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Risky places in the centre of Kalisz

Przestrzenie ryzyka w centrum Kalisza

Abstract: The study is based on now abundant works on crime mapping and the concept of creating safe public spaces. Urban areas with high floor area ratios and high population density also have a high concentration of social issues, including crime. The users of these social and spatial environments often experience mental and emotional problems (stress, anxiety, lack of prospects or limited social trust), social issues (unemployment, poverty or exclusion) and problems associated with crime and safety, degradation of the housing environment or access to public services (e.g. health care or education). Identifying areas particularly at risk of crime can facilitate their transformation into safe spaces and help return these areas to the city and its residents.

The study focusses on the centre of Kalisz and attempts to answer three key questions: (1) Which spaces should be identified as risky places? (2) Which risky places generate the highest risk of crime? and (3) What are the crime-promoting features of risky places?

The study area was inspected and inventoried. Individual risky places were identified on the basis of the general guidelines of the CPTED strategy and the programme "Secured by Design". However, it was Bartosz Czarnecki's method of identifying and assessing threat factors in urban spaces that was of crucial significance.

Field studies have shown that the areas in the centre of Kalisz with the highest risks of crime are in the northern and western parts of the city centre, aside from the historically valued former chartered town area. These areas coincide with the 19th-century and multifunctional development (as well as large-format retail facilities), which are nowadays largely dilapidated. The most important crime-promoting properties of these areas are the possibility of a perpetrator escaping or hiding, the presence of risk groups and third parties, a situational advantage for perpetrators, limited conditions for seeking assistance and a sense of anonymity.

The study emphasises how knowledge of the spatial aspects of crime, combined with the achievements of researchers studying the shaping of safe spaces, can be useful in identifying

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risky places in urban environments. The spatial distribution of risky places and their assessment regarding safety requirements offer valuable information for urban planners and social workers in order to improve the conditions and quality of life of residents in the neglected parts of the city.

Keywords: risky places, crime mapping, environmental crime predictors, shaping safe space, Kalisz

Abstrakt: Opracowanie to powstało w oparciu o bogaty już dorobek crime mappingu oraz w nawiązaniu do koncepcji kształtowania bezpiecznych przestrzeni publicznych. W obszarach miejskich o dużej intensywności zabudowy i dużej gęstości zaludnienia występuje wiele problemów społecznych w dużym natężeniu, także przestępczość. Użytkownicy tych środowisk społeczno-przestrzennych często doświadczają problemów psychicznych i emocjonalnych (stres, lęk, brak perspektyw, niski poziom zaufania społecznego), społecznych (bezrobocie, ubóstwo, wykluczenie), a także związanych z przestępczością i bezpieczeństwem, degradacją środowiska mieszkaniowego, czy dostępem do usług publicznych (np. opieka zdrowotna, edukacja). Identyfikacja miejsc szczególnie zagrożonych przestępczością może pomóc w ich odpowiednim przekształceniu w przestrzeń bezpieczną i przywróceniu tych terenów miastu i mieszkańcom.

Badanie skupia się na centrum Kalisza i dotyczy trzech kluczowych pytań: (1) Które przestrzenie należy zidentyfikować jako przestrzenie ryzyka? (2) Które przestrzenie ryzyka stwarzają największe zagrożenie przestępczością? (3) Jakie są proprzestępcze właściwości prestrzeni ryzyka?

Dokonana została lustracja i inwentaryzacja obszaru badań. Poszczególne przestrzenie ryzyka były identyfikowane zgodnie z ogólnymi wytycznymi strategii CPTED i programu „Secured by Design" (Bezpieczne Projektowanie Przestrzeni). Jednak szczególne znaczenie miała metoda identyfikacji i waloryzacji czynników zagrożeń w przestrzeni miejskiej Bartosza Czarneckiego.

Na podstawie badań terenowych ujawniono, że najbardziej zagrożone przestępczością tereny w centrum Kalisza znajdują się w jego północnej i zachodniej części, poza szczególnie cennym historycznie dawnym miastem lokacyjnym. Tereny te pokrywają się z XIX-wieczną, dzisiaj już znacznie technicznie zdegradowaną, zabudową mieszkaniową i wielofunkcyjną (a także z terenami handlu wielkopowierzchniowego). Do najważniejszych proprzestępczych właściwości tych miejsc zaliczono: możliwość ukrycia się lub ucieczki (sprawcy), obecność grup ryzyka i osób trzecich, sytuacyjną przewagę sprawcy, ograniczone możliwości uzyskania pomocy oraz poczucie anonimowości.

Badanie to podkreśla, w jaki sposób wiedza o przestrzennych aspektach przestępczości w połączeniu z dorobkiem badaczy z zakresu kształtowania przestrzeni bezpiecznych może być przydatna w identyfikacji przestrzeni ryzyka w obrębie miasta. Ujawniona przestrzenna dystrybucja przestrzeni ryzyka oraz dokonana ich ocena w kontekście realizacji warunków bezpieczeństwa oferuje cenne informacje dla urbanistów i pracowników społecznych w celu poprawy warunków i jakości życia mieszkańców dotychczas zdegradowanych części miasta.

Słowa kluczowe: przestrzenie ryzyka, przestrzenne aspekty przestępczości, środowiskowe czynniki zagrożeń, kształtowanie przestrzeni bezpiecznej, Kalisz

Introduction

Crime is not spread through space evenly or randomly. Long-standing research has proved that this phenomenon is visibly concentrated in space – specifically, small pockets of human-occupied space. These pockets with high crime rates are

called hot spots.[1] They are spatial units of various sizes, ranging from individual addresses or buildings, through sections/sides of a street or single blocks to urban neighbourhoods distinguished by similar pathological problems. According to the theory of crime concentration and the concept of crime areas, the crime rates are the highest in certain places. Moreover, the risk of crime there is permanent (Harries 1974; Herbert 1982; Sherman, Gartin, Buerger 1989; Weisburd 2015). In his doctoral dissertation, Jascha Wagner (2020) proved that half of the crimes occurred in less than 10% of locations across seven areas in Delaware, USA. Moreover, in five of these areas crime was concentrated in less than 4% of the blocks.

It was pointed out quite a long time ago that the goal of spatial studies of crime should not only be visualising crime rates on maps, but also interpreting and understanding the relationship between crime and space.[2] That is why, beyond identifying hot spots with higher crime rates, the properties of these hot spots and neighbouring areas should also be studied (Evans, Herbert 1989). In similar research, David Herbert (1982) proved the existence of relationships between crime and both the functions of land use and architectural and urbanist solutions.

