Perceptual Geographies of Crime:

*Exploring university students' spatial responses towards the threat of crime
in Kitchener-Waterloo, Ontario*

by
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AUTHOR'S DECLARATION

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.

I understand that my thesis may be made electronically available to the public.

ABSTRACT

INTRODUCTION: The Waterloo Regional Police Service has identified the post-secondary students in their jurisdiction to be at greater risk to certain crimes than other residents. This study describes how students perceive crime in the cities of Kitchener-Waterloo and gauges gauge their level of crime awareness.

OBJECTIVE: The research investigates how crime in the cities of Kitchener-Waterloo, Ontario is perceived by local postsecondary students.

METHODS: A survey was conducted with 51 volunteers. Data was collected using a standardized questionnaire and a semi-structured interview. The interview involved a cognitive mapping exercise, allowing respondents to both orally and visually describe how their perceptions vary across the city. Multiple annotated maps were produced of the study area, thematically summarizing student perceptions of violent and non-violent crime, as well as social and physical disorder. These boundaries were also compared by overlay to police response data of five crime types to evaluate how perceptions aligned with police-recorded indicators.

RESULTS: Students feel safe in Kitchener-Waterloo, even though they associate certain areas with higher risks of crime. The presence of disorder corresponded to many perceptions of crime. Students faced particularly strong barriers to trust in the presence of homeless and mentally ill. As well, students understand where crime occurs in the study area but their perceptions may not be attuned to their own risks.

CONCLUSION: Students tend to perceive the threat of crime where disorder is most visible, which is away from campus and places of residence. As such, they may not be informed of the risks that the police have identified. These findings emphasize that perceptions of crime in a city are not aligned to individual risks but can illuminate stigmas that divide communities within cities. An understanding of how crime is perceived can be used by police services and municipalities like Kitchener and Waterloo to guide policy and educational decisions as they continue strive towards building strong community in safe cities.

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"IT'S LIKE REAL LIFE
DIE HARD! I MEAN,
OH NO, CRIME."

Jake Peralta, Brooklyn 99

INTRODUCTION

Crime is a reality that has the potential to affect anyone. It is good practice to remain aware of risks and take appropriate precautions to stay safe. However, as concern and precautions grow, individuals' quality of life has the potential to be reduced and bonds of trust may be disrupted within and between neighbourhood communities (Lorenc, Clayton, Neary, et al., 2012). In severe circumstances, the resulting concern for safety leads to poorer mental and physical health in individuals (Pearson & Breetzke, 2013), a breakdown of social control (Bannister & Fyfe, 2001), and the fracturing of trust in neighbourhoods (Ross & Jang, 2000). Conversely, a moderate measure of concern towards crime can also promote healthy precautionary behaviours (Jackson & Stafford, 2009) and improve community resilience to fear and crime (Shippee, 2012). Government officials, police and residents together have a shared interest in understanding how perceptions of crime are held in order to promote quality of life and the development of thriving communities.

This research is about crime and how perceptions align to it. It is tangential to the larger body of research of fear of crime and perceived risk of victimization. Fear of crime is traditionally associated with an exclusive emotional response to the threat of crime (e.g. Russo, Roccato & Vieno, 2012; Kanan & Pruitt, 2002), whereas perceived risk is the cognitive assessment of a threat or potential danger posed by crime (Ferraro & LaGrange, 1987). This research considers these measures as centripetal components of perceptions, contributing to an overall level of awareness and reaction to crime.

Perceptions of crime involve judgments, values and emotions to establish a sense of safety – or not (Ferraro & LaGrange, 1987). The resulting interpretations of crime are reflective of the lived experiences of individuals. Certain individuals and groups may feel at greater risk or be aware of specific crimes more than others; similarly some may be more sensitive towards indications of social disorganization as proxies for

criminal activity. The landscape of crime and safety can vary dramatically throughout a city, and not everyone experiences city spaces in the same way. The two variables of location and familiarity are important drivers in defining the spatiality of fear, which in turn provides insight to behaviour, quality of life, and divides of social inequality (Pain, 1997). For the considerations of this research, perceptions of crime are spatially anchored. Variations in knowledge, familiarity and experiences of locations affect how crime is perceived across a study area. Comparing how perceptions align with police-recorded crime can help establish how well-informed individuals are of crime and identify misperceptions. An understanding of how and where students perceive their risks in Kitchener-Waterloo is important as it can inform policing tactics and improve the relevancy of educational programs to help keep students safe.

This research focuses on university students and how they perceive crime in a mid-sized urban region in southwestern Ontario. The study area consists of two, neighbouring cities of Kitchener and Waterloo, which are two major municipalities centrally situated within the regional jurisdiction of the Region of Waterloo. The Region has taken many steps to both study and combat fear of crime among its residents (Maharaj, 2014; Phillips & Piscitelli, 2013; Piscitelli, 2009; Piscitelli, 2011). Though these existing studies show commitment to the study of fear of crime, they focus largely on full-time residents, excluding the sizeable and transient post-secondary student population within the region. With two universities and a college within its borders, community surveys in this area have typically under-represented the local young adult demographic. Local police have identified that post-secondary students are at disproportionate risk for crime (University of Waterloo, 2013), so it is of interest to understand how young adults perceive crime and their safety. The findings of this research will contribute to the knowledge base of how urban crime is perceived in Canada among university-aged adults which can help better inform policies and strategies of police, university officials and other policy-makers to keep students safe and feeling safe.

1.1.   STUDY AREA

The neighbouring cities of Kitchener and Waterloo are in the Region of Waterloo in southern Ontario (Figure 1.1.1). With a third city of Cambridge contiguous to Kitchener from the southeast, these three cities form a census metropolitan area (CMA), indicating high integration between municipalities "as measured by commuting flows derived from previous census place of work data" (Statistics Canada, 2015a). Thus while these cities operate as separate municipalities, they act as one community. Kitchener and Waterloo are particularly close from a social aspect, often referred to together as "Kitchener-Waterloo" or simply "KW". This twin-city relationship is also reflected in the reciprocity of the names of the urban cores, with Waterloo's centre known as "Uptown" and Kitchener's as "Downtown". As such, Kitchener and Waterloo form the boundaries of the study area of the current project

The combined census population of Kitchener-Waterloo in 2016 was 338,208 (Kitchener: 233,222; Waterloo: 104,986), but with two of Canada's top universities and Ontario's fastest growing polytechnic college, there is a large student population that is unaccounted for by the national census. The University of Waterloo is the largest of these post-secondary institutions, with a student population of 37,800, and located less than half a kilometer to the east is the second university, Wilfred Laurier University, with a student body of 18,940 (Universities Canada, 2017). The Region of Waterloo has estimated that 31,030 students are temporary residents, residing close to their institutions, of whom are not included in census data for the region (Region of Waterloo, 2017).
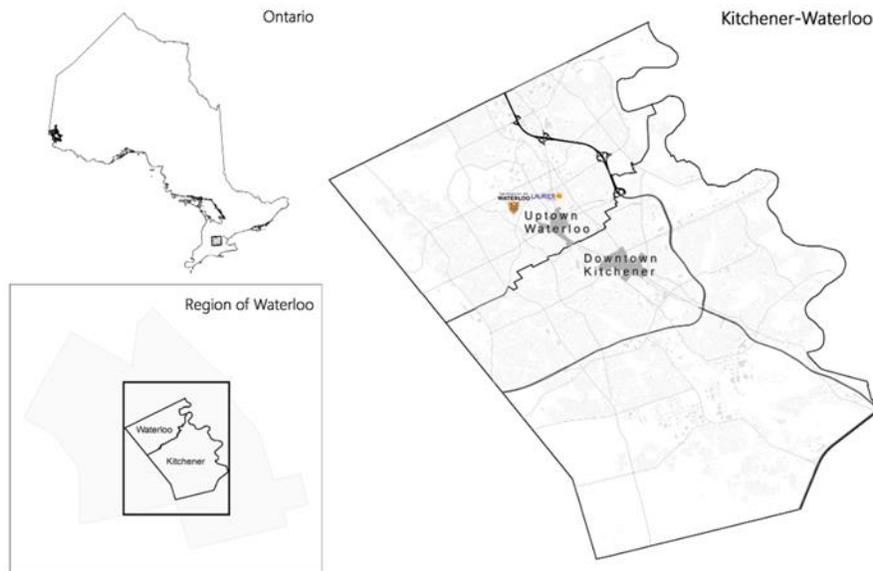
Figure 1.1.1 Municipalities of Kitchener and Waterloo in the Region of Waterloo, Ontario

Crime trends can be understood in the context of crime rates, crime severity and calls for police service. Many of these statistic summaries are reported for the CMA of Kitchener-Waterloo-Cambridge. Over the past decade, the rate of crime in the Region of Waterloo peaked in 2010 and has since been steadily declining. The most recent reported statistics from 2015 revealed an overall increase of 7.4% in criminal code violations from the previous year (Table 1.1.1). Non-violent crimes (i.e. property, drug and traffic-related crimes) predominate over violent crimes, both by volume and by overall percent increase. However, the number of homicides (although extremely low compared to other urban areas) doubled from 2014 to 2015, and robberies also increased substantially. Drug violations of the Federal Controlled Drugs and Substances Act was the only aggregated category in which related violations decreased.

Table 1.1.1 Summary of Selected Offences from the Waterloo Region 2015 Uniform Crime Report (derived from WRPS, 2015)

VIOLATIONS	TOTAL VIOLATIONS *(PER 100,000)*	INCREASE FROM 2014 (%)
Crimes Against The Person	**847.1**	**+2.0**
Homicide	1.0	+100.0
Sexual Violations	79.5	-13.9
Assaults	467.1	+3.0
Robbery	45.0	+27.0
Crimes Against Property	**3487.1**	**+7.5**
Break and Enter	384.9	+11.7
Theft $5,000 or Under	624.5	+5.0
Fraud	310.3	+15.1
Federal Controlled Drugs and Substances Act	**355.5**	**-6.8**
Total Criminal Code Violations (Excluding Traffic)	**5463.0**	**+7.4%**

The severity of crime has also increased in 2015 after over a decade of decline. The Crime Severity Index weights criminal offenses by seriousness (determined by number of convictions and average length of prison sentence) and volume of total incidents (Statistics Canada, 2015b). Overall, crime severity in the Waterloo Region (59.79) is greater than the provincial rating (50.64), but as Figure 1.1.2. indicates, this difference is driven by non-violent crimes.

Violent Crime Severity Index

Non-Violent Crime Severity Index

Kitchener-Waterloo-Cambridge ···□··· Ontario
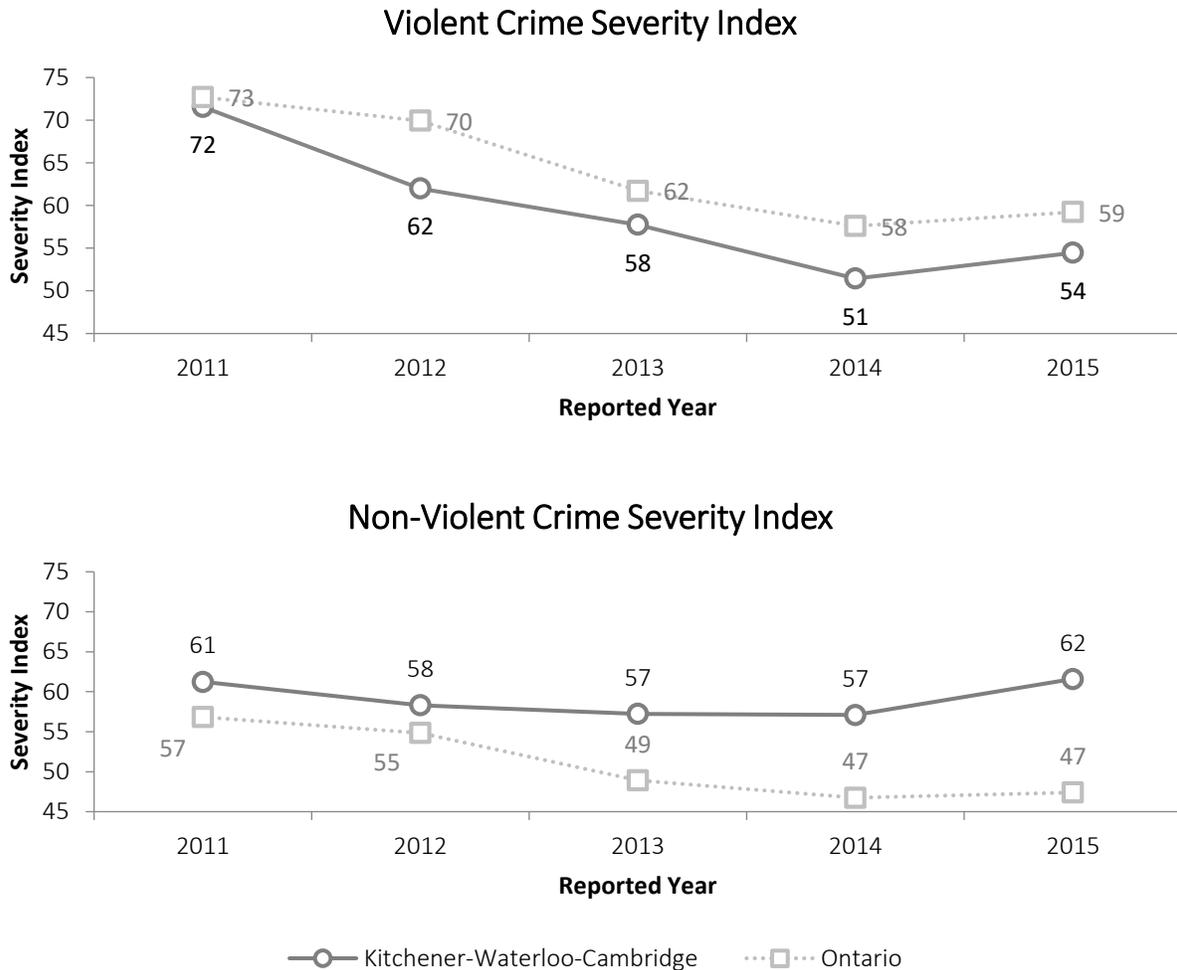
Figure 1.1.2 Crime Severity Index for Violent and Non-Violent Crimes in Kitchener-Waterloo Cambridge versus Ontario from 2011 to 2015 (Statistics Canada, 2015c)

The Waterloo Regional Police Service (WRPS) is the police force for the entire Region of Waterloo, including both cities of Kitchener and Waterloo. On a day-to-day basis, the majority of incidents that WRPS officers respond to are not criminal in nature. Of the top 10 types of calls for service in 2014, only one was in response to a criminal code violation (thefts under $5,000). The more frequent calls for service are related to crime prevention, traffic enforcement and community assistance.

The WRPS has been internationally recognized for its best practices in community policing (WRPS, 2011). In its mission statement, the WRPS states that it is "committed to a leadership role in crime prevention and law enforcement in a community partnership to improve safety and the quality of life for all people" (WRPS, 2017). The police force actively tries to build relationships in the community, including with university students. For instance, both universities have special constable services that help police the schools' properties in partnership with WRPS. As well, the Waterloo Crime Awareness Team (WCAT) is a

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collaborative partnership that brings together local university students and campus and regional police for roundtable discussion to communicate develop crime prevention strategies and solutions.

The resident community itself is active in promoting crime prevention strategies. The Waterloo Region Crime Prevention Council (WRCPC) is an active advisory committee to the regional government, partnering citizens, decision makers and service providers to take action against crime, victimization and fear of crime. It is a member of the Canadian Municipal Network on Crime Prevention (CMNCP), an association of key stakeholders in Canadian municipalities to "prevent and reduce crime and foster community safety and well-being" (CMNCP, 2016). However, the WRCPC is the only member of this network that explicitly identifies the issue of fear of crime as part of its mandate, and in fact has published multiple reports focusing on this issue in the Waterloo Region.

1.2.   RESEARCH GAP AND OBJECTIVES

The main goal of this research is to investigate how crime is perceived by university students in the sister-cities of Waterloo and Kitchener. It is of interest to better understand the repercussions of students' perceptions of crime on their behavior, how such perceptions affect feelings of fear (and thus their mental health), and how police can improve their involvement in protecting students. An understanding of how and where students perceive their risks in Kitchener-Waterloo can inform policing tactics and improve the relevancy of educational programs to help keep students safe. This focus targets two gaps in previous local studies of resident perceptions of crime in the current study area. First, post-secondary students have a significant presence in terms of population size in the Region of Waterloo, but are highly transient and thus represent an age demographic underrepresented in previous local surveys. Second, perceptions in Waterloo Region have not been compared to official crime records. To help fill these gaps, a map-integrated survey was conducted among student volunteers at the University of Waterloo to capture spatial variations of perceptions and anchor interview responses for cross-comparison. The following objectives are used to define the overarching goal and address these gaps:

(1) To explore and identify patterns perceptions of crime in Kitchener-Waterloo among students at the University of Waterloo; and

(2) To compare how students' perceptions of crime align against demands on police resources as a proxy for understanding crime occurrences in the study area.

1.3.   THESIS ORGANIZATION

This thesis has six chapters, structured as following:

(1) **Chapter One** introduces the research topic and study area, outlining the purpose and context to investigate the perceptions of crime in Kitchener-Waterloo;

(2) **Chapter Two** organizes literature on how crime is perceived, how experiences and social situations shape perceptions, and how a spatial perspective frames the interpretative paradigm;

(3) **Chapter Three** describes the methodology for data collection and analysis;

(4) **Chapter Four** summarizes key findings, organized by questionnaire answers, interview themes and a comparison to police data;

(5) **Chapter Five** discusses the findings of the research in context of literature;

(6) **Chapter Six** concludes the thesis with some of the author's reflections.

LITERATURE REVIEW

"Crime is both a factual and perceptual component of the urban landscape, seemingly both a societal pathology and the consequence of economic disparity between social groups."

Alkimim, Clarke & Oliveira, 2013

Perceptions of crime have been studied from many disciplines with many disparate views on how it should be approached and conceptualized. This chapter reviews extant literature to establish a holistic perspective, segmented into three contexts. The first section describes how research has explored the mental and emotional forces that react to the threat of crime, as well as the behavioural reactions incurred. Next, a general framework is illustrated to conceptualize how perceptions are formed (accurately or not) by accumulated experiences of victimization, communication and situational observation. These processes affect individuals and larger social units. Lastly, perceptions reflect understandings of the real world, with spatial variances. Spatial perspectives through cognitive maps reflect the environmental factors that influence perception as well as an overview of cultural attitudes.

