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Hotspots of corruption: Applying a problem-oriented approach to preventing corruption in the public sector

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Abstract

Some places have no crime and some have a lot, and thus we study hotspots. Corruption is structured differently to crime, but hotspots still are notable. The difference is that hotspots are not places but clusters of activity. This paper analyses corruption cases from New York City to explore a way of identifying such clusters. Seventy two cases were coded according to features that represent the elements of the crime triangle: offender and motivation, target and opportunity, and place and ability. Multidimensional scaling revealed three groups of cases, exhibiting different patterns of corrupt activity. Group one involved politicians involved in high value financial corruption. Group two primarily involved supervisors who created opportunities involving procurement and contracts. Group three involved inspectors, particularly in the infrastructure sector, who were involved with low value bribes to violate regulations. Each is discussed in relation to situational crime prevention principles to develop possible strategies for prevention.

Keywords: Corruption, prevention, hotspots, crime triangle, multidimensional scaling

Introduction

Corruption causes harm to communities and undermines security. Where it exists it can, among other things, increase the costs of doing business, ration essential services unfairly, diminish the quality of social, educational and health services, create unsafe infrastructure, cause dreadful harm to the environment, diminish the capacity of local and national government, and undermine the rule of law. It can enrich the powerful and impoverish the powerless, and apart from the tangible ill effects, it affronts citizens who expect principles, processes and laws to underpin regular authoritative interactions.

While not all corruption is criminal, it is a fertile field for criminologists. This paper proposes that many of the lessons learned in crime prevention can be applied to the prevention of corruption. The examination of crime hotspots has been fruitful for exploring propositions for crime prevention, for example for acquisitive crimes such as burglary as well (Johnson & Bowers, 2004) as violent crime (Ratcliffe, Taniguchi, Groff, & Wood, 2011). This paper argues that there are hotspots in corruption. However, these are not necessarily geographical places, as crime hotspots are traditionally understood.

The academic literature on corruption spans many disciplines. From the seminal work of Susan Rose Ackerman (1975) on the economics of corruption to more recent comprehensive analyses of corruption (see, for example Aidt (2003)). Economists have examined corruption in virtually every aspect of macroeconomic and microeconomic behavior and in the allocation, distribution and delivery of goods and services. Rose-Ackerman (1999) weaves many threads together by examining the economic impact of corruption and how high level officials manipulate political power and civil service processes, especially in the development context.

Historians and political scientists have documented ancient and recent manifestations of the phenomenon (Friedrich, 1972). Tammany Hall was a euphemism for multifarious corrupt practices (Werner, 1932) while the processes of corruption over time were documented in V.O Key's classic *Politics, parties and pressure groups* (1958). "Syndromes of corruption" are very usefully identified by political scientist Michael Johnston. While his analysis is on nation states where he uses country level data to illustrate his thesis, his syndrome of "influence markets" is relevant in this context (Johnston, 2005, pp. 39-43,). Moving from syndromes to cultures, Eric Uslaner (2008) demonstrates that people who make corrupt payments feel a sense of high inequality and have low trust, and argues that malfeasance derives from the

absence of transparency (Uslaner, 2008, p. 9,). There is also a strong literature on corruption in administrative studies, while anthropologists have studied gifts, bribes and patronage in different cultures and lawyers have written extensively on the rule of law and the jurisprudence surrounding corruption.

While criminologists have been studying white collar crime for over a century, there has been little on corruption in the criminological literature until about a decade ago. Zimring and Johnson mapped the terrain in 2005, and they distinguished the study of corruption from that of white collar crime and from other crime (pp. 805-806.) . Piquero and Albanese (2011) saw similarities between white collar crime and corruption in community perception and operations and outlined definitional and measurement problems. In their excellent work, *The hidden order of corruption*, Della Porta and Vannucci (2012) devote their longest chapter to corruption and organized crime, while Klitgaard et al (2000) bring analyses of corruption issues into the context of cities and their administration.

Due to the lack of empirical material that has been analysed, corruption prevention is only tentatively finding its way into the criminological literature. Graycar and Prenzler (2013) take a criminological approach to the understanding and prevention of corruption while Della Porta and Vannucci (2012) follow a similar theme in trying to better understand corruption by breaking down corrupt acts to smaller parts and analyzing opportunities and the chain of interaction.

While big sweep discussions talk about changing regimes or constitutions to deal with corruption, there is a task for criminologists now to better understand the phenomenon and devise preventive strategies. This paper is part of that process. To apply lessons learned from crime prevention, the first steps are to understand what the concept of “corruption” covers, and to break it down into manageable and tangible components. Corruption primarily is about a breach of trust . Without getting hung up on definitions we can take some of the standard descriptions, “abuse of public position/ entrusted office for private gain” (Transparency International, 2010), or “unauthorised trading of entrusted authority” (de Speville, 2010). Not all corruption, however, is the same (Graycar & Prenzler, 2013), and it plays out differently in different contexts It may, therefore, be helpful to see corruption as a set of behaviours.

Types of corruption, such as bribery, extortion, misappropriation, self-dealing, patronage, abuse of discretion, creating or exploiting conflict of interest, nepotism,

clientelism and favouritism occur in the performance of various activities. Everyday **activities** in which corrupt behaviour can take place include appointing personnel, buying things (procurement), delivering programs or services, managing disasters, making things (construction / manufacturing), controlling activities (licensing / regulation/ issuing of permits), administering (justice for example). These activities take place in public **sectors** such as health, tax administration, energy regulation and delivery, social services, environment & water, customs & immigration, legal system, as well as in a host of private sector activities such as banking, agriculture, sports etc. And it all occurs in specific **places**, such as countries, regions, localities, corporations, work places etc.

