Tourism and Crime: An Exploratory Study of Burglary From Tourist Accommodation From the Criminal Opportunity Perspective

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Tourism and crime: An exploratory study of burglary from tourist accommodation from the criminal opportunity perspective

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Abstract

It is widely acknowledged that tourists are particularly likely to be victimized, especially with regard to property crimes like theft from tourist accommodation (burglary). Guided by the criminal opportunity perspective, we examine the extent to which environmental and routine activities-related factors explain burglary using the data from a sample of Australian tourists (N = 1,027). Bayesian variable selection with a stochastic search algorithm was used to analyze the data. Our findings demonstrate the utility of opportunity theories in explaining crime against tourists. We found that the location and type of accommodation together with the use of target hardening and guardianship strategies are helpful for understanding burglary from tourist accommodation. Practical implications for crime prevention are also discussed.

Introduction

There is a clear association between tourism and crime: tourists are more likely to suffer crime than are local residents, and citizens are relatively more likely to experience crime when on vacation than when at home. This association is especially evident with property crime, in particular, burglary (theft) from tourist accommodation (Huang et al., 1998; Mawby et al., 1999; Lisowska, 2017; Br`as, 2015; Pizam & Mansfeld, 1996; Jones & Groenenboom, 2002; Mawby & Jones, 2007; Botterill & Jones, 2010; Ho et al., 2017). These dynamics affect tourist demand and, subsequently, the tourism industry. Tourists may be deterred from visiting resorts that are seen as dangerous (de Albuquerque & McElroy, 1999; Alleyne & Boxill, 2003; Anuar et al., 2012; Amir et al., 2015; Holcomb & Pizam, 2006; Cró & Martins, 2017). Tourists who experience crime on holiday, particularly those who experience secondary victimization at the hands of unsympathetic police, holiday representatives, and insurance companies, may also be deterred from returning. While the evidence on this is tenuous (Mawby et al., 2020), tourist victimization is an important consideration where the tourism sector is heavily reliant on repeat visits.

It is well established in the criminological literature that routine activities and environmental factors contribute to explaining crime risk (Cohen & Felson, 1979; Felson & Cohen, 1980; Brantingham & Brantingham, 1995). For example, citizens' prosperity, leisure activities, area and type of residence, etc., all influence risk of victimization. However, while both tourism researchers (e.g., Crotts, 1996; Boakye, 2010) and criminologists (e.g., Mawby, 2012) have suggested that applying these concepts to tourists might explain why some experience crime on vacation while most do not, this has not been tested through a victimization survey of

tourists in general. With this in mind, this paper examines burglary (theft from tourist accommodation) from the criminal opportunity theoretical perspective. We aim to identify routine activities-related and environmental factors associated with the increased risk of criminal victimization of tourists while on vacation using the data from a sample of Australian tourists who recently visited the British Isles[i] or Bali[ii].

Tourists as victims of crime

Earlier studies in Hawaii (Chesney-Lind & Lind, 1986), Barbados (de Albuquerque & McElroy, 1999), Hungary (Michalko, 2004), the US (Zhao & Ho, 2006), and recently, Slovenia (Paliska et al., 2020), found that tourists had high rates of victimization. However, these studies were dependent upon police recorded statistics, with their attendant problems. Mawby and Jones (2007), who interviewed hoteliers, found that the crimes against hotels and clients were higher than that recorded in police statistics, suggesting that the police data is an under-representation. In addition to the traditional criminological concern over the "dark figure of crime" not captured in official crime statistics, very few police forces record whether victims (or indeed offenders) are tourists, locals, temporary workers, second homeowners, etc. (Mawby, 2017)

In one of the few area–based victim surveys that were undertaken into crime against tourists and local people, Stangeland (1998) compared tourists interviewed at the end of their holiday with local residents of Malaga and foreign residents of properties on the Costa del Sol (Spain). Stangeland found that tourists' rates of victimization during a fortnight (average) holiday were not much lower (and sometimes higher) than those of other groups over a year. Similarly, a survey of British holidaymakers found that 10% of respondents had experienced at least one crime during their vacation (Mawby et al., 1999). The authors concluded that citizens' risk of victimization increased markedly when they were on vacation.

Perhaps the most extreme statistics come from Ghana. Boakye (2010) found that almost a third of his sample of foreign tourists visiting Ghana had been victimized during their stay. Moreover, in a survey of 603 backpackers visiting Ghana, Adam and Adongo (2016) reported that no less than 430 experienced at least one crime: physical assault was the most common (28.3%), followed by larceny (26.5%), fraud (24.7%) and verbal assault (20.5%). Of course, backpackers to Ghana represent one specific tourist subgroup. A rather different group of tourists, those booked with luxury travel group e-Shores, were also found to have high rates of victimization, in this case, a third reported having experienced a theft (Hutchinson, 2016). In contrast, others have reported lower levels of victimization. Barker and colleagues (2002) interviewed 1,003 visitors to New Zealand for the Americas Cup 1999–2000 and found that only 3% of respondents had been victims of crime. Similarly, an Australian study by Allen (1999) reported that only 2.3% of 2,480 tourists leaving New South Wales in late 1997 had experienced

crime during their Australian vacation.

Research suggests that tourists are most likely to experience property-related crimes, in particular, burglary from their accommodation. In their study of hotel crime in England, Mawby and Jones (2007) found that the majority of offenses recorded in police statistics were burglary or other theft and that a small number of hotels (n = 17) were the target of repeat burglaries, accounting for 37% of all burglaries. Similarly, Jones and Groenenboom (2002) found that the most frequent crimes in hotels in Central London were burglaries from guestrooms. This aligns with research from the U.S. by Huang, Kwag, and Streib (1998) which found that 82% of all incidents recorded in hotels were burglary/larceny/theft. Further, the vast majority of hotel/motel incidents reported to the police in Miami-Dade County, USA, were also property-related (Ho, Zhao, and Dooley 2017).

Burglary from the tourist accommodation: Theory and prior research

Research suggests that tourists and their accommodation may be particularly vulnerable to criminal victimization (de Albuquerque & McElroy, 1999; Kelly, 1993; Mawby & Jones, 2007; Mawby et al., 2010; Mawby & Vakhitova, 2022). This observation can be understood from the perspective of routine activity theory (Cohen & Felson, 1979). Typically, people commit crime and are victims of crime in locations that are central to their lives. This can include, for example, their homes, where they work, go to school, where they shop and any recreation sites they frequent (Brantingham & Brantingham, 1991). This reflects the routine activities of victims and offenders alike, and the overlap of these routines influences criminal opportunity and crime victimization risk. Routine activity theory posits that criminal opportunity arises when a motivated offender, a suitable target, and a lack of capable guardian converge in time and space (Cohen & Felson, 1979).