2.1. NATURE OF PERCEPTIONS

Reactions to perceived threats encompass emotional, cognitive and behavioural responses. Investigations have traditionally focused most on the emotional effect that the threat of victimization has upon people, that is, "fear of crime". Fear can reduce trust in others, such as police and neighbours, and also

encourage antisocial behaviour, which can contribute to further degradation of social dynamics (Lorenc, Clayton, Neary et al., 2012). The concept term "fear of crime" presupposes this emotional response as fear but recent discussions have criticized this assumption (cf. Innes, 2004; Ditton, Bannister, Gilchrist & Farrall, 1999; Lee, 2009, 36). The true richness of emotion that characterizes a response to crime is poorly captured by traditional surveys (Farrall, Bannister, Ditton & Gilchrist., 1997), lacking in consistency and specificity (Dubow et al., 1979, 1). Studies have shown that fear is not the only (or even the most common) response to the impending threat of victimization. Other emotions are fear, uneasiness, worry, anxiety or even anger (Ditton, et al., 1999; Jackson, 2005; Carvalho & Lewis, 2003). From a psychological perspective, Clark (2003) even asserts that while fear has been the assumed response to crime, this has never been proven and a better term to use is apprehension. There are many factors that characterize the emotional response to crime, including the type of crime being considered (Warr, 1984), the intensity and frequency of feeling (Gray, Jackson & Farrall, 2008), as well as the duration of such episodes (Addington, 2003; Warr, 2000). Over the years, the diversity of measures and interpretations of fear of crime quite evidently indicate that the concept "has suffered from measurement problems" (Ferraro & LaGrange, 1987). Serious discrepancies now exist in numerous conceptualizations and measures of fear of crime, and caution is required when direct comparing study results. Gilchrist, Bannister, Ditton, et al. (1998) suggest that the response to this "challenge is not to develop more precise quantitative instrumentation, but more sensitive qualitative understanding" (pg. 296). Nonetheless, unifying the motive of these emotions in all of their forms is the underlying concern for safety and the researchers' interests in how social insecurities affect the wellbeing of individuals and communities.

One recurrent limitation to research in fear of crime is that it is often looked at in isolation from the rest of individuals' mental and behavioural faculties. Some researchers (e.g. Russo, Roccato & Vieno, 2012; Kanan & Pruitt, 2002) have strongly resisted broadening the conceptual context despite the absence of empirical support to focus on feelings towards crime (Rader, 2004). Yet others understand that fear of crime "refers not just to an emotional reaction to the idea of victimization, but the impacts which the threat of crime has on broader aspects of people's lives" (Pain, Burke, Fuller, et al., 2001, 243-244). The emotive reaction to crime needs to be considered as a reciprocating factor between cognition (which considers subjective valuations of risk), and conation (which reflects individuals' behaviours to react to or to prevent fears or risks) (Rader, 2004). This broader conceptualization supports a more holistic framework of perceptions of crime.

Ferraro and LaGrange (1987) describe risk perception as central to fear of crime, saying "fear is cause and effect to judgment of risk". The interpretation of risk of victimization directs emotional reactions and guides behavioural decisions, and is relevant to understand social processes that involve trust and

community. Within the cognitive facet of perceived crime, individuals process the threat of victimization by evaluating threats and valuing potential targets. Evaluating threats is an individual's process of interpreting signals of crime, disorder and control for potential harm for oneself and for others. Perceiving risk takes into consideration several qualities that reflect individuals' values (Ferraro & LaGrange, 1998): whether the concern of danger is for oneself, one's property, or for the safety of others (Warr, 1992; Gilchrist, et al., 1998). This "altruistic" fear exists because an individual recognizes vulnerability in something or someone that is valued (Warr, 2000). Outward valuation can alter estimation of risks and affect emotional reactions, like among husbands and fathers, who can express great concern for the safety of their spouses and families, even though men may typically have low concern for themselves (Rader, 2010).

The third mentality in perceiving crime is the behavioural facet. Pain (1993, p. 57-58) asserts that 'fear of crime always produces some reaction to the perceived risk', motivating lifestyle adaptations with various defensive and avoidance behaviours. Humans naturally try to avert aggravators of fear and avoid situations that may put themselves at risk (Tudor, 2008). Fear in moderate proportions (and arguably risk awareness) is recognized in the promotion of taking healthy, precautionary actions that reduce one's risk of being victimized (Addington, 2003). Such defenses might include locking doors, carrying a cellphone/staying in communication with others, paying more to take alternate means or routes of transportation, or even arming oneself (May, Rader & Goodrum, 2010; Warr, 1997; Wilcox, Jordan & Pritchard, 2007). In extreme cases, these actions and others can morph into dysfunctional behaviours that degrade one's quality of life (Gray, Jackson & Farrall, 2010). Some unhealthy coping strategies are having a negative state of mind, requiring drugs to reduce anxiety, making superfluous effort to avoid confrontation and increasing security measures (Liska, Lawrence & Sanchirico, 1982). These behavioural responses are reactionary, showing when an individual is struggling to maintain control of the security of his/her own life, which can have negative impacts on quality of life and social dynamics at a community level (Shippee, 2012). Education programs about crime prevention and risk are believed to correct inaccurate perceptions, improve negative emotions and relax behavioural constraints (May, Rader & Goodrum, 2010).

2.2. FORMATION OF PERCEPTIONS

Perceptions of crime are neither static nor random. Everyday experiences continually shape, confirm and reform understandings of crime and safety in society. These understandings consider the possibilities of which crimes may occur, who might be the perpetrators of such crimes, and where such crimes are likely to occur. The pathways of crime perception are developed by indirect and direct experiences of crime (Figure 2.2.1). Direct experiences of crime, that is, victimization, is closely connected to crime, but typically affects a relatively small proportion of any population. Perceptions are then also formed through indirect experiences,

by learning of specific incidents from others and observing environmental cues that signify crime potential. Different experiences through these pathways can lead to varying perceptions, as will be discussed below.
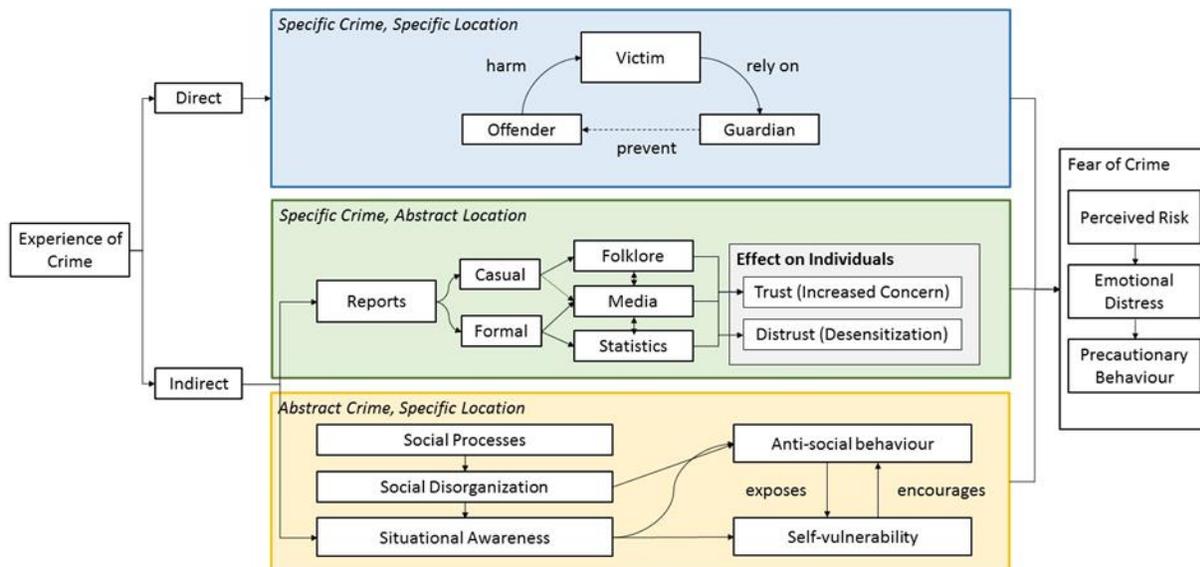
Figure 2.2.1 Functional model of fear of crime

2.2.1. Directly by Victimization

Victimization is a significant event in life that can have lasting negative impacts. In effect, victimization by crime is a reminder of one's vulnerability and can alter how the risks of danger are interpreted and reacted to. But the severity of consequences and social reverberations of crime, from pickpocketing to homicide, are quite variable. According to a national victim survey, victims in Canada face not only the potential of physical injury and economic losses (over one-fifth of property crimes results in expenses above $500), but also psychological effects that include emotional distress and sleeping problems (AuCoin & Beauchamp, 2004). Additionally, preliminary research in the United Kingdom revealed the potential extent of negative impact that victimization in general has on the psychological and social wellbeing of university students, including higher rates of panic attacks and depression (Morrall, Marshall, Pattison, et al., 2010). These experiences and consequences may engrain a sense of insecurity for one's safety and cause one to doubt the goodwill of others – factors that may be formative in how one perceives crimes (Russo, Roccato & Vieno, 2012). This is reflected in a national survey of Canada which indicated that victims were more likely to perceive crime in their neighbourhoods as an increasing problem more than non-victims, especially among those who had been victimized multiple times (AuCoin & Beauchamp, 2004). Yet results in the literature reveal inconsistencies as to the lasting impacts of victimization on perceptions of crime. Being targeted by crime can even work to reduce fears by "resilient adaptation" through which new precautions for safer living are adopted (Rossini, 1988; Shippee, 2012). Impacts of victimization typically decay over time and

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perceptions may continue to change as one's sense of personal control over situations is regained (Evan & Fletcher, 2000; Shippee, 2012).

However, even if falling victim to crime were to guarantee a significant impact on perceptions of crime, the victimization rate alone cannot explain the levels of concern across populations that have been reported in extant literature (Evans & Fletcher, 2000). For example, recently the 2009 GSS indicated that the vast majority of Canadians (93%) are satisfied with their personal safety with crime, but this reduced among older respondents (aged 65 and older) who were statistically the least likely in the population to have been victimized (Brennan, 2011). Thus, experiences of crime other than victimization that have more widespread impact must arguably also account for the development of crime assessments.

2.2.2. Indirectly by Communication

Encounters with crime can be shared and vicariously relived through information channels such as news or social networks. When stories of crime are shared, a sense of insecurity is passed along to create a sense of indirect victimization (Taylor & Hale, 1986; Kohm, Waid-Lindberg, Shelley et al., 2013). Details of crime incidents can be spread via news segments, documentaries and shared stories of personal experiences. These stories may not incur any of the consequences of actual crime, but may still evoke a sense of insecurity that has the potential to reach and impact countless people. News media has a far reach in society, of which the impacts of television and print media are frequently examined in literature (cf. Chiricos, Escholz, & Gertz, 2008; Heath & Gilbert, 1996; Heber, 2011; Kohm, Waid-Linberge, Shelley, Weinrath & Dobbs, 2013; Romer, Jamieson & Aday, 2003). Consider one multi-year study using data from Gallup Polls over two decades recorded the status of perceptions of "crime as a significant problem" in the United States (Lowry, Nio & Laitner, 2003). The authors noticed that a dramatic change occurred in the 1990s when Americans were considering crime as a much greater problem than they had previously – during a period of time when FBI reported declining crime rates. This contradiction the authors attributed to the influence of media, because of several recent high-profile cases.

Indeed, anecdotal accounts of victimization are typically more impactful than the reporting of authoritative crime statistics from local or national aggregations of police-reported incidents (Covington & Taylor, 1991). Particularly violent or unusual stories are covered not only by local and national news outlets, but also through less authoritative "infotainment" documentaries and TV crime dramas, all of which have been shown to influence attitudes towards crime and criminal justice (Kort-Butler & Hartshorn, 2011). But the extent of media influence is dependent on numerous factors including message content, audience characteristics, and dependent measure (Evans & Fletcher, 2000; Heath & Gilbert, 1996). Shocking incidents and statistics designed to garner the most public interest make the headlines, which offer only a limited

scope of the problem of crime without providing understanding of the contextual factors (Kitchen & Williams, 2010). For this reason, violent crimes are reported more often than property crimes because their ability to interest the audience (Evans & Fletcher, 2000). In their review of media effects, Heath & Gilbert (1996) also note that characteristics of the storytelling (such as the nature of the crime, the dramatization used, and the proportion of stories of crime being reported) affect individuals' responses.

Exposure alone is not enough to guarantee a reaction from media reports (Chaddee & Ditton, 2005). Consider how, with national news coverage and online connections, reports of crime can come from anywhere – from a different neighbourhood, city or even country. The level of trust in sources of information have been shown to effect perceptions of crime rates and consequently concerns of victimization (Kort-Butler & Hartshorn, 2011). For those who live in neighbourhoods of high-crime, have been recently victimized or with great trust in news accounts, local news reports can have greater "resonance" in reminding and reinforcing the perceived state of one's vulnerability (Chiricos, Padgett & Gertz, 2000). But misalignment of reports of crime with individual's own witness of events can contribute to skepticism and desensitization to crime as a problem of concern. Kaminski et al. (2010) suggests that some individuals can become desensitized by reports of similar incidents being repeated (even random campus shootings), while others are disturbed by the recurrences and perceived greater risks.

2.2.3. Indirectly by Interpreting Environment

The indirect experience of interpreting the environment is significant because it can be independent of any act of crime occurring. Even without any direct tie to actual crime occurrence, visible signs of other social problems can exaggerate perceived crime risks, particularly when one is unfamiliar with an area (Snedker, 2010). Such observations arguably have greater impact on perceptions of crime than actual crime (Hunter, 1978). An individual's awareness of his/her surroundings involves scanning for possible threats and assessing those risks. A proliferation of signs that are associated with crime will act as visible confirmation of a breakdown of control, fostering the perception that crime is an impending threat (Montolio & Planells-Struse, 2015; Wilson & Kelling, 1982). Judgement about the environment becomes a witnessed account of social decline and a personal source of validation of one's perceptions. This can have significant social implications.

2.2.3.1. SIGNALS OF DISORDER

The broken windows theory proposes that criminogenic environments contain cues of social and urban decay, reflecting that local attitudes and intentions are not supportive towards the common good (Wu & Wen, 2014). These disorders, or incivilities, can be physical or social. Physical signs are observed as "untended" property such as abandoned buildings and vehicles, graffiti and vandalism, litter on the ground

and poor lighting (Brunton-Smith & Jackson, 2012; LaGrange, Ferraro & Supancic, 1992; Skogan, 1986). In parallel, social disorder is represented by "untended" people – the presence of gangs, panhandlers, homelessness, and prostitution, the verbal harassment of women, and drug and gambling activity (LaGrange, Ferraro & Supancic, 1992; Skogan, 1986). This decay of social order symbolically communicates that local guardianship is either ineffectual or non-existent, leaving a vacuum of social control where crime is left unchecked (Hunter, 1978). Sensitivity to the form and context of these symbols varies among social groups, and so individuals' interpretation of the threat of crime will be amplified (Innes, 2014).

Urban environments tend to be busy landscapes containing many unfamiliar elements that need mental processing. Intuition allows for quick processing of key pieces of information to formulate judgements and decision-making (Betsch & Glockner, 2010). A scene within a neighbourhood communicates many non-verbal but visible cues that may be intuitively interpreted as indicators of crime (Innes, 2004). As indicators of crime and disorder concentrate in an area, a 'situational environment' is created with conditions that are strongly correlated to fear of crime (Bannister, 1993, 69; Carcach, Frampton, Thomas & Cranich, 1995; Hur & Nasar, 2014). The presence of incivilities (e.g. litter, poor lighting, rowdy teenagers) is not necessarily evidence of any criminal wrongdoing, yet these signs are often intuitively associated with social decline and the presence of uncivil and possible criminal behaviour. Not everyone will see the same signs of disorder, nor will their intuitions lead them to respond in the same way. Familiar areas have greater imageability than lesser known areas so that, for instance, local residents of a neighbourhood may overlook local criminogenic signs that may either cause others concern or that may cause them concern in other contexts (Lopez & Lukinbeal, 2010; Perkins & Taylor, 1996).

When personal experiences are lacking in an unfamiliar environment, intuition may lead to the formation of stereotypes. Such preconceived labels offer a simple frame of reference to easily respond to ensuing situations and encounters with locals, but may lead to false conclusions by priming individuals to see and believe the worst in the surrounding environments and people (Yang & Pao, 2015). The relation between neighbourhood residents' apprehensions of crime and perceived disorder may actually be spuriously based on other factors like social class (Taylor & Hale, 1986; Sampson & Raudenbush, 1999). As an example, in one study middle-class American university students shared how their experiences reinforced impressions that economically disadvantaged areas were unsafe and areas of good social status were safe (Modly, 2009). Signs of disorder are commonly associated with low-income neighbourhoods. Unfortunately, minority groups like Black communities in many North American cities and immigrants have high correlation with low-income. Media representations may also reinforce such ethnic stereotypes (Callanan, 2012). Such stereotypes may cause misperception of crime in a city by perpetuating concerns of safety where certain ethnic communities

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are found rather than where crime is most problematic (Matei et al., 2001). These schisms between communities reduce social capital and misinform individuals where risks of crime are located.

2.2.3.2. SIGNALS OF CONTROL

As signs of disorder signal a breakdown of control, so different cues can signal the active exertion of control which can compound or allay tensions of perceived crime. Physical indicators of control include police presence, gated communities and security surveillance systems (CCTV). These signs visibly communicate the intention of guardianship of an area to maintain order, protect the vulnerable and ensure no wrong action goes without justice. Alongside these physical elements of control is social capital, which is the strength of relationships among people founded on trust, collective efficacy and established community norms. Initiatives like Neighbourhood Watch as a commitment to watch out for one another can formalize the presence of social capital, but it also exists organically through the local social networks between residents and their neighbours and the police, and volunteerism. Such social infrastructure reinforces a sense of communal values and of community ties. Both physical and social signals of control can act as reassurance that crime is unlikely due to target hardening and the goodwill of others, and can be resisted with the help of fellow neighbours.