This analysis, known as TASP (type, activity, sector, place) is a working framework for the analysis of corruption. First developed by Graycar and Sidebottom (2012), it sets the stage for a situational crime prevention analysis of corruption. Noting that corruption involves doing wrong things, or failing to do something one should do, or doing something permissible, but purposely doing it in an improper manner, then the unit of analysis should not be corruption in a country or an organisation, or a corrupt offender, but rather a corrupt event.

The event may arise from structural features, in which corruption is embedded in processes and tolerated, sometimes it is situational and fleetingly opportunistic. Sometimes the participants are willing, so the behaviour involves collusion, sometimes one participant is unwilling, and thus the behaviour is extortionate.

This paper uses data from an analysis of corrupt events investigated by the New York Department of Investigation (Graycar & Villa, 2011). Work done by the authors elsewhere (and not yet published) shows that a substantial proportion of complaints to anti-corruption agencies is about corruption in municipal government. It is here that opportunities for petty corruption abound, and it is from data in this field that preventive models can be built.

In building preventive strategies, this paper argues that situational crime prevention is a strong guiding mechanism. Anti-corruption agencies have a wide remit. They enforce anti-corruption laws, but generally these are fairly limited, and much of the behaviour that is policed is criminal, such as theft and embezzlement (de Sousa, 2010). However, anti-corruption is bigger than theft, or poor governance, or poor service standards or unsafe environments. It is about limiting opportunities to behave corruptly and strengthening guardianship. Investigation and prosecution can go on forever, but there

is more mileage in limiting opportunities and changing attitudes that underpin and shape behaviour. Therefore, preventive and educational components necessarily complement any enforcement activity and, if success is to be ensured, they should overshadow enforcement. While anticorruption agencies were typically established to respond to corruption on a case-by-case basis, they are increasingly moving into the realms of analysis and prevention.

Theoretical perspective: Situational Crime Prevention

The purpose of this paper is to suggest that Situational Crime Prevention (SCP), with its underlying framework and methodology, could offer a tool to aid anticorruption agencies in their prevention function. The paper focuses particularly on a potential methodology for analysing the corruption problem to inform the tailoring of solutions.

Situational crime prevention (SCP) draws on environmental criminology perspectives to focus on the crime environment, rather than the offender, utilising “an analysis of the circumstances giving rise to specific kinds of crime” in order to “reduce the opportunity for those crimes to occur” (Clarke, 1997, p.2). SCP draws on rational choice theory, routine activity theory and crime pattern theory. Rational Choice Theory (Cornish & Clarke, 2003) views offenders as rational decision makers who conduct cost-benefit analyses that influence their offending choices. Routine Activity Theory (Cohen & Felson, 1979) explains how offenders, targets and locations converge to create opportunities for crime. For example, Clarke and Eck’s (2003) crime triangle explains that crime occurs when a motivated offender and suitable target converge in an opportune place in the absence of effective guardianship.

Crime Pattern Theory draws upon the rational choice and routine activity theories to explain that crimes do not occur randomly across geographical and temporal contexts, but that patterns of convergence can be seen in the existence of crime ‘hotspots’ (Brantingham & Brantingham, 2008). Identification of such hotspots, through systematic data analysis, allows responses to focus resources where they will have the greatest impact; that is, targeting prevention efforts in a focused area that accounts for the greatest majority of the problem. Thus, analysing a number of incidents for patterns helps to identify commonalities between cases that can be addressed, rather than responding to incidents on a case-by-case basis.

Clarke (1997, p4) describes SCP as comprising

opportunity-reducing measures that (1) are directed at highly specific forms of crime, (2) involve the management, design or manipulation of the immediate environment in as systematic and permanent way as possible, (3) make crime more difficult and risky, or less rewarding and excusable as judged by a wide range of offenders”.

Each of these aspects will be discussed briefly below in relation to the present paper’s focus on preventing corruption.

Specifying forms of corruption. Clarke (1997, p.4) states the importance of making distinctions not just between crime types, but within crime types, in order to tailor prevention efforts:

Situational measures must be tailored to highly specific categories of crime, which means that distinctions must be made, not between broad categories such as burglary and robbery, but rather between the different kinds of offenses falling under each of these categories. (p.4)

Thus, it is important that incidents of public sector corruption are not treated as a homologous group, but that different forms of corrupt activity are recognised. For example, Ede, Homel and Prenzler (2002) found that grouping police complaint cases by allegation type allowed identification of deficiencies common to particular types of police misconduct. These deficiencies were then used to suggest possible situational prevention techniques. It is the purpose of this paper to propose a systematic method for exploring the existence of public sector corruption ‘sub-categories’ within the context of SCP, and to identify what those sub-categories might be. Thus, ‘hotspots’ (of corruption) are not regarded as physical locations, but patterns of activity that represent particular vulnerabilities to types of working environments, such as jobs, positions, or sectors.

Clark and Eck’s (2003) crime triangle elements, mentioned above, can aid in understanding the nature of events, to identify what might be targeted with prevention efforts. Carmel-Gilfilen (2013, p.84) describes an inner crime triangle composed of the offender, place and target, and an outer triangle composed of desire, ability and opportunity, respectively, that “represents the environmental circumstances that can be adapted in order to deter [offending]”. We propose that details of the Offender, Target and Place provide information on the ‘who’ ‘what’ and ‘where’, of corruption events, while details of the Desire, Opportunity and Ability provide information on ‘how’ corruption can surface. These are all elements that can be targeted for prevention.