Suitable or attractive targets can be described as having some "symbolic or economic value to the offender" (Miethe & Meier, 1994, p. 49) and/or "perceived as vulnerable and unlikely to actively or successfully resist" (Popp, 2012, p. 691). Felson and Clarke (1998) proposed that target suitability can be expressed using the acronym - VIVA, which stands for Value, Inertia, Visibility, and Access. *Value* refers to the monetary value of the target, *inertia* to the weight of the target, *visibility* to how visible the target is, and *access* to its accessibility. Based on VIVA, an expensive golden watch, left on a table in a hotel room by a tourist who went out exploring is an example of such a suitable/attractive target. Leaving a watch unguarded in a room that is easily accessible by hotel staff (and other hotel guests and strangers, though probably not as easily accessible) creates a criminal opportunity for a motivated thief. Tourists are more likely to have valuables (such as cash, credit cards, cameras, and passports) in their possession and may also present a more affluent population in comparison to residents (Miethe & Meier, 1994). Tourists

also tend to leave their accommodation unguarded while out exploring. Many tourists think that carrying valuables around is a hassle, and so they leave them in the accommodation, thereby making the accommodation an attractive target.

Criminal opportunity can be reduced through social, physical, or personal guardianship. In the residential context, social guardianship in the form of someone willing to supervise or "keep an eye on potential crime targets" (Felson, 1995, p. 53) and intervene when necessary has been shown to reduce the likelihood of crime (Reynald, 2010, 2011). Felson (2006) argued that for guardians to perform as effective crime controllers they must be knowledgeable about their immediate surroundings and the context in which they could potentially act as guardians. They must be able to recognize what they observe as a criminal or deviant act. Contextual awareness in the form of the knowledge of the neighborhood, the people who live in it, and the activities that normally occur there, is the critical factor that contributes to the guardian's capability (Reynald, 2010). "Effective guardians [can recognize] people, things, and activities that are atypical of a certain context" and then intervene if necessary (Vakhitova et al., 2014). The transient nature of tourists' residency makes guardianship through supervision or intervention not very likely. Tourists usually do not have the time or the opportunity to get to know their neighbors and, therefore, are unlikely to be able to distinguish locals from strangers, so would not be alerted if a stranger was entering a neighbor's room.

While not necessarily set up for social guardianship, modern tourist accommodation facilities are often equipped with a variety of security devices. Electronic locks, room safes, and the common area closed-circuit televisions (CCTVs) could all be viewed as a type of physical guardianship (Okumus, 2010; Feickert et al., 2006). Physical guardianship or protection of targets through physical control includes target hardening measures that overlap with guardianship and are consistent with situational crime prevention (Wilcox et al., 2007). Target hardening prevents crime by blocking opportunities for crime by increasing the effort required to commit crime (Clarke, 1992). In residential settings, physical guardianship has been generally shown to be effective against burglary. For example, Tseloni and colleagues (2017) measured the effectiveness of anti-burglary security devices using the data from the Crime Survey of England and Wales and found that some individual security features are more effective in preventing residential burglary than others and that the protective effect of combining multiple devices is better than simply additive.

Research examining the effect of security features on the risk of crime, in particular, theft from tourist accommodation is currently lacking. It is not clear whether these devices, which are quite different from those used in residential settings (e.g., electronic room locks that allow access to anyone with access to the hotel computer system and safes which can be manually overridden by staff), are equally effective against burglary. Tourism research in this space has predominantly

focused on the effect of safety and security features present in tourist accommodation on customer satisfaction (see, for example, Hilliard & Baloglu, 2008; Groenenboom & Jones, 2003; Feickert et al. 2006). Cró and Martins (2017) found that hostel guests will pay more for accommodation with enhanced security, particularly in destinations with high crime indexes. However, beyond location and cleanliness, the study did not explore any specific security measures.

Brantingham and Brantingham (1991) argued that criminal opportunity is influenced by the convergence of routine activities with environmental structures. That is, while the triangulation of a motivated offender, a suitable target, and lack of a capable guardian are fundamental to understanding criminal opportunity, it is also necessary to consider "how routine behavior became established within an environmental milieu" (Johnson et al., 2007, p. 203). To understand where the opportunity for crime is present, it is necessary to identify risk factors that influence criminal opportunities (Connealy & Piza, 2019). Brantingham and Brantingham (1995) argued that these risk factors could be understood as an environmental backcloth. This environmental backcloth represents the combined influence of environmental features with routine activities and provides a conceptual tool for understanding how crime and place are interconnected (Caplan et al., 2011). This suggests that crime targeting tourist accommodation must be understood by examining both routine activities of tourists and environmental characteristics of tourist accommodation, including its type (e.g., all-inclusive resort, hotel, hostel, etc.) and location (e.g., city center, countryside, etc.).

The rate of crime experienced in the context of tourist accommodation appears to vary according to the type of accommodation (Barker et al., 2002). Earlier research has established that tourist resorts often act as crime hot-spots with higher than average crime rates, particularly at the peak of the tourism season (de Albuquerque & McElroy, 1999; Alleyne & Boxill, 2003; Kelly, 1993; Pelfrey, 1998; Prideaux, 1996; Walmsley et al.,1983). However, others have argued that all-inclusive resorts offer improved guardianship, limit accessibility (Alleyne and Boxill, 2003; Boxill, 2004), and provide a touristic equivalent to gated communities (Low, 2004; Addington & Rennison, 2015; Blakely & Snyder, n.d.). In reviewing the limited literature on caravan parks and crime, Mawby, Barclay, and Jones (2010) reported that while some parks had low crime rates, in other parks crimes such as thefts and burglaries were more common. Barker and colleagues (2002) surveyed 1,003 tourists in Auckland, New Zealand, and examined differences in victimization across types of accommodation and found victimization rates were highest for tourists who were camping or staying in camper vans at 8.1%, followed by backpacker hotels with a victimization rate of 7.2%. The comparatively high proportion of crime occurring in backpacker hostels was associated with the lower level of security offered (Barker et al., 2002).