In environmental criminology, the objects and places equated with crime hot spots can be classified as generators or attractors of crime (Brantingham, Brantingham 1995; Kinney et al. 2008; Houser, McCord, Sorg 2019). The generators, attractors and detractors of crime are the key notions of crime pattern theory. They describe the spatial contexts capable of influencing the spatial distribution of crime activity in a given area (Brantingham, Brantingham 1993a). Crime generators are usually equated with sites that attract a large number of people, which can entail a higher number of crime opportunities.[3] People arriving at these locations,

[1] Lawrence Sherman et al. (1989) introduced the term "hot spot" to crime studies. They used it to describe small spatial units characterised by a high intensity of crime, which stems from the non-random distribution of this phenomenon in space. Other researchers have studied the influence of the intensity of crime phenomena and the time intervals between them in places identified as hot spots. From a spatial perspective, the meaning of the term is ambiguous and can encompass individual addresses or buildings, sections/sides of a street or single blocks or even whole districts with similar issues. Currently, Jerry Ratcliffe's spatiotemporal categorisation of hot spots from "The Policing Hotspot Matrix" (2004) is most often used. The matrix includes three types of temporal hotspots (diffused, focussed and acute) and three types of spatial hotspots (dispersed, clustered and hotpoint). A description of various techniques for identifying hot spots in Polish city space can be found in Stanisław Mordwa (2015).

[2] Various methods of determining the properties that 'make' risky places dangerous areas have been developed. One such method, risk terrain modelling (RTM) predictive software, identifies risks from the features of a given location and creates a model of their interaction, thus creating unique spaces of criminal behaviour. RTM offers a statistically credible method of identifying areas at risk of crime on a micro level, while taking into account the spatial influence of its features, such as bars, parks, schools or fast food outlets. The risk values given by the RTM model do not suggest inevitable crimes; they do, however, indicate places where, under specific conditions, the risk of unlawful behaviours is high (Caplan, Kennedy, Miller 2011; Puur et al. 2025).

[3] Two examples of crime generators are areas with a high concentration of trade and services and mass-use facilities (stations and stops, shopping centres or venues for large events) (Czarnecki 2011).

though previously having no intention of committing a crime, may decide to engage in criminal activities due to the number of opportunities for them. Such behaviours are described by the routine activity theory.[4] Crime attractors, on the other hand, are the locations which attract criminals because they are familiar with their crime-promoting properties and conditions favourable to committing specific crimes.[5] The behaviours of perpetrators in locations considered crime attractors are explained at length by the rational choice theory (Cohen, Felson 1979; Brantingham et al. 2020).[6] Crime detractors are buildings or areas wherein potential perpetrators refrain from committing crimes due to some discouraging or repelling factors. They include guarded, monitored or difficult-to-access areas and locations associated with a cultural taboo, such as police stations, courthouses or religious buildings/objects (chapels, crosses or cemeteries). So-called defensible spaces (an idea created by architect and city planner Oscar Newman) are a particular subtype of detractors. These are locations designed and organised specifically to limit the possibility of a crime occurring. This pioneering concept by Newman became the foundation for numerous other theoretical and practical undertakings generally aimed at creating safe spaces (Sypion-Dutkowska 2014).

The generators and attractors of crime can be described as risky places. Leslie Kennedy and Joel Caplan (2012) formed three premises in relation to them: 1) all places are risky, but due to spatial factors some are riskier than others; 2) crime occurs in places of high susceptibility, which stems from a combination of various criminogenic features; and 3) the overall effect of risky places on crime is a function

[4] Lawrence E. Cohen and Marcus Felson's routine activity theory (1979), modified by John E. Eck, attempts to explain why crimes occur in specific places at specific times. According to the authors of the theory, a crime is the result of three circumstances: a motivated perpetrator, an appropriate target or victim and an unguarded location. Moreover, criminals frequently select (or find) their victims on their daily routes, e.g. when commuting, returning home or going shopping. Eck created the concept of a crime triangle. His idea emphasises the act of the crime itself, the methods for limiting crime opportunities and temptations and possibility of identifying perpetrators (increasing the risk factor for the criminals). A crime is a result of the perpetrator–victim/target–location relationship system and its "controllers": the supervisor–guard–manager. The analysis of issues emerging in this system should, for a given case, help answer the following questions: How to stop perpetrators from committing another crime by using the powers of their supervisors/probation officers? How to limit the probability of becoming a victim? and How to change the areas where such problems emerge? (Clarke, Eck 2005: 28–29).

[5] Crime attractors are buildings or regions where activities that are extra-legal, on the verge of legal or accompanied by crimes, such as red light districts, drug trade locations, the vicinity of entertainment venues, black market locations, etc. (Czarnecki 2011).

[6] According to the rational choice theory, criminal activities should not be considered rational – even if the perpetrators act in time-restricted and stressful situations, with limited perception and without access to all information, and even if they think rationally and make rational decisions. They take into account the danger and the risk of committing a crime, but also estimate the potential profits. The perpetrators decide to commit a crime while maximising the benefits and simultaneously minimising the costs (the possibility of detection and its negative results: criminal investigation, criminal record, prison, ostracism or shame). According to Ronald V. Clarke and Marcus Felson (1993), the choice of taking a criminal path and the tendency to commit an act in a specific situation are based on a rational analysis of predicted costs and benefits.

of differing vulnerability and exposure throughout the landscape. Risky places vary physically: they can take the form of a point (facilities or nodes), a line (paths or edges) or an area (in relation to the concept of "anchor points" by Kevin Lynch (1960), who similarly identified the elements of urban space).

Paradoxically, dangerous areas attract many residents unaware of the danger, which in turn may also provoke undesirable criminal activities, especially when the conditions are unsafe. In the last fifty years, studies on the relationship between land use and crime have intensified significantly. Yet, they show that while the spatial relations between various types of risky places doubtlessly influence the crime patterns and tendencies in space, the relation is somewhat ambiguous.