Targeting the environment for corruption and impacting offender decision-making.

Understanding the most common sub-categories, or patterns, of corrupt activity can lead to informed decisions regarding how to prevent the majority of incidents. Work on Situational Crime Prevention has established 25 prevention techniques that can be drawn upon to impact on the crime environment (Cornish & Clarke, 2003). These draw on five principles of situational crime prevention. These are to: increase the effort to behave corruptly; increase the risks of corrupt behaviour; reduce the rewards of corrupt behaviour; reduce provocations of corrupt behaviour; and, remove excuses for corrupt behaviour. The techniques and principles can be drawn upon to design prevention efforts for corruption, tailored towards specific corruption sub-categories.

Aims of the study

The aim of the current study, therefore, is to investigate the applicability of Situational Crime Prevention to the prevention of corruption. It will do this by exploring a method for considering ‘hotspots’ of corruption, in accordance with Clarke’s (1997) principle of first making distinctions within crime types. The method will use the elements of the crime triangle to identify patterns in the frequency with which certain elements converge that may produce or encourage corruption. If there are discernible patterns to these elements, then this would suggest that ‘hotspot’ analysis of this kind might be a beneficial way for anti-corruption agencies to identify the common problems in their jurisdictions. The resultant model will be used to suggest possible ways of preventing corruption, drawing on the principles and techniques of situational crime prevention, which can be tested in further research.

Method

The cases that comprise this study were taken from the Department of Investigation (DOI) of the City of New York. This is a large and traditional anti-corruption agency, which focuses both on administrative and political corruption. Founded in 1873 to serve as an independent and non-partisan watchdog for the New York City government, the DOI is one of the oldest law enforcement agencies in the US. The DOI consists of attorneys, investigators, forensic auditors, computer forensic specialists and administrative personnel.

Over the years, New York City officials (like many city officials elsewhere) had gained notoriety for perpetrating corruption, fraud, bribery and theft with impunity. The DOI therefore, and was specifically delegated the role of dealing promptly and effectively with cases of corruption which were eating into the coffers of the city government (New York City, 2010) Its main role is to combat corruption in public institutions in New York City and ensure that public officials do not use their position for private gain.

The cases were originally collected by Graycar & Villa (2011). That study commenced with one hundred cases which the DOI had investigated and which had been successfully prosecuted. Beginning with cases in 2009 and going backwards, 100 cases were selected in chronological order, and only open source information was used to inform the descriptions and analysis. The 100 cases occurred between 2007 and 2009. While no interviews were conducted with offenders, in order to inform the analysis discussions were held with DOI personnel. The cases were not randomly selected or assigned. However, not all were corruption cases. Twenty-eight cases were eliminated because they were criminal activities such as assault, theft, fraud or forgery. We eliminated those that could have occurred in any corporation or employment context. These cases were not assessed as corrupt acts, since they did not primarily involve the misuse of a public function to gain access to a criminal opportunity. (details of this study are in Graycar & Villa 2011).

The final sample of 72 cases involved more than 72 perpetrators. Some examples of the type of cases are:

- A technician accepted a \$100 bribe to alter drug test results. Her role was to collect urine samples as part of pre-employment testing of all job applicants for the New York City Housing Authority.
- A factory operator offered \$700 to a Department of Buildings (DOB) boiler inspector to overlook unsafe boiler violations in the factory.
- Seven employees of the New York City Human Resources Administration/ Department of Social Services and eight other individuals generated Medicaid cards (meant for the city's neediest and most vulnerable people) in exchange for a cash fee of approximately \$300-\$400 per card. This scheme led to the Medicaid Program losing an estimated \$3.9 million.

- A New York State assembly woman offered her help to a private contractor to acquire city-owned land in her district and in exchange the contractor had to build a house for her valued in \$500,000

(Graycar & Villa, 2011, p. 424-425)

Strengths and limitations of the data

The sample reflects a specific sub-sample of corruption cases; that is, those that have been investigated and resolved (successfully prosecuted) by a particular agency in New York City. Thus, as Graycar and Villa (2011, p.425) point out,

...these cases are not a representation of all the corruption that exists in New York City, but rather a representation of the cases that have been investigated by the City's watchdog agency.

Indeed, corruption by its nature is secretive and difficult to expose, therefore any dataset of corruption incidents is likely to suffer in its representativeness. However, the purpose of the present study is to explore the applicability of a method that anti-corruption agencies could potentially use themselves to inform their understanding of problems in their jurisdictions. The use of data from an anti-corruption agency, therefore, provides an ecologically valid sample for this endeavour.

Data coding

The coding framework utilised for the present study was developed from Carmel-Gilfilen's (2013) version of the crime triangle, shown in Fig 1, which incorporates "a suitable *target* with *opportunity* available, the *ability* to acquire this product in a specific *place* and *desire* on the part of the *offender* to complete the crime" (p. 83, emphasis added). Variables relating to each of these six elements were extracted from Graycar and Villa's (2011) coded data. The variable labels are kept consistent with that paper, while the levels within the variables have been modified to suit the present analysis; for example, some categories have been collapsed to avoid low frequencies and to reduce complexity.