Burglary research suggests that the rate of victimization may also depend on the location

of the target (accommodation). In the context of domestic burglary, the Crime Survey for England and Wales (CSEW) survey suggests that urban households are more likely to be victimized than rural households (Flatley, 2017). On the other hand, Vandeviver and Bernasco (2020) who conducted a study of burglary in the residential neighborhoods of Ghent, Belgium, found that burglars had a distinct preference for residences in neighborhoods with lower residential density. These patterns suggest that the location of the target affects the offender's decision-making in target selection (Brantingham & Brantingham, 1978). Understanding the effect of the location of tourist accommodation on the risk of burglary has direct practical relevance for burglary prevention. As Vandeviver and Bernasco (2020) pointed out: "[i]f burglary victimization risk is determined only by characteristics of the property, then burglary prevention is essentially a private responsibility. Conversely, if environmental attributes affect burglary risk, communal efforts and collective investments may be necessary and could prove cost-effective" (p. 780). Currently, there is little to no research on the relationship between the location of tourist accommodation and burglary.

Current study

The review of literature highlighted the distinct gap in our understanding of the situational risk factors for burglary from tourist accommodation. The overarching goal of this study, therefore, is to model victimization from theft from tourist accommodation as a function of the location, type of accommodation, and security features present in the accommodation. This study focuses on burglary from tourist accommodation as our literature review shows it is the most common type of crime experienced by tourists. Burglary from tourist accommodation normally covers theft from the hotel room or unit (e.g., apartment) that is exclusively for the use of the victim and 'family'; other thefts relate to offenses occurring in shared spaces that may be semi-public (e.g., restaurant, lift, pool area).

To better understand the mechanisms of tourist victimization while on holiday, we conducted a quantitative analysis of tourism experiences in a sample of Australian tourists who holidayed in Bali or the British Isles in the 12 months before the survey took place ($N = 1{,}027$). Bali and the British Isles were chosen for being among the most popular destinations for Australian tourists. In 2019, 1.31 million Australians traveled to Indonesia (of which the majority traveled to Bali (Gebicki, 2017)) and 0.67 million–to the British Isles, making these two countries #2 and #4 top destinations for Australians traveling overseas respectively (Australian Bureau of Statistics, 2020). Generally considered safe, both destinations appear to be broadly comparable in terms of crime rates: according to the Numbeo crime index for 2019 (Numbeo, 2019), the British Isles ranked 59th in the world with a crime index score of 43.64 and a security index score of 56.36. The Irish Republic ranked 53rd with index scores of 46.18 and 53.82 respectively,

alongside Indonesia, which ranked 52nd with index scores of 46.26 and 53.82 respectively. The official statistics on crimes against tourists in either the British Isles or Indonesia however are currently lacking.

Data and methods

To investigate whether the attributes of tourist accommodation explain theft, we conducted an online survey of Australian tourists[iii]. The survey was conducted per the ethical requirements of the host university's Ethics Committee. Participants were informed that their data would be treated anonymously, no identifying information would be collected and they could withdraw from the survey at any time without providing a reason.

To gather information about the experiences of Australian tourists with victimization while on an overseas vacation, an online questionnaire was designed using Qualtrics online platform. The questionnaire was piloted in two ways before being made public. First, we asked a small group of colleagues who were experts in tourism studies and/or criminology to complete the survey and feedback their comments. Second, we piloted the revised questionnaire on a small sample of members of the opt-in online panel. The final questionnaire included questions related to the characteristics of the tourist accommodation, the characteristics of the respondents, and whether they experienced theft from their tourist accommodation.

Participants

Participants were recruited from the members of an online opt-in panel—Amazon's Mechanical Turk (MTurk). To recruit our participants, we posted a link to our survey on the MTurk website. MTurk has been widely used by social scientists, including tourism researchers and criminologists (see, for example, Enns & Ramirez, 2018; Gottlieb, 2017; Vaughan et al., 2019; Vakhitova et al., 2019; and Guttentag et al., 2018). The main advantage of crowd-sourced samples like the one we have collected is that it allows access to a large and fairly diverse and heterogeneous pool of potential respondents (Behrend et al., 2011). The disadvantage is the non-probability nature of the MTurk panel with all the attendant potential for the collected sample to be biased in some way. However, while we cannot assume that our sample is representative of all Australians visiting Bali and the British Isles, and therefore, the proportion of respondents who said they had experienced crime while on vacation does not reflect the proportion of Australians visiting the two countries who are victimized, we can still get useful insights into why some tourists are more likely to experience crime than others by comparing those who were victimized with those who were not.

Australian residents aged 18 years or older (at the time of participating in this research) who, in the past 12 months, visited Bali or the British Isles were eligible to participate in this

study. The time-frame limit was introduced to attempt to reduce any recall issues typically associated with reporting on past events. The brief invitation stated: *You will be asked to complete a survey on Australian tourists' experiences in Bali and/or the British Isles (including the Republic of Ireland). We will ask you questions about your holiday such as the type of accommodation you stayed at, activities you got involved in, etc.* To avoid biasing the sample, the invitation did not explicitly mention that the survey would ask questions about the respondent's experiences with crime. However, the respondents had an opportunity to learn about this aspect of the survey by familiarizing themselves with the Information Sheet posted online and available to the respondents via a link.

The data collection took place between the 3rd of September and the 29th of October 2019. Participants were offered a small monetary compensation (US$1.00) for their participation in the research (a completed survey), commensurate with the average amount of time required to complete the survey. Research suggests this approach improves response quality in MTurk surveys (Peer et al., 2013). It took on average no longer than 10 minutes to complete the survey.

Several steps have been taken to ensure high quality of data analyzed in this study: our survey included three attention check questions; the survey was set up to preclude the same respondents from responding more than once (ballot stuffing); the respondents were required to answer several open-ended questions, which were then used to identify low-quality responses. Responses that did not pass any attention checks or contained nonsensical answers to open-ended questions were excluded from the final sample. In total we received 1,398 responses, of which 371 were excluded for the above reasons, resulting in a sample of 1,027 responses. The proportion of missing data in the final sample was small and for all variables did not exceed 3%.

Measurements

In this study, we use the location and the type of tourist accommodation as proxies for the environmental features that facilitate the convergence of offenders and victims, and the security features present in the accommodation and the tourists' self-protective measures–as proxies for guardianship. To measure the former, respondents were asked to describe the accommodation they stayed in for the most time while on this holiday, including the types of accommodation and its location. For the location, the respondents were able to select one (most appropriate) of the following options: 1) the city, 2) a tourist or an entertainment district, 3) a village/the countryside, and 4) a holiday complex. For the accommodation, the respondents were presented with the following list to select one (most appropriate) option: 1) an all-inclusive resort, 2) an all-inclusive hotel, 2) a hotel/guest house with no meals or breakfast only, 3) a self-catering apartment, 4) a holiday lodge, and 5) a hostel, a caravan, a cabin or a tent. Here, by an all-inclusive resort, we meant one with external barriers where all meals and a comprehensive entertainment program

are provided, and where non-residents are largely excluded. An all-inclusive hotel is different from an all-inclusive resort in that only all meals are included. A holiday lodge/self-catering apartment here is defined as a self-contained unit, where there is a lounge, cooking facilities, etc.

