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Fine-grained analysis of security threats in large urban environments

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Executive Summary

Crime is one of the greatest threats to urban security. This report aims to examine urban crime by analysing criminological research on spatial, temporal and individual patterns of crime and criminal victimisation. However, as crime is a wide-ranging concept, this report is limited to analyses of offences between strangers that mainly occur at public places, such as robberies, thefts, and assaults.

The main finding in this report is that a large proportion of all crime occurs at a few places, and only a few people account for a great amount of all criminal victimisations. Places at risk for hosting crime are characterised by a high density of people, weak social cohesion, low socio-economic status among the residents, and located in inner-city areas. The presence of alcohol outlets and public transportation nodes are also expected to increase the risk of crime. Unsurprisingly, places already known for high crime rates are also at risk for subsequent crime.

Individual risk factors for victimisation encompass many different characteristics and are highly dependent upon what kind of offence that is analysed. However, men, young people (under the age of 25), individuals with low socio-economic status, ethnic minorities, and single/divorced/widowed persons generally suffer from higher risks of victimisation. Tourists may also be at elevated risk for victimisation due to their often reckless behaviour in search for authentic experiences. Also, persons previously victimised are at higher risk for repeat victimisation.

The practical implementation of risk factors for assessing risks of crime is in this project mainly a matter of crime mapping. Some mapping methods are rather simple, using historical crime data for assessing the risk for future crime at different locations. Other methods are more advanced, based on analyses of the characteristics of urban areas (e.g. the built environment) in relation to crime.

The prevention efforts of City.Risks should be based on a situational approach, centred on reducing crime opportunities. This may include route planning for the safest route, and information to individuals in order to modify their behaviour. The latter is situational because making people aware of risks may render behaviour changes, which in turn may put people in safer situations. The SARA-model, a methodological approach for working systematically with situational crime prevention, should be employed for ensuring an analytical approach in the project.

Fear of crime is another dimension of urban security, which may be defined as an umbrella term for all subjective aspects of crime, such as emotional reactions to crime, worry about crime, and perceived risk for victimisation. Importantly, not only actual crime levels affect individuals’ fear of crime. For instance, media crime reporting, places’ physical characteristics, and individual characteristics all play an important role in people’s feelings of security. In general, places with signs of social and physical disorder, poor lighting, and features that enable hiding, such as shrubs and trees, make people become more fearful. In terms of individual characteristics, women are often portrayed as more fearful compared to men.
In City.Risks, terrorist attacks have been proposed as urban security threats that could be targeted by the project’s technical solutions. However, the review of the terrorism literature suggests that predicting terrorist attacks is difficult and that it is mainly a matter of intelligence work carried out by governmental organisations. Therefore, City.Risks should mainly focus on common crimes and focus less on rare criminal activities such as terrorism.

Finally, there are several ethical issues regarding the project’s approach to mitigate and avoid urban security threats. For instance, the focus on people as potential victims and their presumed responsibility to protect themselves from criminal victimisation may result in so-called victim blaming in which people are perceived as responsible for their own victimisation. Individuals’ privacy when using social networks in the end user product is another ethical issue. Users need to be protected in order to ensure that potential offenders do not get access to information that can facilitate offending. Stigmatisation of neighbourhoods may be a problem related to the work in City.Risks but efforts to ensure transparency and restrictions of data provided to the end-users of the City.Risks technical solutions may render a smaller risk for stigmatisation than anticipated. The pilot studies will address the issue of stigmatisation in order to understand how City.Risks may affect the pilot users’ view on neighbourhoods in relation to the information provided to them through the final technical solutions. Finally, the various potential forms of misuse of the technical solutions, such as some tourists’ possible wish to find information on drug and prostitution locations, must be analysed in order for the project stakeholders to not be held liable if misuse occurs.
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1. Introduction

City.Risks aims at improving security in urban environments. Urban security threats encompass several various phenomena such as natural hazards, traffic safety, and crime. Crime is one of the most serious security threats to urban environments as it may result in severe harm to afflicted individuals through the loss of property, and physical and psychological injuries. Thus, there is good reason for analysing urban crime in order to attempt to minimise its negative impact on people’s everyday lives. Such an analysis should consist of various elements, including identification of risk factors of urban crime, descriptions of methods for assessing and describing crime risks, and the difficult task of mitigating and preventing acts of crime.

This report builds upon the fact that urban crime is a phenomenon that is not randomly distributed within cities. Therefore, the research presented in this report is, when possible, placed within a geographical and temporal context. Still, there are variations in victimisation risks between individuals, regardless of where they are located. Consequently, it is important to consider the fact that some people are more vulnerable for criminal victimisation than others.

In this report, urban security will be discussed both in terms of actual risk of criminal victimisation and individuals’ subjective perceptions of their safety. Fear of crime is a related topic that deserves some specific considerations, because of its many negative consequences for individuals’ well-being.

It is here important to emphasise that City.Risks has its focus on a rather superficial aspect of crime. While this report will describe various risk factors of crime and fear of crime, the potential preventive efforts of the technical solutions of the project are limited. The project’s approach to mitigation and avoidance of urban crime is not about eliminating the actual threats, but rather a matter of how individuals can act in order to minimise personal harm from such threats. City.Risks is thus centred on affecting the situations in which crime occurs and it clearly takes a victim perspective by examining what individuals can do in order to mitigate and avoid urban crime. Two specific issues which are generally not in focus within mainstream criminology will be discussed: tourists as potential crime victims and terrorist attacks as urban security threats.

Before presenting the research on these topics, it is necessary to briefly describe two main components of this report: environmental criminology and urban crime.

1.1. Environmental criminology

Environmental criminology is not centred on the traditional criminological theme of explaining offenders’ motivation or development of criminal propensity (Wortley & Mazerolle, 2008). Wortley and Mazerolle (2008) state that traditional criminology has

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a too narrow focus on the offender because “Once the criminal has been created, crime is seen as more or less inevitable: the exact location and timing of the criminal act is of little interest.” (p. 2). Moreover, Wortley and Mazerolle (2008) claim that this focus has resulted in offender-centred prevention efforts that attempt to reduce the development of criminal propensity and seize existing offenders’ involvement in crime. In contrast, environmental criminology is concerned with the entire situations in which crimes are committed which includes the offender, the victim, the place, and the time (ibid.).

Wortley and Mazerolle (2008) describe three main principles that constitute the backbone of environmental criminology. First, crime is strongly affected by the proximal environmental features that are present in any crime situation. Second, there are identifiable patterns of crime in, for instance, urban areas where some locations host more crime than others (i.e. crime is not randomly distributed in space and time). Third, analyses of environmental features and crime patterns are useful for creating effective prevention strategies. These principles are all applicable to this report as well: the immediate environment is the main focus when analysing crime locations and crime patterns are described as a useful resource for assessing crime risk and also to potentially mitigate and avoid urban crime. City.Risks is thus centred on reducing opportunities for crime, which is an approach that has become popular in crime prevention during the last decades (e.g. Clarke, 2008).

### 1.2. Urban crime

Opportunities of crime are highly dependent on the legitimate activities of people’s everyday lives (Cohen & Felson, 1979). Individuals’ activities affect their risk of becoming victimised, resulting in the fact that crimes are concentrated to some places, at some times, and to some individuals. In other words, legitimate activities create an opportunity structure for crime in urban areas, which may result in geographic and temporal concentrations of crime.

Cohen and Felson (1979) argue that the presence of a motivated offender and a suitable target, in the absence of capable guardians are the key components of crime occurrence. To understand crime patterns and the distribution of criminal activities, one must understand when these three components converge in space and time. A similar view is presented by Brantingham and Brantingham (1995) as they provide an explanation of crime based on the concept of crime attractors and crime generators. Crime generators are places that attract many people due to the high variety of activities. People, both potential offenders and potential targets, are concentrated to these areas regardless of criminal motivation. Shopping areas, sport stadiums, and office districts are typical crime generators. These places create criminal opportunities due to the density of people visiting these areas. Crime attractors on the other hand, are places that attract already motivated offenders due to the high range of crime opportunities. Bar districts, drug markets and public transit areas are typical crime attractors (Brantingham & Brantingham, 1995).

Perry, McInnis, Price, Smith and Hollywood (2013) attempt to combine the main elements of environmental criminological theories and state that this approach is
mainly concerned with offences between strangers. The main ideas by Perry et al. (2013) can be summarised in three points:

- Common life patterns are present in the lives of offenders and victims. When their patterns overlap, criminal incidents are more likely to occur.
- Geographic and temporal features influence the occurrences of these overlaps.
- Motivated offenders make rational decisions of whether or not to commit a crime based on, for instance, qualities of the location such as the suitability of targets and the perceived risk of getting caught.

These explanations of how crime is shaped in time and space have important implications for City.Risks because there is no reason to believe that life patterns are static. Thus, life patterns can be changed (e.g. where and when people spend their time), victims/crime targets can become less suitable (e.g. target hardening), and the perceived risk of getting caught can be increased (e.g. improved informal control).

The various offences that can take place in urban areas basically include any crime type listed in any country’s legislation. The kind of criminal activity that occurs is determined by what kind of people that interact in a specific time period. The emphasis of City.Risks lies on offences that take place in the public sphere and not in people’s homes. Consequently, offences that are relevant for the project include, for instance, street robbery, aggravated assault, and various kinds of theft. These offences usually involve offenders and victims that are not known to each other and occur at places such as streets, bars, and public transport nodes.

1.3. Methodology

Urban crime is a wide-ranging field within criminological research. Therefore, the report is centred on highlighting well-established and central findings of criminological literature that are relevant for City.Risks. The procedure has been focused on identifying key research findings that reveal risk factors associated with urban security, and how such risk factors may be employed for risk assessment and prevention. City.Risks points at several topics for this report and it should therefore merely be viewed as an introduction to the research field. Those who are interested in further information could use the report as a starting point from where more information and references can be found.

1.4. Structure of the report

The structure of the report aims at showing how criminological research can contribute to the project’s development. The report commences with a description and a discussion of risk factors before moving over to the practical use of these risk factors. Crime prevention, fear of crime and terrorism are discussed in their dedicated chapters which are then followed by analyses of some limitations and ethical issues of the project. Each chapter in the report is concluded with a section that describes its implications for City.Risks. These sections are summarised in the end of the report and
should be perceived as a starting point from which the upcoming work in the project can depart from in terms of for instance what kinds of data sources that may be relevant to include in the technical solutions.
2. Places and people at risk for urban crime

This section provides an analytical approach for risk identification and assessment as well as explanations of the distribution of criminal activities in urban areas, and outlines some of the most relevant risk factors for urban crime. The chapter discusses the risk factor concept, and explains its function for identifying places with criminal activity, and individuals at risk for victimisation.

2.1.1. A problem-oriented approach

The problem-oriented approach to crime prevention highlights the importance of proactive policing (Goldstein, 1979; 1990). The main focus of a problem-oriented approach to crime prevention is to identify and analyse crime patterns in order to increase the knowledge of their origin in order to offer an effective preventive effort. Goldstein (1979) recommends the police to concentrate their preventive efforts towards a problem-oriented approach by following the structure of the so-called SARA-model. Clarke and Eck (2003) describe SARA as

[...] a form of ‘action research’, a well-established social science method in which researchers work alongside practitioners, helping to formulate and refine interventions until success is achieved. [...] In action research the team is expected to persist until success is achieved, refining and improving an intervention in the light of what is learned from earlier failures. (chap. 8).

SARA is the acronym for the four steps of the problem solving approach: Scanning, Analysis, Response, and Assessment (Clarke & Eck, 2003). The scanning process charts previous crime patterns and identifies high-risk areas (hot spots). Second, analyses are carried out in order to identify what may influence the complexity of a crime pattern. The analyses are required in order to, in the third step, response by direct preventive efforts towards the identified problem. Finally, it is of great importance to assess the effectiveness of the preventive efforts. If the assessment shows that the preventive efforts did not influence the identified problem in the desired direction, the process must start over until “success is achieved” (Clarke & Eck, 2003, chap.8).

Similar to the SARA-model, a recently finished EU-project (BESECURE²) also suggests a form of problem-oriented assessment of risk factors in order to reduce crime. Armbrorst (2013b) argues that risk management and risk prevention should follow a five-step procedure, which is applicable to City.Risks as well:

1. Define the context
2. Identify risks
3. Analyse the risks
4. Assess the risks
5. Treat the risks

These steps may seem rather trivial but they are important to consider in order to fully understand the risk of crimes to occur in certain areas.

² Funded under the H2020 programme
Examples of how risks have been assessed practically can be found in Rotterdam and Amsterdam. These cities have developed urban security indices by combining subjective (survey data) and objective (official statistics) measurements (Armborst, 2013b). The indices demonstrate how cities can work in order to evaluate their level of urban security through combining various sources of information on urban risks. More details can be found in the BESECURE report by Armborst (2013b).

In order to direct resources and preventive efforts for reducing crime, a systematic preventive practice should follow a process similar to the models presented above. This is important in order to make sure that the implementation of a certain effort is based on a thorough analysis of the local crime situation. Analyses of the local crime situation may reveal invaluable facts of when and where crimes occur and also which persons that suffer from high victimisation risks. This is also the case in City.Risks as the project combines general, accumulated and well-established knowledge of crime and fear of crime (in this deliverable) while simultaneously examining the local crime situation in the three pilot sites in deliverable D2.2. Although some aspects of crime and fear of crime are similar in the pilot cities in City.Risks, deliverable 2.2 reveals some differences among the cities which highlight the importance of analysing the local situation for understanding crime and fear of crime. For instance, in Rome and Sofia people seem to be less confident about the work that the police carry out while citizens of Waltham Forest express higher levels of confidence in the police. Similarly, citizens of Rome and Sofia are more worried about crime than citizens of Waltham Forest. These differences highlight the need for making analyses of the local problems that a community encounters.

The upcoming sections in this chapter reveal examples of general risk factors that make urban places and people become vulnerable and attractive for crime (see deliverable 2.2 for information of the specific local crime situation in the three pilot cities).

The risk factor approach

Originating from epidemiology, the risk factor approach is commonly used within many research fields (Kazdin, Kraemer, Kessler, Kupfer & Offord, 1997). Risk factors can be defined as different features that have been empirically proven to have an association with a certain outcome (e.g. crime) and they are, for instance, biological, psychological and sociological (Kazdin et al., 1997). The “risk” in risk factor concerns the assumption that if a risk factor is present, the likelihood is greater for a certain negative outcome.

It is essential to emphasise that risk factors cannot be defined as causes of certain outcomes (May, Wanklyn & Yessine, 2014). They only enhance the risk of a certain outcome (e.g. crime). For instance, high concentrations of bars were found to be related to violent crime, but this does not imply that bars cause criminal acts. The issue of revealing causal relationships between different phenomena is complicated and lies beyond the scope of this report. However, this does not infer that risk factors should not be targeted for interventions.

This study adopts a less strict definition of risk factors. Risk factors mentioned in the forthcoming sections also include correlates, markers and other factors showed to be
related to urban crime; although, it is not always possible to know if these risk factors precede or causes the outcome.

2.1.2. Risk factors for urban crime

Previous research on urban crime show that it is important to consider the contextual and behavioural factors that influence crime rates. As quoted above, Cohen and Felson (1979) argued that the presence of a motivated offender and a suitable target, in the absence of capable guardians are the key components of crime occurrence. The model proposed by Cohen and Felson has been widely implemented as an analytical tool for the identification and understanding of crime concentrations, in particular in police organisations over the world.

Cohen and Felson’s model can also be classified in terms of attractiveness, vulnerability and security/control factors. A suitable target might be a place or object with a high level of attractiveness for the offender: shops selling valuable goods, crowded public places, restaurants etc. with many potential crime victims. The absence of capable guardians is synonymous to lack of control of the target, which makes attractive places and people vulnerable and thus lowers the security level. The upcoming sections will present factors that conceivably affect this interaction.

First, however, it is important to mention that the general risk of becoming subjected to crime in urban areas is relatively low (Sampson & Lauritsen, 1994). Nevertheless, individuals spending time or residing in areas with high human activity suffer from greater risk for personal crime compared to people not visiting high activity areas (Sampson & Wooldrege, 1987). Crimes in the city centre differ from other crimes because a high concentration of the crimes reported in the city centre occur between people that are strangers to each other (Dolmén, 2002). This indicates that the risk of being subjected to a crime in the city centre is more affected by where and when one is spending time, rather than with whom one is spending time.

2.2. Attractive and vulnerable city areas and places

Crime is not randomly distributed throughout the city, indicating the importance of the features of the local setting for criminal activity to occur. Some cites are highly attractive for potential offenders and the crime rate is remarkably high. These places are called hot spots of crime and are locations were offenders and victims repeatedly meet. The hot spots usually consist of small areas such as bus stops, restaurants, street corners, parking lots, and apartment buildings. These small places are concentrated within a larger area, such as a neighbourhood or the city centre, but may affect the crime rate of an entire larger area.

Several studies support this view of the spatial distribution of crime (e.g. Dolmén, 2002; Gruenewald, Freisthler, Remer, LaScala & Treno, 2006; Tabangin, Flores & Emperador, 2010). Urban crimes, such as violence, robbery and theft, are mainly concentrated in the inner-city and to the main core of the city centre (Wikström, 1995; Block & Davis, 1996; Tabangin, Flores & Emprenader, 2010).
Most violent crimes among strangers occur in the city centre, in, or nearby restaurants or other alcohol outlets, and are mainly concentrated to the evening and night hours on weekends (Dolmén, 2002; Tabangin, Flores & Emprenader, 2010; Lipton, Yang, Braga, Goldstick, Newton & Rura, 2013). The city centre is an area characterised by a high density of people. Many people are situated in the city centre because of their work, or they go here to shop or to practice other activities. Although many people operate in the city centre, this area is generally characterised by a low density of residents and most people visit the city centre during a very short period of time. Wikström (1995) points out that the characteristics associated with the city centre, such as the mobility and density of people and low social integration among those operating in these areas, are associated with high crime rates. The propensity to intervene against criminal activity decreases in areas where most people are strangers to each other (ibid.).

It is difficult to understand whether places’ characteristics or simply the accumulation of people is crucial for explaining the heightened risk of crime at some locations. Perry et al. (2013) illustrate this issue by stating that street robberies are more common near foot traffic and that foot traffic is concentrated to subway stops. This creates a link between subway stops and robberies but in fact, subway stops may only be a marker of dense foot traffic (i.e. high density of people). Nevertheless, this does not imply that nothing should be done. If many crimes occur at or near subway stops, these locations should be targeted for prevention initiatives.

Finally, it should be mentioned that many places are repeatedly hosting criminal activities which highlights the basic fact that crime predicts crime. This means that if we identify places with high crime rates, we are also able to identify places where crimes are likely to recur. This may be especially true for offences that take place at locations that are static because of the built environment, such as the locations of public transport, which is discussed in more depth later in this chapter. More information on how the fact that crime predicts crime is used for assessing risks is provided in the next chapter.

2.2.1. Vulnerable neighbourhoods

Neighbourhood characteristics may influence crime rates. Wikström (1995) states that the crime distribution in neighbourhoods is influenced by the level of social integration, population heterogeneity, and residential mobility among the residents. Sampson, Raudenbush and Earls (1997), found, in their study of neighbourhood effects on violence, that high collective efficacy (a concept combining informal social control and social cohesion) decreases the risk of becoming subjected to a violent crime. In their study, collective efficacy serves as a mediator of social cohesion, and illustrates the relationship among residents of a neighbourhood. Collective efficacy is an important factor to take into account when discussing the concentration and distribution of crime. From a motivated offender’s perspective, weak collective efficacy might influence the perception of the suitability of the target. Weak collective efficacy fosters, for example, in areas with high density of people, but where few people reside, such as the city centre districts. At these sites, people are strangers to
each other and not as prone to control over the collective life as in areas where people know each other and have formed social ties (Sampson Raudenbush & Earls, 1997).

Other neighbourhood characteristics identified to increase the risk of crime (sometimes called social risks) are low socio-economic status (SES) (measured by level of education, income and employment among residents), and residential instability. Lipton et al. (2013) found that neighbourhoods characterised as poor, with low incomes and high percentage of vacant homes, suffer from high levels of violent crime. Livingston (2008) also found, in his study of the spatial distribution of assault, correlations of areas with socio-economic disadvantage and rates of violent crime. Again, this indicates that poorer areas tend to suffer more from violent crime compared to more affluent areas. Although research implies a relationship between poverty and violent crime, Bennett, DiIulio and Walters (1996) claim that the relationship between poverty and criminality weakens when the cohesion among residents in an area is strong. Sampson Raudenbush and Earls (1997) also suggest that the social process responsible for the relationship of poverty and crime concentration is the absence of collective efficacy.

2.2.2. Temporal variations

Sports commentators often comment that a player was in the right place at the right time. The phrase is silly because if the player was in the right place at the wrong time, he/she would have been in the wrong place. Police officers often say that a victim of violence was in the wrong place at the wrong time. But if the player [or victim] had been in the wrong place at the right (safe) time, he/she would have been in the right (safe) place. (Pease & Tseloni, 2014, p. 25)

Thus, places are generally not consistently safe or unsafe over time. By considering temporal aspects, it is possible to understand the complete spatiotemporal dimension of crime.