[Insert Figure 1 here]

Table 1 shows the six variables chosen to represent the elements of interest. The 'offender' element was characterised by the 'type of public servant involved'. The 'desire', or motivation, was characterised by the 'value of the bribe or kickback'. The variable 'nature of activity' related to the 'target' in that it describes whether the target was 'regulations' (that were controlled or implemented), 'procurement/contracts', or 'finance' (i.e. stealing or misusing money). The 'opportunity' for the crime is represented by the 'process' variable, which describes whether the person 'violated procedure' or 'proactively created the opportunity' for him/herself. The 'place' for the crime, rather than being the physical location, is taken to be the 'sector' in which the person was working. Finally, the 'ability' is reflected in the 'nature of the infraction', that is, the 'violation', 'theft,' or 'abuse of influence' that was enabled by the individual's position.

All variable levels (categories) are mutually exclusive so that a case can only be coded as belonging to one level (for example a case cannot involve both a high and a low bribe). Each of the 72 cases was coded according to the six variables in table 1. This yielded a data matrix of 72 by 6; each case being represented by a profile of scores across the six variables.

[Insert Table 1 here]

Data Analysis

The data were analysed in two stages. Stage 1 provides a descriptive analysis of the frequency with which each variable category occurs in the data. This shows the overall variation among the cases.

Stage 2 provides an analysis of how all six variables combine. This analyses the profiles of variables in all cases, to explore whether certain profiles are more common than others, and whether certain combinations of variables can be said to form distinct 'types'. Profiles use the numerical codes that represent the categories (outlined in Table 1) and show the combination of variable categories that make up each case. For example, if a case involved an inspector, a low value bribe, targeting regulations, violating procedure, in the infrastructure sector, and violating regulations, that case would have a profile of 111111. If, however, the infraction was theft, the profile would be 111112. Thus, each case has a profile, but two cases that have the same features would have the same profile. Profile analysis is, therefore, multivariate. The strength of

this is the ability to look at the relationships between all the variables simultaneously, in contrast to bivariate techniques that allow only the relationship between chosen pairs of variables. Multivariate analysis allows exploration of patterns of co-occurrence between all the aspects of interest, using only one procedure rather than multiple comparisons that may suffer from familywise error.

Stage 1 analysis revealed that data were missing on at least one variable for 8 of the cases. These cases were excluded from the profile analysis, leaving 64 cases. The 64 cases have 26 different profiles; these, and their frequencies, are shown in table 2.

The patterns among these 26 profiles were analysed using the multidimensional scaling (MDS) technique of Multidimensional Structuple Analysis (MSA) using the Hebrew University Data Analysis Package (HUDAP). MSA analyses the similarities among the profiles and plots these in a two dimensional space; this pictorial presentation of the data aids interpretation. The MSA plot shows all unique profiles as points in the space. Cases that are exactly the same (same profile) are represented by the same point in the plot. The more similar profiles are to each other, the closer together they appear in the plot. The actual space, therefore, is arbitrary; it is the distances between the points that can be interpreted.

The profile plot can, therefore, be analysed for particular groupings of points based on these relative distances (groupings of points that are close together, and separated from other groupings of points). Cases within groupings will share similar features. This will be evident when looking at how the cases in each group score on each variable (e.g. do they all involve the same type of person, or motivation? etc.). To do this, the main plot is accompanied by separate item plots; one for each of the six variables in the analysis. These item plots show the same configuration of points in the space, but show how each case (profile point) scored on that variable. This information can be used to see how the cases relate to each other; particularly why certain groups of cases can be identified as distinct from other groups, and in what ways. For further explanation of MSA and examples of its use see Guttman & Greenbaum (1998) and Porter & Warrender (2009)

[Insert Table 2 here]

Results

Descriptive analysis

The six variables explored in this study revealed variation across the 72 cases, as shown by the frequencies in table 1. The most common features of the cases include the involvement of inspectors (49%), low value bribes under US\$10,000 (68%), and activity relating to controlling or implementing regulations (72%). Most frequently the cases involved a violation of procedure (64%), rather than creating the opportunity (36%), and were in the infrastructure sector (42%), although human services and health and environment sectors were also commonly involved (29% and 28%, respectively). Finally, about three quarters of the sample involved violating regulations, with smaller numbers involved in theft and abuse of influence.

Profile analysis (MSA)

In terms of the case profiles, almost half of the cases had one of only two profiles (see table 2) with the remaining cases exhibiting more varied profiles. In order to explore how all the cases relate to one another (and not just the most common), the data were analysed with MSA. The MSA of the profiles of the 64 cases across the six variables resulted in a two-dimensional MSA solution with coefficient of contiguity 0.998 (indicating that the solution is a very good representation of the actual relationships between the variables) (Figure 2). The dispersion of the points in the main plot suggests three groups of cases can be discerned, based upon their positions in the plot. The item plots (Figure 3) provide detail on the differences between these three groups that make them distinct from one another.

[Insert Figure 2 here]

[Insert Figure 3 here]

[Insert Table 3 here]

Group 1 contains 5 cases, group 2 contains 14 cases and group 3 contains 45 cases. The main plot and the item plots have been partitioned to illustrate these three groups and table 3 summarises the features that describe each. While on some features the groups show high internal consistency (all cases in the group score the same) and distinctiveness (cases in a group score differently to cases not in the group), other features are less discerning.