Considering the unique transient nature of tourist accommodation, which makes guardianship by third parties unlikely, in this study we measure guardianship as the presence of security features in the accommodation and self-protective measures taken by the tourists in relation to their valuables. In the context of burglary from residential accommodation, Garofalo and Clark (1992) measured guardianship by asking household members whether they had a dog or an alarm system, a timer for lights or radio, and any other security measures. Following Garofalo and Clark (1992), we asked our respondents to tell us about the security features present in the accommodation they stayed at. Respondents were offered a list of security features and were able to select more than one option: 1) electronic key, 2) security guard, 3) 24-hour concierge, 4) special window locks, and 5) room safe. We also followed Mustaine and Tewksbury's (1998) definition of guardianship as "the degree of protection afforded to property or persons" (p. 834). In keeping with this definition, we operationalized guardianship as the use of self-protective behaviors by tourists. We also asked our respondents about what they did with their valuables most of the time when they went out. The respondents were offered the following options and were able to select more than one option: 1) left valuables behind hidden in accommodation, 2) left valuables behind but not hidden away, 3) took valuables with me. The respondents were able to choose more than one option. The responses to these questions were coded as separate binary variables.

And finally, to measure criminal victimization while on vacation, we asked our respondents whether they had been the victims of burglary (theft from accommodation) during their stay in Bali/the British Isles. We then asked about the specific location where the burglary occurred and offered the respondents the following options to choose from 1) at the hotel/resort/accommodation, 2) on the street, 3) on transport, 4) in a shop, restaurant, 5) on the beach, and 6) other. Only those who said their property was taken from the hotel/resort/accommodation were coded as 1 – experienced burglary. The rest were coded as 0 – did not experience a burglary. We also asked the respondents about their age, gender, and how long they stayed in the country while on this particular vacation.

Analytic strategy

We model the victimization (theft from tourist accommodation) using a binary logistic regression with Bayesian variable selection and a stochastic search algorithm. In deciding on the modeling approach, we took into consideration, the binary nature of the dependent variable (burglary victimization), the exploratory nature of the study, and the benefits of statistical methods of

variable selection identified in previous literature (see, for example, Raftery, 1995; Vakhitova & Alston-Knox, 2018; and Vakhitova et al., 2018).

The full model likelihood for a logistic regression, where there are k potential explanatory variables, can be specified as

$$\text{logit}(y) \mid \beta, X, \sigma^2 \sim N(\beta_K X, \sigma^2 I)$$

where $K = \{0, 1, 2, \ldots, k\}$ possible regressors ($K = 0$ indicates intercept term). The conventional approach would assume that the full model is the best possible model. However, considering that collinearity in survey data is to be expected as we are measuring behaviors that are likely to have some relationship to each other, this approach may not be optimal. As a result, analysts will usually reduce the number of coefficients in the model to improve model fit and increase parsimony. This approach can be highly problematic as techniques, which focus on selecting a single model can be quite fragile: closely related variables can nudge each other in and out of the model based on slight changes to the data (Ando, 2010). Therefore, determining the best model based on model fit, such as a change in deviance, can potentially lead to the exclusion of important explanatory variables based on a pre-determined significance level (McCullagh & Nelder, 1989). As was shown in Raftery (1995), and recently in Vakhitova and Alston-Knox (2018), Bayesian variable selection allows "a fuller understanding of model fit and parameter/effect size, direction and importance, in situations where we are looking for an indication of potential effects rather than the absolute certainty of significance (i.e. prediction is not the main goal)" (p. 29).

Considering the interactive nature of the routine activity theoretical model, in addition to the main-effects modeling, examining the interaction between our variables of interest was deemed beneficial. As we were not able to test for all possible interactions due to the sample size[iv], we tested the interactions between these three theoretically-relevant variables: *City, All-inclusive resort*, and *Room safe*. The model for this logistic regression is specified as

$$\text{logit}(y) \mid \beta, X, \sigma^2 \sim N(\beta_K X, \sigma^2 I)$$

where the coefficients now include all interaction terms. The prior distribution used was a Cauchy (0, 2.5) for each coefficient, effectively restricting coefficients to the range (-5,5), with minimal probability of values outside this range. Additionally, in this model, all binary predictors (main effects) are rescaled to have a mean of 0 and a standard deviation of 0.5 to improve model stability as recommended in Gelman et al. (2008). A different prior for the Bayesian model was chosen for two reasons. Firstly, for our reduced model we were no longer interested in variable selection and model averaging, instead opting for a single theoretical model. Secondly, several of the interactions in this model were either approaching almost complete separation, indicating (almost) none of the participants in a particular scenario were burgled, or sparse in terms of

tourists fitting the specific profile. As this reduced model involved very informative binary predictors, and the interactions may be sparse or approaching complete separation, we analyzed this model using the R package "arm" as recommended in Gelman et al. (2021).

Results

Descriptive results

The final sample (N = 1,027) included 572 (55.7%) responses from tourists who had visited the British Isles and 455 (44.3%) from those who had visited Bali. The respondents in the final sample were on average quite young (33.4 years; SD = 9.6; mode = 25) with a minimum age of 18 and max of 71 years of age, and predominantly male (59% of those who visited Bali and 62% - the British Isles), which is highly consistent with Mechanical Turk samples (Levay et al., 2016). On average visitors to Bali spent 6.2 days and visitors to the British Isles - 7.8 days in the country.

Table 1 presents the descriptive characteristics of the tourist location, accommodation, and security features present in the accommodation. Most of the respondents in our sample stayed in the city (46%) or a tourist/entertainment district (36%) with the former being much more popular with the British Isles tourists (57%) than the Bali tourists (31%) and the opposite being true for the latter (50% of Bali tourists vs 25% of the British Isles tourists). A holiday complex was the least popular location with only around 6% of the respondents staying in one with it being more popular among tourists who visited Bali (9%) than the British Isles (4%).

In terms of their accommodation of choice, respondents in our sample were almost equally likely to stay at an all-inclusive resort/hotel (40%) or a regular hotel/guesthouse (41%). However, the Bali and the British Isles tourists had significantly different experiences with over 50% of the Bali tourists staying in an all-inclusive resort/hotel while almost half (47%) of the UK tourists - at a regular hotel/guest house. The less popular options were a holiday lodge/self-catering apartment (11%), followed by a hostel, a caravan, a cabin, or a tent (6%).