As crime concentrations tend to cluster on certain places in the city, crime also clusters during certain hours of the day, and to certain days of the week, and even to certain parts of the year. Wikström (1995) defines this temporal concentration of criminal activity as “hot times”, as an extension of the aforementioned “hot spots”. Criminal activity tends to follow the patterns of routine activities in both space and time (Wikström, 1995; Dolmén, 2002; Eck, Clarke & Guerette, 2007). This indicates increased crime activity on a weekly basis in the rush hours of individuals’ activities, such as work, school, or leisure. In the weekends, crime might increase on late nights and evenings when many people visit bars and restaurants in the city.

Ceccato and Uittenbogaard (2014) found, in their study of crime at transit nodes in Stockholm, that most crime incidents on weekdays were reported in the afternoon until late night, from 4 pm until midnight. At these time periods many people travel from structured (work, school) to unstructured activities (leisure), and people often move within the same areas creating high concentrations of both potential victims and offenders meeting in the same setting. However, Ceccato and Uittenbogaard (2014) did not find this crime-increasing pattern in the morning rush hours, suggesting that potential offenders prefer to act in the afternoon and late night rather than in the
early morning hours. The most common crimes in these time periods are theft and vandalism (ibid.).

Moreover, Dolmén (2002) found that many crimes occur in conjunction with the nightlife. In weekends many people frequent the city-centre to visit restaurants and bars, and this is when both violent crimes and robbery are most prevalent (Dolmén, 2002; Lipton et al., 2013). This is also the time when the prevalence of drunken people increases significantly and are clustered to a few places in town, such as a few restaurants, bars, and transit nodes. This crime distribution is concentrated to evenings and late nights of weekends, indicating that these hot times only exist during a few hours per week. Most of the time, even in the city centre, these sites, especially restaurants and bars, are no more crime-generating than any other places in cities (Dolmén, 2002; Lipton et al., 2013; Ceccato & Uittenbogaard, 2014). However, this is mainly true for violent crimes among strangers while domestic violence, and violence among non-strangers might have a different time preference.

Another important perspective is the prevalence of temporary activities that might influence the interaction of potential victims and offenders. Some locations may periodically emerge as places with high crime rates because of, for instance, temporary market places and festivals (Eck, Clarke & Guerette, 2007). These sites might attract potential offenders but the attractiveness decreases as the activity disappears. Ceccato and Uittenbogaard (2014) emphasize that as the concentration of criminal activity peaks, the amount of people at risk of becoming victims of a crime is the greatest. Still, this indicates that the risk of becoming a victim is actually spread among a large amount of people, which means that the individual risk of being victimised may be rather small.

2.2.3. Street crimes in urban areas

As mentioned before, this chapter focuses on crime in public areas, leading towards a focus on so-called street crimes. These offences are directed against persons (i.e. personal crimes) in public areas: theft, various kinds of assaults, and robbery. Below, a brief description will highlight the prevalence of these crimes and the risk for becoming victimised of these crimes.

2.2.3.1. Theft

Theft is the most common personal crime in the city centre and compared to residential areas, theft is more than three times as likely to occur in the inner-city (Tabangin, Flores & Emprenader, 2010). The risk of becoming a victim of theft is highly correlated with life-style. Sampson and Wooldredge (1987) state that the more nights a person is spending in the city centre, the higher the risk of being subjected to theft. However, the authors also argue that the contextual factors of street activity (crowded sidewalks, high density of people moving) can better explain the risk and distribution of personal theft compared to the individual factor of “spending time out”. This highlights the importance of including both individual (micro) and contextual factors (macro) when studying the risk for personal theft. Tabangin, Flores and Emprenader
(2010) found that theft is highly concentrated to the most crowded areas in the city. They also state that thefts seem to follow the spatial pattern of shopping malls and other market places. The main predictor for theft, Tabangin, Flores and Emprenader, (2010) argue, is crowded areas with a lot of queuing people, and especially in shopping areas when potential guardians are absent. Thefts are mainly concentrated during daytime (Dolmén, 2002), or in the afternoon and early evening when people are visiting the shopping areas (Ceccato & Uittenbogaard, 2014).

2.2.3.2. Assault

Assaults generally occur among persons that are familiar with each other (Sampson & Lauritsen, 1994). However, in the inner-city, a great deal of the assaults occur between strangers (Dolmén, 2002), and at locations near restaurants, bars, or near other alcohol outlets (Livingston, 2008; Lipton et al., 2013). Moreover, assaults mainly occur in the evenings and late nights, and are highly concentrated to the evenings and nights of the weekends (Tabangin, Flores & Emprenader, 2010). According to Tabangin and colleagues (2010), assaults also tend to cluster in areas with poor lighting, near bus terminals, and in areas with poor visibility from the surroundings. Wikström (1995) argues that assaults in public places often arise from trivial conflicts and that “There are practically no cases of assault in public between two sober persons.” (p. 457). The alcohol consumption might not cause the aggressive behaviour; however, it seems to be an important factor for the occurrence of violent behaviour in these specific milieus (ibid.). Except for the concentration of stranger violence in the city centre, violent crime such as assault is frequently occurring in areas characterised by low socio-economic status, and low income among the residents (Livingston, 2008; Lipton et al., 2013). Moreover, Gruenewald and colleagues (2006) found that many individuals who had become hospitalised because of violence, were victimised in areas characterised by high residential mobility, poverty, and low SES.

2.2.3.3. Robbery

In contrast to assault, robberies seem to be more planned and are more likely to occur among persons who do not know each other (Wikström, 1995; Mustaine & Tewksbury, 2000). The hot spots for robberies appear to follow the pattern of theft, as most of these crimes are observed in shopping and commercial areas. According to Tabangin, Flores and Emprenader (2010), robberies cluster in commercial areas near open front liquor stores. In contrast to assault, robberies occur in areas with poor visibility and close to factors in the environment that offer both hiding and entrapment. Moreover, Hart and Miethe (2014) found that the risk of becoming subjected to a robbery seems to be affected by the prevalence of a nearby bus stop. They state that bus stops are often characterised by a high density of people, but at the same time the areas around the bus stops often offer opportunities to hide and are characterised by poor visibility from the surroundings. According to Dolmén (2002), most robberies occur during evenings and nights of the weekends, when people converge in the city centre. However, the contextual pattern of robberies found by Tabangin and colleagues (2010), suggests that these crimes may also cluster...
during periods when there is a high density of people present in the commercial areas of the city.

2.2.3.4. Sexual assault

This crime type is not one of the most frequent offences in public places. Instead, sexual assaults often occur between non-strangers, and most of the time even in the home of the victim or the offender (Bachman & Saltzman, 1995; Mustaine & Tewksbury, 2000; Jones, Wynn, Kroeze, Dunnuck & Rossman, 2004). However, these crimes influence to a great deal the prevalence of fear of crime among citizens, especially women. Although it is more than twice as likely that a victim of sexual assault do know the offender, in public areas such crimes often occur between strangers (Bachman & Saltzman, 1995; Stermac, Du Mont & Kalemba, 1995). Most of the sexual assaults reported to the police occurred in open areas or in public areas, and many incidents occurred nearby or even inside the home of the victim (Bachman & Saltzman, 1995; Jones et al., 2004). Jones and colleagues (2004) state that the majority of those who become victims of sexual assault are under the influence of alcohol during the crime episode. Statistically, victims of sexual assault are more likely to be young women between 16 and 25 years old (Stermac, Du Mont & Kalemba, 1995). In contrast to the aforementioned crime types, the risk of being victimised of sexual assault is more influenced by individual factors and whom you spend time with, rather than contextual factors, such as where and when you spend your time. This offence is therefore difficult to outline in relation to its associated risk for occurring in urban areas. It is also difficult to describe the prevalence of this crime due to the number of unreported offences. Often the fear of becoming a victim of these types of crimes does not stand in proportion to the actual risk of becoming a victim (read more in chapter 4).

2.2.4. Special focus: high risk locations for urban crime

Most offences at public places occur in crowded areas where many people converge. Based on the description of the aforementioned crime types, restaurants and bus stops are highlighted as locations where the risk of victimisation is increased. Therefore, this section will have a special focus on these high-risk locations, i.e. locations defined as highly attractive by the potential offender.

2.2.4.1. Alcohol outlets and urban crime

[...] in poor neighborhoods where alcohol is readily available and liquor outlets dot every intersection, informal and indirect social controls on deviant, delinquent, and criminal behavior are diluted. Where broken bottles fill gutters, social bonds are weakened and social capital goes down the drain. (Bennett, Dilulio & Walters, 1996, p. 73)

Restaurants, taverns and bars are places in the public space that tend to attract individuals, both victims and offenders, and a great deal of violent crime is correlated
with the prevalence of such sites (Lipton & Gruenewald, 2001; Livingston, 2008; Tabangin, Flores & Emprenader, 2010; Lipton et al., 2013). Bennett, Dilulio and Walters (1996) state that alcohol outlets and places serving alcohol might evoke the prevalence of physical disorder in an area. Similar to the Broken Windows perspective (Wilson & Kelling, 1982), Bennett, Dilulio and Walters (1996) argue that the presence of broken bottles influences the social order of an area resulting in a high rate of violent crime. Lipton and colleagues (2013) found, in their study of the geography of violence in Boston, that just a few places in the city account for the majority of all violent crime. These places are characterised by poverty, and with a large amount of alcohol outlets, restaurants, taverns or bars selling alcohol (Lipton et al., 2013). Moreover, Lipton at al. (2013) found that areas located close to these licensed premises also show a high concentration of violent crime, in comparison to other parts of the city.

Furthermore, the type of alcohol being sold seem to have influence on violent crimes. Restaurants selling only wine and beer appear to have a negative relationship with violent crime, while outlets selling all kinds of alcohol have a positive relationship (Lipton et al., 2013).

Violent crimes at public places are mainly concentrated to evenings and late weekend nights (Lipton & Gruenewald, 2002; Livingston, 2008; Lipton et al., 2013). The people attracted to the alcohol premises during these time periods mainly belong to the younger population, and this population group is the one most likely to be involved in violent crime, both as offenders and as victims (Sampson & Lauritsen, 1994; Wikström, 1995).

Although Scribner, MacKinnon and Dwyer (1995) found that socio-demographic factors, such as economic status, age structure, and household composition, account for 70 % of the variation of violent crime in Los Angeles, the prevalence of alcohol outlets was associated with additional violent offences. One single outlet contributed with three to four additional violent offences (ibid.).

The literature on crime concentration has repeatedly found that a majority of all crimes are concentrated to a limited number of attractive places. Eck, Clarke and Guerette (2007) coined the concept of “risky facilities” for describing those facilities that host a great share of all offences. For instance, although restaurants, taverns, and bars serving alcohol indicate increased risk for violent behaviour, only a few of all these outlets account for the majority of the violence reported to the police (ibid.). This implies that analyses of alcohol outlets and crime are not simply a matter of pinpointing locations with alcohol outlets, but also a matter of examining which of all outlets that are more risky than the others.

The research on the influence of alcohol on violent crime can be summarised with two main points:

- Places were alcohol is served increase the likelihood of violent crimes.
- This relationship is accentuated during evenings and late nights of the weekends, to taverns and bars selling all kinds of alcohol and to locations that mainly attract younger clients.
2.2.4.2. Public transport and urban crime

[...] bus stops have a social ecology (that is, tempo, pace and rhythm of human activity) that enhances criminal opportunities (Hart & Miethe, 2014 p. 182).

Many studies have found a correlation between the prevalence of public transport nodes and high crime rates (Block & Davis, 1996; Loukaitou-Sideris, 1999; Hart & Miethe, 2014). These studies suggest that there is an increased risk of becoming victimised near public transports. For example, Block and Davis (1996) identified eleven crime hot spots for street robbery in their study of rapid transit stations in the Northeast and West Side police district of Chicago, and all but one included a transit station. Moreover, more than one third of all robberies reported to the police in the areas were committed within 400 meters from a transit station. Most of the robberies identified in the study occurred within a short distance from the transit station rather than at the station. This might be explained by offenders’ considerations of how to commit a crime with the least risk of getting caught. Locations near the station likely host a sufficient number of potential victims, and a decreased supervision and guardianship of the target. Hart and Miethe (2014) also found that public bus stops were present in nearly all of the hot spot areas identified in the city they studied. Out of nine hot spots, bus stops were identified in seven of these areas. No other risky facilities such as bars, restaurants or pawnshops exhibited such a clear pattern.

As the quote above states, bus stops and public transports nodes are places where a large amount of people, with different intentions, converge every day. Bus stops constitute nodes of human activity, and are therefore particularly vulnerable to crime. The high density of people who are strangers to each other may negatively affect the informal social control at these sites. The convergence of motivated offenders, potential victims, and the absence of potential guardians, create criminal opportunities, and therefore make these places vulnerable for criminal activity (Hart & Miethe, 2014).

However, bus stops and transit stations are located within a wider environment, and are affected by the characteristics of the areas in which they are located. Therefore, all bus stops are not equally crime-ridden. Loukaitou-Sideris (1999) found that the ten most vulnerable bus stops in Los Angeles, account for 20% of all reported crimes at bus stops. These high risk bus stops are generally located within a short distance from other risky facilities such as bars, taverns, restaurants, ATM’s, or pawnshops. Further, many studies have found that the location of the bus stops or the transportation node is of great importance when evaluating the risk of becoming subjected to a crime within these areas (Block & Davis, 1996; Loukaitou-Sideris, 1999; Hart & Miethe, 2014). Similar to Loukaitou-Sideris (1999), Block and Davis (1996) found that the distance to restaurants, bars and taverns influences the risk of being subjected to a crime at the bus stops.

Hart and Miethe (2014) emphasise the importance of surrounding facilities that influence the risk of crime at transport stations. The authors found that the risk of street robbery highly increased at ATM’s located near a bus stop, compared to ATM’s not located near a bus stop.
It should also be noted that the overall risk of victimisation at public transport stops is small. For instance, less than five occasions of violent crime were reported per 100,000 passengers over a two-year period in a study by Loukaitou-Sideris (1999).

The findings regarding the risk of becoming subjected to a crime near bus stops or other transport nodes can be summarised by three main points:

- Land use and other features of areas near public transport stops affect victimisation risk.
- The majority of all bus stop crimes occur within the city-centre and are affected by the density of people visiting the areas where the bus stops are located.
- Areas near public transport stops may be more risky than the exact location of the public transport stops.

2.3. Variations in crime and victimisation: vulnerable people

Previous sections have mainly focused on contextual risk factors that define situations, places and areas as attractive for the potential offender. As individual factors also play a significant role as risk factors for criminal victimisation, this section will focus on the micro-level risk factors in order to clarify the individual characteristics that influence the risk of victimisation.

When discussing individuals at risk for victimisation, it is of importance to once again recall this report’s focus on crime at public places. Some groups are more vulnerable to crime (e.g. women) and may suffer disproportionately from other types of crime such as intimate partner violence or sexual abuse, but these offences are generally not related to the public sphere and will therefore not be discussed here. This section, however, merely focuses on offences at public places such as violence, theft, and robbery.

2.3.1. Individual risk factors for victimisation

Previous research has stressed the importance of life-style factors for victimisation: e.g. attractiveness, exposure and proximity (Hindelang, Gottfredson & Garofalo, 1978; Steinmetz, 1982). According to Steinmetz (1982) proximity could be geographical (to potential/motivated offenders) or social (lifestyle). Attractiveness was defined as the level of value for the offender and exposure was the possibility to commit a crime when the offender gets close to the potential victim. Exposure could be divided in technical (locks, alarms) and social (police, security surveillance) aspects. Exposure as defined by Steinmetz refers to (lack of) the control aspect in the routine activity theory. In modern theory, exposure could also be related to the potential victim and reflects the probable to be victimised when exposed to risky settings (places, individuals, times of the day, etc.) (Osgood, Wilson, O’Malley, Bachman & Johnston, 1996).

Generally, young men, under the age of 25, and from households with low socioeconomic status have an increased risk of being victimised in public areas.
Sampson and Wooldregde (1987) state that individual characteristics such as gender, age, and civil status influence the risk of victimisation. However, they further argue that because life-styles influence individual patterns of spatial movement, the main explanation of the distribution of criminal victimisation among people can be found within the life-style of the victims. One might spend more time outside, and therefore participate more frequently in activities at public places compared to a person with a less active life-style. The participation in activities at public places entails a greater exposure to environments where the risk of becoming subjected to a crime is higher. In their study of assaults among college students, Mustaine and Tewksbury (2000) found that life-style can predict the likelihood of victimisation. They state that “Victimization risks are primarily explained by indicators of individuals’ exposure to offenders” (p. 339), indicating that the more time one spends with others, the higher the risk of becoming subjected to a crime. However, Mustaine and Tewksbury (2000) argue that in terms of vulnerability of violent crimes, it is not those who spend more time among strangers who are most vulnerable to violence. Rather, violent crimes are more common between intimates, and those spending a great amount of time with people they know are therefore at higher risk for exposure to these types of crime. Nevertheless, the authors point out that people spending more time among strangers might be at greater risk for other types of crimes such as robbery and theft (Mustaine & Tewksbury, 2000).

Furthermore, another factor related to the individual lifestyle with influence on the risk of becoming subjected to a crime is alcohol consumption. For example, Mustaine and Tewksbury (2000) found that students that consume much alcohol spend more time outside of their homes, with other persons. The authors also found that those who are frequently getting drunk are significantly more exposed to risks for violent crime (ibid.). This might be explained by the fact that these people tend to visit environments where the risk of becoming a victim of violent crime is high. In a review of the literature regarding alcohol and crime, Dingwall (2006) found that both alcohol consumption and visits to bars, restaurants or other alcohol outlets, increase the risk of becoming victimised of violent crime. Dingwall (2006) also found that those who consume large amounts of alcohol when spending an evening out, were ten times more likely to become victims of violent crimes compared with people who consumed a smaller amount of alcohol. This indicates that it is not only the place where people gather for drinking that influences the risk of victimisation, but also the amount of alcohol consumed by the individual.

The risk of victimisation is not evenly distributed by gender, age and socioeconomic status. As mentioned afore, young men with low SES living in urban areas are at the highest risk for violent crime. A similar pattern is true also for the risk of becoming subjected to theft (Sampson & Wooldrege, 1987). For violent crimes in general, men are more frequently victimised than women. Similarly, Tseloni and Pease (2004) found that being male increases the risk of victimisation of personal crimes by 40 %. However, sexual assaults are more common among women, and particularly among young women (Acierno, Resnick & Kilpatrick, 1993).

Tseloni and Pease (2004) found that the risk for victimisation decreases by age. Moreover, marital status also seems to play a role in the risk of becoming subjected to a personal crime. According to Tseloni and Pease (2004), being single, divorced, or
widowed increases the likelihood of becoming a victim of a personal crime compared with married people.

Unlike violence and theft, the demographic differences in the risk of being victimised of robbery are not as large. For example, Sampson and Lauritsen (1994) found that age differences are less apparent when it comes to robbery as this offence is more equally distributed among gender and age. This indicates that individuals’ life-styles might play a more significant role in the risk of becoming victim of a robbery than demographic factors.

In the US, ethnic minorities report higher levels of victimisation than others (Truman & Langton, 2015). For instance, African Americans are more likely to have experienced violent criminal victimisation than whites and hispanics (ibid.). Similarly, Berg (2014) found that African American males are more likely to suffer from gun violence than their white counterparts. In the UK, ethnic minorities (Indians, Pakistanis/Bangladeshis, and Blacks) suffer from higher risks of victimisation of burglary and vehicle theft while they are not reporting higher levels of victimisation for personal crimes, except for mugging (Clancy, Hough, Aust & Kershaw, 2001). Importantly, Clancy et al. (2001) found that ethnic minorities are more likely than others to believe that their ethnicity played a part in their victimisation experiences. Moreover, a recent study indicates that persons born in Sweden but with both parents born abroad are more often victimised of assault, sexual offences, threats, street robberies, fraud, and harassments compared to others (Brå, 2015).

Importantly, ethnicity variables are also dependent on other factors. For instance, McNulty and Bellair (2002) argue that differences in victimisation among ethnic groups can be explained by the disproportional amount of people of ethnic minorities that reside in disadvantaged areas where for instance gang membership is more common. Individuals in those areas, regardless of their ethnicity, may be at higher risk for violent victimisation.

Finally, individual factors of risk of victimisation are somewhat complex. The distribution of demographic factors in victimisation differs partly depending on what crime is discussed, but also due to the combination of risk factor a person possesses. For example, Pease and Tseloni (2014) argue, based on a review of the risk factor literature, that men are more exposed to threats compared to women. However, this pattern is not true when compared to divorced women only. The authors state that divorced women are three times more likely to experience threats compared to divorced men and it is therefore of great importance to here emphasise that combinations of risk factors are essential to take into account when it comes to assessments of risk for victimisation.