Group 1 consists of only five cases but was distinctive in that it contained all cases involving politicians. These cases all involved the creation of the opportunity, and all cases involved high value (over US\$10,000) bribes/kickbacks. In four out of the five cases the target was financial, and in four of the five cases this was enabled through abuse of their political influence. Most commonly, these cases involved the human service sector, although one case involved infrastructure and one the whole of government. An example case that typifies this group is as follows:

A State Senator used his position and influence to obtain financing funds for two non-profit organizations. Part of this money was diverted to pay his personal expenses for an amount of approximately USD \$ 575,000. In that example, the politician creates the opportunity, with his position enabling him misappropriate funds for his private use. In another case, a New York State assembly woman used her position in her district to help a private contractor acquire state owned land. In exchange for this, the contractor had to build her a house valued at US\$500,000.

Group 2 consists of 14 cases and, while some distinct patterns can be seen within the group, it did show somewhat more variation across the variable categories. The majority (approximately two thirds) of the cases in this group involved supervisors, high value bribes/kickbacks, procurement and administrating contracts in the human services sector, and a creation of the opportunity that amounted to theft. However, up to a third of cases showed some variation on these features. An example case that typifies this group is as follows:

Supervisor of adoptions at the City Administration for Children's Services fabricated adoption cases, authorizing undue payments for a total of USD \$ 411,775, in exchange for receiving a portion of that money.

Other examples include employees of the City's Health and Hospitals Corporation (HHC) selling confidential patient information to personal injury attorneys, and the head of a construction company falsifying contract documents to avoid an obligation to subcontract part of the work, and keep the full contract payment amount.

Group 3 consists of the largest number of cases (n= 45). All cases in this group involved low value bribes/kickbacks, all related to controlling or implementing regulations and all violated regulations. Those involved were typically inspectors (71%) or low level workers (27%) who violated procedures (80%) rather than creating the opportunity. While there was some variation in the sector involved, almost half involved the infrastructure sector. Further, this group is the only group of the three that includes cases from the health and environment sector. An example case that typifies this group is as follows:

An Inspector of the City Department of Buildings (DOB) was offered a US\$300 payment to not issue a violation and stop work order for failing constructions plans.

This example clearly shows an inspector in the infrastructure sector who, rather than creating an opportunity for corruption, is offered a low value bribe in exchange for violating procedures (not issuing the violation and stop work order). The violation concerned the inspector not implementing the regulations regarding construction plans.

A further example can be seen in the case of a low-level employee of the City Department of Parks and Recreation (DPR) who received a low value bribe of \$120 from a person obligated to perform community service (Human Services sector) as part of an alternative sentence program. The aim of the bribe was to let the person leave early without performing the services. This would constitute a violation of procedures through not enforcing the regulations that govern community service program.

Discussion

This paper analysed public sector corruption cases from the New York Department of Investigation to identify common themes that may indicate opportunities for targeted prevention. Using the framework of the crime triangle, three groups of cases were distinguished in the data, based upon different combinations of features relating to the ‘offender’, ‘target’ and ‘place’ (sector). Thus, the crime triangle framework was successful in identifying three different ‘hotspots’ of corruption; that is, three primary ways in which offenders, locations and opportunities for corruption converged in the sample cases. The presence of such hotspots shows that, while not all corruption incidents are the same, equally they are not all unique. This means that, instead of responding to corruption on a case-by-case basis, prevention can be focused toward broad types of activity. Thus, prevention can be tailored to each particular type (based on the particular elements involved) to increase effectiveness, as well as targeted at the most frequent (or likely) types, to prevent the most cases. To illustrate this approach, the primary focus of this discussion will be to show how each of the three types identified might best be prevented, drawing on the principles and techniques of situational crime prevention.

As noted in the introduction, situational crime prevention (SCP) has a number of principles that would be applicable to the prevention of corruption. The three chosen

here are to: increase the effort to behave corruptly; increase the risks of corrupt behaviour; and reduce the rewards of corrupt behaviour. These principles are discussed in relation to corruption (Graycar and Prenzler 2013) and it is clear that certain strategies are likely to apply to a number of different forms of corruption; for example, increasing guardianship through transparency and accountability of processes, and reducing rewards through introducing penalties for corrupt behaviour. The analysis presented in this paper shows that such strategies can be targeted to particular forms of behaviour by particular people (positions) in particular sectors. Each of the three groups of cases are summarized and discussed in terms of proposed avenues for prevention encompassing the SCP principles (summarised in table 4).

[Insert Table 4 here]

Group 1: politicians

In the sample analysed, politicians were most vulnerable to high level financial corruption, due to their position of political influence. While comprising only a small proportion of cases, the financial cost associated with these incidents was high, with further potential cost to public confidence in government. The focus of these cases on high personal financial gain would suggest that the prevention principle of decreasing the rewards may be particularly effective. Strategies to achieve this might include large financial penalties, exclusion from future employment in the political/government sphere, as well as moral penalties, such as public naming and shaming. Further, the risks of such behaviour could be increased, for example through mandatory financial audits of both personal and business accounts of politicians.

Group 2: Supervisors

The data showed that supervisors, particularly in the Human Services sector, can create opportunities around procurement and administrating contracts that amount to high value theft and distortion of policy priorities. This suggests that those working in this field might need greater guardianship in terms of accountability mechanisms that could increase the risks and effort, as well as reduce the rewards. For example, using a process of layered decision-making, particularly for contracts that represent a high value, could increase the visibility of supervisors' decisions and reduce individual discretion. The setting and enforcement of procurement guidelines, including the use of penalties for procurement breaches could also be effective. Regular and random audits of accounts may also increase the risk of exposure of theft.

