MODELING TOURISM CRIME
The 2000 America's Cup

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Abstract: Between October 1999 and March 2000, Auckland, New Zealand hosted the largest sporting event ever held in the country, the America's Cup Yacht Race. This paper investigates the impact of this race on destination crime rates, especially against tourists: it statistically models tourism-related crime observing that there was no significant difference between the victimization rates of domestic and overseas tourists. They rather were affected by ethnicity and form of accommodation. The type of crimeexperienced by overseas tourists differs from that for domestic ones in that foreigners are more subject to theft from places such as the casino or a campervan. Domestic tourists are more likely to experience smaller losses as a result of theft from their cars. **Keywords:** America's Cup, special events, crime, statistical modeling. © 2002 Elsevier Science Ltd. All rights' reserved.

Resume: Entre les mois d'octobre 1999 et mars 2000, la ville d'Auckland en Nouvelle-Zelande a accueilli le plus grand evenement sportif qu'on aitjamais vu dans ce pays, la course de voile de la Coupe d'Ämferique. Cet article examine l'impact de cette course sur les taux de crime, surtout les crimes contre les touristes. On presente des modeles statistiques des crimes lies au tourisme en notant qu'il n'y avait aucune difference significative entre les taux de victimes parmi les touristes neo-zeiandais et etrangers. Les taux variaient pourtant selon l'ethnicite et la forme du logement. Le genre de crime differait selon la nationalite, c'est-a-dire que les etrangers ont 6t£ voles dans des endroits comme le casino ou leur camping-car, tandis que les N6o-Z61andais ont eu de plus petits vols d'articles pris de leur voiture. Mots-cles: Coupe d'Amerique, evenements speciaux, crime, moderation statistique. © 2002 Elsevier Science Ltd. All rights reserved.

INTRODUCTION

Hosting events has predominantly been considered from an economic perspective, although there is a growing recognition that the social impacts can be substantial (Fredline and Faulkner 2000; Soutar and McLeod 1993). Crime and safety issues can adversely affect tour-

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ism behavior and experiences (Bentley and Page 2001; Pizam and Mansfeld 1996; Tarlow 2000). There has been a lack of research on the spatial and temporal effects of events on destination crime rates. This paper examines tourist and destination crime rates based on the hosting of a special event: the 2000 America's Cup (hereafter Cup). The study considers the findings of a survey on crime, reported crimes against tourists, and official police statistics for Auckland city collected during the Cup. The synthesis of these inputs enables the study to provide a more holistic analysis of the impacts of crime during a major event: it integrates criminological perspectives, the experiences of tourists in relation to crime, and the practice by police in one paper. However, to achieve this objective, requires a review of three disparate literature bases in social science: tourism research on special events and crime, crime research that has referred to tourism, and the wider criminology literature in relation to victimization. This provides a basis from which to assess the tourism-crime nexus and causal relationships which may exist.

Tourism, Special Events, and Crime

The presence of large numbers of tourists at events may also establish an environment that epitomizes the concentration of opportunities for crime. Such outcomes have become major planning and security considerations within the destinations that host these events (Thompson 1999). Among the most serious impacts of hosting events is the threat to tourist safely (Standeven and DeKnop 1999). This is supported by reports of increased crime as one of the negative impacts of special events (Hall, Selwood and McKewon 1995).

Within the tourism-crime literature, Pizam (1982) questioned whether a causal relationship existed, based on a regression analysis of sociodemographic variables that found insubstantial levels of significance. Other evidence has argued tourism activity patterns coincide with changes in the level of crime (Fujii and Mak 1980; McPheters and Stronge 1974; Prideaux 1994; Rothman 1978; Walmsley, Boskovic and Pigram 1983). Concerns for crime and safety, whether real or perceived, can directly influence behavior, destination choice, and satisfaction with the experience (Edgell 1990; Goodrich 1991; Richter and Waugh 1986; Tilson and Stacks 1997). When concerns for wellbeing are perceived to be excessive, tourists will cancel, postpone, or choose alternative destinations that involve less risk (Pizam 1999; Pizam, Tarlow and Bloom 1997; Richter and Waugh 1986).

The study of human ecology provides a sociological perspective on crime that has become known among researchers as routine activities theory and hot spot theory. The former is based on the assumption that predatory crimes feed off the routine activities of others. Cohen and Felson (1979) argue that most criminal acts require the convergence in time and space of a suitable target or victim, a motivated offender, and the absence of a guardian capable of preventing the interaction between offender and victim. The suitability of the target or victim is influenced by their value (monetary or symbolic), visibility

(ethnicity, dress, and behavior), access (the offenders ability to access and escape the scene) and inertia (the ability to acquire and dispose of the item of value, or resistance of victim). These factors are often pronounced such that tourists may possess a more favorable ratio of risk to reward than locals. Hot spot theory argues that predatory crime is associated with certain types of geographical areas such that a relatively few locations (or "hotspots") are associated with a high percentage of crimes (Schiebler, Crotts and Hollinger 1996). Thus, crimes against tourists are likely to cluster in areas involving the concentration of tourism amenities and attractions, and by implication are likely to be higher in areas hosting special events.