But signals of control can also become counterproductive. When control is seen as ineffective, perceptions of crime can grow negative. For example, while police may be seen as "agents of order" (Wilson & Kelling, 1982), they can also effectively act as visible confirmation of problems and perceptually criminalize local residents (Modly, 2009). A police patrol can reassure residents of their safety in areas where crime is believed to be problematic (Cordner, 2010), but low satisfaction with police ability to curb crime will not render their presence as reassuring (e.g. Snedker, 2010). Alternatively, controls can also act as visible reminders, even exaggerators, of the potential of crime. Some evidence suggests that for prior victims, contact with routine police patrols can intensify feelings of insecurity because of triggers to memories of previous victimization experience (Montolio & Planells-Struse, 2015). If police visible increases in a neighbourhood that was believed to be safe, residents may express alarm (Cordner, 2010). In a similar fashion, gated communities may identify as a haven of safety to residents, but it may lead outsiders to then deduce that the surrounding area is not safe (Alkimim, et al., 2013); burglar bars on a store window may signal a problem of break and enters; and increasing visible security measures in high-crime American schools had an effect of further intensifying fears among students (Schreck and Miller, 2003). Thus, steps that are taken to deter crime may not necessarily improve perceptions of safety.

If signals of control continue to be distorted, this can be damaging to the local community. Social capital within the community can be reduced if residents feel they cannot trust one another and fear for their

safety. To outsiders, the neighbourhood may be associated as a source of systemic crime that even the police cannot control. Police patrol presence in poor and predominantly African-American neighbourhoods in a southern American city core caused university students both assurance and concern as they wondered what would warrant the need for such security (Modly, 2009). In such context, police presence was interpreted as confirmation of a problem, which also acted to incriminate a low-income neighbourhood and perpetuate racial stereotypes. In sum, signals of control are important not only to prevent crime but also to alleviate possible concerns. These signals can also raise concern by drawing attention to and even amplifying other signals of crime and disorder.

2.2.4. Environmental Perception and Familiarity

Environmental perception is impacted by level of familiarity with the space. Familiarity is developed by the "repeated exposure to a particular stimulus or environment" (Craig, Conniff & Galan-Diaz, 2012), which can be seen as time spent and experiences gained from the space. Ferraro & Lagrange (1987) note that risk perceptions are formed on foundation of knowledge of the environment, so that risks of crime may be overlooked in familiar areas, whereas unfamiliar spaces (or people) are evaluated as dangerous due to the unknowns they introduce. For instance, Matei, et al. (2001) observed that inner city residents of Los Angeles often had the lowest levels of fear in their neighbourhoods of residence which had the highest municipal crime rates – a fact related to the levels of familiarity the sample had with the study areas and their adapted expectations of safety.

Conversely, unfamiliarity with place and observed disorder through physical and social indicators create impressions of risk, while urban legends reinforce these beliefs (Modly, 2009). The physical environment contains the primary indications used to build judgments regarding an environment (Yang & Pao, 2015). Unfamiliarity with space may accentuate fears of crimes in the presence of disorder, as well as culturally- or ethnically-different populations (Modly, 2009; Matei, Ball-Rokeach & Qiu, 2001; Lemanski, 2004). In unfamiliar areas, both race and social class have been shown to contribute significantly higher perceptions of disorderliness than physical cues (Yang & Pao, 2015). Ethnic geographies are highly dependent on context of place, and may exist through stereotyping common social characteristics, such as low socio-economic status or prominent gangs of similar ethnicity, creating a link with criminal behaviour (Matei, Ball-Rokeach & Qiu, 2001). Together, unfamiliar elements can enforce negative perceptions, as multiple observations of interpreted criminogenic elements confirm distrust and become "self-fulfilling prophecies" (Sampson & Raudenbush, 2004).

Familiarity is important to consider because individuals' frame their perceptions in such context. Evaluations of space are made within the context of "autobiographical environmental memory" (Craig,

Conniff & Galan-Diaz, 2012), such that not all respondents provide feedback with the same extent or depth of knowledge of the study area. Inconsistent familiarity among respondents has been observed to influence spatial error, and thus there is a trade-off between greater public representation and the spatial error introduced into the PPGIS mapping process (Brown, 2012). Brown (2012) goes on to recommend capturing familiarity prior to obtaining exercise feedback in order to account for the impact of these inconsistencies.

2.2.5.   Variations of Experiences

Paradigms of crime are in continuous development as life experiences repeat or change, which confirm, contradict and expand previous understandings. In this way, an individuals' own experiences are interconnected by taking into account what has been experienced directly, what has been learned from others and what has been personally observed. External variables like the seriousness of the crime or incivility, the frequency of exposure, and even time of day effect perceptions of crime (Hale, 1996; Jackson, 2005). Characteristics intrinsic to the individual (both physical and social) can also be significant factors that influence exposure and interpretation of direct and indirect crime-related experiences.

Certain physical characteristics like gender, age and health are often significantly correlated to how crime is perceived. While not without exception, traditionally gender has been determined as a particularly strong correlate in most statistical models of fear of crime, of which women consistently report higher levels and frequency of fear than males (Pain, 1995). In part, the tendency for women to report greater concern about crime is possibly driven by fears of sexual assault (May, Rader & Goodrum, 2010). Alternatively, social desirability bias suggests that males are pressured to not share vulnerable feelings such as fears, leaving women more space than men to admit and acknowledge risks and weaknesses (San Juan, Vozmediano & Vergara, 2010; Warr, 1997; Snedker, 2010).

Age is another trait that reflects differences in perceptions. Now, a paradox exists in that the younger segment of the population (roughly aged 15-30) is the most likely to commit and to be victimized by crime, yet still, those same ages are typically the least concerned about crime (Kappes, Greve & Hellmers, 2013). Typically this difference is attributed to older individuals being more risk adverse than younger, and as such might be expected to more readily perceive possibilities of crime (cf. Ferraro & LaGrange, 1988).

Other vulnerability indicators reflect individuals' social statuses that may make them more susceptible to perceive crime as a significant problem. Some of these indicators include low socio-economic status, non-white ethnicity, sexual orientation, and prior victimization (Acierno, Reingold, Resnick & Kilpatrick, 2004; Carcach, Frampton, Thomas & Cranich, 1995). Rural residents and urban residents may perceive crime with different levels of sensitivity to experiences (Cordner, 2010; Snedker, 2010), although it is a predominantly urban phenomena (San Juan, Vozmediano & Vergara, 2010). Similarly, immigrants

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(depending on where they come from) can also perceive crime risks more readily, lacking familiarity with local culture and trust in local law enforcement (Wu & Wen, 2014).

2.3. SPATIAL PERSPECTIVES OF FEAR AND SAFETY

A dimension of perceptions of crime is constructed within mental geography to guide decisions in the reality of day-to-day. Certainly, some crimes are more nebulous (e.g. cyber crimes, identity theft) and some perceptions are more indistinct (paranoia that the unknown might occur anywhere), but many crimes are easily associated with a location. Likewise, disorder and elements of control have physical locations that are able to be easily specified. A break-in at an address, a street littered with needles and cigarettes, a neighbourhood where police frequently patrol: these signals can characterize personal geographies that individuals shape their lives around, influencing decisions of where to live, to avoid, to explore, and to take certain precautions.

2.3.1. Cognitive Maps

Consideration of personal geographies of fear requires an exploration of individuals' cognitive maps. Cognitive maps are mental constructs that reflect spatial knowledge (Kitchin, 1994). A cognitive spatial schema is populated with images that reflect perceptions of those areas in the real world (Walmsley & Lewis, 1984, 8). Images are mental conceptions of interpreted reality, informed by environmental observations and pre-existing prejudices, and thus reflect elements of objectivity and subjectivity (Downs & Meyer, 1978). The way individuals interpret their environment then bears significant consequences on their emotions and behaviours (Curtis, 2012). Mental maps explain the reasoning of spatial decisions and represent the paradigm that moulds "attitudes, perspectives and behaviours" (Kitchin, 1994). Since perceptions of crime are built through experiences, these spatial understandings are all relevant to better understanding perceptions of crime. Cognitive maps expose intimate perspectives of individuals' lives and decision-making processes.

Mental mapping, sketch mapping or participatory mapping are synonymous terms for the technique to capture these environmental images in freehand cartographic form. The traditional approach to creating these mental maps is simply to use markers to delineate points, paths and areas on paper maps, although newer studies have begun implementing direct digital inputs. Various recent applications have used this method to map perceptions of regional accents in Washington state (Evans, 2013), of city centre (Montello, et al., 2003), of creative activity in Darwin, Australia (Brennan-Horley, 2010), of cyclists' risk in Galway, Ireland (Manton et al., 2016), and to monitor social re-integration of formerly homeless individuals into a community in Boston, United States (Chan et al., 2014). Spatial responses are a rich data source, giving insight into the locations, distributions, intensities and extents of perceptions at individual and aggregate levels. When integrated with interviews, maps also act as a tool to focus the discussion, improve respondent

articulation of spatial phenomena, and supplement responses (Brennan-Horley, 2010; Boschmann & Cubbon, 2014). A map represents familiar space, so can have a calming effect, which helps to build rapport between the subject and interviewer (Boschmann & Cubbon, 2014).

The purpose of cognitive maps is not to obtain spatial accuracy, but to enrich qualitative responses with context (Brennan-Horley & Gibson, 2009). Qualitative approaches such as cognitive mapping offer a more flexible medium than quantitative for respondents to share how they each uniquely "view and experience the world" (Kwan & Ding, 2008). Cognitive maps are in one sense a distortion of reality, but the misrepresentation is essential to understanding an individual's paradigm. When participants are asked to draw their perceptions on a map, they are often required to draw hard boundaries to represent concepts that are geographically vague. Individual-level impressions of community processes (such as of areas where crime is a problem) do not necessarily correspond to hard-lined boundaries even when the individual draws boundaries by him or herself. Additionally, perceptions may be variable according to geographic scale. Maps that cover large areas require significant abstraction, losing local landmarks and other memory triggers that help mentally reconstruct the lay of the land (Stea, 1969, 64). Many studies limit the study area to a small area, such as a university campus (Fuhrmann, Huynh & Scholz, 2013) or neighbourhood (Talen & Shah, 2007), which helps to focus respondent's experiences but limit a broader understanding of geographic experiences and perceptions in their lives and how they aggregate to a system of perceptions in a city.

2.3.2. Capturing Mental Maps of Fear and Safety

Questionnaires are the longstanding tool used to measure fear of crime, but it is acknowledged to be lacking in its ability to "fully capture the detail" of the multi-facets of life that it incorporates (Jackson, 2005). Ferraro and LaGrange (1987) offer points of recommendation to improve the sensitivity and specificity of questionnaire measures, yet this traditional approach still struggle to capture the geographical context in which these dynamic responses exist. Two decades ago, Hale (1996) described the methodologies and theoretical frameworks used to study fear of crime as "overly restrictive", and recommended a triangulation approach of methods to develop more sensitive measures. Mental mapping is an ideal technique in which to ease the difficulties of capturing perception and emotion, concepts which are "inherently difficult" to determine and use in research (Curtis, 2012). Contemporary research has capitalized on novel approaches using mental maps to capture emotion and perception. A selection of these studies is summarized in Table 2.3.1.

Table 2.3.1 Innovative approaches to capturing perceptions of crime

Author/Year	Sample	Map Medium	Information Collected on Map	Aspects of Innovative Design
Solymosi, Bowers & Fujiyama, 2015	Members of university community	Electronic (Mobile)	Intensity of worry of victimization 'in this moment'; Repeated measures over the course of a month, up to 4 times a day	A volunteered geographic information (VGI) approach to fear of crime Phone app periodically 'pings' respondents to sample levels of fear of crime in real-time & by true location.
Boshmann & Cubbon, 2014	Members of LGBT community	Paper	Areas that felt safe or unsafe in public places using an ordinal colored marker coding scheme	Overlay analysis compared how individuals and collectives experience public space
Podör & Dobos, 2014	Citizens of a small Hungarian town	Paper	Evaluations of relative safety in 11 pre-define zones dividing the city (safe/less safe/dangerous/avoided at night)	Used ratings of standards geographic units Compared directly to crime data
Fuhrmann, et al., 2013	Undergraduate students at a southwestern American university campus	Paper	Up to 5 locations by respondent where they would feel unsafe walking alone on campus	Point-based perceptions aggregated by tessellated grid Compared directly to crime data
Hamilton, Salim, Cheng & Choy, 2012	Public transportation users	Electronic (Mobile)	GPS location with current current levels of emotions using an "Emometer" (happiness, excitement, safety and peacefulness)	Mobile phone applications designed to alleviate fears of crime while collecting targeted spatio-temporal data from public transportation users
Lopez & Lukinbeal, 2010	Residents and police officers of Phoenix, AZ	Paper	Colour coded areas "safe" and "unsafe" (residents); area of "high" and "low" crime (police)	Compares mental maps of residents and police officers to identify disparities between perceptions
Modly, 2009	Students	Paper	Unsafe areas	Interview had respondents reflect on pictures they took of areas they feared
Kohm, 2009	Residents of low-income neighbourhood	Paper	Areas that felt particularly unsafe	Heat maps compare neighbourhood fears of crime and of disorder
Talen & Shah, 2007	Random sample from two high-traffic public areas in city	Electronic (Computer)	Evaluative image of city, based on resident likes and dislikes of the area, including elements of disorder and crime	In-person Interview conducted by series of questions requiring interaction with map
Doran & Lees, 2005	Residents of Wollongong, Australia	Paper	Areas avoided due to fear of being targeted by violent personal crimes (e.g. robbed, attacked, etc.), how hard each location was avoided and at what times of day	Mapped responses analyzed with controlled disorder assessment and crime data
Matei et al, 2001	Residents of communities in Los Angeles	Paper	Neighbourhood of residence, area of comfort, discomfort, feared, and unknown.	Black and white paper base maps with marker drawn colour-coded boundaries

2.3.3. Interpretive Paradigms

As has been discussed, the social repercussions of crime extend beyond the victims and damages of crime. The way crime is perceived affects interactions throughout society – guiding individual behaviour, characterizing neighbourhoods and creating social divides between communities. When perceptions are incongruent with crime statistics, Modly (2009) explains that:

> 'Exploring how and why fears are misplaced by study-participants will allow us to gain a better understanding of how space is socially constructed to be safe or dangerous, how [individuals] participate in the production or reproduction of these boundaries, and why these ideas about danger and safety persist.'

These social constructions of space have affect perceptions at different scales. Spatial perspectives help develop these understandings at the individual, community and urban ecological levels.

The links of individuals' susceptibility to feeling more vulnerable and certain physical and social characteristics (e.g. gender, ethnicity, sexual orientation) has already been discussed. Spatial perceptions of crime help to further define the context within which individuals face concerns for safety and assess their risks, and communities may face similar concerns. Maps can also add perspective into 'geographies of exclusion' that may exist among social groups. In an ecology of fear, crime and fear disadvantage certain individuals more than others from participating freely in society (Pain, et al., 2001, 247). Spatially-oriented studies on perceptions of crime have linked how perceptions of urban crime are linked to the presence of disadvantaged groups like visible ethnicities and low-income neighbourhoods, sometimes superseding actual victimization experiences (Matei et al., 2001; Modly, 2009). For instance, fear of harm may restrict some individuals more than others, such as women who are more likely to constrain mobility and social interactions (Pain, 1997). Perceptions of crime may also unjustly castigate entire communities, such as low-income, visible minorities and immigrants (Kitchen & Williams, 2010; Sampson & Raudenbush, 2004). Mental maps can be interpreted to identify how certain communities are disproportionately fearful or feared, revealing the presence and spatial extent of social divisions.

Finally, aggregated perceptions of neighbourhood identity and experiences combine to reflect the character of the city, similar to how Montello et al. (2003) compared variance in spatial definitions of "downtown" Santa Barbara, or how Brennan-Horley (2010) identified spatial elements of a creative industry to encourage economic growth in Darwin, Australia. In this sense, the city is the subject of study and the aggregate of individuals' perceptions describe its character. The way crime is perceived across a city may attract or deter visitation, or encourage modified behavior – which leads to ecological as well as individual

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health and lifestyle repercussions. Thus, the "collective imagination" of crime in one sense evidences the fracture between communities by reflecting the propagation of stories and stereotypes, the limitation of social interactions and mobility, and the contrast of community values (Jackson, 2005; Lorenc, Clayton, Neary et al., 2012; Matei et al., 2001). Diagnosis of misperceptions of crime is made easier by visualizing perceptions through spatial methods, which can then better inform policy and improve education tactics (Matei et al., 2001).

2.4. CURRENT RESEARCH

This review of literature has summarized key findings of how crime is perceived, how these perceptions form, and how perceptions manifest spatially. The perceived risks and potential consequences of crime affect emotional security and guide behavioural reactions intended to mitigate risk. When crime is perceived as a problem of concern, individual quality of life can suffer and social decline can occur within communities.

Life experiences inform and reinforce perceptions of crime. Associations with incidents are formed by personal victimization, harm caused to other contacts in social networks, and reports relayed by media. Other associations are made from environmental curs, gleaned from the physical and social surroundings. These experiences combine to shape one's perspectives.

Cognitive maps reflect the perceptual realities of the threat of crime. These maps reflect the impact that perceived crime has on individuals' mental and emotional dispositions towards certain areas and neighbourhoods, dictating decisions of actions to take or not. Collectively these mindsets and activities guide the interactions and behaviours between people with each other and with the space, which lead to cultural barriers with various social implications. The research that follows will help to further the spatial link between perceptions and actual crime, and how this affects the social landscape of a city.

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METHODOLOGY

This chapter outlines the background of and the procedures used to collect and analyze data, as well as the steps of analysis that were performed to produce the results. The context of conducting the study is explained by providing an in-depth description and critique of the map data collection tools, an overview of the recruitment process, a summary of participant characteristics, and a statement of relevant aspects of the researcher's positionality.