In sum, the individual risk factors highlighted in this section indicate that young men, unmarried, singles, low SES, spending many nights out with others, and consumption of large amounts of alcohol (or consumption of alcohol several days per week) are all factors that increase the vulnerability of being subjected to a crime. However, the combination of these individual factors, and the context the person operates in are important to consider when assessing the risk for victimisation.
2.3.1.1. A special note on hate crime

A hate crime can be defined as any offence that an offender commits where the victim’s individual characteristics, such as race, religion, and sexual preference, is part of the motif of the offence. Individuals vulnerable for hate crime are thus the people mentioned in hate crime legislations because hate crime laws have been created in order to protect and highlight the vulnerability among groups of people. However, hate crime legislations vary between countries in terms of which groups that are included and many countries also lack such legislations. Importantly, hate crimes are underreported (Maguire & Brookman, 2005) and therefore these offences may be a larger problem than anticipated.

2.3.2. Victimisation predicts victimisation

Revictimization or repeat victimization of people and places represent a large proportion of all victimization (...) Small percentages of the population, and of victims, suffer large percentages of all criminal victimization (Farrell, 1995 p. 469).

Previous victimisation may increase the risk for subsequent victimisation (repeat victimisation) (Wittenbrood & Nieuwbeerta, 2000; Pease & Tseloni, 2014). In a review of the research on repeat victimisation, Pease (1998) argues that “victimisation is the best single predictor of victimisation” (p. 3). Regarding violent crime, the risk of being victimised of an assault is 1.5 times higher for those who have already been victimised of a violent crime (Wittenbrood & Nieuwbeerta, 2000). However, when controlling for daily activities, Wittenbrood and Nieuwbeerta (2000) argue that the effect of previous victimisation on subsequent exposure to crime decreases. This indicates that it is of great importance to consider with whom, where, and when people spend their daily activities. This may explain victimisation more than previous victimisation itself. Over time, the effect of previous victimisation decreases, indicating that subsequent vulnerability to crime, during a life course, is not only to be explained by prior exposure to crime (ibid.).

Importantly, it should be noted that repeat victimisation prevention initiatives obviously cannot prevent initial victimisations. Nevertheless, previous victimisation still is an important factor to take into account when assessing the risk for victimisation, because these initiatives may assist people who already suffer from frequent victimisations.

2.3.3. Special focus: tourists and crime

Within City.Risks, tourists have been discussed as a potential user group of the end user products. The literature on tourism and victimisation is rather sparse, but some research results need to be mentioned because tourists can be defined as a category that is disproportionally at risk for criminal victimisation.

Tourists may be at risk of becoming victimised of criminal acts because “tourists may be unaware of risky locations and exhibit a ‘culture of carelessness’, acting in ways
which are untypical of behaviour at home.” (Brunt, Mawby & Hambly, 2000, p. 418). Similarly, Wood Harper (2006) argues that tourists may play a larger part in their victimisation than non-tourists, because of their less careful behaviour when visiting new places. Moreover, Crotts (1996) claims that tourists are easy to point out due to differences in outfits and which kinds of places they visit. Thus, someone who wishes to commit a crime against a tourist generally knows where to go and what to look for in finding a suitable victim. Furthermore, Chesney-Lind and Lind (1986) found that tourists in Hawaii experience higher rates of victimisation of larceny, burglary, rape and robbery than island residents. Rape and robbery, however, only showed higher victimisation rates among tourists in the city of Honolulu and its surroundings, while a rural tourist area did not show these differences. Thus, urban areas seem to be the location in which tourists’ vulnerability for victimisation is most accentuated. Moreover, de Albuquerque and McElroy (1999) found that tourists in the Caribbean are at greater risk of becoming victims of property crime and robbery than residents. Also, Mawby, Brunt and Hambly (2000) found that, although a small study sample, British tourists experience more crime abroad than at home when compared to data from the British Crime Survey.

Not surprisingly, places where tourists are at greatest risk are related to tourist activities that are present in any given city. Wood Harper (2006) argues that places that are designated for tourists or often visited by tourists, such as hotels and restaurants, are examples of places where crime opportunities emerge. By using New Orleans as an example of the tourism-crime relation, Wood Harper (2006) claims that tourists are perceived as easy targets because of their naïveté and search for authentic experiences off the main tourist sites. A typical tourist victimisation scenario is proposed by Wood Harper (2006): “The potential victim is returning to his hotel in a strange city, most likely fatigued and under the influence of alcohol, winding through dark and unfamiliar streets.” (p. 131).

Importantly, Wood Harper (2006) found differences among the heterogeneous tourist group: tourists who got robbed were generally male (84 %), of 25-35 years of age (47 %), and were all robbed by male offenders. The places that were at the highest risk for hosting tourist-related street robberies were located outside but near the main tourist district (ibid.). Some robberies also occurred within the tourist district and in those cases at places with poor lighting and few people present (ibid.). Regarding the temporal distribution of street robberies, most robberies (60 %) took place between midnight and 6 am (ibid.).

The study by Wood Harper (2006) suggests that much tourist behaviour can be described as risky. In 20 percent of the robberies, the victim and the offender had established a relation prior to the victimisation in order to find women for sexual purposes or drugs. Consequently, Wood Harper (2006) concludes that one fifth of the tourist victims made their victimisation possible through their own behaviour. This is one dimension of a three-fold explanation of this kind of tourist victimisation: (1) being a stranger, (2) being alone in an unknown area, and (3) looking for illegal activities. Importantly, Wood Harper (2006) also acknowledges that the victims’ actions likely have a negative effect on crime reporting as one may not be willing to admit that one was in pursuit of illegal/immoral activities when being victimised. Although Wood Harper (2006) only discusses street robbery in a US context and in a specific city, many
of the findings regarding victimisation of street robberies seem universal. Tourists may become victimised because of their own behaviour, which in turn appears to be centred on being intoxicated with alcohol, being too naive in relation to friendly strangers, and visiting areas that are off the main streets.

2.3.4. Implications for City.Risks

This chapter has outlined risk factors for urban crime, in particular factors related to attractiveness, vulnerability and control/security. Table 1 below summarises the main factors that influence the risk for criminal victimisation at public places. This table can be useful as a starting point for decisions on which kinds of variables to include in risk assessments. In such assessments, it is important to take into account factors on contextual, individual, and temporal levels in order to create an algorithm for the risk of victimisation. Knowing which indicators that are connected to crime will result in better risk predictions and more accurate assistance to the end users. Risk factors that put certain groups of people at elevated risk and risk factors that make some places more likely to host criminal occurrences are important features of a project that aims at enhancing urban security and reducing fear among urban residents. Importantly, some factors mentioned in this report, such as the social cohesion in neighbourhoods, may be essential for evaluating crime risk. However, this requires specific data, which may not be readily available.
### Table 1. Summary of risk factors of victimisation in urban areas

<table>
<thead>
<tr>
<th>Risk factors</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Density of people</strong></td>
<td>Often reflects the time when most people travel between their daily activities. Rush hours during weekdays and evenings or late night at weekends in conjunction with the nightlife.</td>
</tr>
<tr>
<td><strong>Collective efficacy</strong></td>
<td>Weak cohesion among neighbours decreases the propensity to help each other, and by that reduces the prevalence of potential guardians against crime.</td>
</tr>
<tr>
<td><strong>SES &amp; residential instability</strong></td>
<td>Neighbourhoods and areas with a high density of residents with low income, or unemployed. Areas with high density of residential turnover.</td>
</tr>
<tr>
<td><strong>Inner-city</strong></td>
<td>High density of people not knowing each other. A place where offenders and potential targets meet and thus creates opportunities for crime.</td>
</tr>
<tr>
<td><strong>Alcohol outlets</strong></td>
<td>Restaurants, bars, or taverns often possess low social control, and are visited by people under the influence of alcohol. These factors increase risk for violent crime</td>
</tr>
<tr>
<td><strong>Public transport</strong></td>
<td>Large amounts of people travelling and gathering at the same place. Street crime is also more likely in areas close to public transport stops</td>
</tr>
<tr>
<td><strong>Crime-ridden areas</strong></td>
<td>Areas where much crime occurs are at higher risk for hosting more crime</td>
</tr>
<tr>
<td><strong>People at risk</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td>Being male increases the risk for being victimised of urban crime</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td>More risk of victimisation when under the age of 25</td>
</tr>
<tr>
<td><strong>SES</strong></td>
<td>Low income, low degree of education, and being unemployed increase the risk for victimisation</td>
</tr>
<tr>
<td><strong>Marital status</strong></td>
<td>Increased risk of victimisation among people being single, divorced, or widowed.</td>
</tr>
<tr>
<td><strong>Prior victimisation</strong></td>
<td>Previous crime victims are at higher risk for becoming victimised.</td>
</tr>
</tbody>
</table>
3. The practical use of risk factors: assessing risks

The practical use of risk factors should not be interpreted as a possibility to predict future events; it is only a matter of predicting the risk for future events to occur (Perry et al., 2013). Moreover, the presentation of methods for assessing urban crime risks is only proposed as an exposé of some common methods, not a detailed technical description. Still, this section will provide some recommendations that are useful for developing a tool for assessing urban crime risks.

3.1. The spatial study of urban crime

The practical use of spatial crime analysis has mainly been centred on strategic and tactical police work for allocating police resources to areas with special needs. Perry et al. (2013) provide an overview of so called “predictive policing” which can roughly be described as the geographic analysis of crime in order to forecast where future crimes are more likely to occur. However, predictive policing tools are not exclusively useful for police work. Consequently, as City.Risks focuses on individuals’ risk mitigation and avoidance, the project may benefit from considering the findings from geographical and temporal studies of crime, regardless of their original purposes.

Subsequent sections provide brief descriptions of some of the most common methods employed in order to spatially assess the risk for crime to cluster at various locations within urban areas. First, however, we will provide some information on the basic requirements for studying crime from a geographical perspective: selecting a geographic unit of analysis and an appropriate outcome variable.

3.1.1. Selecting an appropriate unit of analysis

Rengert and Lockwood (2009) state “Geographic analysis attempts to explain why one phenomenon is spatially associated with the spatial arrangement of another phenomena [sic!]” (p. 120). Thus, for the study of the geographical aspects of crime, it is crucial that all data included has a spatial dimension. Weisburd, Bruinsma and Bernasco (2009) argue that there is broad consensus among environmental criminologists that any study of the geography of crime should (1) define the boundaries of the unit of analysis, and (2) use boundaries that cannot overlap.

Most studies that attempt to explain the spatial distribution of crime aggregate crime data into various geographic units of analysis. The development of this research has evolved from using fairly large geographical units, such as regions (e.g. Quetelet, 1842), into more fine-grained units, such as neighbourhoods (e.g. Shaw & McKay, 1942/1969). Although regions, cities, and neighbourhoods are still used as spatial units in criminological research, many studies are today centred on even smaller units, such as street blocks and addresses (e.g. Van Vilet, 2009).

Oberwittler and Wikström (2009) suggest that smaller units are preferred due to their representation of human behaviour (including criminal behaviour), as every criminal incident generally takes place at very small geographic locations. Similarly, Groff,
Weisburd and Morris (2009) argue that a street block is a suitable unit of analysis as it well comprises the limited area in which interactions (including crime) take place. Moreover, Van Vlism (2009) found that only a few streets of Rotterdam account for almost half of all robberies, thus suggesting that the neighbourhood level is not fine-grained enough as a unit of analysis. Data collected in smaller units (e.g. street blocks) can always be aggregated to larger units (e.g. neighbourhoods) but larger units cannot be collapsed into smaller units. Smaller units minimise the risk of missing within-neighbourhood variations but, as Oberwittler and Wikström (2009) state, it may be difficult to find enough respondents in very small units, resulting in reliability issues. Similarly, Boessen and Hipp (2015) argue that the recent focus on very small units may result in a lack of recognising processes that take place at another, higher level in the society (i.e. there are processes that do not occur on a micro level).

Regardless of the kind of unit of analysis that is being employed, a rule of thumb is that it is generally inadequate to use very large units of analysis. Taking the city of Malmö as an example, it would in most cases be inappropriate to examine crime in the five boroughs of the city, but more useful to examine crime in the 136 smaller units that together constitute the five boroughs. Other issues related to the analysis of different geographical units that can be worth considering within City.Risks, include definitions and meanings of borders between different neighbourhoods (Anselin, Cohen, Cook, Gorr and Tita, 2000; Brantingham, Brantingham, Vajihollahi & Wuschke, 2009), the diffusion effects of crime-ridden streets on the adjacent areas (Van Vlism, 2009), and relations between non-adjacent neighbourhoods (Tita & Greenbaum, 2009).

It is also relevant to briefly mention that recent research indicates that studies of the spatial influence on crime may need to consider multiple levels of data simultaneously. For instance, Boessen and Hipp (2015) found that neighbourhoods with high levels of racial/ethnic heterogeneity are related to higher levels of crime. However, within these neighbourhoods, street blocks with the most homogenous populations have the highest crime rates. Thus, research on different spatial units of analysis may reveal patterns that would otherwise not have been discovered.

All taken together, it is of great importance to be aware of the consequences when deciding on what kinds of geographical units to employ in a study of urban crime. The availability and quality of data are crucial factors and will determine what kind of analyses that are possible to conduct. Importantly, despite the shift between sizes of the unit of analysis, the basic finding stands strong throughout the years: crime is unevenly distributed in space and time.

### 3.1.2. Selecting an outcome variable

City.Risks focuses on various kinds of offences or categories of offences and it might be a good idea to develop models of risk assessment that relate to these crime categories. For instance, the guidance of tourists in an urban area cannot simply relate to a general crime level (i.e. including all offences as a generic crime measure) if it aims at seriously informing tourists about the security status. It might be more helpful for a tourist to be informed about specific crime risks, such as theft or robbery. The risk
factors discussed in the previous chapter are also often related to specific offences. Furthermore, research indicates that different offences vary in their spatiotemporal compositions, suggesting that crime types should be analysed separately (Grubesic & Mack, 2008).

3.1.2.1. A special note on crime indicators

It is well-known (within criminology) that there are several problems related to official crime records as a measure of crime. Many offences are not reported to the police because these are considered minor or because the victim is familiar with the perpetrator (e.g. intimate partner violence). Also, Pease and Tseloni (2014) argue that police recorded offences are skewed because of variations in police practices to intervene against crime, resulting in negligence of minor offences by some police officers. Hirschfield (2005) posits that crimes that demand police reporting for insurance purposes (e.g. auto theft) are amongst those offences mostly reported to the police while for instance minor assaults are not often reported.

These facts call for attention when deciding on which data to be employed for measuring crime. Using police recorded offences may result in a rather non-representative picture of the actual crime problem in an urban area. However, victim surveys, in which a sample of a population is asked about their victimisation experiences, may help to fill the gap between actual and reported crime levels. Another data source that may be useful is “calls for police services” which may reflect an area’s crime problem level.

Another issue regarding the use of crime measurements is that crime occurrences can be aggregated to create area specific crime rates (Hirschfield, 2005). For instance, Hirschfield (2005) shows that crime rates that are aggregated to geographical areas can be based on absolute numbers, crimes per 1000 inhabitants, and standard deviations for showing areas with the most extreme crime rates (+/- two standard deviations from the mean = very high/very low crime). A minimal demand is that the data contains some geographic information that enables spatial data analyses. Using a measurement of crime per person is often relevant because densely populated areas with many crime incidents may actually be less risky than other areas because they host an abundance of potential victims (Anselin, Griffiths & Tita, 2008). Thus, when comparing two geographical areas with equal absolute numbers of crime incidents, an individual’s risk for victimisation may be lower in the area with a higher population density because there are many persons present that can take the place as a victim.

3.2. An overview of methods and tools for the spatial analysis of crime

Methods for assessing risks through forecasting of where and when crime is more likely to occur vary in their views on what aspects of the crime situation that should be forecasted. These views include predictions of potential offenders (individuals at risk of committing crime), predictions of victims (individuals at risk of criminal victimisation), and predictions of places where crimes are more likely to occur (Perry et al., 2013).
This section discusses crime in general but one must be aware of the previously mentioned fact that risk factors may differ between different types of crimes and therefore have to be analysed separately. Similarly, as offences vary in many respects (e.g. in terms of prevalence and frequency), Pease and Tseloni (2014) argue that “a ‘one size fits all’ approach to empirical analysis and statistical modelling (...) would be foolish.” (p. 8).

There are different methods for putting risk factors into practical use. A common approach is to use historical data to make predictions about future incidents under the premise that “the past is prologue” (Perry et al., 2013, p. 17). Thus, locations where crimes have occurred are also more likely to host future crimes (crime predicts crime). Another approach is to use historical data of crime and analyse the places where crimes have occurred. This includes, for instance, to find correlates of crime in the urban environment and then make predictions of risks for future crimes based on these correlates. Importantly, crime risk mapping often contains a temporal dimension as well, sometimes referred to as “burning times”, based on the fact that crime varies according to hours, months, seasons etc.

Perry et al. (2013) discuss the implications of forecasting people at risk for victimisation and raise three issues of importance for City.Risks. First, certain groups of people within a city may be more vulnerable for victimisation and these groups need to be identified. Second, if locations are successfully forecasted to host much crime, it is crucial to identify which people (residents, workers and visitors) that frequent these areas as these people are at higher risk for victimisation. Third, people that are involved in high-risk criminal behaviour must be identified as they are also more likely to become victims of crime (criminality predicts victimisation).

Finally, Perry et al. (2013) argue for a dynamic approach to crime hot spots as these calm down after they have been targeted by, for instance, police measures. Hence, it is important to continuously update maps of hot spots. The following sections provide an overview of different approaches to the practical use of risk factors in order to forecast places’ and individuals’ risk of experiencing crime.

3.2.1. Tables and other simple projections

Crime rates can be projected in tables with, for instance, lists of neighbourhoods and their crime levels or estimated risk levels. Hirschfield (2005) illustrates this quite simply by showing how areas at highest risk can be highlighted with colours in relation to their crime level. Further, Hirschfield (2005) states that it can be relevant to show an areas’ crime mix, that is, the specific mix of offences in each area.

As crime patterns vary over time, analyses of crime locations may often gain from adding a temporal dimension (Perry et al., 2013). Perry et al. (2013) argue that heat maps (a table of hot times) showing temporal fluctuations (hourly/daily/weekly etc.) is a simple way of conducting a spatiotemporal analysis. Heat maps may be used to show where and when crimes have occurred which then provides information on where and when areas should be targeted by preventive measures.
3.2.2. Hot spot mapping: crime predicts crime

“A crime hotspot is a location, or small area within an identifiable boundary, with a concentration of criminal incidents.” (Anselin et al., 2000, p. 222). Thus, hot spots are high crime areas which are often represented by a red colour on a map (see figure 1). Hirschfield (2005) states that hot spots show non-random clustering of criminal incidents which is useful for knowing where crimes usually occur. Anselin et al. (2000) conclude that only a few areas host a lot of the crime incidents in a city which is similar to other crime related facts, such as the uneven distribution of crime in the population (e.g. a very small number of offenders commit a large proportion of all crimes). A GIS software is necessary for creating hot spot maps because hot spots are based on the geographic locations of crime (Hirschfield, 2005). Johnson, Bowers and Pease (2005) state that crime hot spots show patterns of criminal activities but they can also reveal these activities’ in relation to deprivation and other features of an area. Other phenomena than crime can thus be included for revealing spatial relationships between these phenomena and crime.

3.2.2.1. Basic hot spot maps

The basic concept of hot spot mapping is to use historical crime data (crime predicts crime). The size of the areas on the map (the units of analysis) is, as was mentioned earlier, important to consider. Perry et al. (2103) state that oversized hot spot areas are less useful for implementations of interventions while very small areas may result in a too narrow focus which leaves other hot areas without attention. Hot spot maps are often based on grid maps (see figure 1) where data is projected in rather small cells (e.g. 200*200 metres). The grid cells are coloured based on prior criminal activities. For instance, grid cells with the highest number of previous crimes are coloured red and the lowest are coloured white while yellow and orange represent areas with a medium amount of prior crimes (see figure 1). Anselin et al. (2000) argue that the basic hot spot mapping approach is rather simple as it essentially shows which grid cells that host more crimes than expected, based on the area’s average crime level. However, Anselin et al. (2000) also argue that the simpler methods suffer from some problems such as the subjective decision of grid size and the possible correlation between cells that is not accounted for.
Johnson, Bowers and Pease (2005) argue that basic hot spot maps can be useful for mapping crime that is static (i.e. it recurs at the same locations). However, crime is not always static and therefore a more dynamic approach can be more useful, such as risk terrain analysis, which is described in a subsequent section. Also, an area’s persistent crime rate over time may hide short-term fluctuations (e.g. daily, weekly variations, etc.) which highlight the need to consider short time periods for the ability to produce a representative picture of an area’s crime level.