On the one hand, earlier studies show that areas with a high concentration of risky places can coexist with a higher number of criminal activities due to the many potential targets and criminal opportunities (Bernasco, Block 2011; Weisburd, Groff, Yang 2012; Haberman, Ratcliffe 2015; Mordwa, Laskowska 2020b). Lin Liu and colleagues (2022) observed a strong relationship between the locations of risky points and crime in Cincinnati, Ohio, USA, determining that the more spots of a specific type, the higher the probability of a crime occurring. As a result they determined that knowing the concentration of locations considered generators and attractors of crime in a given area can help explain the distribution and causes of crimes. Other studies also confirmed on numerous occasions that areas with a higher concentration of certain types of locations (e.g. bars, restaurants, petrol stations, bus stops, underground stations and so on) are associated with higher crime rates. A remarkable, complex review of current studies on the influence of the built environment, land use and environmental crime predictors on crime was made by Alana Inlow (2021). She concluded that areas with lower crime rates are characterised by mixed-use areas and clear urban layouts on a macro scale, while on a local scale the issues of lighting, building conditions and servicing and maintaining green areas are the most important. In a study conducted at the scale of urban blocks, William Smith et al. (2000) confirmed that the number of motels/hotels, stores, parking lots, multi-family residences, bars, restaurants, petrol stations and commercial places correlated positively with crime in Raleigh, North Carolina, USA. Such locations contributed especially to street robberies as either generators or attractors. Numerous other publications have identified the crime-promoting properties of such facilities as petrol stations, restaurants, bars, hotels, health and personal care stores, schools, entertainment venues, alcohol outlets, grocery stores, retail shops, metro/railway stations and bus stops (Loukaitou-Sideris 1999; Bromley, Nelson 2002; Lockwood 2007; Stucky, Ottensmann 2009; Bernasco, Block 2011; Bowers 2014; Ceccato, Uittenbogaard 2014; Groff, Lockwood 2014; Cozens, van der Linde 2015; Haberman, Ratcliffe 2015; Favarin 2018; Gerell 2018; Clutter, Henderson, Haberman 2019; Cozens, Love, Davern 2019; Zahnow, Corcoran 2019; Inlow 2021; Tillyer, Wilcox, Walter 2021; Cameron 2022; Mordwa 2022a; Mordwa 2022b).

On the other hand, the dispersion of risky points presents criminals with a wider choice in their search for potential targets (Clarke 1995). Such a spatial

layout can be a challenge to law enforcement, since it requires more patrols to cover numerous locations (Bowers et al. 2011; Haberman, Stiver 2020). A dispersed layout of crime generators and attractors can therefore require the use of various types of safety measures and a strategy of crime prevention. According to Kate Bowers (2014), risky places can be interpreted as crime radiators and crime absorbers, influencing their vicinity in diverse manners. While the distribution of risky places in urban environments is generally considered an index which explains crime patterns, there are few studies indicating how a system of correlations between these places and their spatial contexts can also influence the occurrence of hot spots (Mordwa, Laskowska 2020b).

Regardless of the above-mentioned disparate regularities concerning the density of dangerous areas' influence on crime, the literature discussing the spatial aspects of crime commonly assumes that certain locations are crucial indices of the spatial distribution of crime (Brantingham, Brantingham 1999; Wilcox, Eck 2011) and can even be used to predict criminal activities (Johnson et al. 2007; Caplan, Kennedy, Miller 2011; Berk 2021). Moreover, taking into account the high level of predictability of crime locations and criminal behaviour in modern research, Kim Rossmo (2000) and David Canter (2003) have proposed separate techniques of geographical profiling which make it possible to successfully recreate the sequence of events (crime – location – victim – perpetrator).[7] These techniques involve finding a highly probable location related in some way to the perpetrator on the basis of spatial clues.

It has already been mentioned that the locations where risky places accumulate do not always overlap with the locations with high crime rates. This is because the presence of environmental threats is balanced with successful preventive actions or protective elements (Czarnecki 2011). The methodology of studies of the spatial conditions of crime at the local level (a residential estate, a public space or a street) was presented by Herbert (1982). He claimed that the location of a crime can be precisely identified, and a set of features related to the place can be determined. A comparative analysis should encompass the locations of crimes that are committed (based on official statistics) as well as the locations without crime records. He named the following environmental variables to be assessed: opportunities/targets, familiarity/perceived risk, surveillance/observability, design qualities/security, adjacent land use, local control systems/claims on space, local labelling, general "criminality" of the area, police/activity/efficiency and law enforcement

[7] Among the elements which largely influence the precision of criminal geo-profiles, Kim Rossmo listed the meticulousness of analysis of the crime location, the perpetrator's type and style of action, the availability of criminal opportunities, the victim's daily route, the routine activities of both perpetrator and victim, the specificity of the perpetrator's behaviour, the system of public transport routes and stops, the area borders, the forms and functions of area development and the demographic structure in the neighbourhood (Rossmo 2000). Canter especially emphasises the importance of a detailed analysis of the crime scene, which is crucial in order to identify the perpetrator: "the most objective and observable aspect of any crime is where it happens" (Canter 2003: 6).

sanctions. For this reason, in this work, the risky places are interpreted in the context of crime prevention through environmental design (CPTED). Since the crime-promoting properties of individual buildings and locations were determined on the basis of research of many years, it should be possible to design a space without such properties. It is also possible to transform existing urbanist and architectural solutions into safer spaces in terms of crime risk. The elements of significance – the continuity of frontages, the types of *façades*, the height and density of the building layout, the class and development of streets, whether the windows overlook the streets, the accessibility of backyards from the streets and in relation to them, the routes of footpaths or the locations of parking spots – all influence the possibility of supervision and informal social control (Jacobs 1961; Ceccato 2020). The physical environment can also influence so-called prosocial behaviours. For this reason Jane Jacobs (1961) did not solely examine individual buildings, but how the system of structural and spatial units of a city and the social spaces within it influences the social dynamics and the growing social issues in these areas. It was proved that the relation described by Jacobs can significantly impact human activity through the residents' conditioned behaviours and decisions (Gao, Janowicz, Couclelis 2017). For instance, territoriality[8] can invoke a sense of ownership, responsibility and topophilia by designating the space of an activity that the residents can identify with. In practice, the principle of image management comes down to creating a space in such a way as to make it look cared for and overseen – meaning that there is someone who guards the place and tends to it. A clean, tidy urban space invokes a sense of order and control, which can scare off criminals and thereby increase the residents' safety. Image management consists in the removal of all signs of disorder and vandalism, even the smallest (e.g. graffiti). Target hardening, on the other hand, is a form of access control that hinders criminal activity by limiting the opportunities to commit crimes such as theft, mugging or property damage. Such attempts and solutions, as well as the more advanced locks and alarms or the use of sturdier doors and windows (target hardening against a criminal attack), are meant to increase the effort a potential offender must put into a crime. Though, in general, the common purpose of various concepts and strategies of shaping safe spaces (e.g. the Dutch *veilig wonen*, the British "Secured by Design" or the German *Beccaria-Qualitätsinitiative*) is to create detractors meant to not only minimise the risk of crime, but also to facilitate the emergence of social bonds, increase the sense of safety and improve the residents' quality of life.

This article does not measure how the concentration of spots with risky places in a given area can influence crime, but identifies and evaluates them from the perspective of the local spatial context. The results of such an approach can prove significantly useful for crime-prevention authorities, and in such matters as planning the distribution of patrols with limited human resources (Ratcliffe et al. 2011; Weisburd et al. 2023).

[8] The six pillars of CPTED are territoriality, surveillance, access control, target hardening, activity support and image management (Cozens, van der Linde 2015).