3.1. PRIMARY DATASET: STUDENT PERCEPTIONS OF CRIME

3.1.1. Survey Design

The survey consisted of a questionnaire and a short interview with a cognitive mapping component. An in-person meeting was scheduled with each respondent. A questionnaire was administered first, requiring approximately 20 minutes to complete. Immediately after the questionnaire, participants were interviewed for 10 to 20 minutes. During this time, a cognitive mapping exercise was conducted where participants were asked to draw boundaries around areas where they perceived a high risk of crime. The mapping exercise acted as a tool to help participants recall details of their experiences, and added a spatial dimension to their responses.

3.1.1.1. QUESTIONNAIRE OUTLINE

The goal of the questionnaire survey was to attain baseline information about respondents' demographics, experiences, perceptions and behaviours. A questionnaire ensured this information was captured in a standardized format to support interview responses, while reserving time in the interview to capture more complex responses. The questionnaire consisted of 5 sections, described below in Table 3.1.1.

Most questions were close-ended, formatted in a variety of scales. A copy of the questionnaire can be found in Appendix A.

Table 3.1.1 Description of questionnaire sections

Section	Purpose
A. **Academics**	To collect basic academic information about university attendance
B. **Residential History**	To describe participants' residential history in Kitchener-Waterloo
C. **Community of Residence**	To identify social ties, feelings, and perceptions towards life in Kitchener-Waterloo
D. **Media Consumption**	To establish participants' awareness and response to news media
E. **Perceptions of Crime**	To collect measures of individuals' perceptions of crime activity and risk of personal victimization in Kitchener-Waterloo
F. **Experience of Crime**	To learn about experiences of crime (if any) and the resulting interactions with police
G. **Precautions for safety**	To identify measures that individuals took to ensure their personal safety
H. **Demographics**	To describe the demographic background of respondents

Literature is rife with variants of questions on the frequency, specificity and intensity of fears and risk assessments. The focal section of the questionnaire, "Perceptions of Crime", sought to capture elements of this diversity by asking about intensity of worry, frequency of worry by crime type, perceived risk at different scales, inhibited behaviour, and feeling of safety while alone in neighbourhood during the day and at night. This last measure reflects a principal question that has been used to measure fear of crime in Waterloo Region since 2009, "How safe do you feel from crime walking alone in your area after dark?" (Maharaj, 2014), and thus serves as a benchmark.

3.1.1.2. INTERVIEW OUTLINE

Participant interviews were conducted with the purpose of elucidating responses from the questionnaire, and giving participants control in sharing descriptions relevant to the qualities of their individual perceptions. The interview was facilitated around a mapping exercise. Participants were given the option of using either a paper map with markers or an interactive web-based map, and the same set of questions was asked with both map mediums.

For the first task, participants were asked to identify neighbourhoods where they had lived (previously or at the time of the study) as well as the areas that they were familiar with. This approach was

adapted from Matei et al. (2001) who had respondents draw of regions categorized by neighbourhood, comfort level, fear, and unknown. The exercise helped participants orient themselves to the map and acted as a gauge for the interviewer to assess the spatial extent within the study area that participants were familiar with.

Next, participants drew boundaries around the areas where they believed was an elevated risk of crime. Once drawn, each of these areas were revisited to ask a set of questions about the respondent's level of worry, memorable details about the physical and social space, influences that shaped their perception, and the types of crimes they perceived. Respondents were asked to rate their worry for each area they drew on a 7-point ordinal scale, similar to the approach by Boschmann and Cubbon (2014). The interview ended by asking volunteers to summarize the effect that crime had on their lives and raise any further thoughts or concerns. A full outline of the interview script can be found in Appendix B. Prior to the survey, respondents were asked to fill out a consent form to apply with university ethics protocols (Appendix C).

3.1.2.   Map Survey Instruments

3.1.2.1.   OVERVIEW OF PRINTED MAPS

Paper maps were printed in colour on two 11" x 17" pieces of paper and taped together (Figure 3.1.1). Because the size of paper was limited, the study area was cropped to ensure the map was printed at a legible scale. Although this cropping excluded certain areas, most areas were drawn in the remaining space. Still, some participants using the paper map referred to areas outside this boundary by mentioning points of interest or major intersections. Three coloured markers were used to draw different responses on the map: dark blue for areas lived, light blue for familiar areas, and red for areas of perceived crime. Each of these responses was drawn by freehand, so the size and shape of each area was defined by the participant. At the end of the study, maps were scanned and the responses digitized.
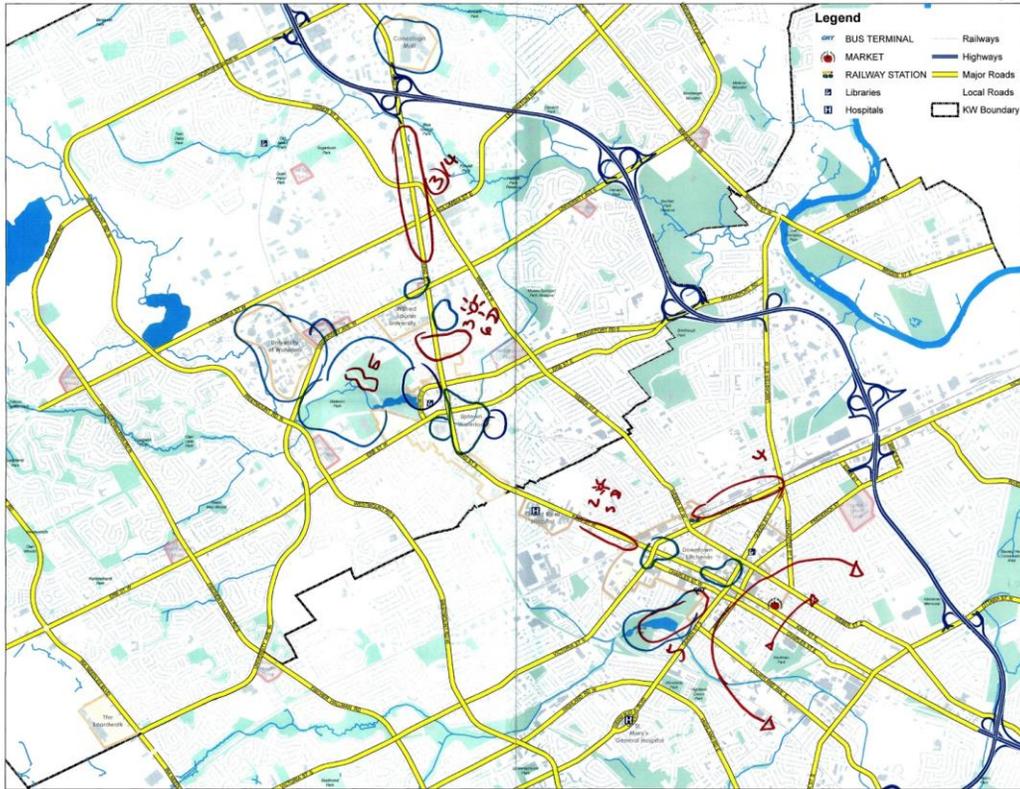
Figure 3.1.1 Example Cognitive Map

3.1.2.2.   OVERVIEW OF ELECTRONIC MAPS

The interactive web-map was a geographic data entry tool that was designed and built using Esri's ArcGIS Online and the ArcGIS JavaScript API (Figure 3.1.2). ArcGIS Online is an online suite of web GIS capabilities, including webhosting of password-protected editable layers. The ArcGIS JavaScript API was used to create a web browser-based input tool for the respondent to interact with.
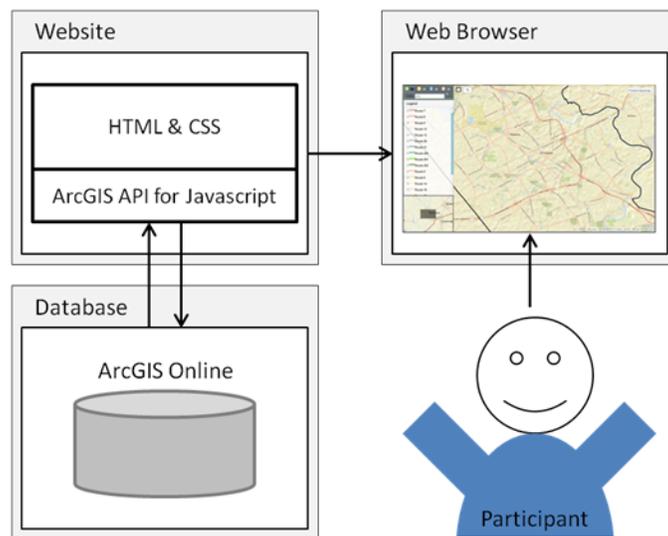
Figure 3.1.2 Functional diagram of the map tool

The browser-based application allowed respondents to interact with the base map differently than with the paper map. Participants were asked to use a 10.1-inch touchscreen laptop to draw their responses. The map could be interacted with by panning and zooming in and out of the map. The limits of the map were set to the official Statistics Canada boundaries of Kitchener and Waterloo. A map legend also made available additional information to help orient respondents to the map, which displayed bus routes, university campus locations, and other features selectable layers. Other map functions included an overview map to indicate where the screen was focused over the area, an address search bar, and a "home" button to revert to the original scale (Figure 3.1.3).
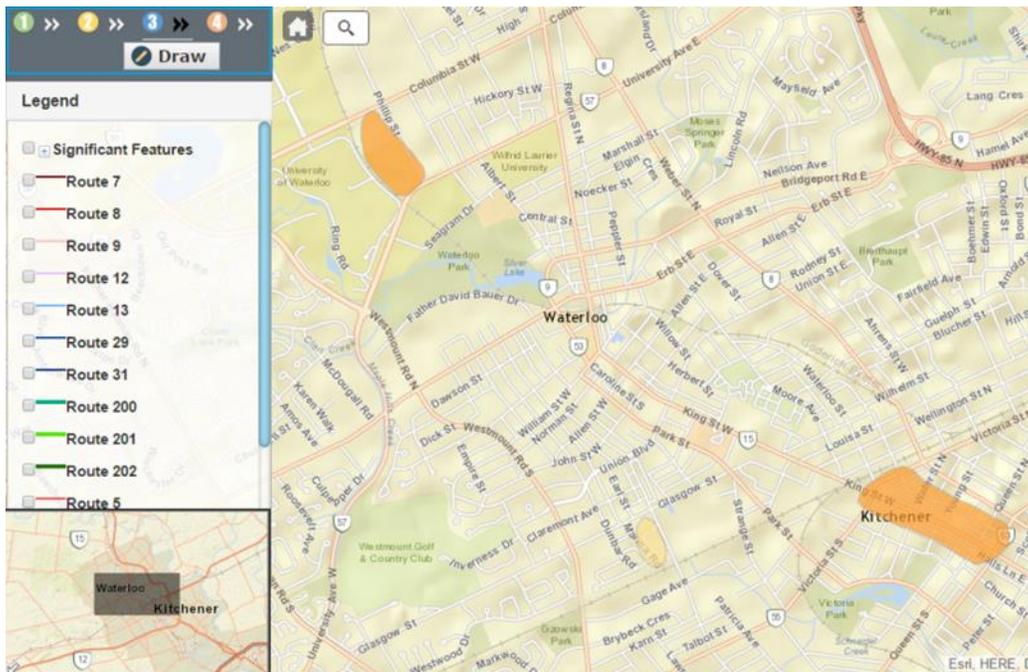
Figure 3.1.3 Map Tool Interface with sample of two drawn areas (in orange)

The tool followed four stages. First, the interviewer input an assigned participant identifier (PID). This unique PID was tagged to all responses each participant provided in the tool. Next, respondents were asked to select familiar areas based on Statistics Canada dissemination areas. This approach varied from the freehand approach used on the paper map, with the purpose of simplifying the process of input for respondents and standardizing responses.

The final two stages required respondents to circle areas on the map that they associated with crime, and then rank their level of worry for each area on a seven-point scale. Respondents circled areas were captured as freehand polygons, which they could draw at any scale on the map. The interviewer reviewed each of the drawn areas with the interviewee to ask further questions and obtain a rank value describing their level of fear in each area, which was stored in the layer's attributes.

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3.1.2.3. LIMITATIONS OF MAP SURVEY INSTRUMENTS

The paper map was the most popular choice, actively chosen by 32 (63%) of respondents. Two respondents did not have an option for the paper map and were assigned by default to using the electronic tablet as some interviews were scheduled late and the supply ran out before it could be re-stocked. One reason for this preference of paper maps may be because it was printed on a large surface (22" x 18"), whereas the tablet was smaller (10.1"). The large and colourful print-out may have drawn more attention. A second possibility might be because touchscreens and electronics in general are essentially ubiquitous in society. To this sample of digital natives, the paper map represented something new, simple and tactile.

For the interviewer, the paper map was also the less cumbersome method as it required very little effort to orient participants with the study area and explain task instructions. Participants were simply handed markers for different tasks. By contrast, the electronic map required participants to overcome two learning curves: adjusting to a new touchscreen device, and interacting with the design of the application. The touchscreen proved to be more difficult to interact with because of the learning curve required to operate the application, the screen's sensitivity to touch, and delays due to server lag. Most students were able to interact with it without difficulty, but extra time was required in each interview to give instructions to those using the electronic map. One older participant who volunteered for the survey (but was later removed from the sample for analysis as he was not a student), had difficulty interacting with the small interface touchscreen. As well, lag from the ArcGIS Online server occasionally added some confusion for participants when their inputs disappeared for a couple of moments then reappeared. Such challenges are consistent with geoweb approaches to participant data collection (Ricker, Johnson & Sieber, 2010).

Nonetheless, the electronic map had its own advantages. The application required time and resources to build, but ultimately was more cost effective than printing large colour maps. Additionally, the upfront investment of time for development was offset by the time required to digitize responses on paper maps. For participants who did not have much spatial familiarity with the study area, the application offered support with an address search function, base map configuration widget, and pan and zoom capabilities. Some technical glitches in the interface and internet connection frustrated some participants, but anecdotal feedback indicated that the overall experience with the application was enjoyable. A summary of the advantages and limitations of both input formats is reviewed in Table 3.1.2.

Table 3.1.2 Advantages and Limitations of Map Medium in the Survey

	Pros	Cons
Paper Map	- Popular choice among participants - Small learning curve - Large surface area	- High cost to print - Time required digitized - Static
Electronic Map	- Interactive with zoom, pan and search functions - Data input directly by participants - Affordable to scale	- Learning curve for both the application and the touchscreen tablet - High upfront cost of time invested in development of application - Internet-reliant and prone to lag - Small surface area for interaction

3.1.2.4.   AGGREGATION OF FAMILIAR AREAS

Responses of familiarity were captured using two different methodologies. Familiarity inputs were standardized for tablet-users, who selected dissemination areas as neighbourhoods they were familiar with. Paper-based responses were drawn free-hand. This necessitated additional processing to resolve the differences. Free-hand responses were intersected with the dissemination area boundaries, then dissolved by dissemination area to obtain a total count for each area. The specific workflow is shown in Figure 3.1.4. The final output over-estimates familiarity.
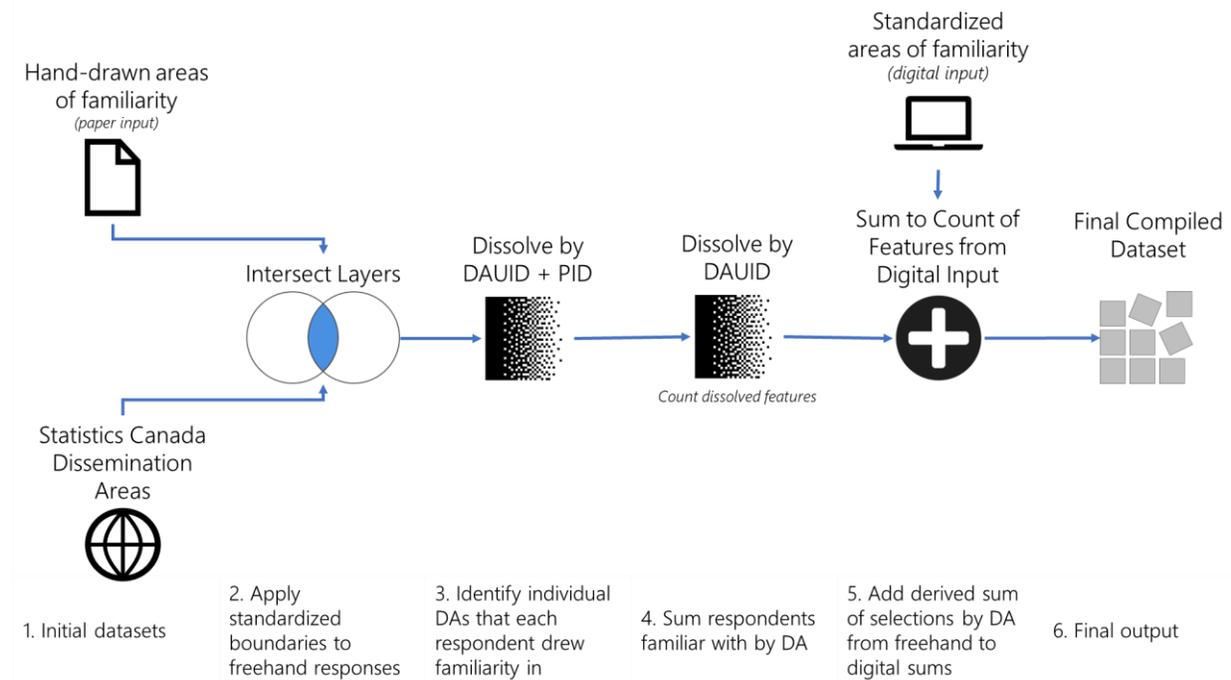
Figure 3.1.4 Workflow to combine freehand and standardized areas of familiarity

3.1.2.5.   AGGREGATION OF PERCEPTIONS INTO FREQUENCY MAPS

Aggregating perceptual maps transformed responses into quantitative results and allowed new patterns to emerge. Frequencies were used to identify the degree of concordance among respondents' perceptions, producing hotspots of collective perceptions of crime. These hotspots were constructed by calculating the geometric union of all perceptions, then dissolving all overlapping duplicate areas. The number of dissolved features from the union represented the number of respondents who associated the area with crime, and were used to calculate the proportion of respondents. The resulting maps show where individuals' perceptions coincided most frequently, as well as where perceptions were unique. A critical approach of understanding respondent representations of their perceptions is borrowed from Curtis, et al. (2014). A quantification of the number of areas is compared against the area to better understand the differences in how spatial perceptions of crime are held.