Group3: Inspectors

Group three suggested that NYC inspectors are vulnerable to low value bribes to violate regulations, due to their decision-making positions, particularly in the infrastructure sector but also within the health and environment sector. This group was revealed to be the most common type among the sample cases. While involving low value bribes/kickbacks, the damage resulting from such cases could be extensive. For example, overlooking building code or environmental violations could seriously affect public safety.

Given that these cases typically involve violations rather than individuals creating opportunities, effective prevention might be targeted at increasing the effort and risks associated with such violations. This could include mechanisms of oversight to increase the transparency and accountability of inspectors' decisions. Rotation of inspectors for particular jobs may also increase the effort and risk necessary for those offering bribes, as each inspection will involve a new person to be approached. Further, while bribes/kickbacks were of low value, there are possible strategies to reduce the rewards. For example, removing pension rights of convicted employees might make low value bribes less attractive, as this would ensure too low a reward for the risk involved.

Limitations and further research

This paper presents an empirical investigation of the utility of the crime triangle framework to identify 'hotspots' of corruption activity. The application of situational crime prevention principles, discussed above, can now be tested in the field. Such testing could involve experimental intervention studies, where prevention techniques are tested against an adequate control group, and with suitable pre- and post-intervention measures. An alternative may be to conduct in-depth case analysis of what prevention strategies were in place when corruption incidents have occurred (to see what was ineffective), with the further possibility of comparing these circumstances to similar departments who have not experienced similar incidents of corruption. This would involve the support of anti-corruption agencies, and in the experience of the authors this support is likely to be willingly forthcoming.

The method for uncovering the patterns found in the NYC cases can be applied to any data set of cases that have enough detail to inform knowledge about the offenders and their motivation, the target and the opportunity, and the place and the ability. Such

analysis on a new data set, however, may uncover groups that are different to those identified here. This is because different jurisdictions will likely experience different problems, due to different opportunity structures (and prevention strategies that may already be in place). In other words, anticorruption agencies need to conduct their own analysis of cases in their jurisdiction to uncover what the ‘hotspots’ of activity are, and tailor prevention accordingly. The analysis presented in the current paper suggests that the crime triangle framework is a helpful tool to uncover such patterns of activity. It is, therefore, important that agencies adequately record the necessary information to enable this analysis (Ede, Homel & Prenzler, 2002a).

Further, there can be different ways of conceptualising the elements of the crime triangle, depending on the data available and the focus of interest. For example, the current study used the sector in which the corruption occurred to explore the ‘place’ element of the triangle. As such the analysis revealed which positions were vulnerable to which sorts of corruption within the different sectors at the broad level. However, place can be conceptualised in a variety of ways. With different data, place could have been explored geographically in the traditional sense of hotspots. Alternatively, with more data, place could be explored more specifically within a particular sector. For example, Ede, Homel and Prenzler (2002) explored hotspots of police misconduct in one agency according to the ‘task environment’ by comparing numbers of complaints against units of different duty types. Thus ‘place’ was conceptualised by the type of work conducted by units within an organisation.

Indeed, corruption follows opportunity, and this is the key next task for this type of research – identifying opportunities and their locations. The present paper has identified some places that do experience corruption, and has discussed some of the opportunities based around the positions of those involved within these sectors, and the kinds of activities they were engaged in. While it may be a truism that health care workers are the ones most likely to engage in health care fraud and municipal workers are the ones most likely to engage in municipal corruption, this paper has started to identify settings in which this corruption has occurred and to develop a classification of how vulnerable positions, activities, sectors and types of corruption all converge. In other words, there are particular structural positions that are related to particular types of activity within different sectors. This is a step towards the analysis of corruption hotspots and shows that such an endeavour is worthwhile. Further work can now progress and refine these findings to uncover more specific opportunities¹ through more nuanced analysis of populations and variables.

¹ For example, an anonymous reviewer suggested merit in exploring the prevalence of corruption among similar positions across different sectors or industries to see if specific vulnerabilities are evident.

Conclusion

In summary, the analysis presented here shows the utility of an analytical approach to identifying corruption problems. The identification of three specific themes within the data shows that not all corruption cases are the same, but that the main features can be distilled into broad types that share common features. The advantage of such identification is that prevention can be targeted to such themes. This has potential cost-benefit improvements over an individualistic case-by-case response, where resources can be targeted at multiple incidents but specific features to ensure the greatest impact. This research, therefore, provides a re-think of the concept of hot-spots, moving beyond places to clusters of activities that can be discerned and appropriate intervention targeted accordingly.

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Table 1: Coding framework of variables and variable levels, and their frequencies within the sample.

Triangle element	Variable (from Graycar & Villa, 2011)	Variable levels	Frequency <i>f</i> (%)
Offender	Kind of public servant involved	1. Inspector 2. Low-level worker 3. Supervisor 4. Politician	35 (49) 17 (23) 14 (19) 5 (7)
Desire	Size of bribe/kickback	1. Low (<\$10,000) 2. High (>\$10,000)	49 (68) 16 (22)
Target	Nature of activity	1. Regulations 2. Procurement/Contracts 3. Finance	52 (72) 14 (19) 6 (8)
Opportunity	Process	1. Violation of procedure 2. Creation of opportunity	46 (64) 26 (36)
Place	Sector	1. Infrastructure 2. Human Services 3. Health & Environment 4. Whole of government	30 (42) 21 (29) 20 (28) 1 (1)
Ability	Kind of infraction	1. Violating regulations 2. Theft 3. Abuse of political influence	55 (76) 13 (18) 4 (6)

Table 2: 26 unique profiles representing the combinations of variable scores for the 64 cases.