The Bali and the British Isles tourists' accommodations were not very different in terms of the presence of nowadays standard security features with nearly 70% having electronic keys, and nearly half having a security guard (47%), 24-hour concierge (46%), and a room safe (46%). The least common feature was special window locks present only in about 20% of accommodations included in our sample. On average, each tourist accommodation had 2.1 features in the British Isles and 2.4 features in Bali. In our sample of tourists, 6.8% of those visiting Bali (n = 31) and 7.9% of those visiting the British Isles (n = 45) reported experiencing burglary/theft from their accommodation with the difference not being statistically significant.

Table 1. Descriptive characteristics of the tourist accommodation examined in this study (N = 1, 027).

Variable	*Bali*		*British Isles*		*Total*	
	N	*%*	*N*	*%*	*N*	*%*
Location						
The city*	141	31.0	326	57.0	467	45.5
A tourist or entertainment district	228	50.1	144	25.2	372	36.2
A village/the countryside	38	8.4	78	13.6	116	11.3
A holiday complex	42	9.2	21	3.7	63	6.1
Accommodation						
An all-inclusive hotel*	107	23.7	112	20.6	219	21.3
An all-inclusive resort	122	26.8	69	12.7	191	18.6
A hotel/guest house with some meals	89	19.7	136	24.9	225	21.9
A hotel/guesthouse with no meals	61	13.5	134	24.6	195	19.0
A self-catering apartment	49	10.8	62	11.4	111	10.8
A hostel/caravan/cabin/tent	24	5.3	32	5.9	56	5.5
Security features						
Electronic key	310	68.1	381	66.6	691	67.3
Security guard	241	53.0	243	42.5	484	47.1
24-hour concierge	232	51.0	236	41.3	468	45.6
Special window locks	98	21.5	105	18.4	203	19.8
Room safe	220	48.4	253	44.2	473	46.1
Self-protection						
Left valuables hidden in the accommodation	169	37.1	184	32.2	353	34.4
Left valuable not hidden in the accommodation	75	16.5	126	22.0	201	19.6
Took valuables with me	174	38.24%	213	37.24%	387	37.68%

* Reference category

Please note percentages for individual categories do not add up to 100% due to rounding.

Inferential results

To estimate the simultaneous effect of different predictors of interest on the dependent variable–theft from tourist accommodation–we have conducted a logistic regression with Bayesian variable selection analysis[v] using AutoStat®[vi]. Table 2 summarizes the best five models in terms of their probability of providing the best explanation for burglary victimization while on holiday. The posterior means and standard deviations for each coefficient included in the explanatory model provided in Table 2 are formed by averaging the predictions from each plausible model. The coefficients are presented in the order of their associated probability of inclusion, which reflects the importance of their contribution to the overall explanatory model.

The first best model (posterior probability = 3.16%) is much more likely than the rest of

the best models and more than 1.5 times as likely as the second-best model (posterior probability = 1.89%). Our modeling suggests that staying at a tourist accommodation other than an all-inclusive resort that has a room safe, especially if it is located in a holiday complex or a tourist area/entertainment district, is associated with a reduced likelihood of experiencing theft from the accommodation. In contrast, staying at an all-inclusive resort, especially if it is located in the city, appears to be much riskier.

Interestingly, the factors related to the location, the type of accommodation, security features present in the accommodation, and personal guardianship are all included not only in the top model but in all five best models. In particular, having a room safe is associated with a significant decrease in the odds of tourist accommodation being burgled (*OR* = 0.23). The risk that a tourist accommodation will get burgled is nearly 80% less for rooms with a safe compared with rooms without one. Further, the tourists that take their valuables with them when out exploring seem to significantly reduce the odds their accommodation is burgled (*OR* = 0.27). However, hiding or not hiding the valuables in the room does not seem to make much difference in terms of the risks of burglary. Staying in a tourist area as opposed to the city decreases the odds of burglary by about 25% (*OR* = 0.75). And finally, the most influential predictor of burglary from tourist accommodation is staying at an all-inclusive resort. In comparison with staying at an all-inclusive hotel, staying at all-inclusive resorts is associated with a nearly 5-fold increase in the risk of burglary (*OR* = 4.6).

The other types of accommodation are not that different from all-inclusive hotels in terms of their risk of burglary. Notably, the country of a tourism destination (Bali or the British Isles) did not meaningfully explain burglary. Further, the higher number of security features is associated with a lower risk of theft from this accommodation. With just one security feature present in the accommodation, the proportion of victims of theft is the highest (13%), which is reduced to 10% with 2 features present and less than 5% with three features present. No respondents, who reported all 5 security features present in the accommodation, experienced theft.

In addition to the main-effects modeling, we also examined how theoretically-relevant variables and their interactions affect the risk of victimization from theft from tourist accommodation. This model was supported by the results of the full model (see Table 2): besides being theoretically relevant, these variables also had a high inclusion probability, far outweighing the other variables (see Table 2). As Fig. 1 shows, in the reduced model, the interaction between the type of accommodation (i.e., All-inclusive resort) and the location (i.e., City) is highly influential (judged by the fact that its credible interval does not contain zero). Having a room safe in an all-inclusive resort located in the city reduces the risk of burglary considerably.

Table 2. Logistic regression (main effects only) with the Bayesian variable selection predicting the risk of burglary from the tourist accommodation.

Variable	*β*	*SD*	*HPD*[*] *2.5%*	*HPD*[*] *97.5%*	$p(\beta \neq 0)$[**]
CONSTANT	-1.86	0.33	-2.51	-1.22	1.00
Security: Room safe	-1.45	0.34	-2.14	-0.81	1.00
Accommodation: All-inclusive resort	1.52	0.32	0.87	2.12	1.00
Precautions: Took valuables with	-1.30	0.35	-2.02	-0.63	1.00
Location: Holiday complex	-1.95	1.20	-3.98	0.00	0.87
Accommodation: Hotel with some meals provided	-0.74	0.64	-1.85	0.00	0.70
Location: Tourist area	-0.29	0.36	-0.99	0.00	0.50
Security: 24-hour concierge	-0.19	0.30	-0.87	0.00	0.38
Precautions: Left valuables in the room not hidden	-0.19	0.35	-1.06	0.00	0.33
Location: Village/countryside	0.17	0.34	0.00	1.09	0.29
Accommodation: Self-catering apartment	0.10	0.29	-0.01	1.04	0.20
Accommodation: Caravan, hostel, cabin, tent	-0.14	0.41	-1.36	0.19	0.19
Accommodation: Hotel with no meals provided	0.06	0.22	-0.10	0.77	0.17
Country of tourism destination	0.04	0.14	-0.10	0.45	0.16
Security: Special window locks	-0.01	0.15	-0.31	0.43	0.14
Security: Electronic key	-0.02	0.12	-0.41	0.09	0.13
Security: Security guard	0.01	0.09	-0.14	0.24	0.11
Precautions: Left valuables in the room hidden	0.00	0.09	-0.17	0.20	0.11

[*] Highest Posterior Density

[**] Probability of inclusion

The intercept coefficient seems to suggest that staying in accommodation other than an all-inclusive resort, located not in the city is the safest option, as far as the theft from the accommodation is concerned, even if the room safe is not present. To aid in the interpretation of the coefficients (see Fig. 1), the posterior probability of burglary for each scenario was calculated using the posterior distribution of the relevant coefficients. Fig. 2 shows that the posterior probability of experiencing burglary while on holiday while staying in a city-based all-inclusive resort without a room safe is nearly 60%.