3.2.2.2. Nearest neighbour hierarchical clustering

Another approach to hot spot mapping is to create ellipses that show an area’s crime hot spots (see figure 2). Nearest neighbour hierarchical clustering (Nhnh) can be used as an example of how the ellipses can be created (Perry et al., 2013). This method clusters events that are spatially close (neighbouring) in ellipses which are then defined as crime hot spots. The basic idea is that crime incidents that are located in near proximity to each other (i.e. closer than could be expected by a random distribution) constitute hot spot areas (Anselin et al., 2000; Hirschfield, 2005). It is thus the distances between crime incidents that determine the hot spot area. Hierarchical clustering creates hot spots of different sizes (see figure 2) based on initial geographical fine-grained hot spots (first order) that in a second analysis constitute clusters of hot spots (second order), which in turn are clustered yet again to create large areas of hot spots (third order) (Hirschfield, 2005). The practical use of the Nhnh map can then be based on which kinds of hot spots that makes most sense for the practical use (first, second or third order).
The Nnh approach is perhaps somewhat easier to employ than grid mapping since it does not demand data that can be projected into grid cells (it uses the exact geographic location of each crime event). However, Perry et al. (2013) argue that the method suffers from subjectivity because the number of ellipses needs to be defined prior to the actual mapping of the crime data.

3.2.2.3. Kernel density estimation

Perry et al. (2013) present yet another method for creating hot spot maps: kernel density estimation (KDE). This approach is based on the concept of a kernel, which is a mathematical function of what each crime contributes to in increased risk in an area. Data from prior crime incidents is thus employed and the KDE method smoothenes the impact of each criminal event throughout the area studied (see figure 3). In other words, it acknowledges not only the exact location of a crime event but also its impact on the nearby area. Importantly, Anselin et al. (2000) highlight the importance of a correctly defined bandwidth in the KDE method. The bandwidth can be described as the distance between crime incidents (dots on a map) and this distance determines how much the model smoothenes the hot spot area. A large bandwidth results in less concentrated hot spots while the reverse is true for models with small bandwidths. Anselin et al. (2000) argue that the optimal bandwidth is based on the actual distances within the distribution of criminal events (points) on a map.
The KDE approach can also use population density as a variable, resulting in a so called dual KDE which shows hot spots in relation to the people at risk in an area. For instance, the city centre may be defined as a city’s main hot spot area but when controlling for population density, other areas may be more risky because there are much crime but less people. Importantly, Perry et al. (2013) argue that carrying out appropriate KDE analyses requires that the analyst has good insight about the geographic area being studied. When KDE analyses are carried out properly, they have been found to predict future crimes with good accuracy (ibid.).

3.2.3. Advanced methods: including more data in the models

Perry et al. (2013) describe more advanced methods than hot spot mapping for forecasting criminal events. These methods make use of other data than just crime statistics. Any data that is related to crime occurrences (e.g. the risk factors mentioned earlier) can be employed in these methods. Risk Terrain Modelling is one of these methods and it will here be described in more depth as an example of how other risk factors than crime itself can be put into practical use.

3.2.3.1. Risk Terrain Modelling

Some locations in urban areas have been proposed to be at higher risk for hosting future crime despite if known offenders at the location are arrested and incarcerated
(Kennedy, Caplan, Piza & Buccine-Schraeder, 2015). Thus, features of the location should, to some extent, contribute to the emergence of crime. Risk Terrain Modelling (RTM) is a method that attempts to incorporate place characteristics in crime forecasting. Perry et al. (2013) argue that this method is rather simple which makes it suitable to describe as an example of how a GIS-based risk assessment tool can be designed.

The basic idea of RTM is to use grid maps with different map layers for each risk factor (see figure 4). The risk factors must have the ability to be projected on a map and thus the data employed must have a geographical component (Kennedy et al., 2015). All map layers together constitute a composite RTM map which shows how a set of risk variables provide an easily interpretable risk map over a jurisdiction, such as an urban area. Each risk variable must be tested separately in order to examine its statistical relationship with the offence in focus. Only risk variables that have a statistically significant relationship with the crime type studied are included as a risk terrain map layer. RTM has proven to be better at forecasting crimes than methods that only use retrospective maps of crime occurrences (Perry et al., 2013).

As figure 4 shows, risk layers are added together which creates a map where some areas have an aggregated risk value that is high due to that area’s high risk value on several risk layers. Caplan and Kennedy (2011b) explain how RTM forecasts crime:

> Clustering of illegal activity in particular areas is explained in a risk terrain model by the unique combination of criminogenic factors that make these areas opportune locations for crime. This occurs where the potential for, or risk of, crime comes as a result of all the attributes found at these places. Attributes of places themselves do not create crime. They simply point to locations where, if the conditions are right, the risk of crime or victimization will be high. (p. 11)

Importantly, Caplan and Kennedy (2011b) also describe the possibility to use one risk factor in several different ways. For instance, presence of bars has been found to be correlated with shootings but it could have a different impact on the outcome depending on how the risk factor is operationalised. Is it the presence of bars per se,
the certain distance from bars, or is it places with the highest concentration of bars that are at highest risk of hosting shootings? Moreover, it is often not the exact locations of bars that host crimes but their surroundings (Caplan, 2011). Furthermore, Ratcliffe (2012) found that the spatial criminogenic effect of bars on the surrounding area regarding violent crime disappears after reaching approximately 26 metres from the exact bar location.

Caplan and Kennedy (2011b) elaborate further on the various aspects of risk factors by stating that there are differences among risk factors in their dynamics. Some risk factors are related to infrastructure which is a rather stable feature while others, such as the number of drug arrests in an area, are more dynamic. Armbrorst (2013a) also acknowledges the importance of treating the risk landscape as a dynamic feature that changes constantly due to various attempts to change it.

The ten steps that need to be taken in creating RTM well illustrate what is needed when creating more advanced crime forecasting maps (Caplan & Kennedy, 2011b, p. 7):

1. Select an outcome event of particular interest
2. Choose a study area
3. Choose a time period
4. Obtain base maps of your study area
5. Identify aggravating and mitigating factors related to the outcome event
6. Select particular factors to include in the RTM
7. Operationalize the spatial influence of factors to risk map layers
8. Weight risk map layers relative to one another
9. Combine risk map layers to form a composite map
10. Finalize the risk terrain map to communicate meaningful and actionable information

More information of each step can be found in Caplan and Kennedy (2011a).

Finally, RTM is a relatively new method for crime forecasting but it has rendered support from studies examining its predictive power. For instance, RTM can be used successfully for forecasting the locations of gun shootings (Caplan, Kennedy & Miller, 2011), aggravated assault (Kennedy et al., 2015), and burglaries (Caplan, Kennedy, Barnum & Piza, 2015). Drawve, Moak and Berthelot (2014) compared nearest neighbour hot spot analysis with RTM and found that both techniques predict gun crime but that RTM is better at forecasting future hot spots that were not previously known as hot spots. As such, RTM does not only show places where crimes have occurred and thus are more likely to occur again (crime predicts crime), but also predicts places where crime is more likely to occur regardless of prior criminal activities (risk factors of places predict crime).

3.3. Implications for City.Risks

The practical use of criminological knowledge in City.Risks should benefit from considering the following recommendations:

- Select a geographical unit of analysis that is as small as possible in relation to available data.
• Find an outcome variable that best fits the geographical requirements (e.g. police recorded offences with a geographical component).

• Analyse each urban area separately and include all criminological risk factors that can be obtained through the available data. Local knowledge is crucial for conducting proper analyses and to make accurate risk estimations. This is the reason why two deliverables are used for analysing urban crime; D2.2 focuses on the local crime situation while this deliverable focuses on general aspects of urban crime that are common in most urban areas, at least in the western world.

• Choose a spatial analysis method that best fits the available data. The methods mentioned in this chapter may serve as a source for inspiration in that decision.

• Conduct separate analyses for different crime types. For instance, the risk of getting mugged may be higher in one area while the risk of pickpocketing may be higher in another area.

• Use existing data from the local police force. Crime predicts crime, thus crime statistics (with coordinates or other geographic references) should continuously be adopted from the police authorities in order to make accurate risk assessments.

• Focus on actual risks. For instance, if area A goes from one to five events of pickpocketing during a month, it is probably still not a high risk area, thus risk should not necessarily be put in relation to prior crime or compared between different areas. The latter refers to differences between areas in crime occurrences. For instance, if area A reported one incident of pickpocketing while area B reported five, area B is not necessarily a high risk area simply because it is riskier than area A.

• Evaluate the accuracy of the risk assessments. If the data analysed suggests that an area is at higher risk of criminal activities, make sure to assess this by checking crime statistics for that area pre and post the risk assessment.

Finally, Perry et al. (2013) outline some common pitfalls of map-based risk predictions which may be useful to consider in City.Risks:

• There is a risk that hot spots will be too large resulting in large areas being defined as hot spots. This is problematic as it is difficult to make any practical use of these large hot spots. Fine-grained data is thus needed for successful risk predictions.

• The data employed needs to be of high quality. Perry et al. (2013) argue that censored data (e.g. not having access to all data), temporally biased data (e.g. crimes are not reported or recognised directly when they occur), and temporally irrelevant data (e.g. using data that is not up to date) result in problems when making risk predictions.

• Risk predictions need to be properly evaluated in order to know if these are accurate.

• It is highly important to be aware of the issues regarding civil and privacy rights. This is of course related to the sensitive topic of labelling areas as “bad” and the use of data with respect to individual privacy.
4. Crime Prevention

This chapter describes various aspects of urban crime prevention that are relevant for City.Risks, in particular situational crime prevention. Thus, the chapter does not discuss the wide-stretching field of crime prevention. Moreover, as the prevention strategies in the project are already decided (technical solutions to tackle urban crime), the purpose of this chapter is not to provide exact guidelines of how a prevention initiative can be outlined, but to highlight aspects of crime prevention that need to be considered during the progress of the project. Situational prevention efforts are discussed, and where to address and implement these initiatives are outlined. Further, the notion of preparedness for large scale incidents is discussed.

4.1. Background

The fact that crime is heavily concentrated on particular people, places and things has important implications for prevention. It suggests that focusing resources where crime is concentrated will yield the greatest preventive benefits. (Eck, Clarke & Guerette, 2007, p. 226).

Crime prevention within City.Risks is highly dependent upon this notion. If there are patterns of crime, these regularities show that something can be done in difference to a non-patterning of crime (random distribution).

The previous presentation of different approaches to assess and describe urban crime risks offers little guidance on how to prevent these risks. Generally, the approaches presented are centred on tactical and strategic police interventions against crime and not on individual efforts in order to minimise the risk for victimisation. City.Risks focuses on the individual in the urban landscape and how he/she can be alerted of risks, or alert other individuals of risky situations. This is related to the implementation of preventive measures, such as providing safe routes and improving communication among citizens. This implies that the criminogenic aspects of different places are not directly targeted by preventive measures, but that individuals should avoid crime through increased awareness of risks and interactions in social networks. In fact, deliverable 2.2 in City.Risks reveals that citizens of all three pilot sites believe that citizens should be consulted to increase community safety.

Crime prevention in general is a difficult task (Tilley, 2005) and it is important to avoid quick fixes. Wikström (2007) argues that prevention efforts should be directed at the causes of crime and claims that many prevention initiatives lack knowledge on what works for preventing crime. However, there are many crimes for which the causes are unknown and prevention efforts may need to be implemented based on the best available knowledge. Importantly, any preventive effort that is implemented should always be thoroughly evaluated in order not to implement harmful or non-effective measures.
4.2. Situational crime prevention

City.Risks is centred on situations in which individuals may experience crime and therefore this section describes the basics of situational crime prevention. The focal point within situational crime prevention is that crime opportunities can be altered or reduced which is supposed to result in less crime (Clarke, 2005). Clarke (2005) posits four reasons for focusing on opportunity reduction as a means for general crime prevention:

1. Criminally disposed individuals will commit a greater numbers of crimes if they encounter more criminal opportunities.
2. Regularly encountering such opportunities could lead these individuals to seek even more opportunities.
3. Individuals without pre-existing dispositions can be drawn into criminal behaviour by a proliferation of criminal opportunities and temptations.
4. More particularly, individuals who are generally law-abiding can be drawn into committing specific forms of crime if they regularly encounter easy opportunities for these crimes. (p. 42).

Although criminal propensity should not be neglected, much can be done in order to reduce crime without focusing on offenders’ motivations. However, crime types differ in their opportunity structure, resulting in Clarke’s (1995; 2008) suggestion that situational prevention must be crime specific.

In practice, situational crime prevention aims at physically modifying situations in order to prevent crime. The preventive approach in City.Risks can be defined as an attempt to modify situations by altering the movement of potential targets of criminal acts, making these harder to attack (i.e. target hardening). This rests on the notion that victimisation is disproportionally concentrated to some places and some people (Eck, Clarke & Guerette, 2007; Pease & Tseloni, 2014). For instance, some stores, bars, and gas stations account for a disproportionate amount of all crime (Eck, Clarke & Guerette, 2007; Fennelly, 2012). Research of the asymmetric distribution of crime among various kinds of facilities show that 20 percent of the bars in a US city account for 62 percent of the bars’ total crime reports, and that 20.3 percent of all stores account for 84.9 percent of the shoplifting reports (Eck, Clarke & Guerette, 2007). Similarly, in the British Crime Survey only 2 percent of the respondents suffered from 41 percent of all property offences and only 1 percent of the respondents accounted for 59 percent of all personal offences (Pease, 1998). Consequently, if facilities and people at high risk can be pinpointed, prevention efforts may reduce a substantial amount of all crime.

Situational crime prevention is often discussed in relation to displacement, which can be defined as the potential movement of criminal activities. This movement is assumed to be the result of crime prevention efforts that make crimes harder to commit at some places. However, Clarke (1980; 2005), argues that displacement is not inevitable for situational crime prevention. For instance, Clarke (1980) claims that many potential offenders do not have the capability to acquire more advanced skills for adapting their modus operandi in relation to improved situational prevention measures, which highlights the potential benefits of target hardening efforts.
Similarly, Tilley (2005) posits that research rather points at a diffusion of benefits, meaning that the positive effects of prevention efforts are spread from the targeted area to other areas not targeted by the prevention effort.

Situational prevention has been criticised over the years. For instance, Clarke (2008) claims that critics of the situational approach are troubled of criminology turning into a technical and controlling discipline, serving people who are investing in situational solutions, such as the security industry. It should also be mentioned that situational prevention efforts are not always considered the best solution to crime problems. Wikström (2007) argues that situational efforts are often inappropriate because the underlying structural and social factors of crime are not affected by these measures. Still, Wikström (2007) claims that situational prevention may be employed to some extent, and preferably in affluent areas because crimes in those areas may be a matter of situational cues rather than deeply rooted social causes. Moreover, Pease and Tseloni (2014) argue that situational crime prevention is more effective, because modifying situations is easier than changing societal structures or personal characteristics of offenders.

4.2.1. Repeat victimisation as a starting point for prevention

It is not uncommon that offenders attack the same targets (places or people) at multiple occasions. This is referred to as repeat victimisation (Pease, 1998; Pease & Tseloni, 2014). It may seem rational to choose targets that were previously attacked with success, which supports the claim of some scholars that offenders act rationally (e.g. Cornish & Clarke, 2008). Indeed, targeting places or people that have been victimised previously is often more efficient than other strategies (Townsley, Homel & Chaseling, 2003). Farrell (2005) argues that the growing body of research on victimisation has revealed some points that are highly relevant for crime prevention. First, 40 percent of the targets of criminal acts are retargeted within a year. Second, repeat victimisation often takes place in near time of the initial event. Third, offenders learn which targets that can be victimised again (e.g. a successful initial burglary of a house that was easy to carry out increases the risk for a repeated burglary at that house) and thus the same offenders often reoffend against the same targets. Fourth, repeat victimisation is especially common for personal crimes (e.g. assaults, threats, sexual offences etc.). Fifth, businesses are often retargeted for burglary, shoplifting and robbery. Pease (1998) summarises the research on repeat victimisation by arguing that:

\[\text{[...]} \text{ victimisation is the best single predictor of victimisation; [...]} \text{ when victimisation recurs it tends to do so quickly; [...]} \text{ a major reason for repetition is that offenders take later advantage of opportunities which the first offence throws up; and [...]} \text{ those who repeatedly victimise the same target tend to be more established in crime careers than those who do not. (p. 3)}\]

Thus, victimisation predicts victimisation which is unsurprising when considering the previously discussed hot spots of crime (crime predicts crime). Farrell and Sousa (2001) argue that there are several reasons for this. For instance, “Repeat victimization may be committed by the more prolific offenders, who return sooner
and more often to the same target” (Farrell & Sousa, 2001, p. 232). Hence, repeat victimisation may simply cluster at hot spots because this is where the most prolific offenders operate. Regardless of how it is explained, repeat victimisation follows patterns (i.e. it is not randomly distributed), and can thus be studied based on these patters (Pease & Tseloni, 2014).

Another aspect of repeat victimisation is labelled “virtual repeat” victimisation (Pease, 1998). This refers to offenders’ retargeting of not the very exact targets but identical or similar objects such as specific car models (Farrell, 2005). Farrell (2005) claims that the design, location, and value of the object are important to consider as important factors in crime prevention efforts that encompasses virtual repeat aspects of crime. However, Pease (1998) states that the concept of repeat victimisation is difficult and it is not always self-evident which similarities amongst two victimisation occasions that define if the second occasion really is a virtual repeat victimisation. Virtual repeats are also similar to the notion of near-repeat victimisation. This refers to the fact that for example neighbours of a house victimised of burglary suffer from an increased risk of being burglarised (Farrell, 2005). The near-repeat effect decreases as the distance increases from the initial target.

Moreover, repeat victimisation on a neighbourhood level may be relevant to examine within City.Risks because of its geographic focus. Pease (1998) argues that three measurements are needed in order to understand victimisation on an area level. First, the number of crimes per households or people reveals the incidence of victimisation in an area. Second, the proportion of households or people that is victimised shows an area’s prevalence of victimisation. Third, the number of victimisations per person refers to concentration. Pease (1998) states that these three measurements together reveal an areas victimisation rate which can be useful to consider in any prevention effort targeted at an area. For instance, the concentration measure is very important for understanding if only a few people or households in an area are affected, or if the victimisations in an area are more evenly distributed. For prevention, it is relevant to use a concentration measure in order to decide if a preventive effort should be provided to only a few people or to all people within a targeted area.

For creating effective prevention efforts based on repeat victimisation, it is important to consider the characteristics of the initial crime occurrences. Pease (1998) offers two different situations which illustrate the need to analyse crime occasions differently for efficient prevention:

A motorist parks her car in a safe area, but leaves the doors unlocked and the key in the ignition. She has her car stolen three times. The preventive scope for the victim’s changed behaviour in such a case seems particularly great. By contrast, another car is left secure and immobilised, but it is nonetheless also broken into three times. In this case, the scope for place change seems to the fore. In brief, both person and place merit inclusion when exploring patterns of repeat, because victimisation of the same place across diverse people using it, or of the same person (or vehicle) across places, is an indicator of where preventive scope might be found. (p. 27)

Thus, the victimisation situations need to be analysed thoroughly in order to fully grasp the place-people connection.
Situational crime prevention efforts have been found to be the best initiatives for reducing repeat victimisation (Grove, Farrell, Farrington & Johnson, 2012). However, Grove et al. (2012) state that this effect is almost exclusively relevant for residential burglaries. Similarly, Farrell (2005) states that the practical implementation of prevention efforts against repeat victimisation has mainly been applied to residential burglary. However, there is no reason for not considering similar efforts for other offences as well (ibid.). Further, Farrell (2005, see pp. 154-156) lists a sample of studies that show how burglaries have been subjected to preventive efforts against repeat victimisation. The efforts that show the best results are defined as packages, which include several different preventive measures that have been implemented simultaneously. This suggests that it is important to work with different kinds of preventive efforts for a possible reduction in repeat victimisation. Many of the studies mentioned by Farrell (2005) include provision of advice to people who have recently suffered from a burglary and also information spreading to their neighbours in order to make them aware of the elevated risk. However, providing advice and education as a single preventive effort has not proved to reduce repeat victimisation but it may be useful as a complement to other preventive efforts (Grove et al. 2012).

Another important aspect of repeat victimisation is that repeat victims, compared to first time victims, are less satisfied with how their reporting of the victimisation to the police was dealt with by the law enforcement (van Dijk, 2001). There may therefore be need for improved assistance to repeat victims by providing assistance and guidance through the reporting process.

Importantly, using repeat victimisation as a starting point for prevention initiatives may be perceived as rather problematic because the initial victimisation incident is not prevented. Thus, it may be relevant to consider other risk factors for victimisation in order to create a full preventive measure. A complete measure may include risk factors that are connected to first time victimisation as well as repeat victimisation in order to make those that already suffer from crime become less exposed to criminal victimisation.

In sum, there are many aspects of repeat victimisation that can be targeted for prevention initiatives. Four basic conclusions for prevention can be drawn: 1) victims of crime should be targeted for prevention because of their elevated risk for future victimisation, 2) prevention efforts should be provided as soon as possible after a crime event, 3) prevention efforts should reduce the opportunities that made the target suitable for initial victimisation, and 4) offender’s already known for their persistent crime involvement should be targeted for interventions. From a City.Risks perspective, all but the last point are relevant. Assisting people who recently suffered from victimisation as soon as possible after a victimisation event may be helpful in terms of making the victims more aware of their elevated risk. This might also result in an opportunity to offer assistance for taking necessary precautions. The latter is of certain importance because, Pease (1998) argues, a change in what initially attracted the offender to the target reduces the risk for repeat victimisation. In other words: if a place or a person is victimised and this does not result in changes to the target, it signals that this is an easy target that can be victimised again.
4.2.2. Victimisation among tourists

As was described earlier, tourist victimisation may largely be dependent on tourists’ somewhat reckless behaviour. By offering advice and assistance, tourists may adapt their behaviour in order to minimise their risks of becoming victims of criminal acts.