3.1.2.6.   THEMATIC ANALYSIS OF ANNOTATED MAPS

Transcribed interviews were imported into an open-source qualitative data analysis and database software, RQDA, to assist in the analysis of textual data (Huang, 2016). The software is freely accessible as a package through the statistical-computing language R. It offers standard features for computer-aided qualitative analysis, which can be leveraged either through the graphical user interface or by command line codes. The information is stored in a SQLite database, which allows for queries and data manipulation to be performed quickly on the coded text using the R language.

Each transcript was assigned with a PID. The first iteration of coding identified which areas the interview text referred to, marked by interviewer cues in each question. Each block of text was assigned the same AID as assigned to the corresponding feature in the shapefile. Transcripts were reviewed again to assign codes based on text content, which was done iteratively to code, confirm and refine labels until a final set of labels was created. Multiple passes were taken to identify classes of criminal activity and neighbourhood characterizations and harmonize codes across all respondents. These classifications were used to develop themes and to export tables to join to the spatial data.

3.1.3.   Sample Recruitment

The survey was conducted with both graduate and undergraduate students on the main campus of the University of Waterloo. The study relied on volunteers from the University of Waterloo community, recruited by method of convenience sampling. Posters advertising the study were hung across campus in residence and academic buildings (Appendix D), and an online announcement requesting participants was placed on the graduate study recruitment webpage (Appendix E). Interested individuals who responded to the advertisements were e-mailed a copy of the study description and consent form, and a link to an online scheduler. Volunteers had the option of scheduling a 45-minute appointment over the course of 5 weeks in

late fall 2015 during regular business hours on Monday to Friday. The meeting was conducted in-person in a private room in a faculty building on main campus at the University of Waterloo, and length of interview averaged around 20-minutes. Participants were awarded $5 in appreciation for their participation in the study, and entered in a draw for a $30 gift card.

The target sample was undergraduate or graduate students at the University of Waterloo but participants were not pre-screened before booking an appointment. A total of 54 individuals responded to the request for volunteers, which included five university affiliates who were not current students. All 54 completed the questionnaire and provided feedback in the interview. For the purposes of analysis, two of the university affiliates were kept in the sample because they fit in the age demographic of the desired sample and were both recent alumni. The other volunteers helped to provide the researcher with contextual understanding of experiences in the city, but their responses are not included in the results.

3.1.4.   Sample Characteristics

The final sample size included 51 participants. These participants fit in a demographic largely missed by other fear of crime studies in the Waterloo Region (Piscitelli, 2009; Maharaj, 2014). The average age of participants was just below 23 years, and ranged from 19 to 37. Three characteristics of gender, academic level and enrolment type indicated that the sample was non-representative of the university student population.

In the results, responses are examined by gender (male and female), as well as academic year. Respondents were separated by academic year into two groups, lower years (years 1A/B to 4A/B) and upper years (years 5+). This separation roughly corresponds to undergraduate and graduate students. However, at Waterloo, each undergraduate academic year is designated in two parts (A & B) to accommodate academic years that are often separated by co-op terms. Some ambiguity may exist if a respondent extended the time of their studies (i.e. switching to part-time studies, or taking an extra year with a reduced course load). In such a case, they may have indicated that they were in their fourth year (4A/B) (i.e. taking 4th year courses), or that they were in their 5th+ year (the number of years that they had attended the university).

The sample's gender ratio was skewed by a high female response rate, with just over two-thirds of respondents being female (Figure 3.1.5). By comparison, the proportion of females attending the University of Waterloo is much less, at 44%. Possibly, males were not as interested in participating because of the persistent view that concerns about crime are a problem (Gilchrist et al., 1998).
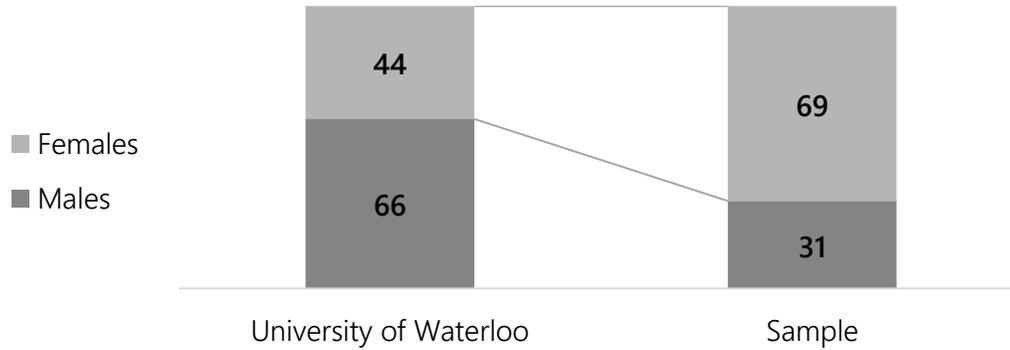
Figure 3.1.5 Proportion of Genders

Student composition was also looked at by academic year and enrolment type. At Waterloo, academic years are designated in two parts (A & B) to accommodate academic years that are often separated by co-op terms. Some ambiguity may exist if a respondent extended the time of their studies (i.e. taking an extra year with a reduced course load). In such a case, they may have indicated that they were in their fourth year (4A/B) (i.e. taking 4th year courses), or that they were in their 5th+ year (the number of years that they had attended the university). Although a couple of students declined to share their enrolment type, it is evident that an over-representation of graduate students participated in the study than is characteristic of the university population (Figure 3.1.6).

54% Lower Academic Year Students
(Years 1 A/B – 4 A/B)

46% Upper Academic Year Students
(Years 5+ & Recent Alumni)
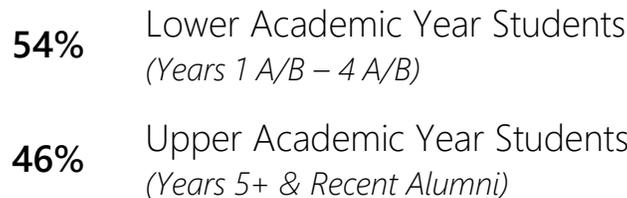
Figure 3.1.6 Respondents by Academic Year

Ethnicity is frequently found to be a significant factor in quantitative models of fear of crime, in which ethnic minorities tend to express greater fear (Hale, 1996; Pain, 2000). The sample is represented by a diversity of ethnicities, with a majority identifying as either White or Chinese (Figure 3.1.7). International students are represented by six different ethnicities in the sample. It was encouraging to note that a number of international students participated in the study, overcoming evident nervousness of being interviewed in a second language to share about their experiences.

White
33%

Non-White
(Latin American, Korean, Chinese, Filipino, Black, South Asian, and Other)
65%

80% Domestic Students

20% International Students

+ 2% No Response
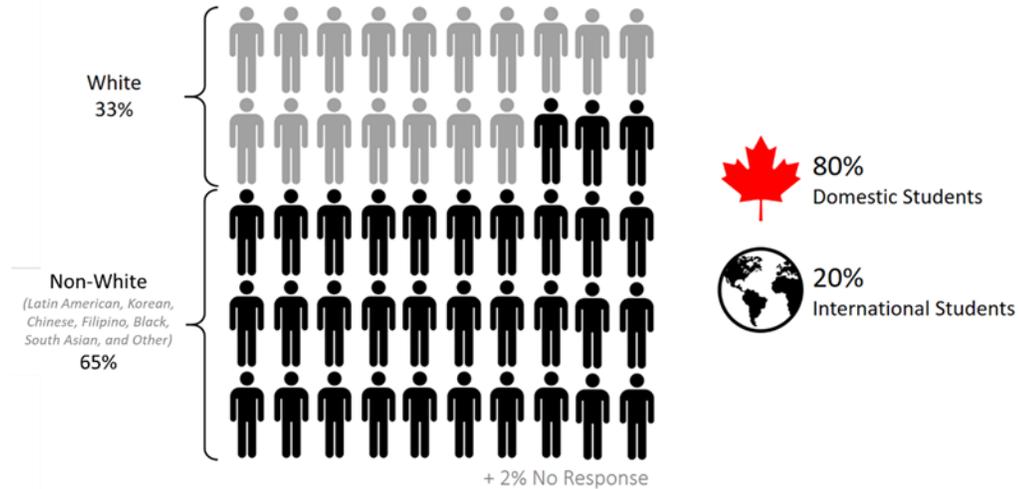
Note: Terminology of ethnic categories was used from Statistics Canada's 2011 National Household Survey visible minority classifications (Statistics Canada, 2015d).

Figure 3.1.7 Proportion of students by ethnicity

3.2. SECONDARY DATASET: WRPS POLICE OCCURRENCE DATA

3.2.1. Dataset Description

The WRPS Police Occurrence dataset represented the demands on police resources from emergency and non-emergency citizen-generated incoming calls as well as officer-initiated requests. It includes the full extent of police call information that can be publicly released within the limitations of the privacy legislation (WRPS, 2014). Police call information represents demands on police resources, and the dataset is not a measure of criminal activity. Calls for police presence are initiated for a wide variety of incidents, of which most are not criminal in nature. In fact, the most common logged call type in 2015 was 'compassionate to locate' (requests for the police to help check on or find a loved one), followed by by-law complaints. Of course, police are also called upon to resolve criminal incidents, which are all included in the same dataset.

The dataset includes a geocode (that is, a coordinate position of the nearest intersection where the police responded to), which is applied to most incidents. The geocoded location is offset from the true location, in order to protect privacy of individuals. Most incidents are associated with these coordinates, but there are cases with no geocode due to the occurrence not being geographically located or is without a municipal address, and therefore is unmappable. Furthermore, it is important to stress that, because the dataset is of demand on police activity, the locations are associated to the dispatch address, which could be where the incident occurred or where it was reported.

With these cautions, the publicly-available dataset remains a valuable proxy to spatial patterns of crime in Waterloo Region. The granular detail of crime type approximates the spatial patterns of crime in the

region, to a degree unavailable in other datasets (i.e. by Juristat). Students' perceptions were spatially compared to a subset of incident types from this occurrence data. Five crime-related incident types were selected: assault, sex offence, robbery, break and enter, and theft (under $5000). The reduction takes a narrow view of crime incidents (and an even narrower view of police service activities) in Kitchener-Waterloo, but allows for a topical comparison of perceptions to specific crime types to be used for discussion.

3.2.2. Method of Analysis

The police data was examined to understand the distribution crime in the study area and to compare how students' perceptions of risk aligned to these incidents. Volume of crime in neighbourhoods is known to affect local levels of fear, but the effect of the spatial variability of crime on fear is less documented (Pearson & Breetzke, 2013). This study compared individual and aggregated perceptions of areas against crime occurrence point data; hotspot analysis was used for visualization.

3.2.2.1. VISUALIZING HOTSPOTS OF CRIME

To understand the spatial distribution of crime in Kitchener-Waterloo, hotspot analysis by kernel density estimation was performed on the subset of crime occurrence data. This non-parametric technique has been frequently used in literature to better understand patterns of distribution and intensity in crime data (Doran & Lees, 2005; Pain, MacFarlane, Turner & Gill, 2006). In order to quantify the extent of clustering in the data, nearest neighbourhood analysis was performed on each crime type separate. This step produces a ratio number calculated by indexing the observed average distance against the expected average distance, so that a lower ratio indicates more clustering than expected (Esri, 2017). The results in Table 3.1.2 indicate that incidents of each crime type tended to cluster and not randomly dispersed over the study area.

Table 3.2.1 Average Nearest Neighbour Ratios for Each Selected Crime Type in Kitchener-Waterloo

Crime Type	Average Nearest Neighbour Ratio	Average Nearest Neighbour Z-Score
Assault	0.354108	-37.964402
Sex Offence	0.601478	-14.160975
Robbery	0.640997	-8.068041
Minor Theft	0.21811	-122.811351
Break and Enter	0.396251	-45.089967

Kernel density estimation was run on each crime type separately. The WRPS protects the privacy of those involved in police-responded crimes by approximating the point location to the nearest major

intersection. The points were dissolved, then the count of dissolve points used to populate the "Population" field as a weight. The output cell size was 70m^2. These outputs are shown in the Results chapter.

3.2.2.2. OVERLAP OF PERCEPTIONS ON CRIME

Additional descriptive analysis was run to explore the frequency of worry by crime type, as well as an assessment of how accurate individual perceptions captured the incidence of each crime type. This further spatial analysis was conducted using overlays to quantitatively compare individual perceptions against police-reported incidents of crime. Spatial queries selected occurrence locations that fell within participants' individual and collective areas. Boxplots show the total proportion of crime volume that perceptions coincide with.

3.3. STATEMENT OF RESEARCHER'S ROLE AND POSITIONALITY

My positionality as researcher and as an academic peer to the study volunteers gives me a unique perspective on their stories they shared. Like many of the respondents, I moved to Kitchener-Waterloo specifically for university, and have attended the University of Waterloo for the past 8 years. Being also of similar age, I was able to easily build rapport with volunteers during the interviews and could empathize with many details of student culture and local features that respondents discussed.

My own perceptions and experiences of crime are limited. My concern for safety is admittedly quite low, perhaps influenced by the fact that since, at the time of writing, I have never been a victim of crime (although coincidently, on the first and last day of the two weeks of survey pre-testing, two of my immediate family members in separate cities experienced thefts from their car or apartment). During the survey, respondents were asked directly about their victimization experiences on the questionnaire, but not during the interview. However, some respondents' perceptions of spaces in Kitchener-Waterloo were formed in part through experiences of victimization, which they were not pressured to share. Participants identities have been kept completely confidential and any details of their experiences in this document have been described at a minimum.

RESULTS

Perceptions of crime in Kitchener-Waterloo are explored quantitatively and qualitatively in this chapter. Results are presented in three sections. The first section focuses on the responses from the questionnaire to establish levels of trust in local communities, observation of local problems, previous victimization experiences, and a structured assessment of perceptions of crime. Next, the following section uncovers the results of thematic analysis, organized by themes that were evident in participants' interviews, revealing associated spatial patterns in four annotated maps. The final section of the chapter compares these spatial perceptions to WRPS 2014 police-reported response data, exploring how the post-secondary students' perceptions of crime compare against official records.

4.1. PERCEPTIONS OF CRIME

4.1.1. Observations of Local Problems

Participants reported types of crimes and behaviours that they observed in their neighbourhoods and around the cities (Figure 4.1.1). This measure allowed students to give a general assessment of community problems according to observed incidents. In every category, disorder and crime were observed more often in the greater city areas than around student neighbourhoods. Social problems and behaviours of homelessness (76%), public drinking (73%) and unsafe driving (71%) were most strongly attributed as city-wide problems; drug use and litter were also viewed by 63% of participants as a problem in the cities. Around student neighbourhoods, social problems were not nearly as frequently observed with the exception of unsafe driving. The greatest consensus towards a neighbourhood problem was for unsafe driving, identified by 45% of respondents.

From your observations, which of the following crimes and/or behaviours are commonly found in Kitchener-Waterloo and in your neighbourhood of residence?

■ Kitchener-Waterloo   ■ Neighbourhood

Social problems and/or behaviours

Problem	Kitchener-Waterloo	Neighbourhood
Homelessness	76	18
Public Drinking	73	24
Unsafe driving	71	45
Drug use	63	24
Poverty	57	12
Prostitution	18	2

Non-violent and property-related crimes and/or behaviours

Problem	Kitchener-Waterloo	Neighbourhood
Litter	63	29
Rundown property	49	20
Vandalism	49	37
Street harassment	41	25
Fraud	25	10
Breaking and entering	24	18
Theft	22	8

Violent crime and/or behaviours

Problem	Kitchener-Waterloo	Neighbourhood
Robbery	37	18
Physical Assault	35	14
Sexual Assault	31	8
Hate crimes	29	6
Homicide	20	4

Figure 4.1.1 Observed Community Problems

Females were more likely to report observing social problems in their own neighbourhoods and in Kitchener-Waterloo across all listed categories than males, with the exceptions of litter and vandalism (Figure 4.1.2). In the case of litter, males were also more likely to report observe the problem more frequently than in Kitchener-Waterloo – the only instance of a problem being observed by one gender more frequently locally than municipally. However, the greatest differences in proportions occurred among violent and non-violent

crimes in Kitchener-Waterloo. Females were particularly more observant than males of physical and sexual assaults occurring in the study area.
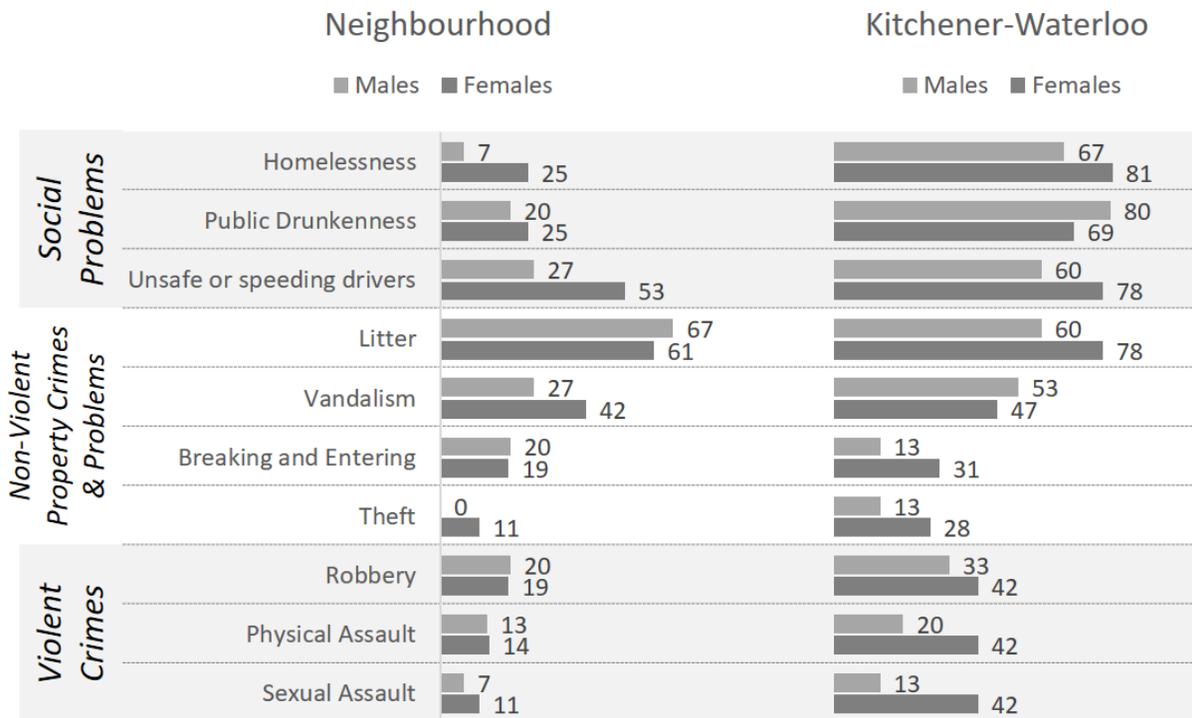
Figure 4.1.2 Observed community problems among male and female respondents

Perceptions among academic years indicated that upper-years tended to observe more social problems than lower-years in both their neighbourhoods and generally in Kitchener-Waterloo (Figure 4.1.3). Strong differences in perceptions were once again noted between these groups perceptions of violent and non-violent crimes. In fact, upper-years were over twice as likely as their counterparts to observe breaking and entering, and theft as a problem in Kitchener-Waterloo. Within their own neighbourhoods, upper-years also report awareness of physical assault at a relatively high rate in their own neighbourhood, as well as breaking and entering.