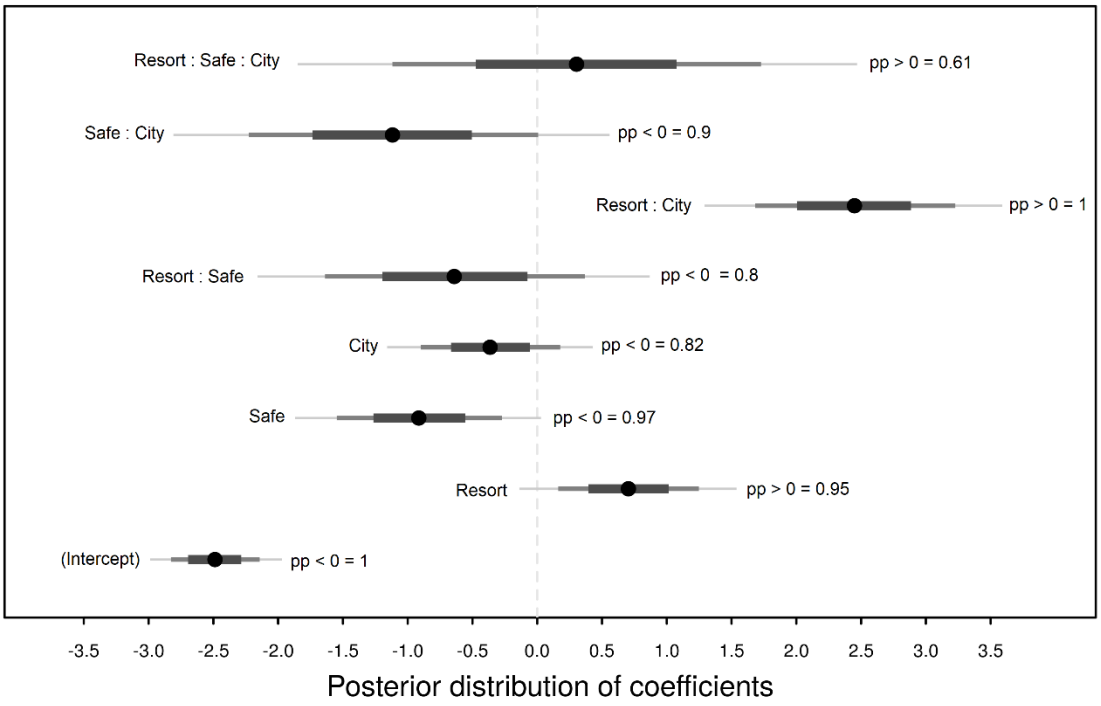

Figure 1. Posterior distributions for the theoretically-relevant variables. Here, *pp* stands for posterior probability, thin lines indicate 95% CrI[vii], medium lines - 80% CrI, and thick lines represent an interquartile range.

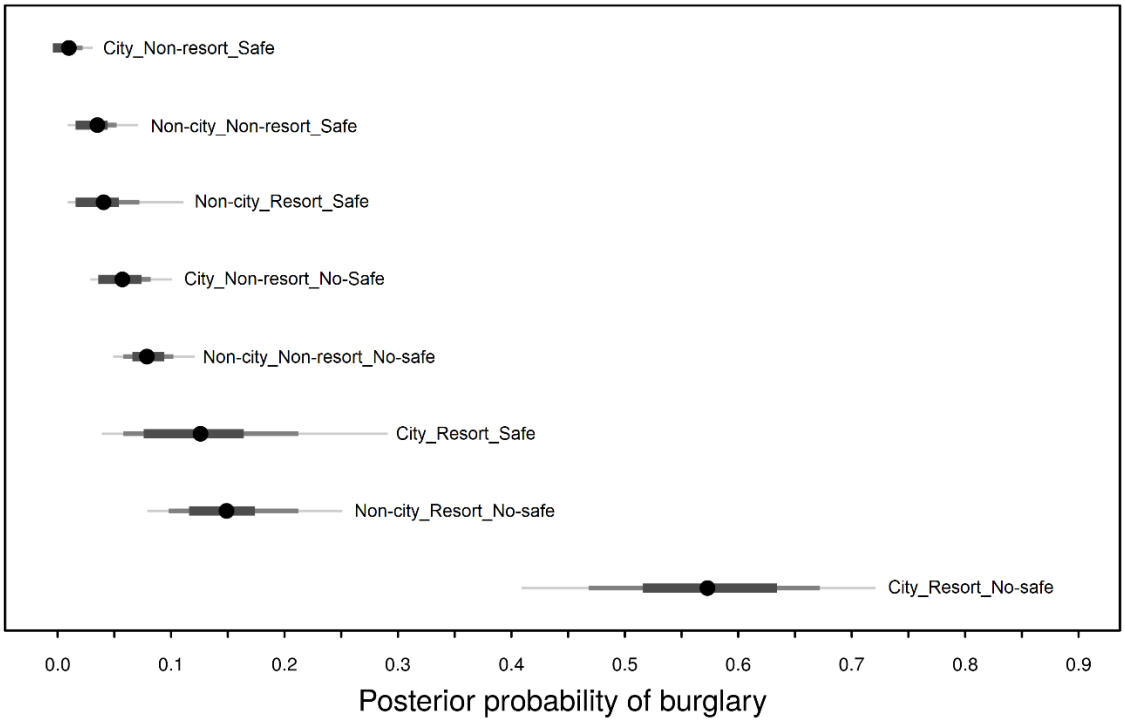

Figure 2. The posterior probability of burglary for the theoretically-relevant variables. Here, thin lines indicate 95% CrI[viii], medium lines - 80% CrI, and thick lines represent an interquartile range.