Crotts (1996) offers a few recommendations that can make tourists less suitable as targets for criminal activities including route planning, being cautious at parking lots (these are defined as hot spots), having travel company if possible, not keeping valuable goods in the car, making sure all doors and windows are locked when leaving the place where you stay, and carefully watching the hotel key or room key. These advice may seem rather trivial but, for instance assisting tourists in their route planning through the use of a mobile device, may reduce the opportunities for victimisation by minimising tourists’ exposure to places known for their criminal activity. The tourists’ role in their own prevention efforts through measures to reduce their suitability is well described by Mansfeld and Pizam (2006) as they state that:

Tourists need to be constantly educated about the safety and security hazards present during their trips and given practical tips to avoid them. They should be made to understand that in numerous instances they themselves through their own actions bear part of the responsibility for incidents of safety and security affecting them. (p. 354).

Consequently, any means, such as the City.Risks end user products, are valuable for improved tourist consciousness of their own role as targets for criminal activities. The awareness of being a stranger through the tourist role, not being alone and avoiding the pursuit of illegal or immoral activities may be obvious for many people. Nevertheless, this information should be provided repeatedly although perhaps only a few people may be willing to follow these advice.

4.2.3. Alcohol and crime

Maguire and Brookman (2005) discuss alcohol-related offences at public places as a certain field of interest within crime prevention. As was mentioned previously, these offences tend to occur at late nights and early mornings near pubs and city centres and the people involved rarely know each other (Maguire & Brookman, 2005). Many prevention initiatives against alcohol-related crime are situational, such as efforts to improve bar environments (e.g. by training of staff and improved physical design of the premises) (ibid.). Importantly, alcohol-related violence is not normally a matter of intoxicated people targeting sober passers-by at a certain location. Rather, it is a matter of intoxicated offenders and intoxicated victims, in many cases where the persons involved are both offenders and victims (e.g. bar fights). Avoiding areas where many intoxicated people converge could assist people in search for a safe route after spending an evening out.
4.3. Preparedness

City.Risks partially aims at not only avoid but to mitigate urban security threats. This is related to an urban area’s preparedness for the occurrence of events that threat people’s security. Table 2 shows some examples from a healthcare perspective related to what kinds of events that healthcare facilities should be prepared for.

An example of when the usefulness of being prepared is evident is a bomb threat: a not very common but still potentially lethal crime that creates panic and fear among the public. The reason for being prepared for a bomb threat has been suggested to rest on the notion that:

 [...] proper planning will instill confidence in your leadership, reinforce the notion that those in charge do care, and reduce the potential for personal injury and property loss. Proper planning can also reduce the threat of panic, the most contagious of all human emotions. Panic is sudden, excessive, unreasoning, and infectious terror. Once a state of panic has been reached, the potential for injury and property damage is greatly increased. (ATF Material, Secret Service, 2012, p. 391).

Having a plan prior to an occasion, be that a bomb threat or any other serious crime, may be helpful for the mitigation of its consequences. The City.Risks project’s end user product may assist in such an occasion although many of the larger urban threats likely are state businesses that should be tackled by governmental initiatives. Although many of the more serious threats to urban environments are very rare, these events may be those that can be most greatly affected by preparedness initiatives. Creating social networks and safe route functions may be an attempt to make people aware of threats and thus people may be more prepared if something occurs.

Table 2. Situations requiring emergency planning (Colling & York, 2012)

<table>
<thead>
<tr>
<th>Manmade</th>
<th>Accidental</th>
<th>Natural</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bombs/arson</td>
<td>Fires</td>
<td>Earthquakes</td>
</tr>
<tr>
<td>Strikes/pickets</td>
<td>Hazardous materials</td>
<td>Hurricanes</td>
</tr>
<tr>
<td>Terrorism</td>
<td>Construction</td>
<td>Snowstorms</td>
</tr>
<tr>
<td>Gangs/mobs</td>
<td>Utilities failures</td>
<td>Tornadoes</td>
</tr>
<tr>
<td>Civil disturbances</td>
<td>Transportation incidents</td>
<td>Floods</td>
</tr>
<tr>
<td>Pandemics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Active shooter</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4.4. Implications for City.Risks

Crime prevention may be the most difficult aim to achieve in the City.Risks project. The preventive measures offered by the project must be carefully implemented and assessed, no matter if they target actual crime or simply aim at mitigating the consequences of larger serious events. There is clearly a situational approach within
the project and this will likely be the backbone for understanding if and how the proposed efforts may contribute to reduced risk for victimisation among the app users.

Regarding prevention in relation to risk factors, it can partly be focused on victims’ reduction of their suitability as targets. Moreover, by targeting prior victims as a group at elevated risk for victimisation, many victimisation incidents can be reduced if they are successful. The difficult task remains, however, to only take actions that are proportionate to the victimisation risk. People should not restrict their daily lives in order to not become victims of criminal acts but perhaps some precautions can be justified. This is especially true for tourists, a group known for their somewhat reckless behaviour. It is here also important to mention that by advising previously victimised people to change their behaviour, some may argue that victims are blamed for their victimisation (so-called victim blaming). This issue will be discussed further in the chapter on ethical issues (chap. 7).

Reducing alcohol consumption is not a central aspect of City.Risks, but locations where many intoxicated people converge (e.g. at closing hours in bar districts) should perhaps be avoided if people are seeking a safe route to their place of residence after spending the night out.

City.Risks is to a high degree based on communication and, at least partially, dependent upon people’s ability to communicate. This is especially important for the development of social networks and the potential information provision in the case of a larger serious incident. However, many neighbourhoods are highly heterogeneous in their resident composition, resulting in potential language barriers among, for instance, residents who are not native speakers. The project’s communication tools may have limited impact in areas where people do not speak the same languages. These areas may also suffer disproportionately from crime, which makes the challenge for City.Risks even more complicated. In its examination of different practical approaches to security threats in Europe, the BESECURE project conclude that the local context is very important in practices targeting urban security (Van Buul-Besseling, 2015). Thus, it is essential that City.Risks will not be based on the assumption that urban security issues can always be generalised to any urban area. Therefore, deliverable 2.2 focuses exclusively on the local crime situation in the three pilot cities.

In sum, people, places, and facilities with the highest crime concentrations are the main focus of City.Risks. This is not a matter of discouraging some people from visiting some places, but a matter of assisting people in their decisions of where to go. Importantly, this may not necessarily be described as crime prevention per se; it is more a means for making people more aware of a city’s current security status. Many people will still visit high risk places and pursue risky lifestyles, and doing so for many good reasons, but at least they may benefit from being familiar with where and when the risk is high and also which people that are at highest risk for victimisation. By providing a platform for distributing these insights, at least some people may adopt a slightly more cautious behaviour, and perhaps reduce their risk for being victimised.
5. Fear of crime

This chapter describes the subjective dimensions of urban security threats which are here gathered under an umbrella term named “fear of crime”. Various aspects of fear of crime are discussed before continuing with descriptions of risk factors for fear and fear reduction. Importantly, this chapter shares some similarities with the chapter on risk factors for urban crime but adds the research findings on the subjective aspects of crime to fully grasp the picture of urban security as both an objective and a subjective phenomenon.

5.1. Background

Fear of crime is an important aspect of urban security, concerned with people’s perceived sense of security and emotional reactions to the threat of crime. Researchers and policy makers have become increasingly interested in fear of crime as its detrimental effects on people’s well-being have become more highlighted over time (Hale, 1996). Because of fear (of crime), some people lock themselves inside of their homes and avoid activities, people, and places that make them feel fearful (Box, Hale & Andrews, 1988; Hale, 1996) and thus fear has “…become a major social problem.” (Box, Hale & Andrews, 1988, p. 341).

Fear of crime is often argued to be a larger problem than actual crime (Hale, 1996). Farrall, Jackson and Gray (2009) state that fear of crime is, at least partially, independent of actual crime rates which makes fear of crime an issue of its own right. This is supported by the findings that official crime rates do not predict fear of crime (Ferraro, 1995), and that fear of crime is more accurately predicted through area characteristics than crime rates (Tseloni, 2007). Similarly, Hale (1996) states that the neighbourhoods in which people live affect their perceptions of fear. Moreover, Farrall, Jackson and Gray (2009) argue that fear of crime is intertwined with perceptions of societal breakdown, such as diminishing social cohesion in neighbourhoods and erosion of moral values. All taken together, fear of crime is not only a matter of reactions to actual crime, but a broader concept that reflects perceptions of various features of which crime is one.

5.1.1.1. The plurality of subjective dimensions of crime

Alexander and Pain (2012) illustrate the subjective aspect of crime by arguing that “people of the same age living in the same street, or even in adjacent houses, can draw very different conclusions from, and attach varying kinds of and levels of significance to, the same risks.” (p. 38). Thus, people may have the same objective risk of becoming victimised, but perceive their risks of being victimised differently (subjectively). Moreover, Ditton and Innes (2005) discuss the fact that more persons are afraid of becoming victims of crime than those who actually are victimised. However, people think prospectively about crime, and future victimisation can rarely be predicted with much accuracy. In other words, following the logic from Ditton and Innes (2005), people are afraid of crime because it is an unpredictable risk. Therefore,
the common discussion of fear as irrational (i.e. fear does not correspond to the actual risk) is only relevant when people are obviously experiencing extreme fear levels that are built upon highly erroneous perceptions of crime risks. Nevertheless, differences among people in their fear levels are important to examine. This is perhaps best demonstrated by the fact that most women are more afraid of becoming a victim of a violent offence in the public environment than at home even though their actual risk of becoming a victim of a violent offence is higher at home (Valentine, 1992). Thus, many women may wrongfully be warned of where their risk for victimisation is highest. However, this does not imply that people are not at all aware of their actual victimisation risk. Findings from the US reveal that people may accurately know the actual risk for victimisation among different kinds of offenses (e.g. one knows that murder is less likely than burglary) (Ferraro, 1995).

Ferraro (1995) argues that “Perceived risk is a necessary but not sufficient cause of fear.” (p. 54). Moreover, perceived high risk of victimisation may not cause fear but may make people more cautious (ibid.). In other words, perceived high risk for victimisation may render feelings of fear, but also changes in behaviour, sometimes referred to as “constrained behaviour” (Ferraro 1995 p. 55). Nevertheless, Ferraro (1995) found that perceived high risk of victimisation is a good predictor of fear, which highlights the existence of a risk-fear relationship. Unsurprisingly, Ferraro (1995) also found that people reporting constrained behaviour also report higher levels of fear. Nonetheless, Ferraro (1995) argues that perceived risk and fear of crime should be defined as two different concepts:

> Fear is only one of several reactions to judgments of potentially high risk in a situation. Others may include constrained behavior, community or political activism, compensatory defensive actions, and avoidance behaviors including relocation. (Ferraro, 1995, p. 12).

However, some scholars argue that fear is not only a negative part of people’s lives. For instance, Ditton and Innes (2005) ask themselves:

> [...] is fear of crime a bad thing, and is there too much of it? Clearly, it cannot absolutely be bad. A citizenry with no such fear would have a nasty, brutish and short existence. Each member would throw away his or her front door key (for ease of ingress), pin his or her money on the outside of his or her clothing (for ease of access) and make a point of publicly insulting large young men with shaven heads carrying hatchets (for ease of egress). Conversely, a citizenry paralyzed with such fear would never leave the house, buy any food or speak to anybody, and thus have a life equally nasty, brutish and short. (p. 596).

Thus, some amount of fear may be protective and the task of reducing fear may mainly be concerned with issues of reducing fear to levels that are relevant in relation to individuals’ actual risk levels. However, does the quote really concern fear as an emotional response to crime or is it more about subjective perceptions of risk? This highlights the importance of being aware of the many definitional differences regarding fear of crime. Although this report treats fear of crime as an umbrella term of all subjective aspects of crime, the differences among the definitions will be highlighted when necessary, especially in the next section on how fear is measured.
5.1.2. Measuring fear of crime

While crimes are, at least to some extent, reported to the police, there are often no existing official data sources on fear of crime or other perceptual aspects of crime in many geographical areas (Hirschfield, 2005). Measurements of subjective fear of crime are mostly based on self-reports as police records and other similar sources do not contain this information.

The complexity of the fear of crime concept is related to its measurement. Mawby, Brunt and Hambly (2000) state that:

Traditionally, fear is measured by questions about safety: for example, feelings of safety at home alone at night or walking out alone after dark. Closely associated with these are questions that tap anxiety or worry: for example, worry of being the victim of burglary or mugging. Other questions may explore feelings about the crime situation and other ‘public incivilities’, locally or nationally. (p. 469).

Moreover, Hale (1996) argues that “[…] many researchers use individuals’ assessment of their risk of victimisation as a surrogate for their fear. Others confuse concern for crime in society with worries about personal safety.” (p. 80). Furthermore, Farrall, Jackson and Gray (2009) state that many studies of fear are actually not capturing the fear itself, but rather ask questions about emotions related to perceived risks while Ditton and Innes (2005) argue that it is difficult to measure emotions at all. Measuring fear is thus contingent upon its operationalisation but the many different definitions of fear of crime and also the absence of definitions in much fear of crime research has caused much confusion (Ferraro, 1995; Hale, 1996; Farrall, Jackson & Gray, 2009).

Hale (1996) discusses the common distinction of fear into cognitive, affective and behavioural components. First, cognitive measures are centred on subjective risk assessments of the likelihood of becoming victimised of a certain crime. An example of a cognitive question is “How likely do you think it is for you to be victimised of violence when walking home after dark?” Second, affective measures focus exclusively on emotional components with questions like “Do you feel afraid when walking home after dark?” Third, behavioural measures examine people’s actions in relation to their experienced fear with questions such as “Do you choose a route that you think is safer than other routes when walking home after dark?” Moreover, measuring fear of crime is difficult because a survey or other instrument for measuring fear forces the respondent to imagine fear through for instance descriptions of various scenarios (Ferraro, 1995). The use of scenarios is problematic because many people purposely avoid situations that they believe are risky and therefore they cannot answer whether these situations are causing fear (i.e. they never experience the situation).

Perhaps most important when measuring fear is the question on how fear of crime as an emotional concept can be distinguished from fear of crime as subjective risk perceptions. Hale (1996) claims that fear of crime must contain an emotional component by arguing that:

Fear of crime refers to the (negative) emotional reaction generated by crime or associated symbols. It is conceptually distinct from either risks (judgements) or
concerns (values). Of course fear is both an effect of, and caused by, judgements of risk but to confuse the two is to confuse this relationship (p. 92).

This taxonomy of perceptions of fear is common and is presented in table 3. Pain (2000) takes another position and embraces fear of crime as an umbrella term by stating that “fear of crime’ describes the wide range of emotional and practical responses to crime and disorder individuals and communities may make.” (p. 367). The definitional issues of fear of crime are thus not necessarily important to consider for studying it. Pain (2000) also embraces the plurality among the definitions of fear by concluding that:

...researchers are beginning to forge more holistic accounts of the fear of crime: as a phenomenon which varies between individuals; which has geographical, economic, social, cultural and psychological dimensions; which is influenced by a whole range of processes and relations scaled from the global, national and local to the household and the body; and which is rooted in place and variable between places (p. 381)

Fear is thus a multifaceted concept that needs to be studied from different perspectives.

**Table 3. Classification of crime perceptions. Adapted and modified from Ferraro (1995)**

<table>
<thead>
<tr>
<th>Type of perception</th>
<th>Cognitive</th>
<th>Affective</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Level of reference</strong></td>
<td><strong>Judgements</strong></td>
<td><strong>Values</strong></td>
</tr>
<tr>
<td><strong>General</strong></td>
<td>A. Risk to others; crime or safety assessments</td>
<td>B. Concern about crime to others</td>
</tr>
<tr>
<td><strong>Personal</strong></td>
<td>D. Risk to self; safety of self</td>
<td>E. Concern about crime to self; personal intolerance</td>
</tr>
</tbody>
</table>

**5.1.3. Information about crime and its relation to fear**

Offences vary in how much they affect individuals’ levels of fear. For instance, so-called “signal crimes” are crime incidents that disproportionally increase people’s sense of fear (Ditton & Innes, 2005). A signal crime, or any other incident that people react to with fear, is not generally a matter of a specific kind of offence but a matter of how specific crime incidents are perceived and how these incidents vary in how the public is affected by them. In a more detailed definition, Innes (2004) argues that:

The central proposition is that people tend to construct their understandings of crime and disorder, and thus their perceptions of criminogenic risk, around certain ‘signal’ incidents. Not all crimes and disorders have equal value in terms of how collective risk perceptions are assembled. Thus some murders matter more than others in shaping collective risk perceptions, as do some burglaries,
and some forms of vandalism and anti-social behaviour, depending upon the ‘social visibility’ that an incident assumes in the life of a collective. (p. 352).

The notion of signal crimes pinpoints the importance of the crime information that people take part of. One of the main sources for information on crime incidents is crime news (Weitzer & Kubrin, 2004). Lowry, Nio and Leither (2003) state that the crime news coverage on the TV-news affects the level of fear among the viewers. In their study, the TV-news coverage of crime affected the public’s perceptions of crime to a greater extent in comparison to the actual crime rate (ibid.). This indicates that “the press [...] is stunningly successful in telling its readers what to think about” (Cohen, 1963, cited in Lowry Nio & Leither, 2003 p. 65). Crime coverage and other stories of criminal events might therefore result in a misleading picture of risk of victimisation, and by that influence the fear of becoming the victim of a crime (Farrall, Jackson & Gray, 2009).

Heath (1984) states that crime news per se might not influence the readers’ level of fear of crime; it is rather the illustration of the sensational, rare, and random crimes that influence fear among the audience. These stories are commonly portrayed in the crime news, which might reflect the kind of stories selling papers rather than the crime incidents most likely to occur in public areas (Duwe, 2000). In other words, “The media dwell on those acts that are especially serious in their consequence, that are morally reprehensible in their character, that are difficult to fathom and explain.” (Farrall, Jackson & Gray, 2009, p. 10).

Moreover, the news coverage of crime incidents influences fear of crime not only through portraying sensational and rare crime, but also through the extent to which people might relate to crime stories (Chiricos, Padgett & Gertz, 2000). In general, people become more fearful if serious crime incidents can be related to their own lives. Heath (1984) states that crime stories indicating randomness (when the offender is unknown to the victim) generate more fear due to the perception that crime can happen to anyone, anywhere. This is similar to the concept of the “ideal victim”, which refers to a victim that has not done anything that made the offender commit the act of crime (e.g. provocations or any other behaviour that may have precipitated the offender’s actions) (Christie, 1986). Stories of ideal victims in the news may thus signal that anyone in the society could be targeted by an offender, which in turn may result in fear. This reflects the concept of so-called “victim blaming”. The more the actions of the victim might explain the crime incident, the less fear of crime will be perceived among people reading the news (Walster, 1966). By blaming the victims for their victimisation, one could distance oneself from the actions leading to the vulnerability of being subjected to a crime, and by that decrease the fear of crime (ibid.).

When discussing the emergence of fear of crime, it seems as if it is not necessarily the severity of the offence that matters, but the victim profile. Heath (1984) states that for reducing fear of crime, people have to be able to distance themselves from the characteristics of the victim described in the crime news. These characteristics include gender, age, and place of residence (ibid.). The more distanced one is believed to be from the victim portrayed in the crime news, the less fear of crime will be experienced. On the other hand, when perceiving one’s own characteristics to fit into the picture of the victim, fear of crime may increase (Heath, 1984; Chiricos, Padgett & Gertz 2000).
5.2. Risk factors for fear of crime

Fear of crime is unequally distributed among people and places. Box, Hale and Andrews (1988) classify the features that are associated with fear in six broad categories which can be labelled environmental cues, individual vulnerability victimisation experiences, perceptions of the law enforcement, perceived risk for victimisation, and variations in the severity of different offences. Similarly, Ferraro (1995) stipulates that features on three levels are affecting individuals risk perception: “macro ecological, neighbourhood, and personal characteristics.” (p. 52). Some of these categories are of certain importance for City.Risks and will therefore be discussed in the upcoming sections.

5.2.1. Fear-generating places

The importance of the situational dimension of fear has become more pronounced in research on fear of crime (Nasar, Fisher & Grannis, 1993; Pain, 2000; Brownlow, 2005). For example, neighbourhood cohesion is a recurring characteristic connected to fear of crime and actual crime in research (Box, Hale & Andrews, 1988; Scarborough, Like-Haislip, Novak, Lucas & Alarid, 2010; Ivert, Chrysoulakis, Kronkvist & Torstensson Levander, 2013). Similarly, Ferraro (1995) found that perceived risk for victimisation is higher in areas with higher official crime rates.