Bartosz Czarnecki (2011) researched the issue of safety from the perspective of an urbanist who plans spatial structures and attempts to find out what solutions must be implemented to limit crime. He paid particular attention to the influence that all architectural and technical solutions in space have on the behaviour of potential perpetrators. In his publication, which broadly refers to the "Secured by Design" programme,[9] he proposed a method of identifying crime predictors in urban spaces. In this method, he suggested classifying risky places into four categories: crime attractors, crime generators, crime enablers and structural factors of the urban environment. At the subsequent stage, each of these crime predictors is interpreted and evaluated in terms of the risk it poses. The evaluation is based on various aspects of executing the safety/risk conditions; in this way, the crime-promoting features of places are de facto identified. Each risky place is therefore assessed in terms of "the possibility for a perpetrator to escape or hide; the presence of risk groups; the offender's (easily obtained) advantage; the presence of third parties; limited conditions for getting help or a sense of anonymity," for example. A multi-faceted analysis of each risky place then makes it possible to identify problematic locations and give recommendations to limit their crime-promoting qualities, that is, the risks they pose.

The purpose of this work is to identify risky places located in the centre of Kalisz and evaluate them in terms of 21 safety aspects (the crime-promoting qualities), in order to then identify the places that generate the highest risk of crime. A multi-faceted assessment of the crime-promoting properties of these places is presented, constituting a foundation for the suggested spatial solutions aimed at reducing potential crime risks and based on selected examples/locations.

1. Research area

In 2020, Kalisz was the second largest city in the Greater Poland Voivodeship, with approximately 96,000 residents (after Poznań, with 548,000 residents). In terms of crime risk, the city can be considered relatively safe (taking into account its size). This year, there were 23.87 crimes per 1,000 residents (in comparison, in Poznań it was 25.02, in Leszno 29.78 and in Konin 21.74; for the whole of Poland the index was 20.05). In total, 2,312 crimes took place. The majority (1,342) were crimes against property (with only 38 crimes against persons), and criminal detectability amounted to 73.5% (the average in Poland was 73.3%). To compare with previous years, the number of crimes in Kalisz since 2013 (with 3,696 crimes in 2013) has been dropping steadily (based on data from *Bank Danych Lokalnych. Główny Urząd Statystyczny* [Local Data Bank of Statistics Poland]).

[9] When planning the premises of the "Secured by Design" programme, the creators made use of knowledge of spatial analyses of crime and methods of influencing the spatial and social environment to reduce unwanted behaviours. This is why it is possible to identify, with high probability, places that are unlikely to fulfil safety conditions, and to suggest possible solutions.

The area of detailed research encompassed the centre of Kalisz – the oldest part of the city, chartered in 1257. For research purposes, the city centre was separated from the Śródmieście I housing estate by excluding the city park. According to the records of "Studium uwarunkowań…" (2019), a downtown built-up area (tenement-dominated housing estate with ground floors used as service venues) dominates the whole research area. To the north of the historical city area, there are larger complexes of multi-family and services buildings (schools, religious services and a large shopping centre, Galeria Tęcza). The whole area is listed on the Registry of Cultural Property as an area of the urban layout of the city of Kalisz and the area of archaeological cultural layers. Moreover, excluding the multi-family housing development, the shopping centre and the region to the north of Kanał Bernardyński, the area is within a zone of historic preservation; there are 50 sites on the Registry of Cultural Property and numerous ones on the commune register of historic monuments, as well as natural monuments.

The centre of Kalisz was selected as the research area due to its high concentration of negative social phenomena, such as unemployment, poverty, crime and low levels of education and social capital. For these and other reasons, the city centre (analysed in this article) is considered one of the dilapidated parts of the city and ready for revitalisation (Diagnoza 2016). The crime rates in the whole of Śródmieście collected for the diagnosis of social issues were determined to be among the highest in the whole city. The number of incidents recorded by the police amounted to 313.7 per km^2 (the value for the whole city was 33.7 per km^2), and the number of interventions recorded by the police in Śródmieście was 1,888.4 per km^2 (188.1 per km^2 for the whole of Kalisz). Within the research area, the western quarters (along Złota Street) and the northern quarters (along 3 Maja Street) are considered to be at the highest risk of crime, while the area of the former chartered city is considered relatively safe. The municipal revitalisation programme to be implemented lists "limiting the scale of social issues" as the first strategic purpose. The social issues include "a number of high-intensity crisis phenomena: unemployment, poverty, crime, low educational achievements among children [and] low participation in public and cultural life" (Zmiana Gminnego Programu 2024: 55).

2. Research methods and sources

The centre of Kalisz was selected for the purpose of this study. In September 2020, field research was conducted there involving the identification and assessment of environmental risk factors. This work was conducted according to the method developed by Czarnecki (2011). The first stage involves a survey of the research area, that is, inventorying buildings and locations which can potentially

pose a risk in their immediate vicinity (they can contribute to the appearance of conditions favourable to crime risks). They are treated as various environmental crime factors. When identifying the risks, it is important to identify the physical features of a given space, its structure and the distribution of functions. When identifying them in the research area, their surroundings and the spatial context were always interpreted in terms of their possible influence on crime distribution (attracting or repelling). Areas with the same development or buildings with the same functions could be considered risky places in some cases, but not in others. The classification of these factors that accompany the identification process are classified in accordance with the principles of the strategies for creating safe spaces. For this reason, the classification replaces the terms "crime generators" and "crime attractors" with a general notion of environmental crime predictors,[10] which nonetheless should be equated with risky places.

Czarnecki's method proposes two main risk predictor groups, ones that have an impact on the presence of a potential perpetrator (opportunity generators or crime-favourable locations) and structural factors (the consequence of an inappropriate urban layout). See Table 1 for the full classification of crime predictors.

The second stage of the method is assessing the places and buildings which generate risks. Each predictor is separately assessed from the perspective of 21 different aspects of safety conditions (see Table 2 for the full list). The assessment of a factor is based on the characteristics of a given place and time. It uses the following five-point scale: 1 – definite lack of influence on crime risk; 2 – no influence; 3 – hard to assess/not applicable; 4 – potential influence; 5 – definite influence. It is recognised that the predictors with the highest negative assessment (those that facilitate the emergence of dangerous spaces) should be appropriately eliminated through special design solutions.