	Neighbourhood	Kitchener-Waterloo
	Lower Years ■ Upper Years	Lower Years ■ Upper Years

Social Problems
- Homelessness: 14 / 26 | 75 / 78
- Public Drunkenness: 25 / 22 | 68 / 78
- Unsafe or speeding drivers: 46 / 43 | 68 / 78

Non-Violent Property Crimes & Problems
- Litter: 61 / 65 | 79 / 65
- Vandalism: 36 / 39 | 46 / 52
- Breaking and Entering: 14 / 26 | 14 / 39
- Theft: 7 / 9 | 14 / 35

Violent Crimes
- Robbery: 18 / 22 | 36 / 43
- Physical Assault: 7 / 22 | 29 / 43
- Sexual Assault: 7 / 13 | 25 / 43

Figure 4.1.3 Observed community problems among lower- and upper-year students

4.1.2. Past 5-Year Experiences of Victimization

One-third of respondents (n=18) reported having been a victim of crime in the past five years. The most frequently mentioned incident involved theft; other incidents mentioned were fraud, vandalism, threats, hate crimes, physical and sexual assaults, and driving infractions. Experiences of victimization did not occur exclusively in Kitchener-Waterloo; seven respondents referred to incidents that occurred elsewhere in Canada or abroad. Half of victimized respondents (n=9) reported the crimes to police and no one sought help from victim services. Victimization experiences tended to increase respondents' level of concern of crime (Figure 4.1.4).

**Has your awareness/concern of crime changed
after your experience(s) of victimization?**
Asked among those victimized in past 5 years

11	50	39	0	0
Much more concerned	Somewhat more concerned	No change	Somewhat less concerned	Much less concerned
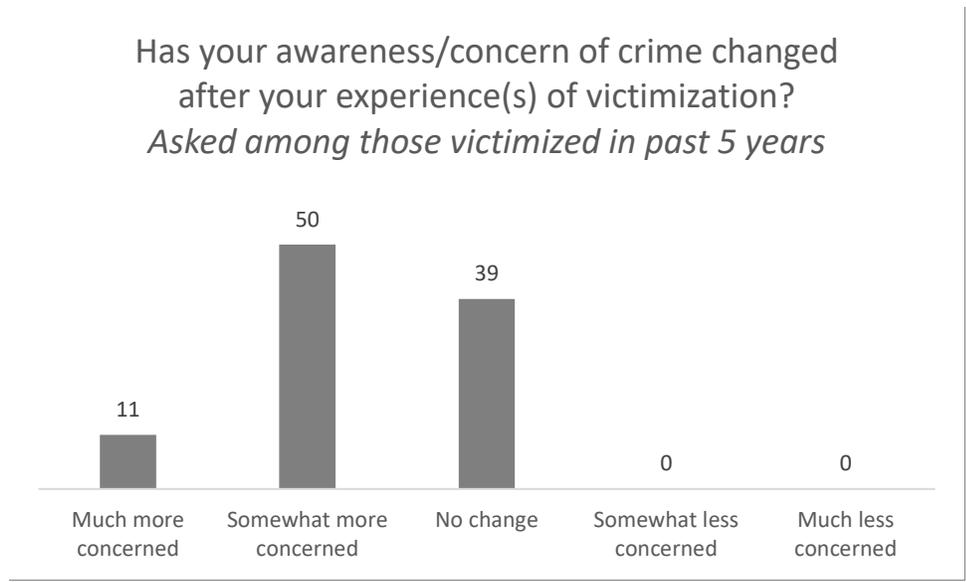
Figure 4.1.4 Change in concern of crime among Past 5 Year victims

4.1.3. Worry

A generalized measure of worry was used to assess students' emotional perception of crime. Specifically, students were asked how worried they were about becoming a victim of crime in Kitchener-Waterloo. On a 5-point scale, the middle two options captured nearly 75% of responses: nearly half of respondents indicated they were 'Not very worried' (47%), and an additional quarter reported that they were 'A little worried' (27%) (Figure 4.1.5). Overall, students are not very worried about being victimized by crime in Kitchener-Waterloo.

**In general, how worried are you about becoming a
victim of crime in Kitchener-Waterloo?**

20	47	27	4	2
Not at all worried	Not very worried	A little worried	Very worried	Unsure
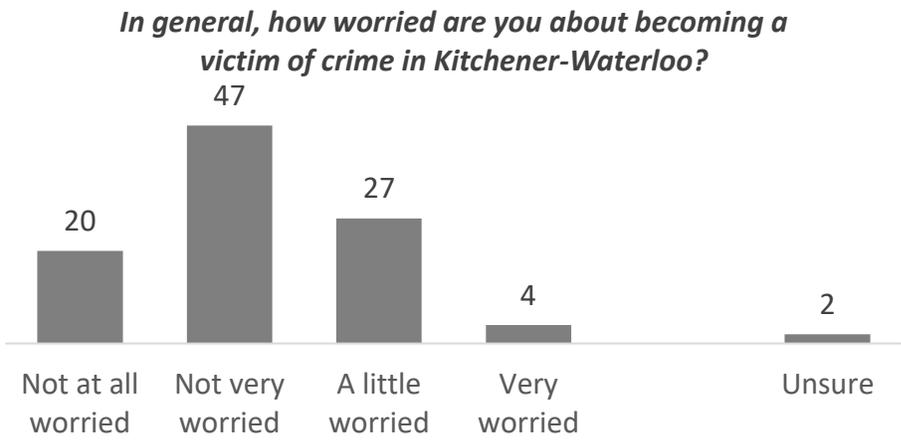
Figure 4.1.5 Worry of Crime

In general, how worried are you about becoming a victim of crime in Kitchener-Waterloo?

- Very Worried
- Somewhat worried
- Not very worried
- Not at all worried
- Unsure

	Male (n=15)	Female (n=36)	Lower (n=28)	Upper (n=23)
Very Worried	0	3	4	0
Somewhat worried	12	23	21	17
Not very worried	59	46	39	63
Not at all worried	29	23	29	21
Unsure	0	6	7	0
	Gender		Academic Year	
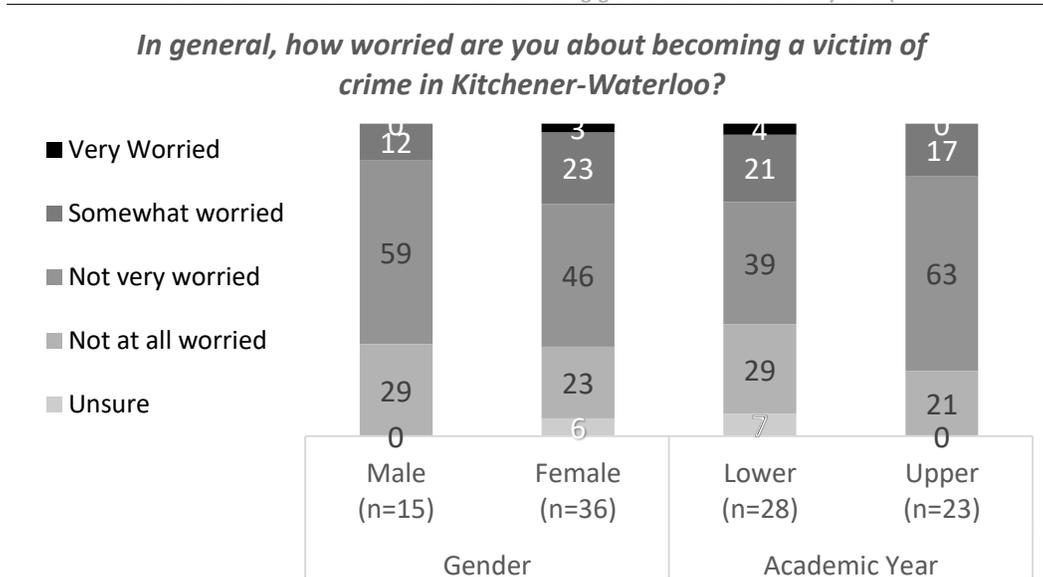
Figure 4.1.6). Both females and lower year students reported higher levels of worry. Female students were twice as likely as males to report being at least somewhat worried about becoming victimized by crime in the study area. This trend is similarly reflected among lower year students.
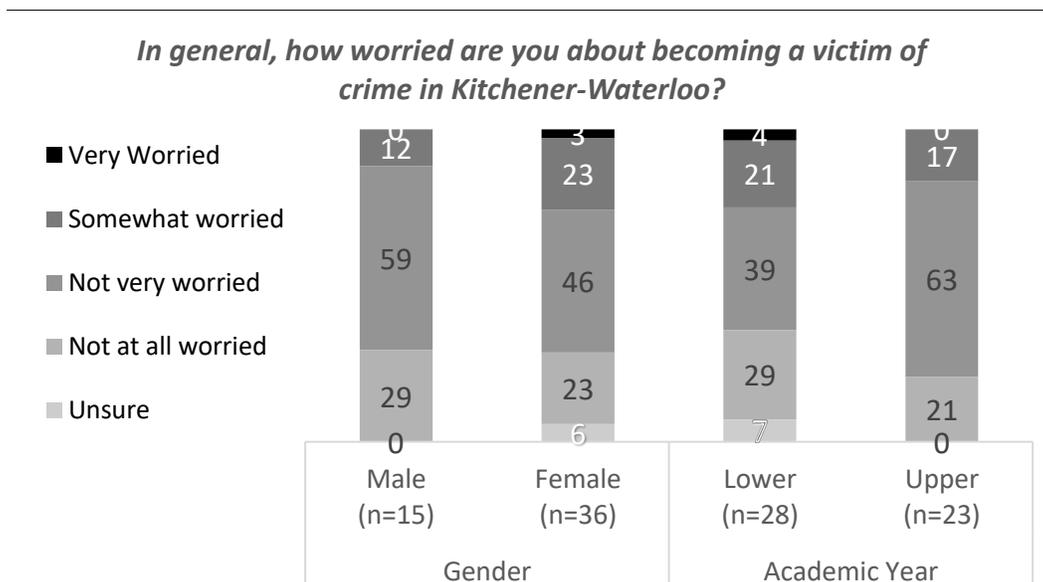
Figure 4.1.6 Worry of crime by gender and academic year

4.1.4. Risk Perception

Students were asked to assess their personal level of risk of victimizations at two scales: in their neighbourhood and in the cities of Kitchener-Waterloo (Figure 4.1.7). Responses were rated on a 5-point numeric scale where 1 indicated 'Low Crime Risk' and 5 as 'High Crime Risk'. Respondents viewed their neighbourhoods as places of low risk of crime, with 88% selecting the two lowest risk estimates. The perception of risk increased when participants considered the broader area of Kitchener-Waterloo, almost

systematically shifting up one point. Yet overall perceptions stayed low. Even with this shift, the highest category (5) was never selected at either scale and the majority of responses were in bottom two points.

How do you perceive your risk of crime …?

A. In the neighbourhood where you live

```
57
|■|
    31
    |■|
        8
        |■|   4
        |■|  |■|   0
─────────────────────────
 1    2    3    4    5
Low Crime              High Crime
Risk                        Risk
```

B. In the cities of Kitchener-Waterloo in general

```
         51
         |■|
              31
              |■|
    10                8
    |■|              |■|   0
─────────────────────────
 1    2    3    4    5
Low Crime              High Crime
Risk                        Risk
```
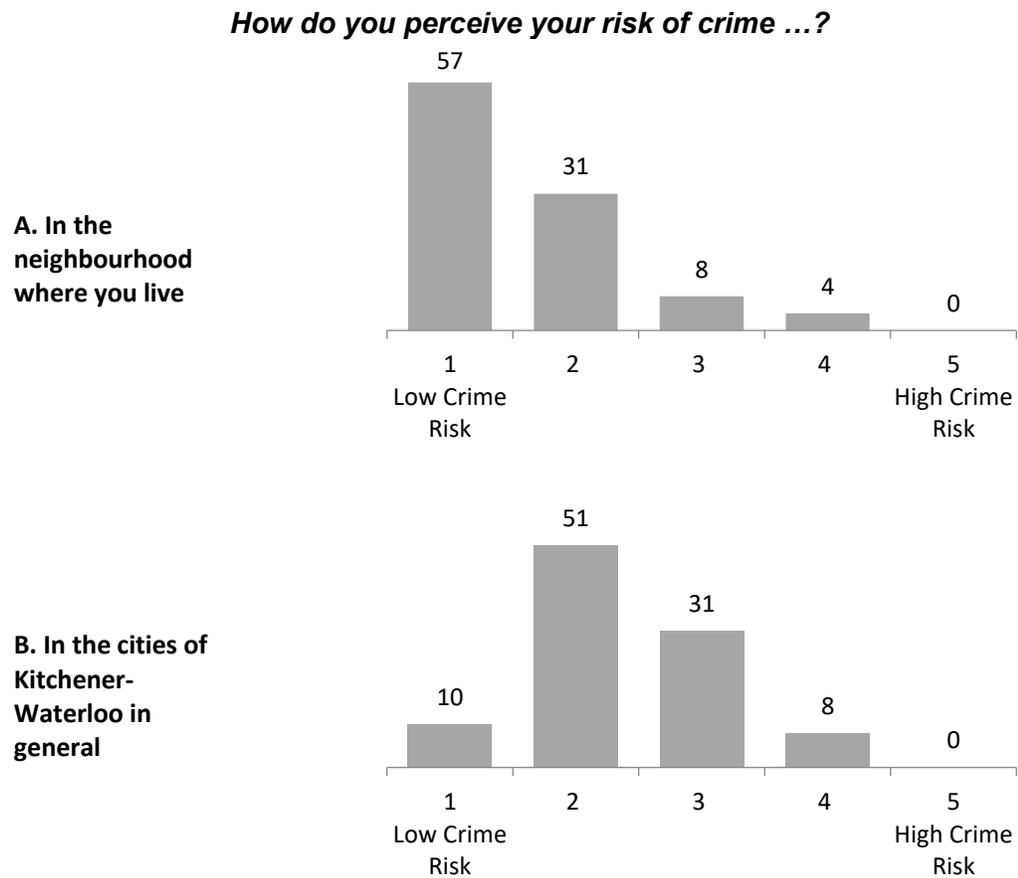
Figure 4.1.7 Perceptions of risk

4.1.5. Inhibition

Students were asked about the effect that the threat of crime had on their lifestyle choices. The question was adapted from the biennial community perception survey by the Regina Police Service (Jones & Ruddell, 2014). Respondents assess the negative impacts that the threat of victimization had on their quality of life. Less than 15% of respondents agreed to some extent that their behaviour was constrained due to the possibility of crime, but for most individuals, crime does not act as a negative lifestyle inhibitor to behaviour. Results show a strong consensus among respondents that the possibility of crime does not keep them from doing things they would like to do (Figure 4.1.8).

To what extent do you agree or disagree with the following statement: "The possibility of crime keeps me from doing things I'd like to do."

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
	4	10	12	27	47
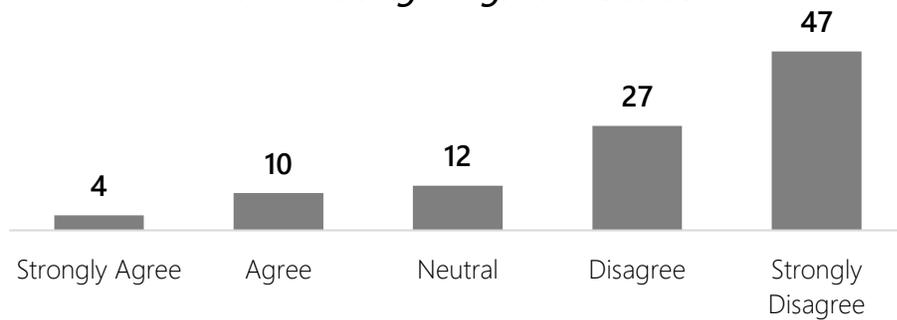
Figure 4.1.8 Inhibition from risk of crime

Between genders and academic years, male and upper year students are least likely to agree that the threat of crime inhibits their behavior (Figure 4.1.9). The students who did agree that their behavior was impacted by the threat of crime were almost exclusively female and entirely lower year respondents. One-quarter of lower year students agreed to some extent that they adapt their behavior to protect themselves from crime, yet in contrast, no upper year students agreed that they adapted their behavior due to the threat of crime.