5.2.1.1. Neighbourhood characteristics

Neighbourhoods characterised by low social cohesion, where people are not prone to intervene or help each other, or where people do not share the same values, are more likely to generate fear of crime. A study conducted in Malmö found that fear of crime is more pronounced among residents of neighbourhoods characterised with low social cohesion, and with a high concentration of criminal activity (Ivert et al., 2013). Moreover, fear is not only related to crime but also to perceived social and physical disorder in an area (Ditton & Innes, 2005; Farrall, Jackson & Gray, 2009). Contextual cues in the neighbourhood, such as litter or dilapidated buildings indicating a high level of social or physical disorder, make people perceive the neighbourhood as unsafe and this generates fear (Hale, 1996; Ivert et al., 2013). Neighbourhoods that give the impression that no one cares generate more crime (Wilson & Kelling, 1982), and by that also generate more fear of crime (Scarborough, Like-Haislip, Novak, Lucas & Alarid, 2010). Ferraro (1995) argues that most people restrict themselves from visiting places that show signs of risk, such as areas with physical and social signs of disorder (e.g. graffiti, homeless people). Furthermore, Ferraro (1995) found that perceived level of incivilities in one’s neighbourhood affected the perceptions of risk more than any other variable in his study. Ferraro (1995) thus argues that:

Signs of social and physical incivility such as disruptive neighbors, unsupervised youth, vacant houses, and unkept lots are generally associated with higher perceived crime risk. These phenomena are signals to residents that more vigilance is needed to avoid crime in their daily activities […] (p. 51).
Moreover, Innes (2004) points at the importance of considering differences among neighbourhoods in how disorder creates fear. In highly organised neighbourhoods, a minor disorder may cause much fear while already disorganised neighbourhoods may not be affected at all by minor incidents due to their already high levels of social and physical disorder.

5.2.1.2. The physical environment

Another place based fear-inducing factor is the physical environment. Brantingham and Brantingham (1995) state that many people experience fear of crime at places with poor lighting even though many of these places are not high risk areas for crime. This accentuates the fact that fear of crime is seldom only related to the actual risk of becoming subjected to a crime (Liska & Baccaglini, 1990).

Fear of crime is also affected by the perception of control in the setting, and by the perception of vulnerability of victimisation (Heath, 2001). Nasar, Fisher and Grannis (1993) found that poor lighting, poor visibility, and the absence of ability to escape increased fear of crime among the interviewed students. Most students reported that they felt less safe after dark, and when in park-like areas. These places were characterised by the presence of trees and shrubs which could serve as hiding places for a potential offender (Nasar, Fisher & Grannis, 1993). Similarly poor lighting, park-like areas, lack of escape routes and visibility have been found to increase fear of crime (Nasar, Fisher & Grannis, 1993; Koskela & Pain, 2000; Brownlow, 2005; Ivert et al., 2013).

These attributes of the environment are appreciated during daytime, but become unpleasant and frightening after dark. Brantingham and Brantingham (1995) state that these fear-generating areas are created by our daily routine activities and argue that “The urban settings that create crime and fear are human constructions, the by-product of the environments we build to support the requirements of everyday life” (p. 5). Thus, although we appreciate a certain environment, various changes in the attributes of the area, such as reduced visibility after dark, make the place become perceived as unsafe which increases fear of crime. This is, as mentioned afore, rarely related to the actual risk of victimisation in these areas. It is rather influenced by the experience of reduced control over our life events.

Koskela and Pain (2000), in their comparative study of women’s fear of crime in two European cities, describe contrasts of the factors that create fear. Poor lighting could facilitate the abilities for the offender to hide in the dark, but the women who participated in the study stated that brightness made them more exposed to a potential offender. Another contrast associated with fear is the experience of vulnerability in large open places, such as recreation areas or in the spaces between houses, but also in narrow streets and alleys where the visibility is low, which in turn triggers fear of crime (ibid.).

Moreover, Koskela and Pain (2000), found that there is often a social factor linked to the experience of fear of crime in a physical context. The authors state that “Space is not viewed in a social vacuum, and indeed it is meaningless to consider the social and physical properties of space as dichotomous” (Koskela & Pain, 2000 p. 275). The social
factor is often the trigger of fear in a certain physical context, and could explain the emergence of fear in different areas. Koskela and Pain (2000) found that the presence and absence of people (a social factor) had a significant influence on the perceived fear. For example, empty parks, squares, and hills triggered fear as well as crowded bus stations, restaurants, and city centres.

Pain (2000), in a review of the literature of fear of crime, found that people located in the same area often hold very different perceptions of crime. It is thus important to consider the fact that the physical attributes of an area may be perceived differently in relation to fear among the citizens. For example, Brownlow (2005) found that men and women differ in their perception of vulnerability, and in their coping mechanisms to handle fear of crime. Both men and women felt unsafe and afraid of visiting park-like areas after dark, but only women seemed to avoid these areas due to fear. Men, on the other hand, visited these places despite fear, but stated that they were prepared to defend themselves against the potentially dangerous strangers they could meet in the park (Brownlow, 2005). Thus, men seem to trust their physical ability to defend themselves if (when) they are exposed to threats of victimisation. This indicates that the primary factor for fear of crime lies within the perception of having control over life events. Similarly, Heber (2009) concludes her study by arguing that:

As regards personal fear, this may be understood as a fear of the uncontrollable. Situations and persons that are unknown and unpredictable lead to the interview subjects becoming afraid. Darkness, unfamiliar locations, and being in a confined space, such as on an underground train, are all factors that contribute to this type of fear. Rowdy individuals who are under the influence of drugs or alcohol are also perceived as dangerous because they are unpredictable. Familiar people and places on the other hand are perceived as harmless and safe." (p. 271)

In sum, social and physical attributes of the environment influence perceptions of risk of becoming victim of a crime, and by that impacts fear of crime. Places that most people appreciate during daytime are perceived as fearful after dark. The social and physical factors associated with fear of crime are not generally corresponding to the actual risk of crime. Lack of control and perception of vulnerability at different places affect fear, which highlights the need to consider locations that create fear and the individuals that visit these places. The next section attempts to pinpoint which groups of individuals that are at elevated risk of experiencing fear of crime.

5.2.2. Vulnerable people

In this section, individual differences in fear of crime are outlined in order to illustrate how fear is unequally distributed among people. Ferraro (1995) argues that, in general, personal factors are the best predictors of fear. The research on these factors is mainly centred on gender and age differences (Hale, 1996). However, the groups that suffer from fear are not necessarily more subjected to risk than others which highlights this chapter’s specific focus on the subjective dimensions of fear.
5.2.2.1. Gender

Women are generally more fearful of crime (mainly violent and sexual crime) compared with men (Ferraro, 1995; Stanko, 1995; Pain, 2000). This finding has rendered different prevention responses of which some have focused on informing and changing women’s behaviour. Stanko (1995) argues that women’s fear has been exploited for commercial reasons as safety products are specifically directed at reducing fear among women. For instance, “Rape alarms, cellular phones, and electronic panic pendants” (Stanko, 1995, p. 47) are examples of how commercial enterprises have capitalised on women’s fear of crime. Women are also often used for advertising products for reducing fear of crime which signals that fear is mainly an issue for women (Stanko, 1995). Moreover, Stanko (1995) argues that people’s safety has become a matter of individual responsibility which further underscores the focus on women as targets for safety products.

Importantly, men are more often victimised of violent crimes by strangers than women (Stanko, 1995). This stresses the somewhat problematic focus on women as a group that should be warned or advised to not visit some places, not walk alone after dark etc. because of the risk of encountering dangerous strangers. Despite their higher risk, men are generally not targeted by information campaigns which seems counter-intuitive when looking at the evidence of gender differences in fear.

Research on fear of crime is generally centred on fear of crime outdoor in public places. However, as Stanko (1995) argues, women are at higher risk of experiencing crime by people they know, such as spouses and work colleagues, and in familiar environments (home, workplace). This is important to consider because spouses, friends and others may be the persons who cause the high levels of fear. Drakulich (2015) found that sexual assaults by acquaintances create more fear among women than equal victimisations by strangers. There may be many reasons for this (see Drakulich, 2015) but these results imply that crimes by acquaintances are affecting women to a large extent. Ferraro (1995) argues that women are specifically fearful of victimisation of sexual offences, which may explain women’s high fear levels. Moreover, women’s fear of crime is much a matter of fear of men’s violence. Thus, Stanko (1995) emphasises that “The fact that women are not always successful in their avoidance strategies is a commentary on men’s violence, not women’s failures.” (p. 57). Consequently, information and assistance to women in order to change their behaviour do not target the actual cause of the fear.

Importantly, men may underreport their fear levels due to expectations on males to not be fearful (Pain, 2000). Moreover, Box, Hale and Andrews (1988) found that the gender differences in fear become much less apparent over time, meaning that men become closer to women in their levels of fear as they grow older. This emphasises the significance of age on levels of fear. Still, the fact that, in general, women report higher levels of fear is a relatively stable finding in research of fear of crime. Not surprisingly, this was also the case in deliverable 2.2 in City.Risks which examined the local crime situation in the three pilot cities.
5.2.2.2. Age

Age is one of the most debated issues in the literature of fear of crime (Pain, 2001). Elderly people are generally found to suffer from higher levels of fear (Hale, 1996). Weitzer and Kubrin (2004) found that fear of crime tends to decrease in middle age, but increases again in late middle age which might be the result of perceived higher vulnerability. Further, Ferraro (1995) found that young people are more fearful compared with middle-aged people. Thus, the relationship between age and fear of crime seems to fluctuate during the life-course.

However, it is also recognised that the relationship between age and fear of crime has been misinterpreted in fear of crime research (Pain, 2001). Farrall, Bannister, Ditton and Gilchrist (1997) argue that the relationship between age and fear of crime is affected by methodological problems. In a review of measurements of fear of crime, Farrall and colleagues (1997) state that the elderly population tend to report more fear of crime when answering so-called closed questions, compared with studies where they express fear in their own words through open questions.

Further, Ferraro (1995) found that younger people tend to constrain their behaviour to a lower degree compared to older people, which implies that less fearful people may have the most behaviour constraints (Ferraro, 1995). However, studying fear of being subjected to a terrorist attack, Stevens, Agho, Taylor, Barr, Raphael and Jorm (2009) found that younger people (16-24 years) are more likely to change their behavioural patterns due to these kinds of threats. In general, most people constrain their behaviour to some extent in order to minimise their risk for victimisation (Ferraro, 1995). Avoidance of areas perceived as unsafe is the most common behaviour constraint while other adaptations include, for instance, installations of locks and improved lighting (Ferraro, 1995).

5.2.2.3. Victimisation experiences

Crime victims are sometimes assumed to experience high levels of fear due to their previous experiences of victimisation. Box, Hale and Andrews (1988) argue that victims may take precautions after they have been victimised, resulting in less fear among crime victims. However, their results showed that victims of crime in disorganised neighbourhoods became more fearful as a consequence of victimisation, i.e. the local context had an important impact on the individuals’ levels of fear.

Many people also worry that persons close to them, such as their children and parents, will become victims of crime (Heber, 2009). This altruistic fear may affect people’s daily lives and for some people even more than fear of one’s own victimisation. Heber (2009) found that parents are much more worried about their children when the children are young and that fear of parents’ victimisation increases as the parents grow older. Similarly, Ferraro (1995) found that people who have experiences of close people’s victimisation also report higher perceived risk for own victimisation (Ferraro, 1995).

Ferraro (1995) found that those who are victimised, especially of property crime, perceive their risk of victimisation as higher. However, it is important to remind that
the risk for victimisation is only one aspect within the umbrella term of fear of crime. Many people may perceive their risk for victimisation as high but, nonetheless, do not have any negative emotional reactions to these perceptions.

Farrall, Jackson and Gray (2009) found that worry about all kinds of offences is related to experiences of victimisation (both direct and indirect through others’ experiences), poor health, witnessing crime, area crime level, and concerns about informal social control and community efficacy. This, Farrall, Jackson and Gray (2009) argue, shows that “[...] those individuals who live at the ‘sharp end of life’ vis-à-vis crime and victimization [...] are most likely to report moments of everyday worry about a range of offences.” (p. 202). It can thus be stated that victimisation experiences may be a part of a more wide-stretching problem in which some people live under circumstances that make them vulnerable for actual crime and fear of crime.

5.2.2.4. Tourists

The special interest in tourists in City.Risks raises the question whether tourists constitute a group that experience more fear than others. Mawby, Brunt and Hambly (2000) found that British tourists are more fearful at home than on vacation, despite the fact that people often experience more crime abroad than at home.

Crotts (1996) points to a central aspect of the perceived versus actual risk discrepancy among tourists by stating that “Unfortunately, ‘perception is reality’ in the travel business” (p. 3), thus highlighting the fact that the perceptions of safety are important to address in order to make tourists feel safe and to maintain a site’s attractiveness for travellers. More research on tourists’ fear of crime is needed to fully understand its prevalence and characteristics.

5.2.2.5. Other personal factors of fear

Marginalised social groups have been found to suffer from both higher rates of victimisation as well as higher rates of fear (Pain, 2000). General research findings indicate that LGBT-persons and ethnic minorities experience high levels of fear (Ferraro, 1995; Otis, 2007; Meyer & Grollman, 2014). Mayer and Grollman (2014) found that heterosexual women and sexual minority women and men are more afraid of being alone outside at night compared to heterosexual men. Moreover, ethnic minorities often live in high crime neighbourhoods, report high levels of incivilities, perceive their risk for victimisation as high and are more fearful (Ferraro, 1995).

Other personal factors related to fear of crime include a wide range of variables. For instance, people who have lived in their home areas for a long time report lower perceived risk levels as well as persons reporting good health and high education (Ferraro, 1995). Although rare, fear of terrorist attacks also varies greatly among different people. Stevens et al. (2009) found that low education, being unmarried, living in urban areas, and not speaking English at home (the official language in the country studied) are all factors related to perceived higher risk for victimisation of a terrorist attack. Importantly, people not speaking English at home and persons with
low education reported that they had changed their behaviour because of their perceived risk of becoming victimised of a terrorist attack.

5.3. Reducing fear

Reducing fear is important because fear itself, no matter if it is rational or not in terms of actual risk for victimisation, is an important issue for many people (Sunstein, 2003). However, fear cannot only be tackled by the same initiatives as those targeting actual crime. In other words, efforts to reduce fear must be diversified because

[...] there is no single approach to reducing fear which will work in all communities. If fear of crime is not simply related to risk of victimisation then it might be reduced by initiatives other than those that aim to reduce directly that risk. One approach might be to provide more accurate information about crime risk and advice about constructive responses to crime via existing social networks and organisations. (Hale, 1996, p. 81).

Thus, it is important to consider the local perspective as well as initiatives that are not exclusively focused on reducing victimisation. Creating platforms for information and advice distribution might be one alternative. Although it cannot surely be defined as an effort that will reduce fear (it may actually increase fear), we can argue that citizens have the right to be informed of a city’s security level. Most likely, correct information will be less alarmist and speculative compared to media’s reports on crime. Consequently, the City.Risks app may be a source for providing accurate risk estimations and information about crime that attracts users through accurate risk information. Importantly, this work also includes an analysis of the local crime situation in the areas included in the project, as many features related to fear are not just general and may be specific for some areas which is why deliverable 2.2 examines this issue further.

Hale (1996) discusses the consequences that fear of crime renders, of which behavioural change is one aspect worth mentioning in particular. Because of fear, people change the way they act, where they operate, and at what times they visit certain locations. These precautions may often seem logic; most people avoid empty, dark streets in the middle of the night, or do not take the shortcut through the park on the way home after dark. However, many people take far less rational precautions because of their fear which is why the City.Risks app can be useful for providing accurate information of where and when places are riskier. It cannot be assured that this would make people feel less afraid, but it can assist people in their search for information about the security level in an area.

Moreover, Sunstein (2003) argues that very serious events, such as terrorist attacks, likely result in much stronger emotional and behavioural reactions despite the rareness of these events. The concern itself or the fear, is something that affects people, therefore fear cannot necessarily be reduced by arguments of low likelihood of some events (ibid.). Still, no matter if fear is existing without any actual reason, tackling fear is important because fear may result in social costs for both individuals and the society as a whole (e.g. people avoid certain activities such as flying because of fear of terrorist attacks) (ibid.). Moreover, Sunstein (2003) posits that reducing risks
is not always possible or necessary, but information and education can make people less fearful as they will be more aware of the actual low probability of some events.

Hale (1996) discusses community prevention programmes for reducing fear and finds that most initiatives highlight the importance of making citizens engaged in local networks. Similarly, Box, Hale and Andrews (1988) suggest that investments in communities may be an important way to reduce fear of crime. A main issue for most of these initiatives is that those who benefit are often already well-organised communities. Not surprisingly, already tightly knit communities are easier to knit even more tightly together. However, the main challenge is to make less organised communities become more organised and make people invest time and effort into engagement in local networks. City.Risks should perhaps put an extra effort into providing a platform for organising residents in areas with low social cohesion and could benefit from having more channels for communication and networking.

5.4. Programmes of crime prevention and fear reduction

This section suggests some key elements for a local situational prevention programme (see Wikström & Torstensson (1996) for a more detailed discussion). A programme for general situational crime prevention should be developed by means of the police being instructed, both on their own account and conjointly with local private enterprises, to draw up a local strategy which should embrace:

1. A plan for measures specifically designed to prevent crimes and disturbances of the peace being committed, and to increase community safety in the centre of larger towns. A plan of this kind could, for example, include elements such as:
   - concentrated, visible local policing at times and in places where problems are most serious, organised on the basis provided by a detailed survey of the specific problems faced locally (see deliverable D2.2 that examined the local situations in the three pilot cities in City.Risks),
   - a lowering of the tolerance threshold for what kinds of behaviour are acceptable in public places,
   - installation of a system of surveillance cameras to be operated in the late evening and night-time, and
   - development of coordination and collaboration with restaurants and pubs on questions related to public order.

2. A special plan for major policing efforts in `multi-problem housing areas'. A plan of this kind could, for example, include elements such as:
   - concentrated, visible local policing at times and in places where problems are most serious, organised on the basis provided by a detailed survey of the specific problems faced locally,
   - a detailed charting of the problems faced on the housing estate,
   - high police density at times and in places where problems are most concentrated,
3. A plan for directing special efforts in the area of repeat victimisation.
4. The establishment of a special local co-ordination body linking police, shops and industry in the effort to develop situational crime prevention in these kind of businesses/premises. Co-ordination and collaboration of this kind could, for example, include elements such as:
   - special crime-prevention plans for big shopping centres, and
   - special crime-prevention plans for industrial estates.

5.5. Implications for City.Risks

It may be beneficial to simultaneously consider objective risks and subjective aspects of crime which together constitute urban security. A well-functioning customisation of the project’s end user products may be a useful way of dealing with this challenge. The customisation may both contain information about the user (e.g. if one is a tourist) and a detailed description of the area (e.g. neighbourhood characteristics) in which a person operates. Although some groups may underreport their fear levels, the fact that some people experience higher levels of fear is relevant for the project because it points at which people that may have the best use of the end user products. When working with fear reduction, it is important to remember that many other aspects than crime itself affect fear. For instance, it is, at least theoretically, plausible that connecting people in networks may result in better knowledge of their neighbourhoods. This can reduce fear of the “unknown”, i.e. other people that one may be afraid of. City.Risks may thus work as a glue that makes people stick together in order to create safe neighbourhoods. Perhaps this could also be useful when specific crime incidents occur that greatly affect people’s perceptions of risk and fear of crime.

City.Risks is partially centred on making tourists feel safe in urban areas. The end user products may therefore provide information that makes the tourists aware of the crime situation when visiting new areas. Most people are more fearful in unfamiliar environments and may thus benefit from information of safety when visiting unfamiliar areas.

In order to be able to implement measures against fear of crime, additional data collection may be necessary. To be able to assess the project’s success, it is also vital to carry out pre and post intervention measurements of fear. For instance, the pilot users of the app may be surveyed of how the app affects their perceptions of safety, for instance through items measuring behavioural changes due to app recommendations. If no evaluations will be performed, it will be impossible to find support for the project’s success or failure as a mitigation and avoidance initiative against fear of crime.
Finally, a good starting point for City.Risks may be to consider how a crime prevention programme can be developed as proposed by the example in section 5.4. Although this example includes elements not directly in focus for City.Risks, it may be used as an example of how crime and fear of crime should be targeted for interventions in urban environments.
6. Beyond ordinary crime: terrorist attacks

City.Risks has addressed terrorist attacks as urban security threats. However, terrorist attacks are in many respects different from other crime types, and are therefore described and discussed in a separate section.

6.1. Background

The threat of terrorist attacks mainly affects people’s sense of safety, but also the actual security level in cities. This may be the result of terrorists’ increased targeting of civilians, other private, non-military, and non-governmental targets. The terrorist attacks in New York City on 9/11 2001 has rendered an enhanced focus on terrorism but Europe has also suffered from terrorist attacks for several decades. For instance, terrorist attacks have been carried out by nationalist groups, such as IRA in Northern Ireland, ETA in the Basque Country, and FLNC in Corsica, as well as leftist terrorists such as the Red Army Fraction in Germany and the Red Brigades in Italy. The post 9/11 focus on terrorism is more centred on jihadi terrorism which has also affected European cities, such as Paris, Madrid, and London. The focus on jihadi terrorism is well illustrated by the new Swedish strategy for fighting terrorism, in which al-Qaeda and similar terrorist organisations are claimed to be the nation’s main terrorist threat (Government Offices of Sweden, 2014/15:146).