The analysis and visualisation of data obtained during the field research were conducted with the use of GIS tools. The map of assessed risk predictors (Figure 2) was created with the use of "empirical Bayesian kriging"; in the author's experience, this technique is highly effective in identifying places with a high concentration of problematic areas (high assessment of risk evaluation in addition to the close spatial proximity of these places). Since the places under assessment varied in type and scope of influence (taking the forms of points, lines and areas), the assessment was based on all centroids resulting from sectioning the objects with a 50-metre grid.[11]

[10] The research concerns the influence of risk predictors on the distribution of crime, with risk predictors being identified in accordance with various concepts of shaping safe spaces, and not all forms and functions of land development, as was mostly analysed in various other publications. The method favours the predictors that originate in the typology and characterisation of urban spaces, capable of creating conditions that facilitate a general crime risk. According to the standards of strategies which help shape safe spaces, it is the influence of these predictors which should be skilfully eliminated or limited through clever design solutions.

[11] According to Natalia Sypion-Dutkowska (2014: 81), it is the distance with the strongest influence on the majority of risky places. The parameters adopted for the GIS analysis take into account the findings developed through many articles dealing with similar criminological issues of crime studies (e.g. Caplan 2011), and they are consistent with the author's many years of research experience.

3. Results

3.1. Identification of risk predictors

In total, 154 risk predictors were identified in the centre of Kalisz. Their classification is presented in Table 1, and their distribution throughout the city centre is visualised in Figure 1. Among the predictors, the majority were crime attractors (CAs), which decisively influence the presence of a motivated perpetrator. Only eight structural factors (SFs) which limit defence were identified, although they occupy a significant surface area. The most numerous among the CAs were the "honeypots" (meaning locations which encourage social gatherings and influence crime and asocial behaviour) – these are mostly shops, bars, pubs and restaurants that serve alcohol, as well as fast-food restaurants. The category of public facilities encompasses various locations whose properties make them attractive to criminals. In the research area, these are the well-known marketplaces (3 Maja or "pod Tęczą"), service and trade complexes, petrol stations, supermarkets and public utility buildings (offices). Footpaths and routes include public transport stops and dangerous intersections. The conflict and fear generators include facilities and functions that have conflict-generating properties in a given context. In the centre of Kalisz these are pawnshops, some schools, social assistance centres, buildings of the justice system or various religious objects/buildings.

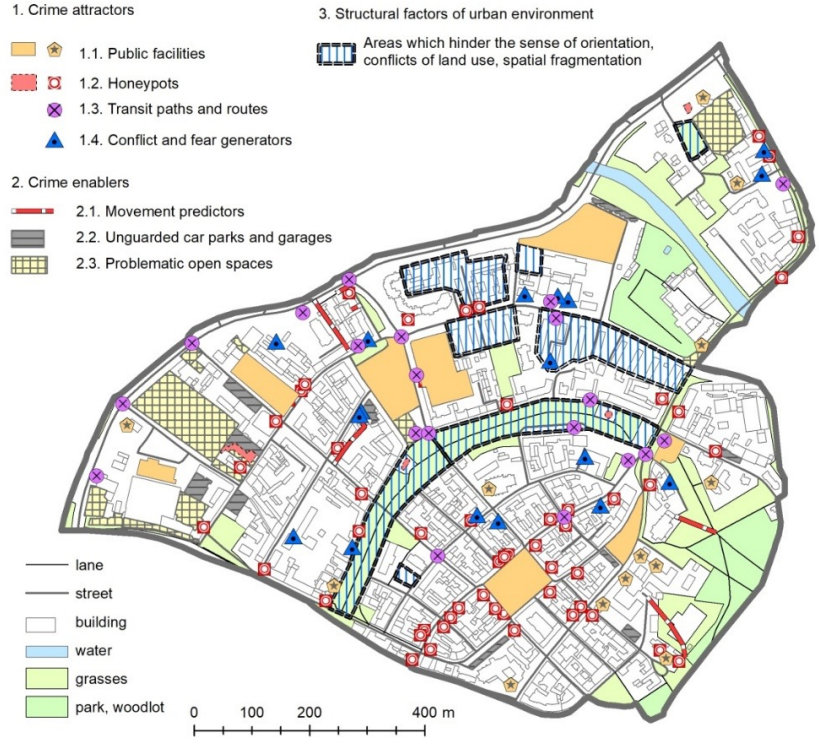
Table 1. Risk predictors identified in the centre of Kalisz

Crime predictors		Buildings/Sites	
		n	%
1. Crime attractors (CAs)		117	76.0
1.1.	Public facilities	21	13.6
1.2.	Honeypots	59	38.3
1.3.	Footpaths and routes	20	13.0
1.4.	Conflict and fear generators	17	11.0
2. Crime enablers (CEs)		29	18.8
2.1.	Movement predictors	6	3.9
2.2.	Unguarded car parks and garages	10	6.5
2.3.	Problematic open spaces	13	8.4
3. Structural factors (SFs) of the urban environment		8	5.2
3.1.	Areas which hinder the sense of orientation	1	1.3
3.2.	Spatial structures restricting social integration	2	0.6
3.3.	Conflicts of land use	0	0
3.4.	Spatial fragmentation	5	3.2
3.5.	Discontinuities of the urban fabric	0	

Source: Own elaboration.

Crime enablers (CEs), or locations with insufficient or weak supervision and poor maintenance and upkeep, can facilitate the commission of crime. In the centre of Kalisz there are many such risk predictors, with the most common being open spaces. They are typically in significant spatial disorder, the spaces are dilapidated, their purpose and spatial development is unclear. The study area contains numerous urban wastelands, abandoned or uninhabited buildings and areas degraded by human activity (Figure 1). The unguarded car parks and garages, whose negative influence often manifests in the degradation of previously orderly areas, are largely problematic for the development of the study area. Due to an insufficient number of designated parking spaces, the sides of streets and interiors of many districts are chaotically occupied by parked cars. Moreover, several pedestrian routes that determine the routes of movement on foot were identified in the centre of Kalisz. They are isolated paths that determine the route of pedestrian movement under limited visibility, conditions and with little possibility of obtaining assistance.

Figure 1. Distribution of risk factors in the centre of Kalisz



Source: Own elaboration.

A continuous urban space and a clear layout of public spaces improve the users' sense of direction and safety. Unfortunately, the centre of Kalisz strays from this

ideal, since eight large-area structural factors which restrict protections were identified within the area. They limit the conditions for fulfilling protective functions, have properties that facilitate social disorganisation and are poorly equipped for defensive behaviour; all this makes them prone to attracting potential perpetrators. These are mostly intra-district and inter-block areas located on 3 Maja Street and in the area of Planty Miejskie.

The map of the localised risk predictors shows a visible spatial diversity of individual predictor groups, which is obviously caused by the arrangement of various forms of land development and their functions (Figure 1). The majority of crime attractors (including honeypots) are found in the historical quarters around Rynek Główny (the main market square). The areas to the north and west of Planty Miejskie contain the majority of crime enablers and structural factors that restrict protection. The predominantly tenement-based housing there contributes to an impression of spatial disorder and an atmosphere of disorganisation. These areas struggle with spatial degradation associated with illegal parking and informal pedestrian paths. A generally greater concentration of the centroids of risk predictors is in the vicinity of Rynek Główny, Nowy Rynek and Piskorzewie/ Chopina Streets.