From a safety perspective, tourists possess a range of characteristics that make them vulnerable to crime (Chesney-Lind and Lind 1986); thus, they may have a statistically higher chance of being victimized than residents (de Albuquerque and McElroy 1999; Fujii and Mak 1980). A transient population comprising local, domestic, and international event participants increases the potential targets for crime and the individual anonymity for offenders. A tendency for some tourists to lower their security consciousness on holiday, indulge in risk-taking behavior, and enter unfamiliar environments increases their exposure to criminal activity. The enclave nature of many environments may also congregate tourists and criminal opportunities (Schiebler et al 1996), although it can equally create tourist-friendly environments that are more effectively policed.

The Tourism-Crime Nexus and Relationships

Research has tended to focus on the characteristics that explain the relationship between tourism and crime. One of the most widely researched areas focuses on tourists as victims (Allen 1999; Barker 2000; Chesney-Lind and Lind 1986; Kelly 1993; Schiebler et al 1996; Walmsley et al 1983). A common shortcoming, with the exception of Allen (1999) and Barker (2000), has been the inability to identify the characteristics of the victim or to differentiate between tourists and residents. Chesney-Lind and Lind (1986) and de Albuquerque and McElroy (1999) did differentiate tourists from residents but were unable to identify any specific characteristics of victims.

One of the constraints on research has been quantifying the extent of these impacts (Ritchie 1984). The measurement of crime is aided by records of arrest, offence, and occasionally victim data, although such statistics are often fraught with measurement problems, as not all cases are reported or recorded. The empirical study of tourist victimization is significantly underrepresented in the literature, in part, because it remains a new and sensitive area of research in many destinations. Authorities are reluctant to measure and potentially risk disclosing the level of crime because of the threat it poses to future arrivals (Schiebler et al 1996). For example, Allen (1999) found that tourists 15-24 years of age and international students experienced the highest rates of criminal victimization.

Historical evidence indicates that hosting events can lead to con-

siderable negative impacts. Their seasonality effect can cause disruptions to local lifestyles, increase crowding, inflate prices, and lead to resident frustration towards tourism. The published research has argued that increases in criminal activity accompany the hosting of special events (Burns and Mules 1989; Hall et al 1995; Kelly 1993). One of the most widely researched events that related to crime was the 1987 Cup in Fremantle, Australia. Hall et al found that the "evidence of the impacts of hosting the America's Cup on criminal and illegal activity in the Fremantle area is substantial" (1995:37). This included a correlation between the hosting of the event and an increase in criminal activity, particularly for alcohol-related offences. Selwood and Hall (1988) found an explicit relationship between the hosting of the 1987 Cup and an increase in petty crime. Personal crimes of sexual and common assault and robbery increased, combined with significant increases in minor offenses, including traffic infringements, drunkenness, and disorderly behavior (Hall et al 1995). Getz (1997) observed that social problems such as crime can be institutionalized at events. After the 1987 Cup in Fremantle, disorderly behavior that occurred during the event returned to the destination in subsequent years (Hall et al 1995).

MODELING TOURISM CRIME

New Zealand first challenged for the Cup in Fremantle in 1987, but it was not until 1995 that *Team New Zealand* successfully challenged and won the rights to host the 30th defense in Auckland. From the inaugural challenge in 1987, the prospect of winning and hosting the Cup provided a major incentive to developing event tourism in New Zealand (Getz 1991). Yet, only a paucity of published research empirically examines the impact of events and criminal activity that occur in this respect. In an era when the desire to host special events is increasing within urban destinations (Page 1995), the lack of social impact research in this area is of major concern. This posed a number of research questions which were framed into a series of specific hypotheses including: did the 2000 America's Cup lead to a rise in crime rates and were overseas tourists more likely to be victims of crime than domestic visitors?

Study Methodology

The Auckland region has a population of just over one million and the city receives around 73% of the total annual national arrivals of 1.6 million. Hosting events has become a major focus of Tourism Auckland. As part of an ongoing research program in tourist health and safety (Bentley and Page 2001), this project was designed in conjunction with the New Zealand Police to assess the impact of a special event on crime, extending earlier research in this field by Barker (2000). Primary data for the study were obtained from a random survey of domestic and international participants. Surveys were conducted over an 11-week period between December 1999 and the conclusion of the

Cup regatta on 2 March 2000. A total of 1003 personal interviews of non-resident tourists were conducted in downtown Auckland and the Viaduct Basin where the Cup syndicates had their bases and a Cup Village was constructed. The objectives were to identify participants' perceptions, concerns, and experiences of crime during the Cup event. The resulting data enabled the victimization probabilities of different tourists to be calculated, while regression analysis was used to predict differences between domestic and international tourists based on details of the offence.

A second method of data collection involved the implementation of tourist victim information reports (TVIRs), a technique previously applied by Barker (2000). Similar to police offense reports used for recording crime in the general population, the victim reports were designed specifically for recording offenses committed against tourists. The recording of victim data was undertaken by the New Zealand Police after permission and consultation to derive crime data, and as with the survey, was conducted over the December to March period. However, the tourist-victim data applies only to offenses reported to three police stations in central Auckland: Auckland Central, Downtown, and Wharf stations (the latter being inclusive of the Cup Village). Tourist reporting of crime at other Auckland stations would have been insufficient to justify the additional resources necessary to record such incidents during the Cup based on senior police experience (that is, at Police Commander level). One of the recurring research problems has been the lack of data on the characteristics of tourists as victims of crime (de Albuquerque and McElroy 1999; Prideaux 1994). A major objective of the victim reports was to record details both of the offense and the victim (Table 1). The ability to develop a detailed profile of crime enabled the study to identify both the nature of and characteristics of tourists as victims. The victim reports in this study are a notable development in research because few countries have begun to collect such victimization data (Kathrada, Burger and Dohnal 1999). Furthermore, in contrast to the majority of studies that have begun to collect

Table 1. Variables Derived from Tourist Victim Information Reports

Details of the Offence:
Date of offence: day, month
Time of offence
Offence type
Scene type
Scene location: address
Violent crime: physical injury; weapon involved
Property crime: property taken and damage; value of loss
Details of the Victim:
New Zealand or overseas resident
Nationality of the victim
Ethnicity of the victim
Gender of the victim
Age of the victim

victim data in response to increasing crime, the reports represent a mutual and positive relationship with police as part of a proactive approach towards understanding and monitoring future developments in tourism-related crime.