Discussion

The overarching goal of this study was to identify routine activities-related and environmental risk and protective factors for burglary from the tourist accommodation. Our findings show that the location, type, and availability of security features in the tourist accommodation, as well as the tourist's self-protective measures all, meaningfully contribute to the explanation of the variation in the risk of victimization from burglary from the tourist accommodation.

In particular, security features, especially room safes, present in accommodation appear to provide some protection from burglary. Room safes are designed to prevent theft by strangers, not necessarily by staff[ix]. Ellwood (2017), an expert in hotel crime, argued that most theft from the accommodation is the work of opportunists, not hotel staff. This may explain why a room safe is likely to be quite effective against theft from tourist accommodation. It is worth noting that the presence of a room safe was an influential factor in both types of modeling we have conducted: the main effects with all variables of interest included, and the main effects plus then interactions with only theoretically-relevant variables included.

24-hour concierge on-premises is also associated with a reduced risk of theft from the accommodation, though the effect size is small. This may be reflective of the deterrent effect that a concierge, a formal guardian, has on potential thieves. This is a similar form of guardianship

that might be provided by neighbors in residential settings. Interestingly, while having a concierge appears to reduce the risk of theft, the same cannot be said about having a security guard. This is likely to be explained by the type of accommodation that employs one or the other type of security. We would speculate that a 24-hour concierge is a feature of more upmarket secure tourist accommodation, while a security guard is likely to be employed in less safe locations where crime is not unusual. Surprisingly, we found that electronic keys do not significantly reduce the risk of burglary. While providing the ability to interrogate each door lock and get a list of everyone who accesses a particular room at any given time (McGoey, 2018), electronic keys are not fool-proof, in fact far from it. Security flaws in common electronic key-card locks may be easily exploited to gain access to hotel rooms (Greenberg, 2012; Dickinson, 2019).

It is worth noting that, in line with research on the effectiveness of anti-burglary security devices in residential settings (see Tseloni et al., 2017), we found a higher number of security features present in accommodation to be associated with a lower risk of victimization. So, even though our analyses suggest that electronic keys, special window locks, or having a security guard by themselves do not protect against theft from tourist accommodation, these features seem to nevertheless contribute to increased security, although the exact mechanism of this combined effect of multiple security features is not obvious at this point.

Not surprisingly, personal guardianship in the form of not leaving valuables in the room while out exploring appears to be highly effective in reducing the risk of theft from the accommodation. Our analyses suggest that taking the valuables with them while exploring is slightly less effective than keeping them in the room safe, but please note, our question regarding the precautions in relation to valuables asked what did respondents do with them "most of the time". So, it is possible that some respondents took their valuables with them while exploring most of the time, but not always, which reduced their risk of burglary. What is even more interesting, however, is that whether one hides the valuables in the room or not seems to make very little difference. Tourists probably do not hide their valuables all that well, so that could explain that self-protective action in the form of hiding the valuables in the room is ineffective against burglary. Additionally, given that burglars are unlikely to be aware of such actions before breaking in, this may reflect the amount stolen or whether the burglary was successful or an attempt, rather than burglary *per se.*

Besides the utility of routine-activity-related factors in the form of security features present in tourist accommodation, our findings reiterate the value of understanding the influence of environmental features on criminal victimization. In particular, we found that staying in the city appears to be riskier than staying in a tourist area or a holiday complex. There could be several explanations for this observation. Potential offenders may stand out more in areas that are full of tourists, compared to the city where it would be easier for them to blend in with others. Moreover,

offenders' 'commuting time' will be less. It is also possible that the tourist accommodation that is likely to be found in tourist areas and holiday complexes may be more upmarket (luxury), located in safer areas, and therefore more secure. Accommodation in the city is likely to be more heterogeneous and range from luxury to affordable, especially on the outskirts. A more in-depth examination of the features of the tourist accommodation is needed to understand what is it about being located in the city that makes a tourist more likely to become a victim of burglary. The very clear pattern evident in this study that tourist accommodation located in the city is riskier than any other location we measured has implications for burglary prevention. As Vandeviver and Bernasco (2020) pointed out: "[i]f burglary victimization risk is determined only by characteristics of the property, then burglary prevention is essentially a private responsibility. Conversely, if environmental attributes affect burglary risk, communal efforts and collective investments may be necessary and could prove cost-effective" (p. 780). The increased victimization risk in cities suggests that elements of the city environment (not only the individual property) influence victimization from burglary and may require an investment in crime prevention by the entire community.

In contrast to research on all-inclusive resorts by Alleyne and Boxill (2003) and Boxill, (2004) suggesting lower crime risk (but in line with earlier literature by, for example, de Albuquerque and McElroy (1999) or Prideaux (1996)), our analyses suggest that all-inclusive resorts/hotels *are not* safer than other popular types of tourist accommodation, at least regarding burglary. In fact, they have the highest risk of burglary compared with all other types of accommodation measured in our study. Routine activity theory can help explain this observation. Unlike gated communities, all-inclusive resorts host highly transient populations who may not stay at the resort long enough to develop familiarity with other guests required for capable guardianship by third parties through supervision or active intervention. Besides creating fewer opportunities for informal guardianship by third parties, all-inclusive resorts are also less likely to encourage self-guardianship. All-inclusive resorts are known for providing all the meals and often entertainment programs to their clients, which suggests that tourists who stay at all-inclusive resorts are likely to spend significantly more time within the boundaries of the resort, but not necessarily inside their room. Tourists who stay at all-inclusive resorts are likely to spend less time inside the room exactly because of all the offerings outside it. In direct contrast, those in self-catering accommodation, who are likely to spend more time eating in their units, have a higher level of self-guardianship. Tourists may also feel safer within all-inclusive resorts (Alleyne & Boxill, 2003), which may result in lower levels of self-guardianship and preventative action compared to what might be taken at home (de Albuquerque & McElroy, 1999). And finally, rooms in all-inclusive resorts may be particularly easy (vulnerable) targets as mealtimes at all-inclusive resorts happen at specified times, making it quite predictable when the tourists' rooms are unguarded.

Notably, we found that hostels, caravans, cabins, or tents, which have been previously identified in the literature as fairly risky when theft is concerned, were not associated with an increased risk of victimization (less than 6% of respondents who stayed in hostels, caravans, cabins, or tents reported victimization)[x]. While some previous studies have found an increased risk of victimization in these accommodation types (Barker et al., 2002), others were inconclusive (Mawby et al., 2010). While we did not find an increased risk of victimization, our sample size for these accommodation types was small ($n = 56$). Further investigation is required to make conclusions about the risk of burglary victimization in hostels, caravans, cabins, or tents.