3.2. Assessment of risk predictors

In the subsequent stage of research, each of the 154 predictors was assessed in its local context from the perspective of the 21 aspects of fulfilling the safety conditions, which determine their crime-promoting properties (Table 2). The average assessment value of all predictors was 3.02. The percentage of assessments indicating no risk to the safety conditions or minimal risk (ranks 1 and 2) was on the same level as the percentage of assessments indicating a negative influence (ranks 4 and 5), amounting to 41%. Crime enablers and the structural factors which limit defence and protection posed a higher potential risk. Among the crime attractors, public facilities should be mentioned, as they were the only predictor in the group to be assessed higher than the average of all predictors (3.12).

From the perspective of fulfilling the safety conditions, the assessments of individual risk predictors were diverse (Table 2). The safety conditions assessed when taking into account as many as nine aspects received an average score below 3; from this perspective, worrying about safety seems mostly unnecessary. However, in general, the safety of people in the centre of Kalisz can be threatened by "the possibility for a perpetrator to escape or hide; the presence of risk groups" (northern and western parts of the area); "the offender's (easily obtained) advantage; the presence of third parties" (in the vicinity of Rynek Główny); "limited conditions for obtaining assistance; or a sense of anonymity" (especially in the vicinity of CEs and SFs).

Table 2. Assessment of risk predictors in terms of fulfilling the safety conditions in the centre of Kalisz

Aspects of safety conditions	Groups of risk predictors*			Average
	1. Crime attractors	2. Crime enablers	3. Structural factors	
User's visibility	2.48	2.62	2.13	2.49
Visibility from the neighbourhood	2.62	3.14	3.13	2.74
Conditions for obtaining assistance	3.31	3.97	4.25	3.48
Possibility of route selection	3.31	3.38	2.50	3.28
Degree of isolation	2.68	3.62	3.75	2.91
Presence of third parties	3.49	3.55	2.75	3.46
Presence of risk groups	3.81	3.59	3.88	3.77
Legitimation of perpetrator's presence	3.23	3.86	3.50	3.36
Perpetrator's advantage	3.53	3.72	4.38	3.61
Possibility of escaping or hiding	3.88	3.97	4.63	3.94
Conditions for supervision	3.13	3.83	3.63	3.29
Sense of anonymity	3.31	3.90	4.00	3.45
Territoriality	3.15	3.86	4.00	3.33
Atmosphere of disorganisation	2.62	3.48	4.00	2.86
Durability of materials and functions	2.28	2.83	2.75	2.41
Unjustified applications on walls; graffiti	2.15	2.31	2.25	2.18
Conditions for maintaining order	2.56	3.31	3.00	2.73
Attractiveness of place	2.83	4.10	3.13	3.08
Appropriate usage	2.32	2.79	2.38	2.42
Usage conflicts	2.32	2.59	2.50	2.38
Conditions for fulfilling the functions of the location	2.32	2.52	2.00	2.34
Average	2.92	3.38	3.26	3.02

Source: Own elaboration

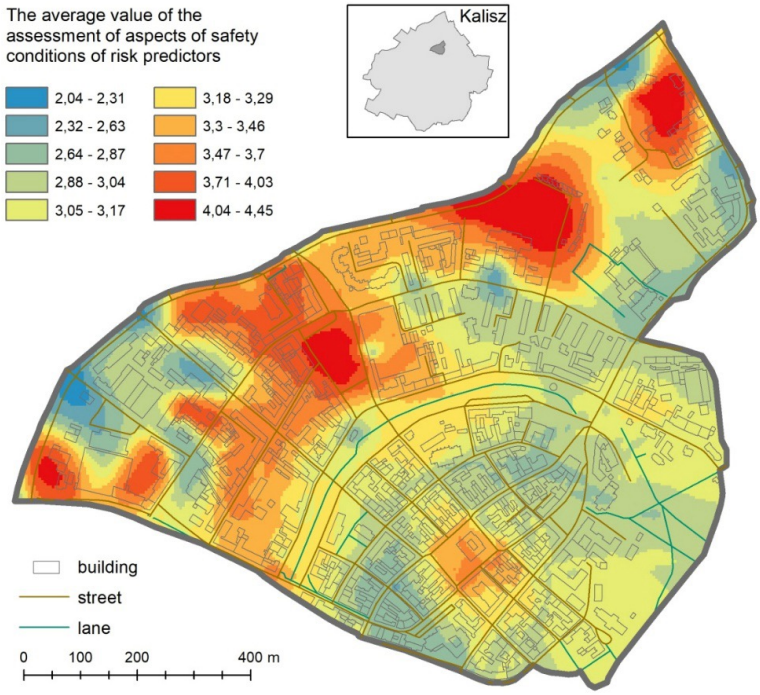
* abbreviations: CAs – crime attractors; CEs – crime enablers; SFs –structural factors which limit protection/defence

A map was created (Figure 2) to visualise the risks posed by spatial elements of the centre of Kalisz using the average values of all 154 predictors in 21 aspects of safety conditions. The map clearly shows the locations with little risk to their occupants, where the environmental conditions are generally unfavourable to potential perpetrators. These lower risk levels are mostly found in the eastern and southern parts of the study area (with the exception of the vicinity of Rynek Główny). There were fewer environmental risk predictors identified for this area

in general. Not only are there fewer of them, but they also obtained better assessments of their safety aspects.

The worst average assessments of safety conditions overlapped with the oldest tenement-based housing estate from the late 19th and early 20th centuries. These are mostly in the vicinity of Nowy Rynek and the neighbourhood of the "3 Maja" marketplace; the crime-promoting features of these locations obtained highly negative assessments. These areas are known for their issues with insufficient spatial order and manifestations of social issues (unemployment and addiction).

Figure 2. Assessment of risk predictors in the centre of Kalisz



Source: Own elaboration.

3.3. Locations with the highest risks of crime

Among all environmental predictors identified in the centre of Kalisz on the basis of Jenks' natural breaks method, the seven potentially most risky ones were selected (Table 3). They include predictors related to intense use (crime attractors; Figure 3a–c) as well as spatial factors (Figure 3d–f), i.e. crime enablers (footpaths, problematic open areas or garages). Among the seven, as many as 82% of all assessments (in 21 categories) were ranks 4 and 5, while only 7% were ranks 1 and 2. All the

predictors listed in Table 3 were most unfavourably assessed in two aspects of fulfilling the safety conditions: "conditions for obtaining assistance and possibility of a perpetrator escaping or hiding." The assessments of the individual predictors "user's visibility, perpetrator's advantage, atmosphere of disorganisation, conditions for maintaining order and attractiveness of the place" were also decidedly negative.