Auckland Police also provided secondary data for the study in the form of official statistics extracted from their database monitoring crime in the city. This data included area statistics for the Auckland district and the total arrests made by the Operation Marlin unit during the policing period of the Cup. Operation Marlin was a one-off policing initiative developed for the Cup involving an additional 182 police and was based on similar operations at previous special events such as Asia Pacific Economic Cooperation in Auckland and the Cup in Fremantle. Due to the differences in how offenses come to the attention of police and are subsequently represented in the data, arrest offenses by nature predominantly include crimes by offenders that are detected by police (e.g. disorderly behavior), whereas offense reports reflect crimes reported to police by victims (for example, theft).

Police Area Crime and Arrest Statistics

Auckland city crime statistics were obtained over a four year period for the months October to February, which coincided with the period of the Cup. Table 2 indicates that from October 1999 to February 2000, all listed offenses experienced an increase compared with the previous year (particularly burglary and assaults) with the exception of thefts from vehicles which experienced a decline. Drug and disorder offenses during the event increased by a lower margin than in the previous year, although it is likely that the recording of these crimes was substantially underestimated based on a police tolerance towards these offenses. While total crime levels in Auckland city increased by 3.3% during the Cup, Auckland's population experienced by a 9.5% rise in international arrivals to New Zealand during this period (corresponding visitor statistics for central Auckland were unavailable) (Statistics New

Table 2. Auckland City Crime Statistics October 1999-February 2000[a]

| Offence (Oct-Feb)	1996-97	% change	1997-98	% change	1998-99	% change	1999-00
Assault	331	1.5	336	-6.5	314	16.2	365
Sexual	54	-38.9	33	-9.1	30	16.7	35
Drugs (Cannabis)	337	-3.3	326	12.9	368	6.3	391
Disorder	532	-0.6	529	27.2	673	11.9	753
Burglary	607	-8.1	558	-23.3	428	26.4	541
Theft	2,373	-26.6	1,741	19.0	2,072	0.5	2,082
Theft ex car	1,409	-37.6	879	30.9	1,151	-15.2	976
Total[b]	27,226	-10.5	24,354	-5.2	23,081	3.3	23,837

[a] Source: New Zealand Police.

[b] Includes other crimes not specified in table.

Zealand 1999, 2000). Crime statistics for March 2-5 (which represented the end of the Cup and celebrations) magnify the hedonistic impacts of a special event on crime over a concentrated period of time. The concentrated impact of the Cup was reflected by a high incidence of behavior, assault, and wilful damage offenses, given the combination of day and night celebrations, large crowds, and the consumption of alcohol. Of further note were the 50 recorded cases of theft from vehicles which again reflected the large crowds and the increased opportunities for crime.

To consider the temporal variation in the pattern of these crime statistics, a simple correspondence analysis (Greenacre 1984) was undertaken. In correspondence analysis the associations between the rows and columns of a frequency table are illustrated in a plot that suggests their proximity. Such plots are particularly useful when the large number of categories makes a cross-tabulation difficult to interpret, as is the case in this instance. As discussed in Page and Meyer (1996) and Bentley, Meyer, Page and Chalmers (2001) some caution is advisable when interpreting correspondence analysis plots. This is particularly true when the association between the rows and columns is insignificant. Fortunately this is not a concern in this instance because the sample size is large (N=20,224, X^2=195, DF=18, P=0.000). However, in any correspondence analysis, the plot for the rows is never strictly comparable with that of the column, so the proximity of row and column points can only be approximately measured by creating axes from crucial points to the origin. For example, the axis created for sexual crimes in Figure 1 suggests that the proportion of sexual crimes has fallen steadily from 1996-97 to 1999-00. In addition, the axis for disorder suggests that the proportion of disorder offenses has increased steadily within the same period. In this respect, it appears that the Cup has not changed existing trends.

The plot explains a very healthy 98.6% of the association between year and type of crime with the horizontal axis explaining a dominant 68.4% of the association. This horizontal axis positions 1996-97 on the far right and 1999-00 on the far left so it has been labeled "Time: Present to Past". The vertical axis puts violent crimes (such as burglary, sexual, and assault) at the bottom and less violent crimes (such as disorder and theft ex car) at the top so it has been labeled "Level of Crime: Violence to Disorder". The position of the two dates towards the middle of this vertical axis suggests that these years were similar in terms of the level of violent crime, while 1997—98 saw relatively more violence and 1998-99 saw relatively less violence.

