاف والتشابه بين عوامل الخطر لنوع الجريمة؟ تستفيد دراستنا من البيانات الممتدة من مكتب الإحصاء المركزي الإسرائيلي (CBS) لتحديد البيانات الاجتماعية وبيانات الفرص على مستوى قطاع الشارع. المتغير التابع هو متوسط عدد جرائم العنف وجرائم الممتلكات في تل أبيب-يافا بين عامي 2010 و 2014. ويفسر الانحدار السلبي ذو الحددين (ZINB) الاختلافات في جرائم العنف وجرائم الممتلكات. في حين أن العديد من العوامل المحددة التي تفسر الجريمة متشابهة بين نوعي الجرائم، إلا أن هناك أيضاً عوامل إجرامية متميزة تتنبأ بالجرائم العنيفة وجرائم الممتلكات. بشكل عام، تدعم نتائجنا موقف أسباب الجريمة الشائعة أو العامة في الأماكن، ولكننا في الوقت نفسه، نشير إلى أهمية فهم الأسباب المحددة لأنواع محددة من الجرائم.

الكلمات المفتاحية: جريمة المكان؛ الفرص الإجرامية؛ نظرية الفوضى الاجتماعية؛ شرايح الشوارع

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