Table 3. Most risk-favourable predictors in the centre of Kalisz

Predictor no.	Name	Address	Average assessment
1.01.02	Marketplace "Pod Tęczą"	Nowy Rynek 1	4.48
1.01.01	City marketplace: Bazar "3 Maja"	3 Maja 42	4.43
3.03.09	Undeveloped land	Stawiszyńska 26	4.38
1.01.05	Kalisz town hall	Główny Rynek 20	4.33
3.01.06	Footpath	Majkowska 4	4.29
3.02.10	Garages by the city marketplace	3 Maja 42	4.29
3.03.02	Undeveloped land	Wojska Polskiego 119–121	4.19

Source: Own elaboration.

Figure 3. Locations with highest risks of crime in the centre of Kalisz:
a) the city marketplace "3 Maja"; b) the marketplace "Pod Tęczą";
c) Kalisz town hall; d) dilapidated area on Wojska Polskiego 119–12;
e) footpath Majkowska 4 on Wojska Polskiego Street;
f) Stawiszyńska 26.

Source: Photographs by Anna Żubrowska.

The most negative influence on the public facilities mentioned in Table 3 (predictors 1.01.02, 1.01.01 and 1.01.05; Figure 3a–c) is determined by the safety

conditions that put a potential victim in a bad position ("user's visibility, conditions for obtaining assistance, presence of third parties and presence of risk groups"), those that provide an advantage to a motivated perpetrator ("conditions for supervision and possibility of escaping or hiding") and those that refer to unfavourable spatial conditions ("atmosphere of disorganisation, unjustified applications or graffiti, conditions for maintaining order and attractiveness of the place"). Describing the properties of locations in this way makes it possible to determine some of their generic predispositions. From the perspective of the theory of shaping safe spaces, the unfavourable properties of the identified risk predictors have the following effects: anonymity and conditions of consent to the perpetrators; frequent presence of people without any ties to the location (including those from marginalised or disadvantaged groups); transit and flows of people – sources of both potential perpetrators and victims; and conflict of functions in relation to neighbouring areas (Brantingham, Brantingham 1993b; Colquhoun 2004; McCord, Ratcliffe 2009; Czarnecki 2011; Wagers, Sousa, Kelling 2017; Mordwa, Laskowska 2020b; Inlow 2021). The properties of these public facilities indicate that these locations are favourable to mugging, bodily injuries, assault, petty theft (including pickpocketing), fraud, illegal trade in licenced or illegal goods and minor violations such as littering, alcohol consumption, harassment, aggressive/loud behaviour or indecent/vulgar behaviour (Ceccato, Haining, Signoretta 2002; McCord, Ratcliffe 2009; Bowers 2014; Groff, Lockwood 2014; Sypion-Dutkowska 2014; Mordwa, Laskowska 2020a).

Among the predictors most negatively assessed for locations that facilitate crime were a footpath, a garage and two problematic open spaces (Table 3; Figure 3d–f). There, the "atmosphere of disorganisation, insufficient conditions for obtaining assistance, the perpetrator's situational advantage and the possibility of a perpetrator escaping or hiding" all obtained highly negative assessments. Such properties of locations have the following crime-promoting effects: no factors of supervision and conditions of consent; limited visibility; limited conditions of maintaining order; no vitality of place; ambiguous location status; hindered orientation; possibility of surprising the victim; possibility of gaining the element of surprise; conditions favourable to catching the victim alone; limited possibility of obtaining assistance; conditions of isolation and anonymity; the presence of people from marginalised or disadvantaged groups; and attractive targets for burglaries. These properties make these locations remarkably favourable for mugging, assault, sexual assault, rape and car theft (from the car and from garages), as well as minor violations such as making graffiti, littering, satisfying physiological needs, alcohol consumption and others. The average values of the environmental risk predictors listed in Table 3 can be treated as the probability of these crimes/acts occurring.

4. Discussion and recommendations

There have been various attempts to solve the issue of identifying buildings and locations at risk of crime. The complexity of the problem stems from the ambiguous relation between the crime rates and the level of fear caused by crime (sense of safety). The nature of crime by itself in the context of the fear of crime is full of paradoxes. On the basis of many works, Norman Davidson (1999: 447) formulated six paradoxical statements regarding the relationship between crime and the fear of crime, all with a spatial element:

1. "even in high-crime areas, people tend to believe that crime is committed by someone else, somewhere else;
2. local events increase fear, distance events do not;
3. crime increases social cohesion in some areas, decreases it in others;
4. women's fear is greatest in places where they are least at risk;
5. Neighbourhood Watch is most successful where it is least needed;
6. the best-lit areas have the highest crime rates".

Obviously, the literature is full of many suggestions and methods of identifying dangerous places, and it is difficult to determine which is the best system. For instance, crime hot spots can be identified through police data (Mordwa 2013; 2015), although the problems with the quality of police databases are no secret (Błachut 2007). Gill Valentine (1990), on the other hand, identified dangerous locations by studying the subjective sense of safety. Paradoxically, most people do not realise which places really are dangerous – if they did, there would be no victims! Studies on the perception of dangerous locations based on the declarations of research participants have the same flaw (Bogacka, Siniecka 2020), which also applies to results obtained through the moments of stress (MOS) method. In the MOS method, used by Kalliopi Kyriakou and Bernd Resch (2019) or Alina Ristea et al. (2021), for example, the study participants carried special devices (spatial videos, audio recording devices and biosensing wristbands), whose purpose was to measure the levels of stress in specific spatial situations when walking along a set path. Another method of identifying dangerous places, currently quite popular, is the use of machine learning GeoAI techniques. John Hipp et al. (2022) interpreted photos from Google Street View in search of eleven spatial features typical of five types of crime. Although it is believed that GeoAI-based techniques make it possible to study a larger area while also being cost-effective and not time-consuming, it should be emphasised that the safe and risky places they identify are nonetheless the result of human visual perception (of the overseers' of computer algorithms), and that they do not take into account the local context.

Doubtlessly, the use of various methods of identifying risky places can yield different results, and the researchers who base their studies on each method will obviously defend their choices. In this article, dangerous areas were determined based on the long-standing results of the CPTED strategy and the "Secured by

Design" programme. Their conclusions and recommendations make it possible to predict which crimes can occur where and in which spatial contexts. These results were compared with the data on crimes from local governments' documents.