The policing of the Cup by Operation Marlin involved a geographical area that extended from the Auckland harbour bridge to Quay Street including the Viaduct Basin and Cup Village, and covered what might be described as within the city's main tourism district which extends to the waterfront area following the construction of the America's Cup Village. Between October 1999 and early March of 2000, Operation Marlin police arrested 511 persons for a total of 745 offenses (Figure 2). Yet, despite estimates of over four million visits to the
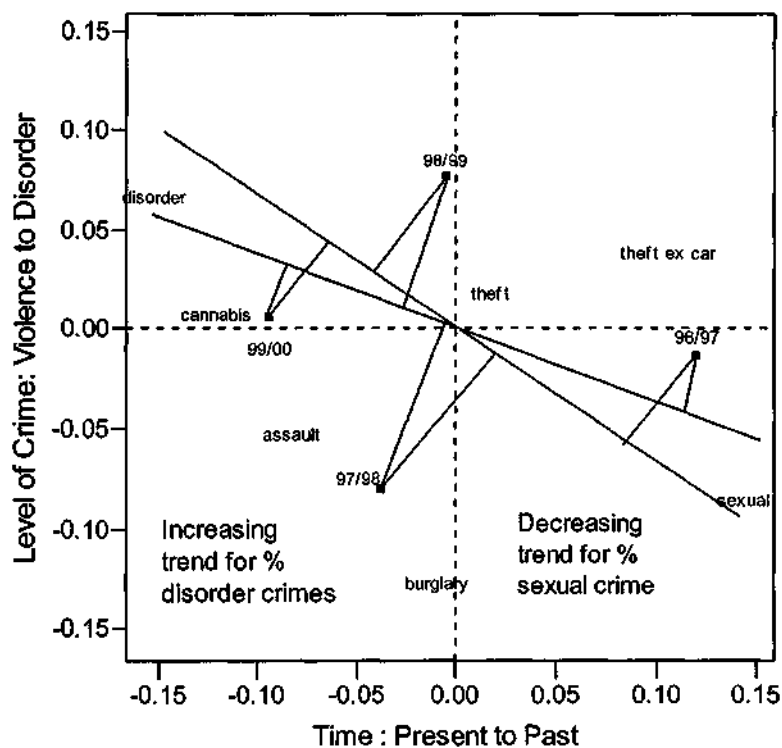
Figure 1. Trends in the Auckland City Crime Statistics

Cup Village in this period, only one third (33.1%) of these arrests took place within the Operation Marlin policing area.

Drug and anti-social offenses collectively accounted for 45.1% of all cases and the highest proportion of arrests. Of these, 23.1% of offenses comprised drunk and disorderly behavior, while drug offenses accounted for 14.5% of crime. The high incidence of disorderly behavior was in part a reflection of the increased detection of these crimes by police, the easy availability of alcohol, and the tolerance by licensed premises and police towards alcohol consumption (especially at night outdoors in public places). Crimes of violence comprised 20.7% of all detected offenses, of which 6.7% were for assaults against members of the public (excluding sexual assault). An assumed correlation between crimes of violence and night-time activities including the consumption of alcohol is presumed to account for a significant proportion of these crimes. Property and related offenses accounted for 19.3% and the remaining 14.9% comprised traffic violations. The decline in the number of arrests from 197 in December to 66 in February is explained by the end of the Christmas and Millennium celebrations, the return to work by much of the domestic population, and a resulting reduction in the number of Operation Marlin police at the end of the Louis Vuitton Cup (challenger series) in the first
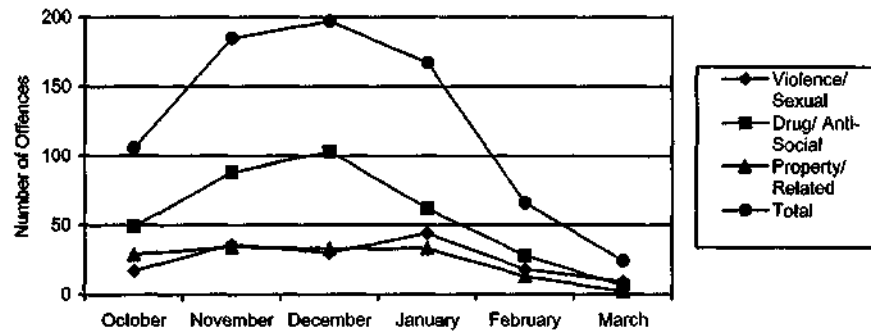
Source: New Zealand Police. March figures do not represent a full month

Figure 2. Operation Marlin Arrest Offenses October 1999–March 2000

week of February. By comparison, the TVIR data shows that reported offenses were more consistent over this period with 50 offenses reported in December, 80 in January, and 68 in February.

Tourist Victim Information Reports and Crime Surveys

The TVIRs sought to differentiate tourists from the aggregated official crime data. Victim reports provide only a measure of crimes against tourists that were reported to police and cannot be assumed to represent the characteristics of unreported crime. Between December 1999 and March 2000, 202 criminal offenses were reported to police by tourists. Of these, 21.6% (43) were reported by domestic and 78.4% (156) by international tourists. Europeans accounted for the highest incidence of victimization (26.3%), while Japanese and other Asians comprised 7.8% of victims, reflecting the visitation rates from these regions. Over half (51.4%) of all victims were 20-29 years of age and 65.8% were male, which supports the traditionally higher risk and risk-taking behavior of young males noted in the criminological literature (Ongley 1996). A predominance of property crimes (98.5%) over violent crimes (1.5%) was found while theft from vehicles accounted for 55.4% of reported offenses and other theft comprised 39.1%.