It should also be mentioned that this report was written prior to the terrorist attacks in Paris in November 2015. These incidents may greatly affect future terror policies and anti-terror work in the EU.

6.1.1. Definition and characteristics

An important aspect of the study of terrorism is the definitional issues of the phenomenon. Terrorist attacks are rather complicated crimes because the purposes behind the acts make all the difference. Terrorist attacks consist of acts that could easily be defined as any crime (e.g. homicide) if they would not comprise certain circumstances. Of the many definitions of terrorism, it seems suitable in this context to present the EU definition of terrorism. The EU Council framework decision (2002/475/JHA) decided on a unified EU definition of terrorism and also provided a foundation for legislation that all EU-members are bound to adopt. It includes three main points that characterise terrorist attacks, including acts with the aim of:

- seriously intimidating a population, or
- unduly compelling a Government or international organisation to perform or abstain from performing any act, or
- seriously destabilising or destroying the fundamental political, constitutional, economic or social structures of a country or any international organisation (EU Council framework decision, 2002/475/JHA, p. 2)

Examples of acts that may be defined as terrorism by the EU Council framework (2002/475/JHA) are attacks on individuals, kidnapping, attacks on government
facilities, manufacture of weapons, including threats of committing such acts as those just mentioned.

However, Dean (2007) describes some definitional issues, which are generally related to various governments’ arbitrary definitions of terrorism based on their perceived threats to their country. Dean (2007) argues that “the clichéd statement used by almost all guerrilla warfare and militant insurrectionary groups that ‘one person’s terrorist is another person’s freedom fighter’ underscores the relativity at very core of the definitional difficulty of terrorism.” (p. 173). LaFree and Dugan (2004) draw an example of this by noting that former Israeli Prime Minister Menachem Begin was originally a well-known terrorist leader, fighting for Israeli freedom before becoming a legitimate leader of the country. This report, however, attempts to keep the discussions on terrorism in a somewhat less complex manner by adopting the so-called modern definition of terrorism. This does not include terrorist attacks committed by states (Gaibulloev, Sandler & Santifort, 2012), thus only subnational actors of terrorism will be included in the analyses of this report.

An important aspect of terrorism is that it may seem like warfare. However, terrorism is more prolonged (Savitch, 2005) and it explicitly targets civilians (Gaibulloev, Sandler & Santifort, 2012), which a legitimate warfare should not do. Moreover, it is important to mention that “Often erroneously seen as indiscriminate or senseless, terrorism is actually a very deliberate and planned application of violence.” (Hoffman, 2006, p. 255). Furthermore, Armborst (2010) argues that terrorism is moralistic violence, meaning that the perpetrators believe that their acts are morally justifiable. Also, terrorist violence is vicarious in that it is usually aimed at collectively punishing people in a society. This highlights the fact that terrorist attacks are often not aimed at specific persons but at a population in general (Savitch & Ardashev, 2001).

### 6.1.2. The impact of terrorism on society

Terrorist attacks are not very common in the EU but the recent terrorist attacks in Paris reveal that terrorist attacks may occur in Europe with severe consequences. Other parts of the world are much more exposed to terrorism, such as the top five countries of terrorism fatalities: Iraq, Afghanistan, Pakistan, Nigeria and Syria (Institute for Economics & Peace, 2014). The Institute for Economics & Peace (2014) puts terrorist attacks in their relative role as a source for violence, and states that forty times more people died from homicide than terrorist attacks in the world in 2012. Moreover, since 9/11 there has been a lot of media attention on transnational terrorism. However, of the world’s 82,536 terrorist incidents between 1970 and 2007 in the Global Terrorism Database (GTD), barely 13,000 are classified as transnational terrorist attacks (Enders, Sandler & Gaibulloev, 2011). Although transnational terrorist attacks have declined since the mid-1990s in terms of frequency, Gaibulloev, Sandler and Santifort (2012) found that the attacks have become more serious, generally causing more casualties and fatalities. Terrorist attacks in Europe from 2000 to 2013 were almost exclusively committed by political organisations or nationalist separatist terror cells (i.e. non-religious terrorism) (Institute for Economics & Peace, 2014).
Despite the rareness of terrorist attacks, terrorists’ targeting of civilians may influence the feeling of safety among residents of urban areas. Brandt and Sandler (2010) argue that “The marked targeting shift to private parties since the mid-1990s is because of three causes: increased security of property, fundamentalist terrorists’ taste for bloodshed, and terrorists’ bid for attention.” (p. 234). From a civilian perspective, terrorism is today a highly relevant matter as military and governmental targets have been replaced by soft-targets putting entire populations at risk for terrorist attacks. The potential consequences of perceived high terrorism vulnerability in urban areas may also result in business relocation and withdrawal of people from certain areas (Coaffee, 2009). Also, terrorist attacks at tourist sites may severely damage the tourist business, especially if the attacks are persistent (Sönmez, 1998; Araña & León, 2008).

Finally, it should also be mentioned that terrorist attacks make people become more afraid of terrorist attacks and therefore people change their behaviour which is highly irrational in terms of the likelihood of another attack (Sunstein, 2003). Sunstein (2003) refers to this phenomenon as “probability neglect”. Probability neglect indicates that people are very fearful of terrorist attacks after they have occurred, despite the rareness of these incidents (ibid.). This reaction is likely due to the focus on the severe consequences of the attack, and not on the likelihood of its recurrence (ibid.). Unsurprisingly, preventive efforts against terrorist attacks may highly exceed the actual risk for terrorist attacks, which makes the responses to terrorist attacks restrict the daily lives of urban residents. For instance, Coaffee (2009) states that London’s inner-city area has been transformed into a high security area with several measures for controlling the urban space.

6.2. Factors related to terrorist attacks

The knowledge of terrorist groups and their targets varies. For instance, Dean (2007) argues that profiling of terrorists has proven not very useful because they seem to be rather “normal” people, not easy to pinpoint. Still, Dean (2007) highlights the possibility for profiling the process that makes people become terrorists, including for instance the concept of radicalisation. Geographic profiling of terrorists’ residences is also employed at times in order to assist investigations of terror incidents (Bennell & Corey, 2007). Furthermore, Nance (2014) describes in detail how terrorists and their terror cells may be detected, and the intelligence work needed for finding these people. However, City.Risks, it is more important to examine which kinds of urban places and which people that may become targets of terrorist attacks.

6.2.1. Variations in terrorist attacks: vulnerable places

Savitch and Ardashev (2001) argue that cities in general, but in particular the largest and globally most important cities in terms of media presence, such as Paris and London, are suitable targets for terrorist attacks. Savitch and Ardashev (2001) highlight the symbolic value of urban areas as targets for terrorists by stating that:

A well-placed explosion can produce enormous reverberations and paralyse a city. This, in fact, was the motive behind the bombing of New York’s World Trade
Center in 1993 and 2001. The simple idea of collapsing two buildings in a highly populated, densely built, ‘global city’ not only damages people and property, but also creates a contagion of fear and economic rupture. (p. 2516)

The fact that terrorists target densely populated areas in the city centres is one of the most common findings in terrorism research (e.g. Savitch, 2005; Canetti-Nisim, Mesch & Pedahzur, 2006; Berrebi & Lakdawalla, 2007; RAND, 2013). Urban areas provide opportunities for hiding and preparation of terrorist attacks (Savitch, 2005) and offer plenty of soft targets in a small concentrated geographic location (Morris, 2015). Gaibulloev, Sandler and Santifort, (2012) argue that terrorist attacks have in general become more centred on soft targets, that is civilians and private enterprises, as opposed to hard targets (e.g. military, government buildings etc.).

The focus on cities for terrorist attacks is well in line with the notion that “terrorists are rational actors who seek maximum pay-offs for their actions” (Savitch & Ardashev, 2001, p. 2527). Similarly, Brandt and Sandler (2010) argue that “Terrorists’ innovations (e.g., the use of fueled airplanes as bombs) and their ability to adopt the successful methods of other groups underscore their rationality and acuity.” (p. 215). Thus, in order to commit successful terrorist attacks, terrorist groups become smarter and change their attacks in relation to counter-terrorism efforts.

Urban areas are symbols for military, financial and political power, which make these places suitable targets for terrorist attacks (Savitch & Ardashev, 2001). Savitch (2005) argues that these places “hold some importance – either as population centres, transport corridors or junctures, hubs for business, finance, politics, religion, media or as places of strategic or symbolic value.” (p. 362). Moreover, Savitch (2005) posits that public transport lines, retail outlets, restaurants and hotels are typical terrorist targets. Similarly, Santifort, Sandler and Brandt (2012) state that public places in general are targeted by terrorists while Coaffee (2009) highlights the fact that financial districts have become more common as targets of terrorism since the 1990s when for instance Madrid and Paris were struck by terror attacks.

Importantly, not all regions, cities, and neighbourhoods are experiencing the same risk levels for terrorist attacks. For instance, research has shown that even in a heavily terror afflicted country as Israel, 60 percent of the administrative areas did not suffer from any terrorist attacks 1949-2004 (Berrebi & Lakdawalla, 2007). Moreover, US counties characterised by high residential instability, high proportion of urban residents, and population heterogeneity have been found to be at higher risk of having experienced a terrorist attack (LaFree & Bersani, 2014). Notably, LaFree & Bersani (2014) found that concentrated disadvantage (e.g. high rates of unemployment, homelessness, people receiving public assistance, or a large share of persons holding low-wage jobs) was associated with lower risk for a county to have suffered from a terrorist attack (ibid.).

Savitch (2005) states that terrorist attacks usually are concentrated to a certain place in the city. Also in line with previous criminological research, qualitative data analyses by RAND (2013) revealed that some places were repeatedly targeted by terrorists. For example, the early 1990s IRA terror attacks in London took place within a square mile of the city, where the symbolic and political power is well manifested (Coaffee, 2009). Despite the small geographic area affected, the attacks resulted in heavy security
measures because they hit the very core of UKs economic and political activities. On a larger scale, the IRA bombings of London in the early 1990s show that the prime targets for terrorists are vulnerable locations of their perceived enemy’s, and not necessarily the geographic home area of the group (e.g. Northern Ireland). Savitch and Ardashev (2001) state that London was a suitable target for IRA because it is the symbol of imperial Britain. Moreover, many terrorist organisations have changed the procedure of their attacks. LaFree, Dugan, Xie and Singh (2012) found that ETA changed their tactics in the late 1970s by targeting more distant areas (e.g. Madrid) in order to affect the Spanish government. Similarly, Savitch and Ardashev (2001) conclude that “Algerian terrorists make their case in Paris. Irish Republican terrorists pronounce their wishes in London.” (p. 2529).

Finally, Clarke and Newman (2006) offer an acronym that can be useful for understanding which places that are at risk for being attacked by terrorists: EVIL DONE. The vulnerabilities of EVIL DONE are:

- Exposed. Visible targets are easier to access.
- Vital. Places with important functions (e.g. infrastructure) for society.
- Iconic. Symbols for what the terrorists wish to fight (e.g. capitalism).
- Legitimate. Targets that can be justified (e.g. military, police).
- Destructible. The target must suffer greatly from the attack.
- Occupied. Densely populated areas.
- Near. Terrorists do not want to travel far for committing their acts.
- Easy. Poor security precautions increase suitability as targets.

Although some of these points may not be equally important and accurate for all attacks (Clarke & Newman, 2006), they illustrate factors of places that need to be considered in order to improve urban security.

6.2.2. Variations in terrorist attacks: vulnerable people

Another approach to the study of terrorist attacks is to consider factors related to those who become victims of terrorist attacks. As was mentioned earlier, terrorist attacks are often directed at entire populations but some patterns can be found among the victims of terrorism.

Canetti-Nisim, Mesch and Pedahzur (2006) examined the characteristics of victims of terrorist attacks in Israel and found that young people and women are at higher risk of becoming victims of suicide terrorist attacks. This is likely explained by these groups’ dependency on public transportation, and, in the case of women, their frequent visits to markets for household activities. These public locations, as discussed earlier, are high risk areas for terrorist attacks.

Tourists are sometimes targeted by terrorists, which is explained by Sönmez (1998);

The reason is simple and obvious and has been demonstrated by numerous incidents: when nationals of other countries become involved, news coverage is guaranteed. This way, terrorists know they will secure media attention while curtailing their government’s ability to censor news content. When tourists are kidnapped or killed, the situation is instantaneously dramatized by the media,
which also helps the political conflict between terrorists and the establishment reach a global scale. (p. 425).

Moreover, Sönmez (1998) states that tourists may be rather effective targets in terms of the gain in relation to the cost of the attack. Rather limited attacks may gain much publicity and cause widespread fear. Similarly, Savitch (2005) argues that tourists are at elevated risk of terrorists’ tactic to quickly carry out the attacks in urban areas in order to create fear among the population:

Populations and activities most vulnerable to this tactic may be tourists, seeking unusual sites, or business people attending conventions. [...] The tourist city holds a number of attractions for terrorists including busy airports, crowded restaurants, packed convention halls and unsuspecting hotel guests. (p. 363).

Thus, places that terrorists attack are often also places where many tourist activities are carried out.

6.3. Risk assessments of terrorist attacks

RAND (2005) discusses the importance of making adequate risk assessments of terrorist attacks in US cities. If it is possible to evaluate cities’ risk of becoming targets of terrorist attacks, it is also possible to both proactively and reactively act on these risk evaluations for making the effects of an attack as small as possible. However, as with most risk assessments, it is difficult to predict risks of terrorist attacks.

RAND (2005) argues that the concept of terrorism risk consists of three components, threat, vulnerability, and consequences. First, when a threat is present, this should be measured in terms of “The probability that a specific target is attacked in a specific way during a specified time period” (RAND 2005, p. 6). A threat is thus dependent on its context and what kinds of threats that are present (i.e. terrorist attacks are carried out in many different ways). Second, vulnerability refers to the notion that potential targets of terrorist attacks vary in their vulnerability (i.e. some potential targets may be equally at risk for terrorist attacks but they may differ in how much damage an attack may cause). Third, consequences refer to the damages and their severity (e.g. casualties and fatalities) caused by a successful terrorist attack. In sum, RAND (2005) states, “[...] terrorism risk represents the expected consequences of attacks taking into account the likelihood that attacks occur and that they are successful if attempted.” (p. 10). For City.Risks, the vulnerability of different targets and the consequences of an attack are the areas of main concern when it comes to prevention (see next section).

Piegorsch, Cutter and Hardisty (2007) examined each US urban centre’s risk for terror attacks, using a vulnerability index of urban areas. Still, this only showed which US city centres that are at risk for becoming targeted by terrorists. This may be useful for allocation of counter-terrorism resources, but analyses on a city level do not provide much help for risk assessments within cities. A somewhat more specific approach offers risk analyses of critical infrastructures by screenings that show which places that need most protection (Apostalakis & Lemon, 2005). From a City.Risks perspective, this somewhat proactive approach may be relevant because infrastructure locations at highest risk may be relevant to consider in the case of a terror attack. In other words,
the mere fact that infrastructures within cities vary in their assessed degree of risk, shows the importance of assisting and guiding people using the infrastructure while under attack. Similarly, Clarke and Newman (2006) demonstrate that the eight EVIL DONE features can be applied to rate the relative risk among a city’s potential targets. This in turn could be aggregated into a total risk score (ibid.). If these assessments are correct, lives can be saved through assistance and advice to people during an attack. Still, Clarke and Newman (2006) argue that different kinds of attacks need different risk assessments and thus the situation may seem more complex than anticipated.

6.4. Prevention

Gaibulloev, Sandler and Santifort (2012) argue that as terrorist attacks are not very common, the enumerable amounts of money spent on anti-terrorism efforts are very ineffective in terms of saving lives compared to other societal issues (e.g. diseases). However, people are still willing to put a lot of effort for avoiding terrorist attacks because the consequences outweigh the low likelihood of the occurrence (Sunstein, 2003).

As was mentioned previously, attempts to affect radicalisation processes, and other offender motivation issues, are not in focus within City.Risks. Based on the fact that terrorists have purposes with their actions, LaFree and Dugan (2004) state that one of the differences between crimes in general and terrorist attacks is that terrorists do not try to hide their criminal actions. Consequently, in difference from other crimes, terrorist attacks are difficult to fight with traditional crime prevention methods because terrorists perceive the criminal justice system as a part of the state that they fight. The main concern in terrorist attack prevention for City.Risks is to deal with these from a situational perspective, which is not concerned with the motivations of the terrorists.

6.4.1. A situational perspective on terrorist attacks

A situational perspective on terrorist attacks may seem rather straightforward because “It does not try to do the impossible – to uncover the root causes of crime – but rather seeks to remove the opportunities for offending and to mitigate the effects of the crime if it is not prevented.” (Clarke & Newman, 2006, p. 187). Opportunities for terrorist attacks need to be targeted by preventive efforts because not all terrorists can be removed; there will always be people who are ready to commit acts of terrorism (ibid.).

Clarke and Newman (2006) argue that in order to prevent or mitigate the consequences of terrorist attacks, one most analyse the environment in terms of vulnerabilities and opportunities in much the same way as terrorists themselves do. Situational prevention encompasses the opportunity structure and aims at changing it in order to make crime “more risky, more difficult, less rewarding, and less excusable.” (ibid.).
As City.Risks is centred on the practical issues of mitigation and avoidance of security threats, the RAND (2005) presentation of how each of the three previously presented risk elements (threat, vulnerability and consequences) can be targeted for interventions is rather instructive:

Intelligence and active defense involving “taking the fight to the enemy” represent an approach to risk management that focuses specifically on threats. Managing risk through vulnerability requires increasing surveillance and detection, hardening targets, or other capabilities that might reduce the success of attempted attacks. Finally, risk can be managed through consequences by increasing preparedness and response that reduces the effects of damage through mitigation or compensation. (p. 11, italics added)

City.Risks is inarguably directed at reducing vulnerability and minimise the consequences of an attack. While threats are difficult to be fully aware of, vulnerability has fewer uncertainties attached to it because it might be related to an actual location, such as a city, which may be assessed in terms of its vulnerability (RAND, 2005). Similarly, consequences can also be rather correctly estimated because of existing knowledge on for instance weather conditions in relation to a chemical attack (RAND, 2005).

Finally, Newman and Clarke (2008) argue that responses and actions during and after a terrorist attack need not to be ad hoc as this may actually increase the negative impact of the terrorist attack (e.g. arresting innocent people who are thought to be suspicious, shutting down important infrastructure etc.). The response must be proportional in relation to the threat.

6.4.2. A focus on mitigation

Clarke and Newman (2006) identify characteristics that make places vulnerable for terrorist attacks (i.e. EVIL DONE). Targets are not chosen on a random basis, and thus it is possible to identify vulnerabilities that make some places more likely to host terror attacks than others. Infrastructure is a prime target for terrorists and especially attacks against public transports have resulted in mass casualties and fatalities. London and Madrid are two relatively recent venues for this kind of terrorist attack, but safety issues regarding public transport need to be addressed in any urban area. Adequate information and assistance can potentially result in mitigation of consequences by placing more people in safe locations. Clarke and Newman (2006) argue that the infrastructure itself often only suffers from minor disruptions due to its widespread function (i.e. only parts of an infrastructure are usually destroyed). Still, the human disaster cannot be overlooked and any person that can be saved from harm justifies any effort that assists residents or visitors.

Preparedness for terrorist attacks may be important because the consequences of an attack can be minimised if people are assisted. Thus, a focus on urban terrorism is, for City.Risks, a focus on the preparedness to deal with an attack. Further, efforts for completely hindering an attack from occurring is a task for other agencies, such as the law enforcement and the military, but also for those in charge of the built environment because building design may mitigate the consequences of an attack (Little, 2007).
Information to citizens has also been proposed as important when it comes to prevention of terrorist attacks because then people can increase their awareness towards suspicious activities (Brandt & Sandler, 2010). Moreover, Newman and Clarke (2008) suggest that when a terrorist attack occurs, information collecting and spreading are crucial for both the public and those officials working to mitigate the harm of the attack. Since terrorists also seek media attention in order to create mass panic (Savitch, 2005), the information spreading needs to be accurate and not helping the terrorists in their struggle for getting headlines and creating fear.

Finally, the justification for preventing terrorist attacks, despite the many difficulties related to it, is well summarised by the Government Offices of Sweden (2014/15:146) in their recent publication of the national strategy for fighting terrorism: “We cannot protect ourselves from everything but we shall do all we can for our protection” (freely translated, p. 3). This is in line with other countries’ prevention efforts as well. For instance, the US aftermath of 9/11 has rendered much more focus on the preparedness and reactions to terrorist attacks (Newman & Clarke, 2008).

6.4.3. Governments’ role in terrorism prevention: The Swedish example

The threat of terrorist attacks has caused many countries to develop national plans for terrorism prevention. City.Risks may benefit from these plans because they show how initiatives against terrorism are described by policy makers.