To what extent do you agree or disagree with the following statement: "The possibility of crime keeps me from doing things I'd like to do."
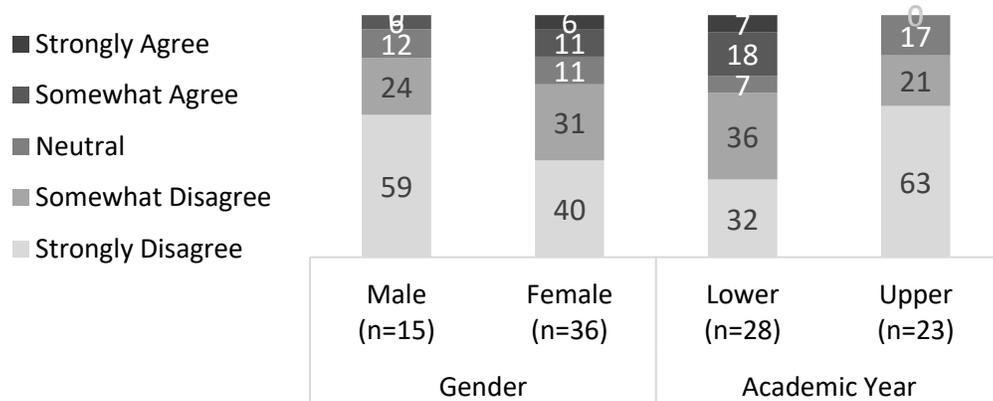
Figure 4.1.9 Inhibition of risk of crime by gender and academic year

4.1.6. Feeling of Safety

An alternate single all-encompassing measure of students' insecurities toward crime considers the feeling of safety. The approach to measure feelings of safety has been employed by the Waterloo Region Crime Prevention Council's longitudinal study of fear of crime since 2008, which asks how safe respondents

feel about walking alone in their neighbourhood at night. In this survey, respondents were asked two questions about how safe they feel walking alone in their neighbourhood, during the day and at night. During the day, 100% of students reported feeling "reasonably" or "very" safe. After dark however, feelings of safety diminish. Over one-quarter of respondents feel "somewhat" or "very" unsafe walking alone in their neighbourhood at night. Full distribution of responses are displayed in Figure 4.1.10.

When you walk alone in your neighbourhood, how safe do you feel... ?

A. During the day

B. After dark
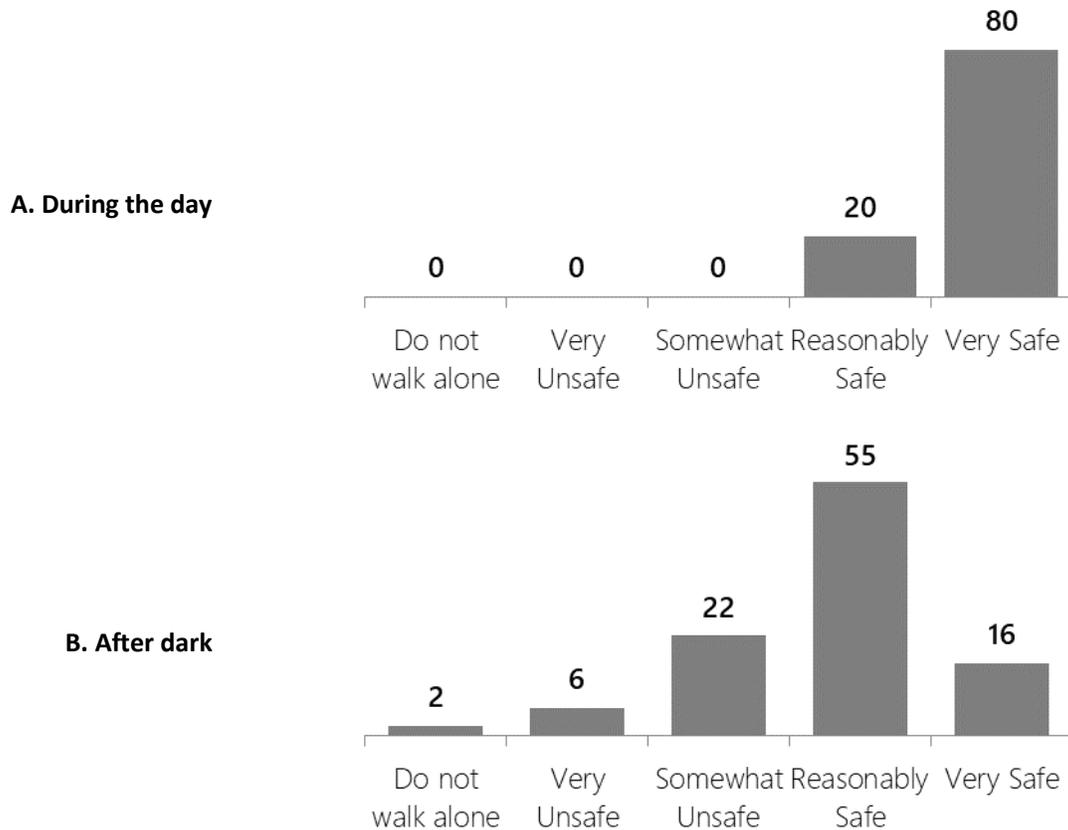
Figure 4.1.10 Feelings of safety while walking alone in neighbourhood of residence at night

This shift in sentiments based on time of day is not surprising, but it is important to note that most respondents do not attribute their insecurity as a response to any particular crime. An open question followed, asking respondents to describe what factors affect their feelings of safety. The most common factor that participants attributed to their sense of feeling unsafe was dim lighting. Other replies revealed conflicting views of whether the presence or absence of people at night raised concerns for safety. Neighbourhood consumption of drugs and alcohol at night-time raised some concern among just four participants. Participants did not mention any daytime concerns for safety.

All groups reported high feelings of safety when walking alone in their neighbourhood after dark (Figure 4.1.11). These feelings of safety were greatest among male students, of whom one-third reported

feeling "very safe". This result was twice the proportion reported by any other group. Female, upper year students are the only groups that report feeling very unsafe or never walking alone after dark.

When you walk alone in your neighbourhood, how safe do you feel after dark?
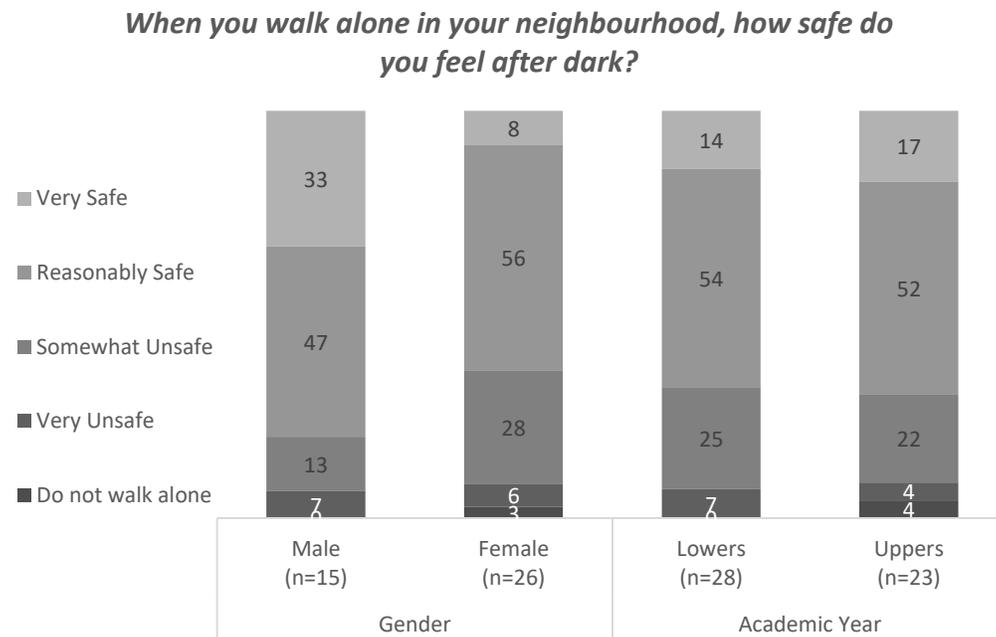
Figure 4.1.11 Feelings of safety while walking alone in neighbourhood of residence at night

OVERVIEW OF SPATIAL PERCEPTIONS

4.1.7. Familiarity with Kitchener-Waterloo

Respondents indicated areas where they were most familiar in Kitchener-Waterloo, including areas where they had lived or frequented for school, work, socializing or other reasons (Figure 0.1.). Core areas of familiarity centred on dissemination areas around the main University of Waterloo campus, nearby local mall and plazas, and the urban cores of Waterloo and Kitchener. Peripheral areas of the municipal boundaries of Kitchener-Waterloo were the least familiar, particularly in Kitchener where roughly half of students felt accustomed with the downtown area, but few areas elsewhere.
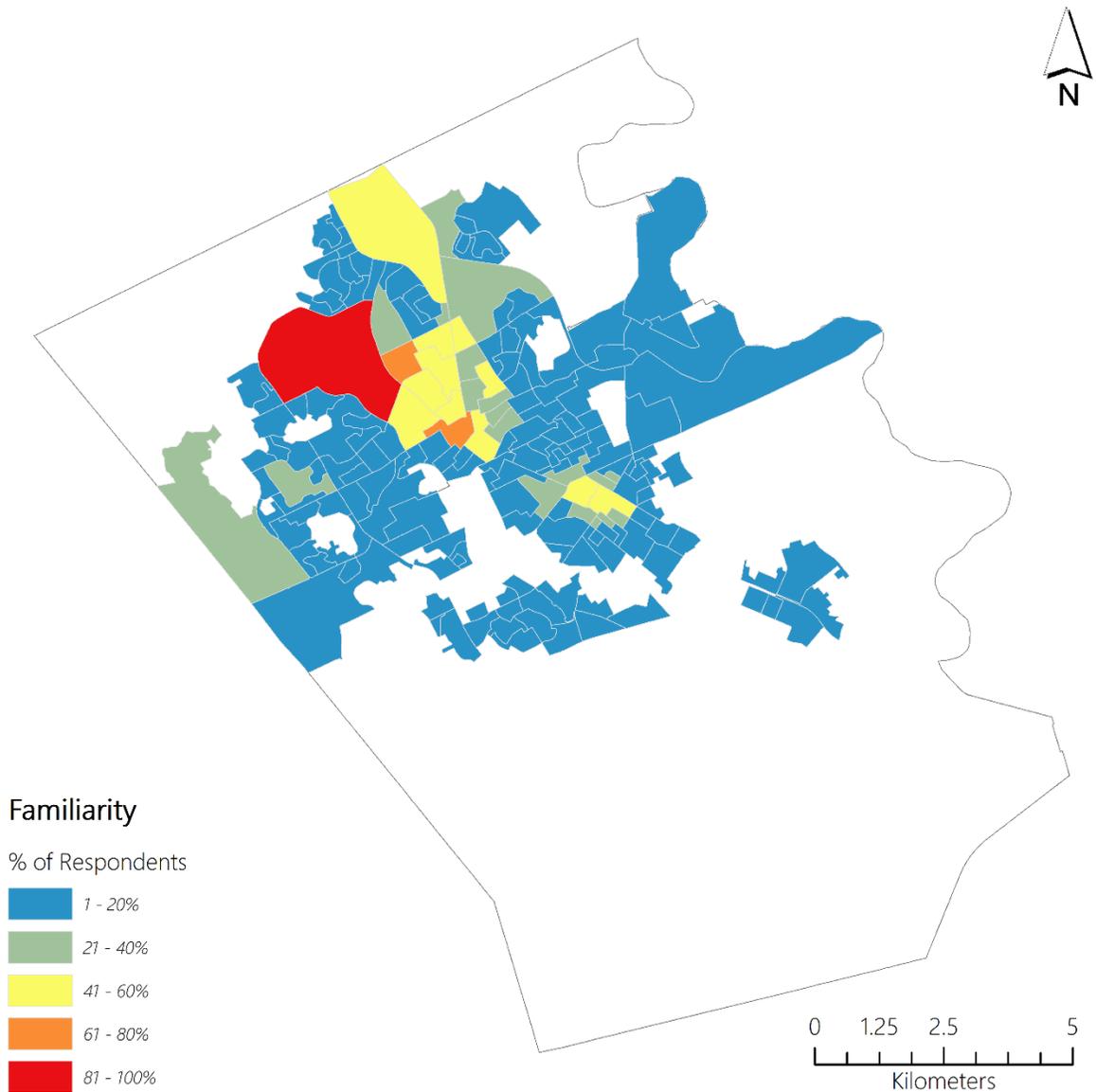
Figure 0.1 Student familiarity with neighbourhoods in Kitchener-Waterloo (%)

4.1.8. Spatial Form of Perceptions

The questionnaire responses are illustrated further by the boundaries that participants drew around the areas where they perceived risk of crime in Kitchener-Waterloo. Participants' cognitive maps reinforce the conception that fear of crime has a definite spatial dimension, and influenced by similarly-interpreted signals (see Methodology). An aggregation of the results depicts a concentration of boundaries toward the centre of the study area (Figure 4.2.1.). Just one of the 138 distinctly drawn features did not overlap any other features at all, reflecting strong correspondence between drawn responses.
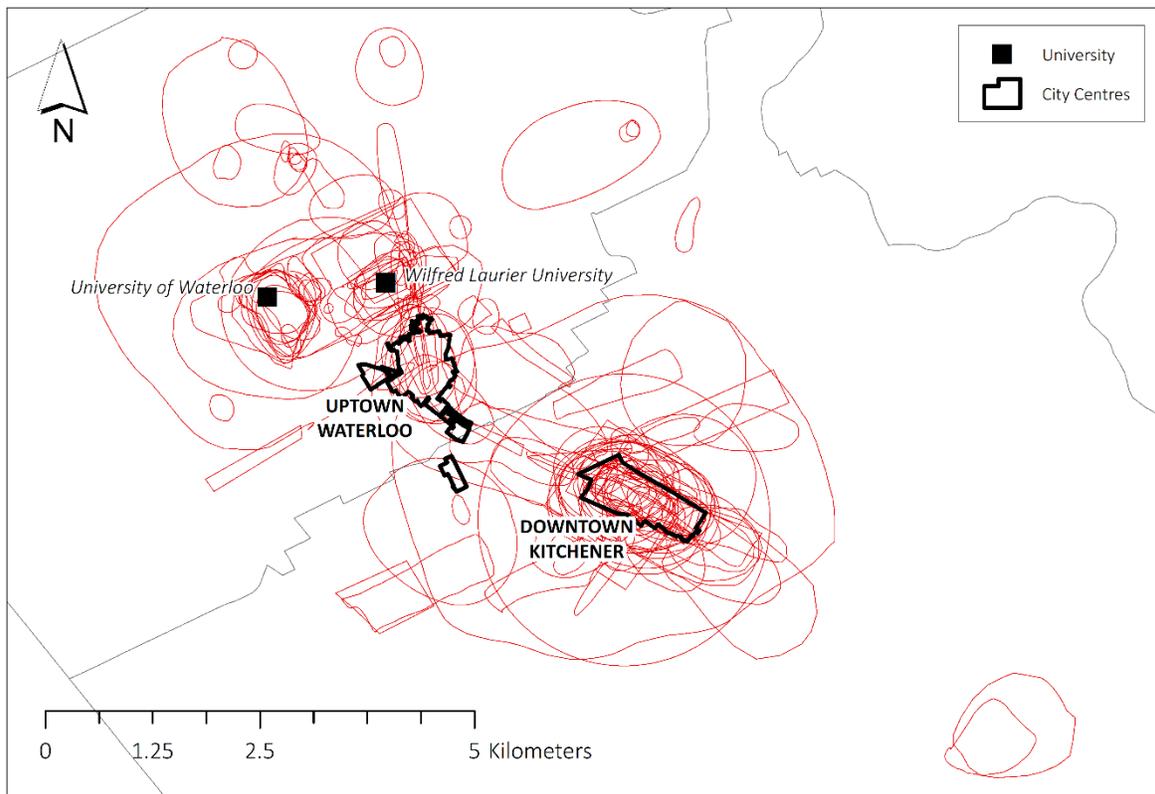
Figure 0.2 Spatial overlay of individual areas of perceived crime

Participants were free to draw area where they perceive crime in any shape and size. Participants drew an average of approximately three areas each, for an average total of 2.7km^2. The number of drawn responses varied significantly between participants. For example, the two participants who declined to draw boundaries believed Kitchener-Waterloo to be safe throughout, yet five participants each identified six or more areas in the study area that they identified with crime. The average area of each feature was small at 0.93km^2. The average level of fear for each area was 3.5 on the 7-point scale, where lower numbers correspond to lower fear. Figure 0.3 visualizes how the number of areas drawn per participants moderately correlates to a decrease in average area size. Note, one outlier was removed from the chart, representing a respondent who had drawn areas at an average size of 13km^2. The differences in size of areas drawn indicate variability in how students perceive and associate risk of crime in the city.
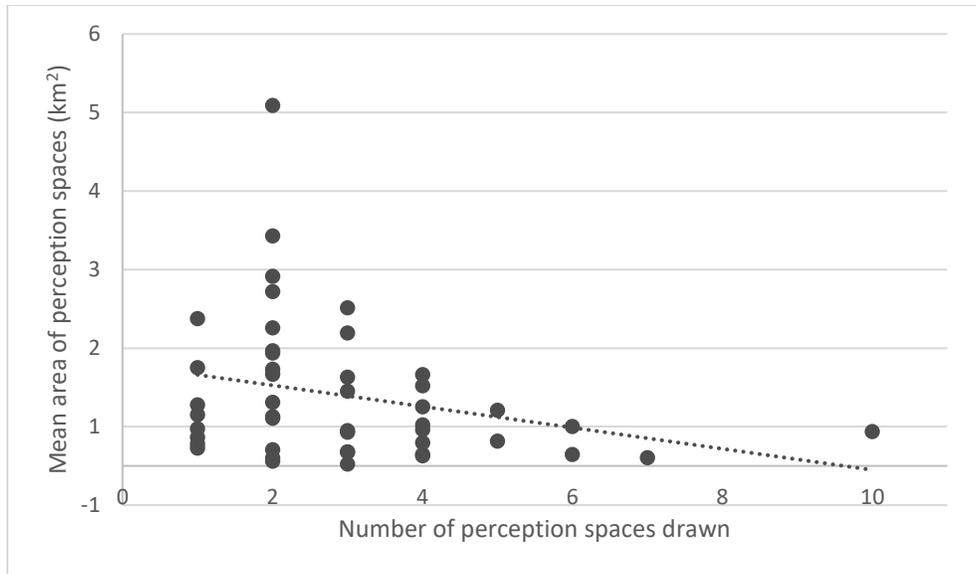
Figure 0.3 Relationship between number and size of areas where participants perceive crime