Overseas guests were more likely to experience theft from accommodation or person than domestic tourists, reflecting their greater tendency to use commercial accommodation and campervans. The domestic group was more likely to experience crime in public places, particularly theft from vehicles, which reflects the greater self-drive travel among this group. In terms of location, public places (55%), accommodation (15.8%), and campervans (10.4%) accounted for the highest share of all crimes, respectively. Overseas guests also incurred a far greater monetary loss for their possessions than domestic tourists, since the losses from accommodation and campervans involved greater quantities of items than domestic ones from theft from vehicles.

The sample of 1,003 tourists for the survey comprised 29.3% domestic and 70.7% international. Foreign tourists encompassed 45 different countries, including a significant proportion of Europeans and North Americans, while less than 10% were of Japanese or other Asian descent. A low proportion of Asians in the vicinity of the Viaduct Basin was also noted during the Whitbread stopover in 1993-94 (Burgess and Molloy 1994). An interest in yachting and a high proportion of yachts competing in the Cup with European and American syndicates were likely reasons for the sample representation of tourists. Although the existing composition was likely to change during the America's Cup, no comparable data was available that recorded the origins of tourists to the city during that time. Using an English language survey and a lower willingness to participate in it among Asian and Japanese also affected the sample representation for these groups.

The survey asked whether respondents believed that they had been criminally victimized in one or more of the five crime experiences. Some 30 respondents (3% of the sample) reported a total of 34 offenses with multiple responses allowing for the fact that any one person can be victimized on more than one occasion. Of the total offenses reported in the survey, 50% involved the theft or burglary of property from the accommodation and 29.4% theft from vehicles. Only two incidents of violence were reported, which accounted for 5% of the total offenses.

Victim Characteristics

Perhaps the main benefit of recording the characteristics of victims of crime is the ability to identify differences in the risks among different tourists and travel options. Overseas tourists, for instance, represented 70.7% of the sample, yet they accounted for 80% of victims (±15% with a 95% confidence). This is an interesting but not a statistically significant difference. The highest levels of reported victimization were among the British (20.0%), Australian, and Europeans (16.7%). Non-New Zealanders were disproportionately more likely to be the victims of crime, while 3.8% were victimized compared with 1.3% citing their nationality as a New Zealander. In terms of vulnerability, overseas tourists were 1.6 times more at risk of crime than domestic tourists.

The choice of accommodation was a considerable factor in explaining crime, since half of all reported such incidents occurred at their places. Domestic tourists were twice as likely to stay with friends and relatives, while international guests were more inclined to stay in backpacker hostels, and these differences in exposure to risk influenced the rates of victimization between these groups. Tourists staying in backpacker hostels experienced the highest level of crime (39.3%), followed by the accommodation choices of friends and relatives (32.1%), and camping or campervans (17.9%), bearing in mind that the offenses did not always occur at these locations. Thus, in terms of the highest rates of victimization, 8.1% who camped or stayed in campervans and 7.2% of those who stayed in backpacker hotels were victims of crime. Furthermore, of those occurring in places of accom-

modation, 58.8% occurred in backpacker hostels, reflecting the lower security offered at these premises located in downtown Auckland.

Despite comprising less than half (47.2%) of all respondents, 73.4% of victims were aged between 20 and 39. Tourists aged under 40 were over-represented as victims, while those older were under-represented. A decreasing rate of victimization with increased age is consistent with both the victim reports and other study findings. The size of the group was also important in explaining victimization rates, as 55.2% of victims indicated that they were traveling alone.

The identification of the causal factors that result in the victimization is complicated by inter-relationships among variables in the data. The risk of crime may be influenced by the personal characteristics and behavior of the tourist as well as the nature and security levels present at the place of accommodation. Tourists may also be increasingly vulnerable to crime when traveling alone, yet they might also be more inclined to stay in backpacker hostels where security is often regarded as low. The reporting of crime also depends on the willingness of victims to disclose their experience to the interviewer and can differ according to characteristics of the victim and the offense. Interviewer effects can influence the honesty of responses and whether or not an incident is reported. This may be further compounded for personal crimes or if victims have not reported them to police (Harland 1995; Lyberg and Kasprzyk 1991). A high rate of under-reporting among tourists was identified in the survey, as only 36% indicated that they had reported their experience to police. In the context of both low-incidence of crime and deficient victim reports, any inferences taken from the survey findings should recognize these limitations.

Victimization Rates

Due to the complexity of the tourism-crime nexus and the nature of inter-relationships in the data, Multinomial Logistic Regression (Sharma 1996) and the General Linear Model procedure (Searle 1987) were used to test the significance of differences between domestic and international victimization rates and the significant factors affecting crime and property loss. These factors have been built into victimization rate models that allow prediction of probabilities and the domestic/international status of a crime victim.

Only one of the data sources, the Auckland visitor survey, allowed a comparison of victimization rates by containing information for non-victims and victims. These data involved only 28 of the 30 victims in the sample due to missing values, and on account of the small sample size the results should be viewed with caution. Multinomial logistic regression was used to determine the important factors affecting victimization rates (Table 3). This is a nonparametric method that makes no assumptions other than a random sample of data, which can handle both metric and nonmetric predictors. This method models victimization rates *(p)* in terms of X-predictor variables using the log odds-ratio equation:

Table 3. Estimated Coefficients for Victimization Rate Model

Coefficient	Description	Coefficient	Description
$\beta_0 = -2.3$	Constant	$\beta_2 = 0.5$	Friends/Relatives
$\beta_1 = -2.2$	European	-16.2	Motel
-18.3	Maori	-1.5	Hotel
-18.4	Pacific Islander	1.5	Backpackers/Hostel
-0.5	Asian	1.9	Campervan/Camping
-18.7	African	-16.1	Bed and Breakfast
0	Other	-16.5	Home/Farm-stay
		0	Other

$$\log\left(\frac{p}{1-p}\right) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots$$

$$\text{i.e. } p = \frac{1}{1 + e^{-(\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots)}}$$

The results showed that only ethnicity ($P=0.023$) and form of accommodation ($P=0.000$) contributed significantly to victimization rates. Gender, domestic/international tourism status and age failed to have a significant effect.