Offender	Desire	Target	Opportunity	Place	Ability	Frequency
1	1	1	1	1	1	19
1	1	1	1	3	1	11
3	2	2	2	2	2	4
2	1	1	2	2	1	4
2	1	1	2	3	1	3
4	2	3	2	2	3	2
2	1	1	1	2	1	2
3	1	1	1	3	1	1
1	1	1	1	2	1	1
3	2	2	2	1	1	1
4	2	3	2	1	3	1
1	1	1	2	3	1	1
3	2	3	2	2	2	1
4	2	2	2	2	3	1
3	1	2	2	1	2	1
3	1	2	2	2	2	1
2	2	3	2	2	2	1
4	2	3	2	4	2	1
2	1	1	1	3	1	1
3	1	1	2	2	1	1
2	1	1	2	1	1	1
2	2	2	2	2	2	1
3	1	2	1	1	1	1
2	2	2	1	1	2	1
2	1	1	1	1	1	1
1	2	1	1	1	1	1
					TOTAL	64

Table 3: Summary of the three groups in relation to how they score on the variable categories (N=64).

Variable	Group 1 N= 5	Freq (%)	Group 2 N=14	Freq (%)	Group 3 N=45	Freq (%)
'Offender'	Politician	5 (100)	Supervisor Low level worker Inspector	10 (71) 3 (21) 1 (7)	Inspector Low level worker Supervisor	32 (71) 12 (27) 1 (2)
Desire	High value	5 (100)	High Value Low Value	10 (71) 4 (29)	Low Value	45 (100)
Target	Finance Procurement/Contracts	4 (80) 1 (20)	Procurement/Contracts Regulations Finance	10 (71) 2 (14) 2 (14)	Regulations	45 (100)
Opportunity	Create opportunity	5 (100)	Creation of opportunity Violation of procedure	11 (79) 3 (21)	Violation of procedure Creation of opportunity	36 (80) 9 (20)
Place	Human Services Infrastructure Whole of government	3 (60) 1 (20) 1 (20)	Human Services Infrastructure	9 (64) 5 (36)	Infrastructure Health & Environment Human Services	21 (47) 17 (38) 7 (15)
Ability	Abuse of political influence Theft	4 (80) 1 (20)	Theft Violating regulations	10 (71) 4 (29)	Violating regulations	45 (100)

Table 4: Example prevention techniques proposed for each corruption group.

Group 1	Increase the effort	Increase the risks	Reduce the rewards
Politician High value Finance Create opportunity Human Services Abuse of political influence	Oversight and hearings by authoritative expenditure committees; Media vigilance and publicity; scrutiny by citizen groups	Financial audit of personal and business accounts	Financial penalties; Moral penalties
Group 2	Increase the effort	Increase the risks	Reduce the rewards
Supervisor High Value Procurement/Contracts Creation of opportunity Human Services Theft	layered decision-making	Setting and enforcement of procurement guidelines	Penalties for procurement breaches
Group 3	Increase the effort	Increase the risks	Reduce the rewards
Inspector Low Value Regulations Violation of procedure Infrastructure Health & Environment Violating regulations	Oversight of decisions	Audits of decisions relating to regulations; Integrity testing	Financial penalties

Fig 1: Crime triangle (Carmel-Gilfilen, 2013)

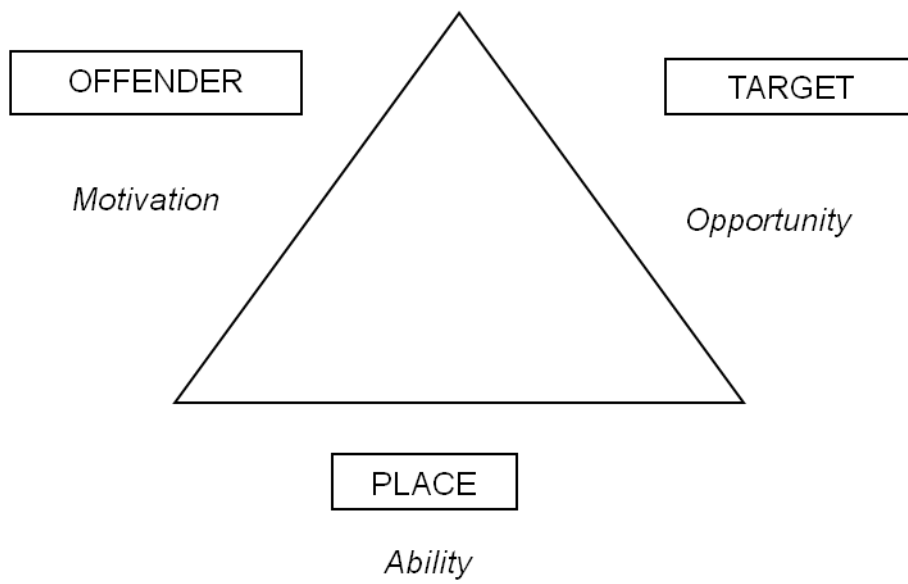


Fig 2: Main MSA plot partitioned into three groups. Points represent the 26 different profiles.

The numbers indicate how many cases are represented by each point (frequency of the profile).