Finally, our analyses have revealed that some routine activity-related and environmental factors interact to produce interesting effects. For example, we found that all-inclusive resorts located in the city appear to be much riskier in terms of theft from accommodation than all-inclusive resorts located not in the city and that having a room safe in an accommodation that is located in the city seems to reduce the probability of burglary. Besides confirming the importance of including theoretically-relevant interactions when modeling victimization, these interactions could also be informative when prioritizing security improvements for tourist accommodation. The providers of tourist accommodation may want to prioritize installing room safes in their city locations, especially in all-inclusive resorts, ahead of any other locations.

Limitations

Before concluding, we would like to acknowledge and discuss this study's limitations related to data collection and research design. While these limitations do not discount the importance of the findings, they need to be considered when interpreting the findings. As was discussed in the methodology section, the sample we analyzed in this study is non-randomly selected making our findings not generalizable to the population of Australian tourists. Previous research has shown that non-probability samples can offer useful insights when used for evaluating theories (Broidy, 2001). In a recent comparison of various sampling methods, Thompsom and Pickett (2019) demonstrated that Mechanical Turk aids theory testing by demonstrating the contrasting influence of different variables while conceding that the magnitude of the relationship may be exaggerated or understated. Considering the goal of our analyses was not to make inferences about the general population in terms of proportions, but instead, to test the theory by modeling victimization events, the use of non-probability sampling in this study was deemed acceptable.

Further, as is typical of any study that relies on self-reports of victimization, we only measured crime that respondents were aware of. Of those participants that responded 'not experienced' with regards to the victimization of burglary (theft from accommodation), some might have been in fact cases of attempted burglary or burglary that has not been noticed. If, for example, a small amount of cash has been taken from the safe, the victim may not notice it. Besides some burglaries not being noticed, our data may suffer from other limitations associated

with self-reported data, including recall and memory issues and unwillingness to report (Travis et al., 1995). Our respondents likely forgot at least some specifics of their vacation, in particular, the presence/absence of security features.

Due to the observational cross-sectional design of our study, we cannot claim that room safes *cause* the reduction in theft from tourist accommodation, albeit burglars may be deterred from targeting accommodation where they know safes have been installed. Any number of variables we did not collect or include in our model could be responsible for the observed effect. Accommodations with room safes may be located in generally safer areas or more upmarket places with better overall security or security-minded personnel. While we cannot state with certainty that room safes prevent burglary or that staying at an all-inclusive resort makes burglary more likely, our findings suggest the need to further interrogate the actual level of protection from burglary (theft from accommodation) provided by different security strategies and environmental features of tourist accommodation.

Finally, our model specification was dictated by the main objective of this study—to examine the effect of situational factors on the risk of burglary from tourist accommodation. Previous research, however, suggests that other individual and social factors may be associated with the increased risk of personal victimization while on vacation. Such factors as the use of alcohol, whether one is traveling alone or in a group, and the nature of the relationship among group members may be potential risk factors for tourist victimization, in particular, violence or robbery from the person (see, for example, Davis et al., 2002; Cohen, E. 1987). Alcohol use may be related to the increased vulnerability as a target, traveling in a group rather than alone could represent a lack of guardianship (Cohen and Felson, 1979), and close interpersonal relationships between group members could mean a higher level of guardianship responsibility and the increased likelihood of both supervision and intervention if necessary (Felson, 1995; Reynald, 2010). It is not difficult to imagine the above-mentioned factors affecting the tourist's vulnerability to assault, robbery, or theft from the person. However, we believe the effect of these factors on theft from tourist accommodation is at best indirect and not likely to be significant. Having said that, future research should examine the combined effect of situational, individual, and social factors in the context of violent crime against tourists. The findings from such research could help further understand the mechanism of personal victimization while on vacation.

Conclusion

This paper explored the risk and protective factors for burglary (theft) from tourist accommodation from the criminal opportunity perspective. We extend on the work of Cohen and Felson (1979) and Brantingham and Brantingham (1984) to illustrate that environmental features of tourist accommodation and the routine activities of tourists are important for understanding the risk of victimization of Australian tourists in the British Isles and Bali. In particular, our

findings suggest that having a room safe decreases the risk of theft from the accommodation while staying in an all-inclusive resort was found to attract a higher risk of burglary compared to staying at most other types of tourist accommodation. These findings are especially noteworthy given the popularity and perceived safety benefits of all-inclusive resorts.

Further research examining accommodation type is required, including research that examines a diversity of destinations with varying crime indexes – as our research focused on destinations with relatively low crime. The influence of accommodation type may be different in destinations with higher crime rates. Further, in light of our findings on the influence of features such as room safes and concierge on the victimization from burglary, we suggest that additional studies of security measures within tourist accommodation are warranted.

These findings also have implications for both the tourism sector and crime prevention initiatives. Specifically, increasing security features that offer guardianship within tourist accommodation may decrease the risk of burglary. Although it should be noted that security measures that are overt and intrusive may have unintended consequences and negatively impact the quality of the tourist's stay, meaning the need for security should be balanced with other tourists' needs.

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Notes

[i] We use the traditional term British Isles to indicate the UK, Channel Islands, Isle of Man and Irish Republic.
[ii] The British Isles or Bali were chosen based on the fact that these two tourist destinations are among the most popular for Australian tourists (Australian Bureau of Statistics, 2020).
[iii] The data for this study was collected as part of a larger study examining criminal victimisation of tourists while on overseas vacation.
[iv] Testing for all possible interactions between 19 variables would take 468 coefficients and require a sample size in excess of 20,000 cases. While this is not impossible, collecting a sample of such size was beyond this study's capacity.
[v] Number of iterations performed (excluding burnin): 10,000; burnin: 1,000.
[vi] AutoStat© is a web-based data science platform (https://autostat.com.au/).
[vii] CrI – Credible Interval. In Bayesian statistics, a credible interval is an interval within which an unobserved parameter value falls with a particular probability. Credible intervals are analogous to confidence intervals in frequentist statistics with different in that Bayesian intervals treat their bounds as fixed and the estimated parameter as a random variable, whereas frequentist confidence intervals treat their bounds as random variables and the parameter as a fixed value (Harper & Hooker, 1976).
[viii] See Note vii.
[ix] The hotel staff has to have some way to open a hotel room safe when guests forget their safe codes or safe electronics malfunctions.
[x] Further investigation using a larger sample is needed before any conclusions about the safety of hostels, caravans, cabins, or tents could be made as the number of respondents who stayed in such accommodation in our sample is fairly small (n = 56).