As shown in Table 3, victimization rates were highest for Asians and for those staying in backpackers/hostels/campervans/camping. The pi and p_2 coefficients should be interpreted as the expected effect of the indicated factors on the log odds-ratio, $\log(p/(1—p))$. For example, the probability of victimization for a European staying with a friend or relative is equal to

$$p = \frac{1}{1 + e^{-(\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots)}} = \frac{1}{1 + e^{-(-2.3 - 2.3 + 0.5)}} = 1.8\%$$

But the probability of victimization for a European staying in a campervan is

$$p = \frac{1}{1 + e^{-(\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots)}} = \frac{1}{1 + e^{-(-2.3 - 2.2 + 1.9)}} = 6.9\%$$

Tourist Origin and Property Loss Factors

Two of the data sources, the tourist survey and the TVIR data, provided information regarding the type and scene of crimes. Multinomial logistic regression analysis was again used to determine which factors were related to domestic as opposed to international victims. The small number of victims (only 28) for the survey meant that no significant

Table 4. Estimated Coefficients for Crime Differences

Coefficient	Description	Coefficient	Description
$\beta_0=-2.9$	Constant	$\beta_4=1.8$	Public Place
$\beta_1=1.7$	Loss ($10,000)	17.5	Cup Village bar, restaurant, club
$\beta_2=3.3$	Theft	17.7	Other bar, restaurant, club
0.2	Theft ex car	15.0	Casino (carpark/bar)
17.7	U/L Taking of vehicle	2.4	Accommodation
0	Other	19.8	Campervan
$\beta_3=0$	15–19 years of age	16.2	Dwelling
0.7	20–29 years of age	−0.6	Shop/Retail
2.6	30–39 years of age	0	Other
1.0	40–49 years of age		
0.6	50–59 years of age		
0	60+ years of age		

effects could be found. For the TVIR data, however, -the size of the property loss had a significant effect (P=0.044) as did the type of offense (P=0.016). Gender had no effect while the effects of age (P=0.097) and scene of the crime (P=0.074) were marginal. Table 4 shows the coefficients for the following log odds-ratio model for the probability that a victim is from overseas as opposed to domestic. This model is a simplification in that it assumes independence between the four effects.

$$\log\left(\frac{p}{1-p}\right) = \beta_0 + \beta_1\text{Loss} + \beta_2\text{Offense} + \beta_3\text{Age} + \beta_4\text{Scene}$$

These coefficients suggest that crimes against overseas tourists are more likely to involve large property losses and unlawful taking of a vehicle. In addition, they are more likely to involve middle-aged people, taking place in bars, restaurants, clubs, casinos, campervans, or dwellings. Crimes against domestic tourists are more likely to involve smaller property losses, theft "ex car" (out of a person's car), teenagers, and a shop/retail/accommodation/public place. These coefficients can be used to predict whether a crime involves an overseas tourist. For instance, for a teenager robbed of US$10 worth from his car in a public street, the probability that he is an overseas tourist can be calculated as follows:

$$p = \frac{1}{1 + e^{-(\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots)}} = \frac{1}{1 + e^{-(-2.9 + (20\times0.00017) + 0.2 + 0 + 1.8)}} = 29\%$$

Therefore, the probability that this teenager is a domestic tourist is 71% while the same for a 30-39 year old is 15%.

The size of property losses was also analyzed using the general linear

Table 5. Properly Losses (NZ$)[a] for Domestic and Overseas Visitors

Visitor	Mean	Median	Maximum	Standard Deviation
Domestic	1111	541	13,217	2,241
Overseas	2362	968	46,400	4,810

[a] l$NZ=0.42 US cents.

model procedure and the TVIR data. This method assumes that the response variable has a normal distribution with constant variance for all types of crime. Therefore, the right-hand skewness in the property loss distribution makes a log transformation necessary for this variable. Ethnicity, age, and gender are not significantly related to the size of the property loss but, as expected, the domestic/overseas status of the tourist is significantly related ($P=0.000$). Table 5 compares the magnitude of property losses for domestic and overseas tourists. In addition, the crime scene is related to the size of the loss ($P=0.0l7$). Figure 3 consists of box-plots; it shows that the highest losses are experienced for casino and campervan crime scenes. A log transform is used in order to better show the data with the worst losses identified as outliers at the top of the "public place" and "other" boxplots.