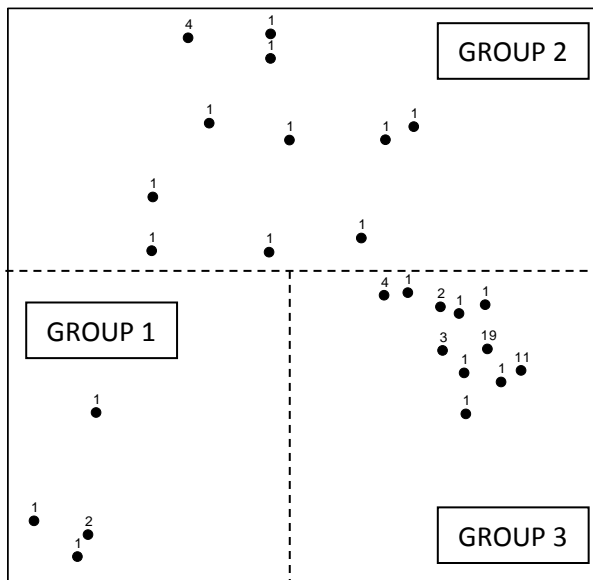
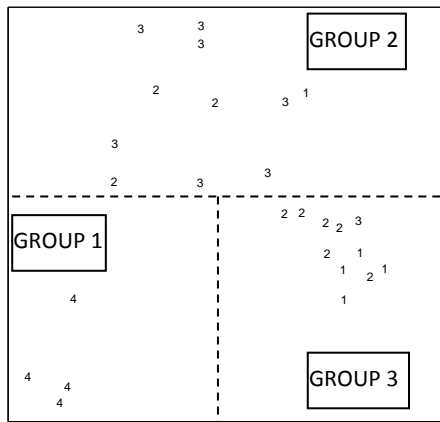
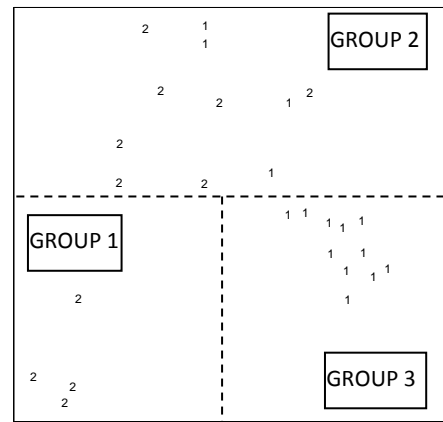


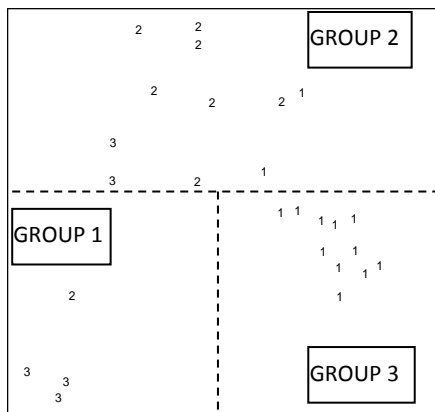
Fig 3: MSA Item plots. The numbers indicate the variable category (listed under each diagram) that each profile point represents.



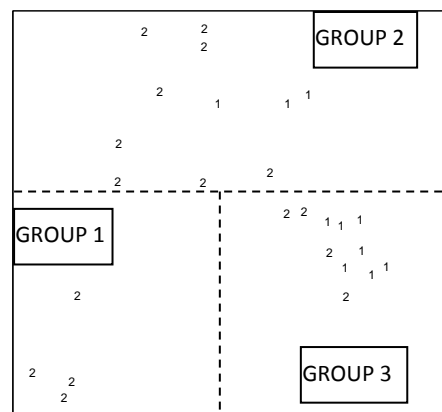
Variable 1: Public servant involved (*Offender*) 1= Inspector, 2= Low-level worker, 3= Supervisor; 4= Politician



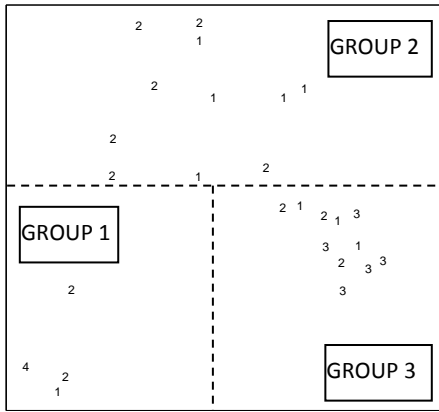
Variable 2: Value (*Desire*) 1= Low; 2= High



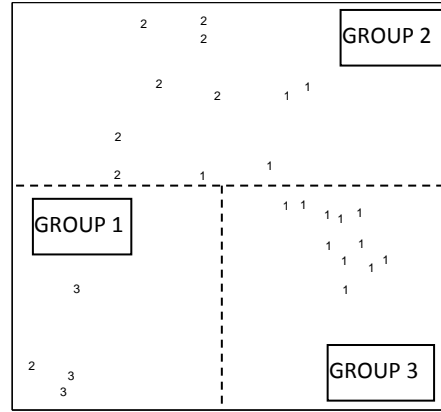
Variable 3: Nature (*Target*) 1= Regulations; 2= Procurement/Contracts; 3= Finance



Variable 4: Process (*Opportunity*) 1= Violation of procedure; 2= Creation of opportunity



Variable 5: Sector (*Place*)
 1= Infrastructure; 2= Human Services; 3= Health & Environment; 4= Whole of



Variable 6: Infraction (*Ability*)
 1= Violating regulations; 2= Theft; 3= Abuse of political influence