The 2016 document called "Kalisz. Rewitalizacja. Do trzech razy sztuka" contains data on crime in the revitalised city area (as cited in Zmiana Gminnego Programu 2024). The Kalisz area analysed in this document is wholly within the zone meant for revitalisation, taking up approximately one fourth of its area and 46% of its residents. Among the 15 streets with the highest crime and intervention rates in the revitalised zone, as many as eight are within the research area of the Kalisz centre. These are (in order) 3 Maja, Złota, Ciasna, Nowy Rynek, Fryderyka Chopina, Zamkowa, Babina and Kazimierzowska. These eight streets hosted 58% of the crimes and 59% of the interventions (where 100% is the total from the 15 streets with the highest crime risk). Therefore, the analysed centre of Kalisz stands out negatively even against the zone meant for revitalisation, which has a high concentration of social issues in its own right.

In the document "Diagnoza strategiczna Miasta Kalisza" (Urząd Miasta Kalisza 2021: 82), it is stated that:

> Kalisz is a safe space, which is confirmed by both statistics and residents' opinions. […] In 2020, the number of crimes per 10,000 residents, confirmed by the police in completed preparatory procedures, was 38. In the period 2014–2020, the highest was in 2019 (49), and the lowest in 2015 (21).

Furthermore:

> In the quantitative and qualitative studies, the residents of Kalisz expressed their relatively high sense of safety. The large majority of all stakeholder groups considered crime a minor issue of the area. Notably, there are some more dangerous locations (mainly 3 Maja, Śródmiejska, Babina, Ciasna and Złota Streets); however, there are relatively few of them, and at least they mainly do not translate into the fears of both residents and representatives of other groups. (Urząd Miasta Kalisza 2021: 83)

The layout of the streets listed in these documents, with the highest number of crimes and interventions, generally coincides with the places at the highest risk of crime on the map showing the assessment of risk predictors (Figure 2). The differences in these spatial layouts are small. Firstly, two small locations, although with high negative assessments, are not crossed by any of the streets with the highest levels of crime risk. One place is located in the northernmost part of the centre of Kalisz (the vicinity of Cicha and Prosta Streets), and another is in its westernmost part (Jabłkowskiego and Podgórze Streets). Both are cases of dilapidated interior urban layouts, within a street network. However, both areas were included in the local plans for revitalisation of Kalisz – the only ones. This means they were intended to be urgently improved in terms of their social and spatial situation (Zmiana Gminnego Programu 2024: 126). On the other hand, during the land inventory procedures, the crime-promoting properties of locations along

Zamkowa and Kazimierzowska Streets were mostly dismissed and attributed only an average potential crime risk.

The advantage of the method of identifying and assessing risky places used in this study is the inclusion of the local spatial context and the distances and relationships between them. Additionally, an in-depth area observation and inventorying of individual risky places which assesses them from the perspective of the 21 aspects makes it possible to suggest, in accordance with the principles of shaping safe spaces, methods of "healing" places that are at particular risk of crime. It is possible to provide recommendations, whose application can restrict or even eliminate the crime-promoting properties of locations and return them to the city and its rightful owners: the local communities.

It is clearly impossible to provide recommendations which would solve the problem of crime in the whole research area. That is due to the differences in the crime-promoting properties of individual locations, which require individual analysis. Recommendations on shaping safe spaces can and even should support the revitalisation of selected parts of the city. In this paper, a recommendation is made for a location on Ciasna Street (Figure 4), which had one of the worst assessments (aside from those whose descriptions are presented in Table 3). The basic description of this place can be described in several points: 1) the streets, pavements and illegal parking spaces are surrounded by old, dense buildings; 2) open and forested spaces lie in close vicinity; 3) the car park is located in an out-of-the-way location with weak visual control. These features make the space a possible area for preparing and executing crimes.

During the inspection of this place, some interviews were conducted with its users. Its negative image, according to their opinions, was due to the lack of a sense of territoriality, an inability to get help, the constant presence of third parties and a pervasive atmosphere of disorder. According to the research methodology, the following issues were observed during the official assessment of the place (and ascribed the highest ranks of 4 and 5): "a wide range of possible routes, the possibility of escaping or hiding, poor conditions for obtaining assistance by the victim, a large degree of isolation, the presence of third parties, the presence of risk groups, the legitimation of the perpetrator's presence, the perpetrator's advantage and poor conditions for informal supervision."

Therefore, the numerous crime-promoting properties of the location were confirmed and, on this basis, the local situational conditions were determined: 1) the lack of visible security features of buildings and yards, 2) easy access to common areas, 3) no guards and no "eyes on the street," as trees and sheds hinder observation. All these statements make it possible to identify predictable behaviours: the spatial properties provide conditions and opportunities for committing crimes.

The following general actions are recommended: 1) secure building and yard entrances, 2) install private monitoring, 3) improve the visual properties and the lighting and 4) increase the presence of residents within the space.

Figure 4. Location on Ciasna Street, Kalisz

Source: Photograph by Anna Żubrowska.

Conclusions

The debate on the quality of generally accessible public spaces, which should facilitate human relationships and fulfil the aspirations of their users, is ongoing in various environments (academics, practitioners, local government officials, community workers, etc.). The concern for an appropriate standard of such places in the urban structure should be the main purpose of various involved parties. Public spaces should be associated with monuments, transportation, green spaces, relaxation, trade, restaurants or residential opportunities, and they should be distinguished by the strong sense of safety they invoke.

In recent years, researchers have published many works on the influence of risky places on crime rates (Ceccato, Newton 2024). However, the majority of empirical studies are still limited to numerical measurements of the locations without taking into account the spatial context in their direct neighbourhood or the level of risk they pose. Individual risky places can represent crime generators, which provide multiple criminal opportunities, or crime attractors, which draw potential criminals in. This study proves that the spatial structural factors, which

additionally shape the neighbourhood and the mutual spatial context of risky places themselves, are also important.

Taking into account earlier studies, the question of which method of identifying risky places is best remains unanswered. If these studies can be related to the vast literature on the geography of crime, crime mapping and the issue of shaping safe spaces, this study provides reliable empirical research and support through a direct assessment of the spatial relations between the risky places, also in the local context. Yet, it is unavoidable that the methodological approach applied herein has some flaws. The research procedure is laborious, requiring large amounts of work and time. Moreover, there are some concerns that assessments of safety conditions (the crime-promoting properties of places) comprise the researchers' subjective opinions. Nevertheless, this study contributes to the vast literature on the issue of the spatial influence of risky places in specific urban areas.

The centre of Kalisz is an important and noteworthy space on a regional scale due to the determinants of heritage, tradition, culture and the arts. In the quest to improve the safety of this space, the article attempts to identify risky places, and then assess the level of crime risk they pose. The potential of applying the conclusions drawn from the research approach is visible, also through the relevant recommendations for suitable local spatial policies. Assuming that the spatial distribution of risky places can influence crime patterns, the results can inspire various ruling bodies and policymakers to manage certain areas better and to optimise the distribution of services for public safety.

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