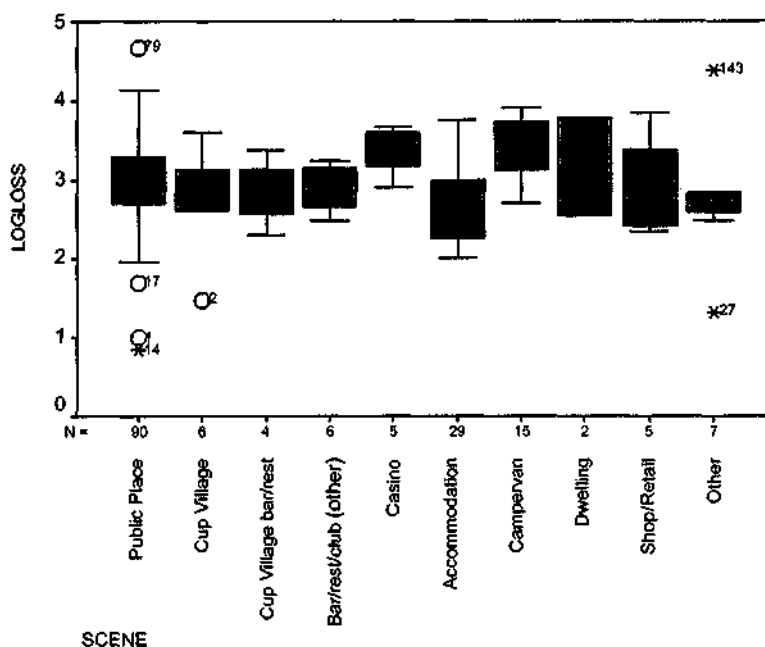What the above analyses show is that victimization rates relate to

Figure 3. Log Transformed Property Losses in Relation to Crime Scene

ethnicity and accommodation. Most at risk are Asians staying in relatively inexpensive accommodation (such as in backpacker establishments). Middle-aged overseas tourists are particularly prone to theft involving valuable property taken in non-public places other than shops or accommodation. In the case of the casino and camper-van cases, the magnitude of the losses experienced are particularly worrying. However, given the relatively small sample size in the study, these relationships merely illustrate indicative trends and outcomes that would be enhanced by a follow-up study at the 2002-03 Cup.

Evaluating the Tourism-Crime Nexus

The research data on crime generated during the Cup records relatively low rates of victimization, reflecting the comparatively safe image of New Zealand. This was confirmed by in-depth discussions with senior police. Auckland Police indicated that the incidence of crime was conspicuous by its absence despite the large numbers of arrivals during the Cup based on previous year's crime rates and those at special events (such as the Commonwealth Games in 1990, Commonwealth Heads of Government and Asia Pacific Economic Cooperation conferences in 1999). However, crime increased during the Cup as expected with an increase in population at a level that was less than the proportional change in population. It is important to consider the nature of both crimes and victims in addition to the level of incident in order to target the future prevention of such offenses. The proportion of property to personal crime supports the predominance of property incidents, and the value and access associated with tourists' possessions. Arrests for violent offenses accounted for one-fifth of the total, although a low rate of reported crimes against the person reflected differences in reported and detected crime, and low reporting rates for personal crimes. The increase in crime during the Cup was undoubtedly an underestimate due to police tolerance towards minor offenses and under-reporting, particularly among tourists who typically have lower rates than residents. This major deficiency of existing crime statistics requires greater emphasis; unreported crime should be estimated, for it has the potential to adversely affect the experience of tourists. Therefore, the nature of reported crime against them cannot be assumed as a reliable basis for predicting the level of unreported incidents. This study has indicated the importance of the triangulation of research data (acknowledging the limitations of different methods of recording crime, victim reporting rates, and sample sizes) such that recurring trends can be identified and crime prevention targeted.

With event-related crime, it is problematic to ascertain the proportion of crime attributable to the increase in population, the increase in tourism activity, and associated with hosting the event. Table 6 depicts the major event and destination-based variables associated with an increased tourist population that were considered fundamental in determining the low crime incidence during the Cup; the rating of each variable along a continuum corresponds to an associated

Table 6. Variables Related to Crime at Special Events

	Low Crime		High Crime
Event Type	Family		Hedonistic
Destination Type	Leisure-oriented		Tourism-oriented
Visitor Type	Family		Hedonistic
Community Support	Majority		Minority
Overall Event Impacts	Positive		Negative
Event Duration	Long		Short
Police Presence	High		Low
Location/Spatiality of Event	Concentrated		Spread
Existing Crime Levels	Low	...	High
History of Crime at Event	Low	...	High
Media Profile	Low	...	High

crime level. Although based on the 2000 Cup, it is presumed that these variables can be applied to the examination of crime at other special events.

Small-scale events, for instance, are less likely to be associated with negative problems like crime compared to large-scale or mega events (Hall 1992:67). Crime is influenced by the levels of social and hedonistic activity at events, particularly at night, and can lead to increases in alcohol and drug-related offenses, while large crowds can be conducive to pickpockets and snatch thefts. Prideaux (1996) argued that the promotion of a tourism locality as a hedonistic destination attracts a tourist type and associated activity where rates of crime may increase.

The viability of hosting a special event depends, in part, on minimizing costs to the community and generating support for the event (Hall 1989), including community involvement in planning, the recognition and sense of pride gained from hosting an event, and participation as a spectator (Ritchie 1984). A high concentration of tourism can lead to negative attitudes among residents and force them to adapt their routines to cope with increases in population (Pizam 1978; Rothman 1978). Yet, in terms of foot traffic, typical problems of crowding and congestion in Auckland had the converse effect of enhancing the festive atmosphere of the event. Positive reporting of the Cup that dominated news headlines for a sustained period also contributed to a psychological boost to the host, guest, and business communities, and consequently enhanced the image of New Zealand and the country internationally. Public enthusiasm for the event was aided by the expectation and eventual reality of the country successfully defending the Cup (a factor which was a significant difference from Fremantle).