The Government Offices of Sweden (2014/15:146) define terrorism prevention as a threefold task: 1) early social prevention initiatives (prevent individuals from possessing terrorist motivations), 2) prevention of terrorist attacks to occur (e.g. make funding of terrorism more difficult), and 3) increased protection in the society to make people feel safe and less vulnerable when an attack occurs. The Swedish example highlights the need to balance preventive efforts between reducing motivations and dealing with already motivated offenders. City.Risks is mainly concerned with the third of the Swedish prevention strategies: make the society less vulnerable for terrorist attacks. This includes an increased awareness of terrorists’ shift to soft targets for their attacks and specifically attacks in public places. Public transports, cultural venues, shopping malls, and sport and cultural events are suggested as in certain need for protection, (Government Offices of Sweden, 2014/15:146).

Importantly, the Swedish terrorism policy also contains a special note related to how the nation should respond to terrorist attacks (Government Offices of Sweden, 2014/15:146). This work includes both quick and efficient responses from the authorities (e.g. police, rescue services, military support) to physically stop the attack, but also to limit the damages associated with it. The latter is highly relevant for City.Risks as it aims at assisting people during terrorist attacks.

Moreover, the Swedish terrorism policy acknowledges the conclusions from the investigation after the terrorist attacks in Norway on July 22nd 2011. A main inference from the investigation was that early warnings and information processing are important for successful cooperation during an attack. The Swedish Government therefore proposes an improved communication system, including the use of mobile devices for better reaching the public. Furthermore, the Government states that it
City.Risks intends to develop a mobile phone based system for alerting the public when serious incidents and crises occur. The Government Offices of Sweden (2014/15:146) also state that communication between authorities, the public, and media may be important for how a crisis situation develops. Better communication can create better confidence, minimise disinformation, inform of government decisions, and assist those affected by a crisis. These efforts are important not only for the actual terrorist threat but for the fear and worry that can be created in relation to an attack. Thus, the City.Risks idea of improved communication seems highly relevant in terms of how a government defines the solutions for dealing with the threat of terrorism.

6.5. Implications for City.Risks

Terrorist attacks are rare, but render severe consequences for many people when they occur. City.Risks cannot develop tools or actions that can predict terrorist attacks as this work is highly centred on the work by intelligence services and other governmental organisations.

It seems relevant to conclude that people vulnerable for terrorist attacks are those who visit vulnerable places. Consequently, frequent visitors to inner-city areas and people residing in city centres may be certain groups at risk for terrorist attacks. Still, as terrorist attacks are difficult to predict and prevent, City.Risks should not focus on these tasks in the development of the project. The high concentration of people in inner-city areas is attractive for terrorists but the task of dealing with terrorism in these areas is a matter of preventive work by governments and local authorities. City.Risks may however be helpful in the communication among its users when a terrorist attack has occurred or any other large scale criminal event.

In essence City.Risks should be a tool for increased safety in relation to common crimes and other factors that make people feel less safe in their urban lives and focus less on rare (but severe) crimes such as terrorism.
7. Limitations and ethical considerations

From a City.Risks perspective, there are several limitations and ethical issues related to the study of urban crime. Some of these issues are presented here along with potential measures that can be taken in order to minimise their impact.

7.1. Limitations

Some limitations have been discussed in the previous sections, but a few major limitations need to be briefly mentioned again because they may affect the project’s success.

Advice for precautions and increased awareness of risk for victimisation may be vital contributions for reducing the risk for victimisation. However, offenders’ motivations for committing crime are not targeted by the project, which may result in an unchanged amount of potential offenders. Nevertheless, following the logic of situational prevention, reduced opportunities should result in less crime, regardless of offenders’ motivations. Neglect of offenders’ motivations may thus be a limitation that can be argued to be less important by taking a situational prevention perspective.

An area of certain interest for the geography of crime regards the potential displacement effects that may occur from crime prevention efforts that target geographic areas. Although City.Risks does not aim at modifying the environment, it may affect the movement of people in urban areas, thus potentially changing the opportunity structure for crime. This limitation is largely a matter that can be resolved by a dynamic approach to urban crime by continuously updating the risk predictions through collection and analyses of fresh data.

A common issue when evaluating crime prevention initiatives is the difficulty of isolating the effects of the prevention effort from other phenomena that may affect crime and fear of crime. Therefore, it is important to not assume that an intervention against crime and fear of crime is the only factor that affects the outcome.

Another limitation regards the fact that only risk can be predicted, not actual events. This is important to highlight throughout this project as well as to the people who will use the end products. Inevitably, some risk predictions in the project will not be accurate. For instance, some people may be victimised at places and at times where a low risk is predicted. Consequently, there is great need for taking a modest position and not claim that people actually are safe or unsafe, only that the risk is high or low. This is likely of high importance for liability issues as well.

Finally, another limitation is the project’s lack of collaboration with local law enforcement agencies. Initiatives against crime are often dependent on collaboration with local authorities, such as the law enforcement. City.Risks likely needs to develop some kind of collaboration with local police forces. Collaboration with local police forces can also be useful for accessing crime data that would otherwise be difficult to obtain.
7.2. Ethical issues

There are several ethical issues related to the project and these are outlined in this section. Some of these issues can be resolved, at least to some degree, which is the topic of the next section.

As was mentioned earlier, the unit of analysis is important to consider in studies of urban crime. If too large units are selected, there is a risk of labelling fairly large areas (e.g. neighbourhoods) as high-risk communities. This may result in increased level of fear in those areas, both for residents and visitors. Moreover, people may avoid visiting these areas, potentially decreasing the level of informal social control, which may in turn result in higher crime levels. Also, this may result in increased polarisation between different geographical areas.

City.Risks may help people to calculate risks for victimisation, which is likely most important for people visiting cities or urban areas that they are not familiar with. Obviously, it is more ethical to guide tourists who are not familiar with their environments than to provide risk assessments to residents in a city, with the potential issue of people realising that they are living in a high-risk area. It would probably be rather disturbing to suddenly be told that your neighbourhood is a high risk area.

Another issue concerns the economic aspects of tourism. For many cities, tourism is an important source for income. Thus, cities may not be contented with the notion of even discussing crime and terrorist attacks in their urban areas as they would not like to be perceived as risky tourist destinations.

A possible ethical dilemma for City.Risks is the potential misuse by the users of the mobile application. The offences included in the application should not include information such as where drug traffic or prostitution is located within an urban area because this information may be used by people who seek drugs and prostitution for their own illegal purposes. This is especially relevant for tourists because they may at times seek illegal and morally questionable activities (Brunt, Mawby & Hambly, 2000). A similar ethical consideration concerns the misuse of the app by for example family members that seek to control their family members, such as their spouses.

Although speculative, another aspect regarding the misuse of the City.Risks platform is the fact that tourists are the targets of some terrorist attacks. Thus, a platform guiding tourists may be used for malicious purposes by terrorists, such as mapping tourist activities and movement within a city in order to cause as many casualties as possible when carrying out a terrorist attack.

It is also relevant to mention that a mobile phone is itself an object that is desirable for thefts and robberies. Therefore it may be problematic for individuals to rely on their mobile phone for their security. Similarly, if a mobile phone is stolen, how can other users’ information within a trusted network be kept safe from people who can make use of knowing where these people are? This is a matter of ensuring the users’ privacy which of course is a central aspect of the project.

An important aspect of City.Risks is the focus on individuals as agents that can affect their own victimisation risk through guidance. Although this may seem rather unproblematic, it must be stated that this may be interpreted as if individuals have
the responsibility for their own safety. There is a risk for “victim blaming” in which victims have to “suit themselves” for becoming victims of criminal acts. A person visiting an unsafe area may by this logic be described as a risk taker who should act differently. However, Pease (1998) argues that the focus on victims, despite their blameworthiness or criminal record, should not remove the focus from victimisation as a negative outcome for anyone. Regarding the fact that many victims are also offenders, Pease (1998) posits that “This is not a reason to blame the victim and walk away. It is with the people identified that the problem of violence resides, and it is in action with and around them that it must be addressed” (p. 16). Moreover, Pease (1998) argues for victims’ right to information:

Protection of victims in their lives as they choose to live them should be offered, but there seems to be no reason in principle why the factors believed to make them vulnerable should not be mentioned, so long as this is separated from any offer of help. Victims may choose to change, and have the right to the information on which that choice may be based. Help should not be contingent on that choice. (p. 22).

The victim blaming argument can thus be reversed into “victim empowering”.

7.2.1. A special note on fear and ethics

Fear of crime is a highly subjective phenomenon and the project’s aim to connect people in networks where they provide each other with safety information could be somewhat problematic. Some individuals may warn others based on their perceived security threats, but these may not be actual threats, which may create fear that would not exist otherwise. In other words, it may be difficult to rely on subjective data for improving the subjective (perceived) level of safety. Also, more awareness of security issues, for instance through the end user products, makes people more focused on crime problems which of course may result in a disproportional focus on crime in relation to the actual risk for victimisation (Farrall, Jackson & Gray, 2009).

Moreover, if the public becomes more worried of crime risks, despite if this worry is based on media or other sources, it often reacts by demanding more influence for the criminal justice system, such as harsher sentences and more police presence (Farrall, Jackson & Gray, 2009). Consequently, policy makers aiming for more repressive criminal policies may capitalise on fear of crime for gaining public support. This is applicable for any effort to reduce fear because by addressing the fear of crime problem, many people will demand actions against crime.

7.3. Implications for City.Risks

This section provides suggestions of how the project may proceed from the limitations and the ethical issues.
7.3.1. Neglect of offenders’ motivation

As proposed, City.Risks should benefit from arguing that reduced opportunities should reduce crime regardless of offenders’ motivations. This is a matter of how the project’s potential success is communicated in relation to criminological perspectives on crime and fear of crime reduction.

7.3.2. Labelling areas as high risk places/stigmatisation issues

It could be more ethically appropriate to alert people of risky places when they are characterised by an unusual intensive crime wave compared to periods when the crime rates are relatively low. For instance, outbreaks of gang violence during a limited amount of time may be important to warn residents and visitors for. Consequently, this demands high flexibility in the data underlying these warnings as it needs to be up to date for providing crime patterns for short time periods (e.g. days, weeks). Also, City.Risks should mainly be concerned with advising people who visit unfamiliar areas/cities, as this more clearly justifies the provision of information and advice.

City.Risks should not provide advice or information that portrays an area as dangerous. The risk for stigmatisation of such areas is high and as most European cities do not have extreme crime levels, there should not be too much focus on pinpointing areas as high risk areas (no areas are actually very risky to visit). In fact, deliverable 2.2 in City.Risks revealed that most people in the pilot sites have not been victimised of crime during the year prior to the study. Moreover, any sensitive data on area level will not be directly shared with the users of the City.Risks end user products. The operation centre should be responsible for the data analyses and focus on how the data can be used in order to provide balanced and accurate information to the end users. This should be perceived as a work much different from the common over exaggerating crime information provided by the media and other sources that capitalise on people’s fear of crime. City.Risks thus has a role to fulfil in today’s society, namely to provide the citizens with tools and information that make people feel less fearful. Finally, this work inevitably includes the potential positive de-stigmatisation of areas that are today described as unsafe by the media. The fact that some urban areas are already avoided by urban citizens was evident in deliverable 2.2 and thus area stigmatisation and the avoidance of certain areas is today common among urban residents.

In sum, City.Risks needs to be careful in how sensitive data on an area level are used but also acknowledge the possibility to help already stigmatised areas becoming less stigmatised through the provision of balanced and accurate analyses of the current situation. The pilot trials should examine how the users perceive the geographical areas included in the study in relation to stigmatisation and de-stigmatisation.

7.3.3. Crime displacement

Although crime displacement is not an inevitable aspect of situational crime prevention, it is important to investigate potential displacement effects when
evaluating the pilot studies. Crime reduction may not necessarily be the main effect of City.Risks but if it is to be examined, it is necessary to find out if, for instance, some areas experience differences in their crime rates after the implementation of the end user products.

7.3.4. Risk prediction

It is important to make sure that City.Risks may only calculate and alert people of potential risks, not actual events. The only exception is the aim of assisting people in the case of terrorist incident in which City.Risks may work as a tool for guiding people to safe locations. Thus, the users must be aware of the fact that risk assessments are only about risk calculations, and that the project’s tools cannot be held liable for miscalculations such as incorrectly suggested safe routes.

7.3.5. Tourism and crime:

City.Risks should provide information to tourists without labelling cities as dangerous. Perhaps this is mainly related to terrorist attacks and it must not be forgotten that these are very rare and unpredictable incidents that, in terms of relevance, should not be the main concern for visitors in any EU city. Moreover, tourism is an important income source for many cities, which demands a balanced view on crime that cities can make use of without frightening those visiting the city.

7.3.6. Misuse of the City.Risks tools

Areas that provide criminal opportunities should be announced with caution. Although tourists and others may easily retrieve this information from other sources, City.Risks should eliminate the potential misuse of the end user products in order to work as a reliable tool for improving urban security. Similarly, people that are victimised or socially controlled by their partners or family members may suffer from using the mobile application. Hence, all misuses must be discussed prior to the mobile app’s implementation in order to be prepared and take action if misuse occurs.

7.3.7. Privacy issues

Although this report is not focused on privacy in relation to ICT-solutions, it should briefly be mentioned that mobile phones are common theft objects. It is thus important to have a system that make users able to disable the City.Risks app in order to keep their secure networks private.

7.3.8. Victim blaming

City.Risks must adopt an approach to urban security threats that does not accuse people of acting unsafe. Many people visit areas and places that they know are less
safe than other areas in a city. This includes bar districts and nightclub areas, which, for instance, are important tourist venues. People are deliberately putting themselves at risk and perhaps the use of the mobile application should be customised according to what kinds of safety issues that one is interested of, because many people are willingly taking risks. The project may benefit from actively arguing for individuals’ right to information of security risks in order to not be accused of being a project blaming people for their victimisations.

7.3.9. Fear of crime

The highly subjective matter of fear of crime is dependent on crime information. City.Risks must provide accurate information in order to not frighten its users. The aim must be to provide a more correct picture of crime risks than other sources (mainly media). Information of crime reported by the app users should also be considered with caution. Perhaps users’ perceptions of crime should be centred on collecting information from many users simultaneously in order to not make single individuals’ crime perceptions result in unnecessary fear of crime among the app users.

Moreover, the project should be cautious in the portrayal of the crime problem. The fear of crime issue should not result in users’ calling for repressive actions from the law enforcement but use the project as a platform for soft efforts for fear reduction. If not, there is risk for people interpreting the project as a means for harsher policies. The City.Risks project should thus be explicit about its role in reducing fear, as a means for assisting people in their daily lives to experience less fear.
8. Conclusion and recommendations

This section initially summarises the highlights of this report before providing a list of recommendations that can be useful to consider during the progress of the project.

8.1. Conclusion

This review of the criminological research regarding urban security threats provides a foundation for the development of methods to improve urban security. The main focus has been on the distribution of personal crime among strangers in public environments. Risk factors for victimisation are both related to specific places and certain groups of people. For example, locations with a high density of people (e.g. the inner-city and public transport stops), weak cohesion among residents, and high frequency of alcohol outlets (or taverns, restaurants), are characterised by an increased risk of crime. People at high risk for being subjected to crime are, young, single, male, and/or have low socio-economic status. Further, both places and individuals previously victimised are at greater risk for subsequent exposure to repeated victimisation.

Situational crime prevention for reducing crime opportunities is of certain relevance for City.Risks. In order to make accurate risk estimations, it is essential to analyse and identify the underlying processes of the problem. This includes thorough data analyses for understanding the complexity of the crime problem within the local context. Furthermore, the preventive efforts should be crime-specific because different offences require different preventive efforts.

Fear of crime is a phenomenon distinct from crime itself and encompasses several different subjective aspects of crime. The research on fear of crime suggests, for instance, that people, especially after dark, become fearful because of physical features of the environment, such as shrubs, and poor lighting. Fear may also be influenced by individual characteristics which can be exemplified by the common finding that fear of crime is more prevalent among women and in specific age groups.

The research on terrorist attacks reveals that these offences are different from ordinary crime. They rarely occur and are therefore difficult to predict. However, the consequences of terrorist attacks, as well as other rare but serious urban security threats, may be successfully mitigated through information and assistance to affected people.

Several ethical issues with City.Risks need to be addressed. For instance, urging people to avoid certain routes or sites is not necessarily a preventive approach. Areas may become increasingly affected by crime due to the absence of people carrying out legitimate activities at these locations. Moreover, defining areas as criminogenic might generate fear and feelings of insecurity among people operating in these areas on a daily basis. Another ethical dilemma for the City.Risks project is that it is built upon risk assessments of crime, meaning that it is the risk of crime, and not actual crime events that are in focus. Therefore, the users of the project’s technical solutions should be informed about the uncertainties when assessing crime risks.
Finally, throughout this deliverable, several risk factors and important aspects of urban crime and fear of crime have been suggested as important for the upcoming work in City.Risks. However, it is unlikely (if not impossible) for the project to target all of these factors. Nonetheless, a thorough and comprehensive design of the pilot trials may reveal when, where and how the project’s solutions may be specifically relevant and successful. For instance, little is known about the actual use of information-sharing for reducing crime and fear of crime and the project’s pilot trials may provide insights of how this could work. Thus City.Risks may contribute to a better understanding of crime and fear of crime reduction possibilities in urban communities.

8.2. Recommendations

In the previous chapters, implications have been presented in order to highlight the relevance of criminological research for City.Risks. A simplified summary of these implications is presented below. However, it is important to consult each chapter in this report for fully understanding the usefulness of the recommendations in this section.

8.2.1. Risk factors

When discussing risk factors, it is of great importance to emphasise that risk factors cannot be defined as causes of certain outcomes. Instead, risk factors are phenomena that enhance the risk of a certain outcome. It is essential to consider risk factors at contextual, individual, and temporal levels:

**Contextual factors**
- High density of people
- Weak collective efficacy
- Low socio-economic status
- High prevalence of alcohol outlets
- Proximity to public transports
- Crime-ridden areas

**Individual factors**
- Being male
- Under the age of 25
- Low socio-economic status
- Single
- Previously victimised

**Temporal factors**
- Rush hours during weekdays and evenings or late night at weekends in conjunction with the nightlife
8.2.2. Practical use of risk factors

It is important to find out what we can and cannot do with the available information on crime in urban areas. The practical use of criminological knowledge in City.Risks should benefit from considering the following recommendations:

- Select a geographical unit of analysis that is as small as possible in relation to available data.
- Local knowledge is crucial for conducting proper analyses and to make accurate risk estimations.
- Conduct separate analyses for different crime types.
- Use existing data from the local police force. Crime predicts crime, thus crime statistics should continuously be adopted from the police authorities in order to make accurate risk assessments.
- Evaluate the accuracy of the risk assessments.
- There is a risk that hot spots will be too large resulting in large areas being defined as hot spots. This is problematic as it is difficult to make any practical use of these large hot spots.
- Risk predictions need to be properly evaluated in order to know if these are accurate.

8.2.3. Prevention

There is a situational approach within the project and this will likely be the backbone for understanding if and how the proposed efforts may contribute to reduced risk for victimisation among the app users. Recommendations when implementing the project’s preventive efforts can be summarised in four main points:

- Focus on people’s reduction in their suitability as targets.
- Target previously victimised people.
- Areas where many intoxicated people converge should be avoided if people are seeking a trouble-free route to their place of residence after spending the night out.
- Preparedness of serious crime incidents may be important for mitigating the consequences of these incidents.

8.2.4. Fear of crime

When working with fear reduction, it is important to remember that many other aspects than crime itself affect fear. For City.Risks, some points are worth highlighting:

- Most people are more fearful in unfamiliar environments and may thus benefit from information of safety when visiting unfamiliar areas. The end product could therefore provide information that makes people aware of the crime situation when visiting new areas.
- It is vital to carry out pre and post intervention measurements of fear of crime in order to assess the potential fear reducing effects of the project.
• Connecting people in networks may result in better knowledge of their neighbourhoods. City.Risks may thus work as glue that makes people stick together in order to create safe neighbourhoods.

8.2.5. Ethical considerations

There are several ethical issues related to the project. Some of these issues can be resolved, at least to some degree. This summary provides suggestions of how the project may proceed from the limitations and ethical issues.

• It might be more ethically justifiable to only alert people of risky places when they are characterised by an unusual intensive crime wave. City.Risks should mainly be concerned with advising people who visit unfamiliar areas/cities, as this more clearly justifies the provision of information.
• The users of the mobile application must be aware of the fact that risk assessments are only about risk calculations, and that the project’s tools cannot be held liable for miscalculations such as incorrectly suggested safe routes.
• City.Risks should provide information about crime without labelling cities or areas as dangerous.
• The highly subjective matter of fear of crime is dependent on crime information. Therefore, the aim of City.Risks must be to provide a more accurate picture of crime risks than other sources (mainly media).
Bibliography


Armborst, A. (2013a). D1.4: Literature review on key topics of urban security. BESECURE.


RAND (2013). Predicting suicide attacks: integrating spatial, temporal, and social features of terrorist attack targets. Santa Monica: RAND Corporation


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