Soutar and McLeod (1993) found that expenditures that benefit the community play a major role in mitigating local concerns about hosting events. The Cup contributed to an economic, tourism, psychological, and physical legacy both from the investment in the US$34.3 million waterfront redevelopment and that generated from publicity of the event. The nature and extent of impacts is affected by the dur-

ation of special events or the temporal concentration of event-related activity. Short-term (such as one-day) events tend to have the greatest impacts, even though increased the resulting impacts are concentrated and may exceed levels of carrying capacity and generate significant social and physical disbenefits both for host and guest communities. In contrast, events that last weeks or months, including the Cup, and recurring events have longer term and more sustained impacts, and residents are more likely to be able to adapt to changes associated with hosting them.

The presence and visibility of police or "guardians" has been reported for its effect as a deterrent to crime in destinations by increasing offenders' risk of apprehension (Cohen and Felson 1979; Jud 1975; Kelly 1993; McPheters and Stronge 1974; Pizam et al 1997; Prideaux 1994; Rothman 1978). Tourism environments can create "hotspots" of criminal opportunities due to the influx of tourists and workers, increased crowding and anonymity, and enclaves of accommodation, attractions, and entertainment (Fujii and Mak 1980; Kelly 1993; Prideaux 1994; Richter and Waugh 1986; Schiebler et al 1996). Such locations can also create a safe enclave for tourists if there is a sufficient police and security presence to deter crime as demonstrated by Operation Marlin. The environmental design of the Cup Village limited the number of access points to seven and particular attention was paid to environmental design, lighting, and a visible yet unobtrusive presence of police and security. In this way, the nature of the environment, tourists and the event substantially reduced the capacity for offenders to successfully engage in criminal activities.

An enclave area like the Cup Village can lead to issues of displacement of crime from immediate areas so as tourists were in greater risk returning to vehicle or accommodation, or visiting other attractions of the city with less concentrated security. This was confirmed by police figures which reported that only 169 arrests took place in the Cup Village in almost five months. The relocation of additional police resources into the Cup area may provide opportunities for crime at these outside areas, where the opportunity and risk were more favorable. Auckland Police argue that this form of crime displacement was minimized because the personnel assigned to police the Cup were in excess of existing quotas for the district.

The impact of crime during special events is also dependent on the level of existing crime occurring in the wider host destination and encompasses significant commercial and political risks for special events embroiled in negative publicity. Schiebler et al (1996) argue that the problem is more likely to occur in destinations already experiencing high rates of crime, and introducing tourism to a destination with low risk will not invoke an increase against tourists in the same way as a high crime destination. In this way, the whole problem was more of a potential concern than an existing concern in Auckland which had experienced a 11.6% decline in recorded crime in the years to December between 1997 and 1999 (Auckland City Police nd).

CONCLUSION

This paper began with the objective that by examining the crime/event-hosting relationship, and identifying its internal determinants, tourism and security officials could reduce crime, which was critical to the success of events and subsequent tourism activity. The study extended and triangulated a number of research techniques to measure the impact of crime at the Cup and, in this way, has contributed towards understanding future prevention needs at special events. This also has wider implications for understanding tourism-related crime and represents one attempt to examine its impacts at a special event using a synthesis of data, where previous applications of secondary data have had limited scope in assessing all the impacts.

The study concludes that the potential impact of crime at special events is unquestionably based on changes in the status of the population and the criminal opportunities that a seasonal increase in tourism activity presents. Crime at special events is also dependent on a range of interrelated variables associated with the event and the host destination. However, when applied to the Cup, these variables were more favorable in deterring crime than increasing it at a rate greater than the proportional increase in population. Thus, the increase attributable to the Cup was low and less than the change in tourist population at risk.

An examination of the research data reveals that differences in ethnicity, accommodation choice, and, to a lesser extent, the age of tourists affects their risk of criminal victimization. This is reflected in the victimization rates between international and domestic tourists and the result is based on the exposure to risk that these factors entail. Overseas tourists were more likely to be the victims of thefts from accommodation, while thefts from vehicles were higher among domestic tourists. Although there were notable differences in the nature of crimes against both domestic and overseas guests, differences in the actual victimization rates were not significant. A larger sample of victims in the regression model may highlight additional factors among tourists being significant to victimization rates such as age and the domestic/international status of the victim. This could be achieved in the future through larger survey samples or by obtaining estimates for the number of domestic and international tourists to the area. In the interim, the study's identification of tourists and locations at high risk of criminal activity suggests implications for controlling crime, including increased education and security measures that can be adopted within the tourism industry. The study also provides a basis on which to further study crime at special events.

This paper has highlighted the intrinsic value of collecting statistics on tourism and crime from a practical perspective and the value of close collaboration with the police to identify changes in the nature and level of reported and unreported incidents associated with a special event. It also indicates that irrespective of the level of crime, tourism and security officials can utilize this data to plan for events and enable an effective use of the limited resources available to the police.

The coordination of the timing and planning for events between the industry and police is strongly advocated (WTO 1998). The study encourages the continued research into destination crime rates for the planning and forecasting of impacts of future special events given that the combination of these variables will inevitably differ. This study and a second defense of the Cup in 2002-03 provide a foundation for longitudinal research on crime and its impacts on event destination crime rates. 13

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