4.1.9. Spatial Distributions of Perceptions

Figure 0.4 shows the resulting maps show where individuals' perceptions coincided most frequently, as well as where they were unique. These results show that perceptions of crime coincide most frequently on three general regions: Downtown Kitchener, and the two campuses of the University of Waterloo and Wilfred Laurier University.
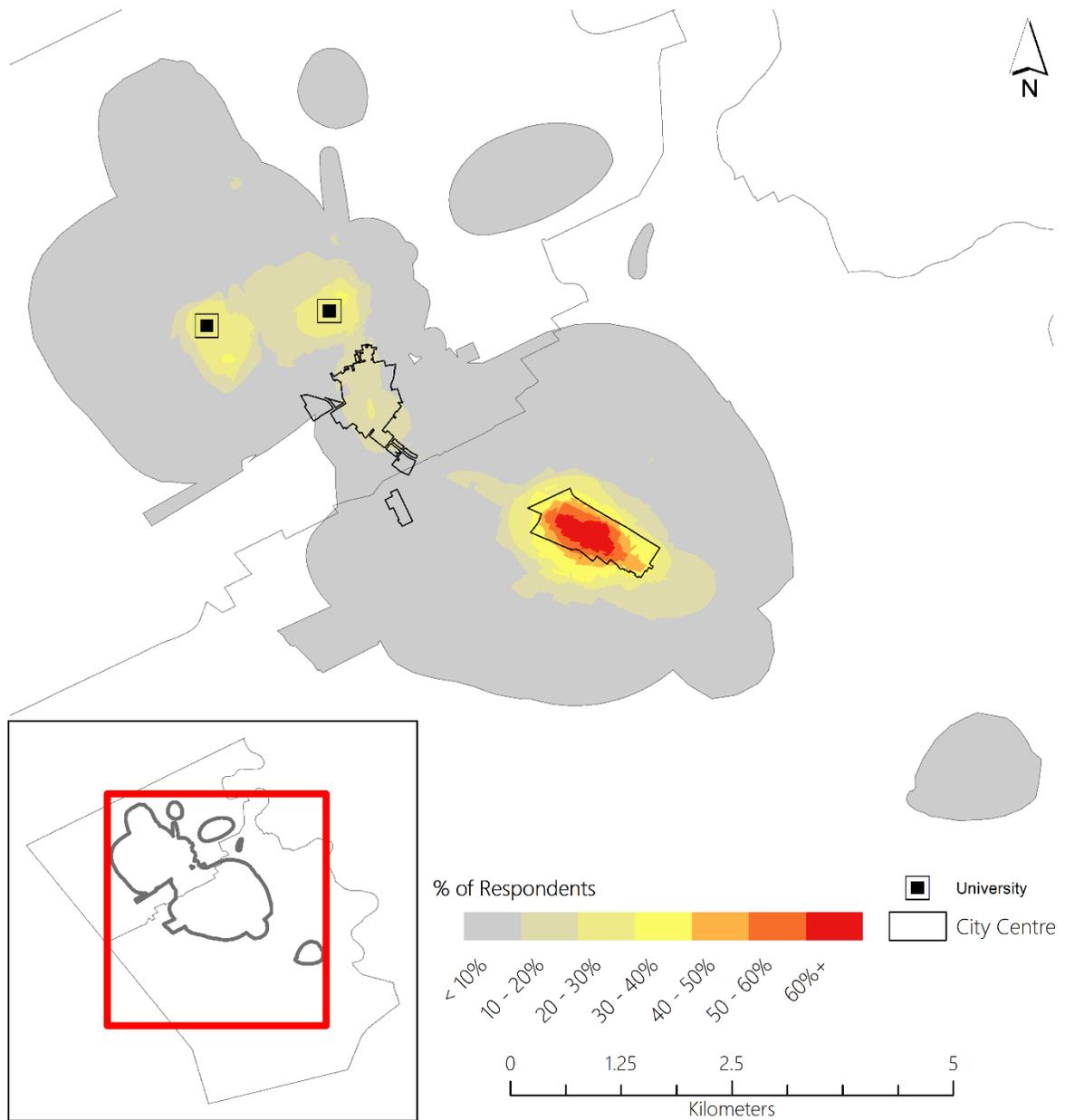
Figure 0.4 Concordance maps by Frequency of Respondents

4.1.10. Spatial Distributions of Worry

Participants were asked to rate their level of worry on a 7-point scale for each of the boundaries that they drew. The 7-point scale ranged from '1 – Not at all worried' to '7 – Very worried', which allowed for more variation in responses than the question about worry on the questionnaire. Worry across the 138 areas was generally quite low (Figure 0.5). Over half (55%) of ratings were of the lowest three points, meaning that participants perceptions of crime risk did not necessarily cause much worry. In fact, some participants explained for some areas that, although they had indicated a response on the upper half of the scale, it did

[49]

not mean they were particularly worried. For example, one international participant identified two areas on the map, describing her worry in those areas as 4 and 6 points. She explained that her worry was "really not that high" compared to her home country. While these ratings were not purely arbitrarily chosen numbers, the magnitude of fear that the numbers represented was different for individuals based on their own interpretation and life experiences.

On a scale of 1 to 7, how worried are you about becoming a victim of crime in this area?

1 Not very worried	2	3	4	5	6	7 Very worried
8	19	28	17	15	7	7
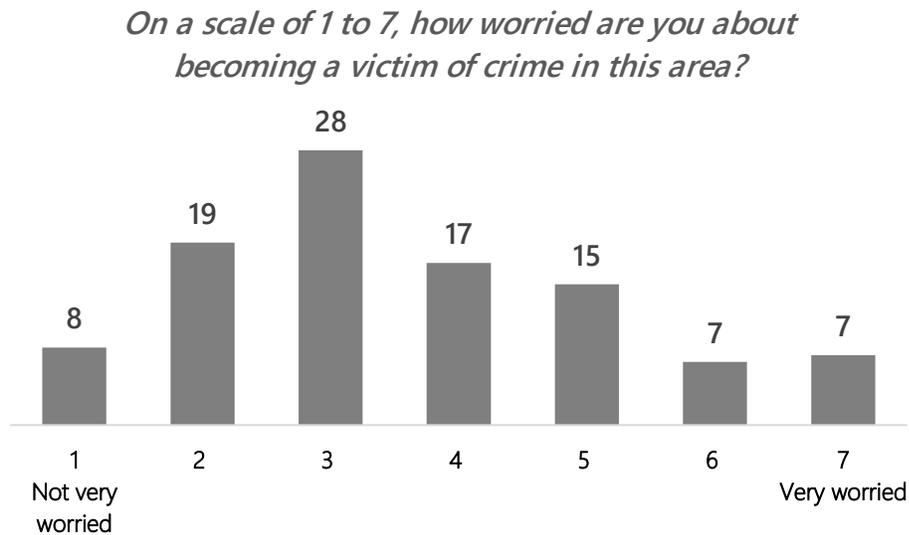
Figure 0.5 Ratings of fear in participant-drawn areas across Kitchener-Waterloo

4.2. SPATIAL THEMES

Interview responses revealed that spatial perceptions were driven by observations, experiences and intuitions of criminal behaviour and signs of disorder. These themes were coded into four categories to explore the spatial distribution of common perceptions. Criminal behaviour was separated into two categories of violent crime (assaults, robberies, homicides, etc.) and non-violent crime (fraud, breaking and entering, theft, etc.). Disorder was defined by the presence of social incivilities (substance abuse, homelessness, mental illness, etc.) and physical incivilities (rundown buildings, poor lighting, litter, etc.).

4.2.1. Perceptions of criminal behaviour

Spatially-defined perceptions of violent crimes in the study area were low across the study area (Figure 4.2.1). A total of 46% of the 144 areas drawn on the maps were associated with violent crimes. The highest concentration of perceptions centred on downtown Kitchener. To a lesser extent, students also identified violent crime as a problem around the main campus of the University of Waterloo more than around Wilfred Laurier University and Uptown Waterloo.
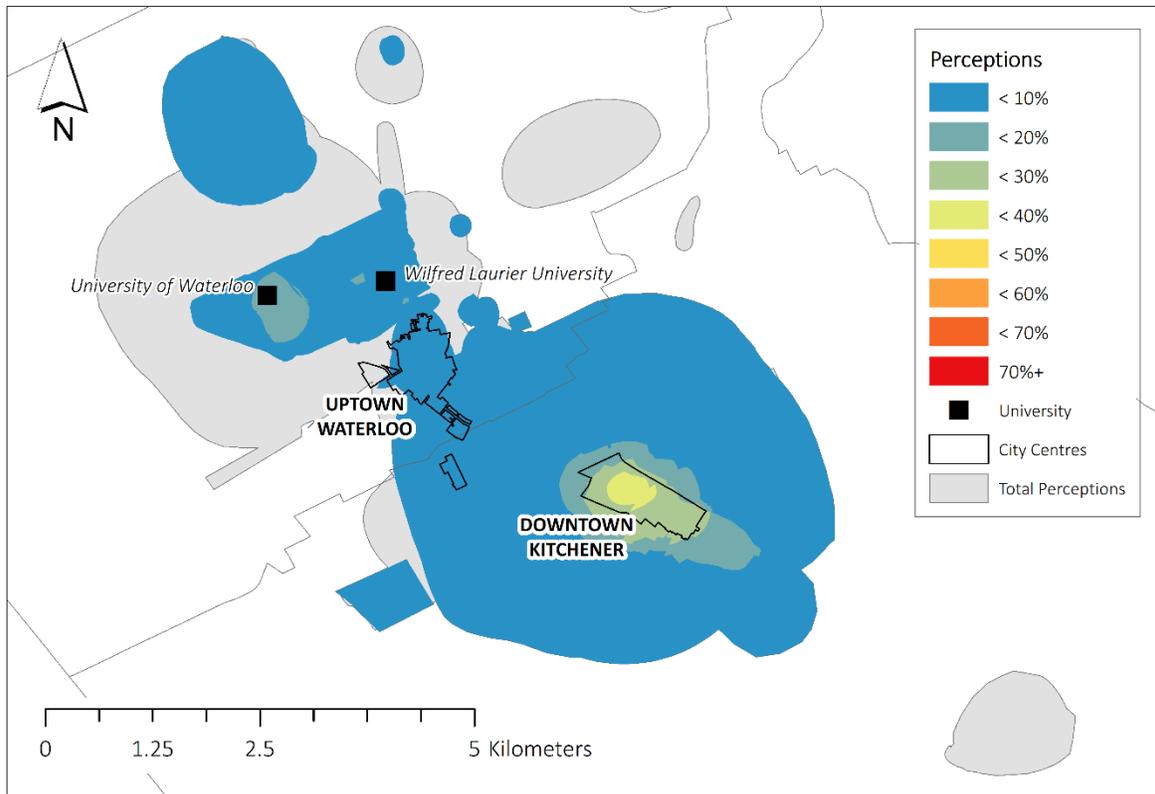
Figure 4.2.1 Spatial perceptions of violent crime in Kitchener-Waterloo

Non-violent crimes were perceived with more focus on more neighbourhoods in Waterloo in addition to downtown Kitchener (Figure 4.2.2). Downtown Kitchener and the University of Waterloo campus were both top areas associated with non-violent crimes. Surrounding neighbourhoods of Wilfred Laurier University were also more cohesively identified as having problems with non-violent crimes, but virtually excluded Uptown Waterloo. The number of areas associated with non-violent crimes was equivalent to those associated with violent crimes (47%).
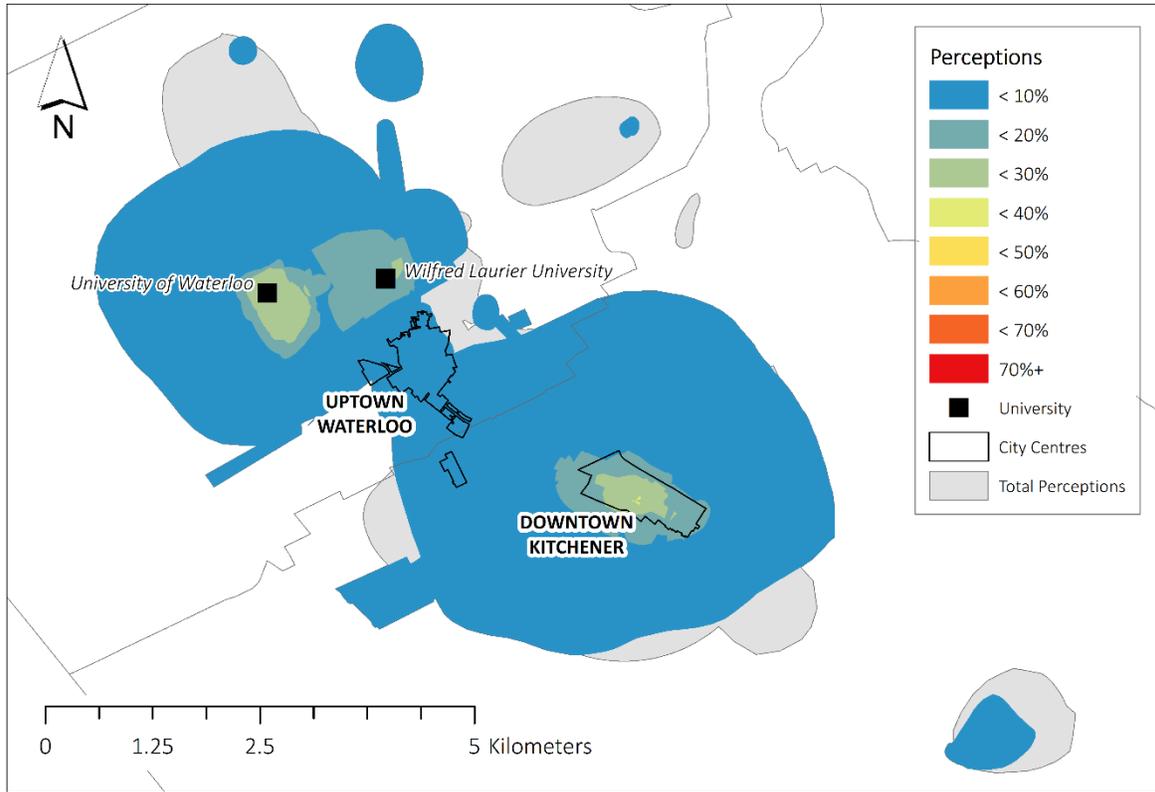
Figure 4.2.2 Spatial perceptions of non-violent crime in Kitchener-Waterloo

4.2.1.1.   PERCEPTIONS OF CRIME BY GENDER

Very little overlap occurred among areas where male respondents described violent crimes (Figure 4.2.3). While perceptions are sparse in Waterloo, some cohesion begins to form in the downtown core (<20% of male responses). More agreement is observed among perceptions of non-violent crime (Figure 4.2.4). Males more strongly associated non-violent crime through the core areas from downtown Kitchener through to Uptown, Wilfred Laurier University and cresting at the University of Waterloo. Males tend to more likely perceive non-violent crime, given the relative larger geographic area and concordance of perceptions. In total, of the 33 areas that males drew where they perceived crime, 42% were associated with violent crime and 52% were associated with non-violent crime.
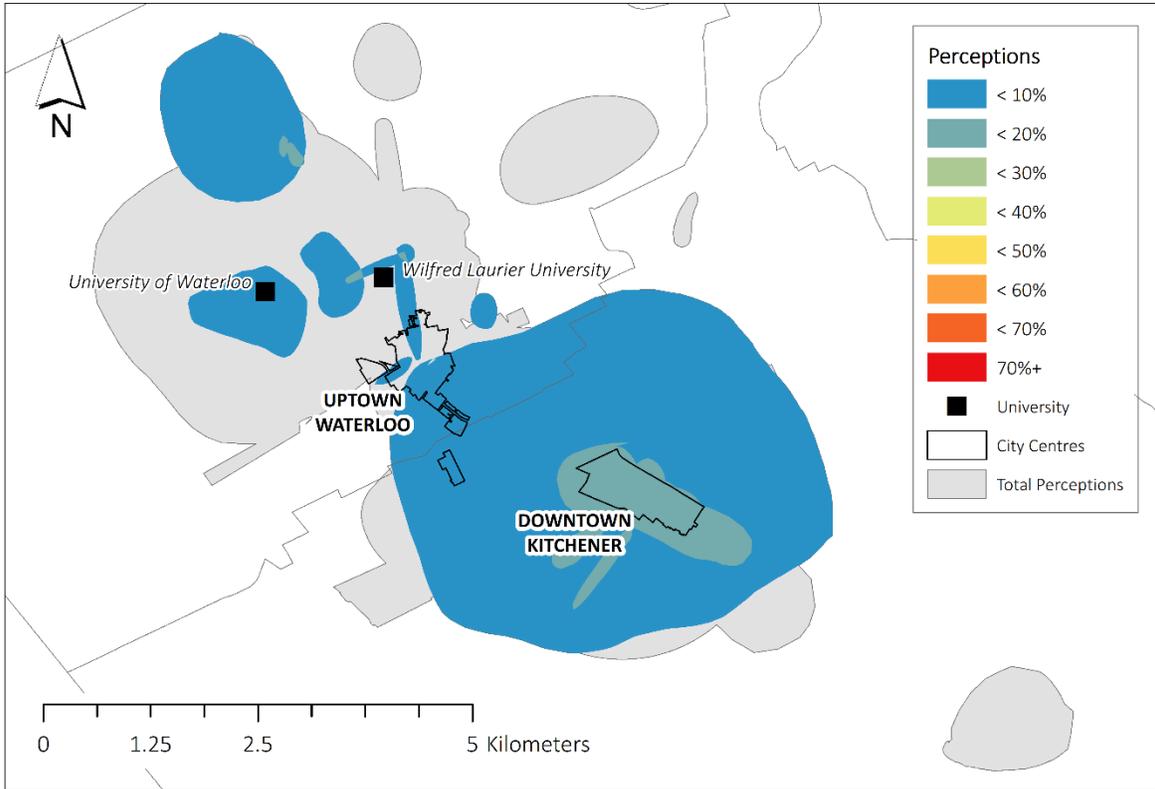
Figure 4.2.3 Male students' spatial perceptions of violent crime in Kitchener-Waterloo
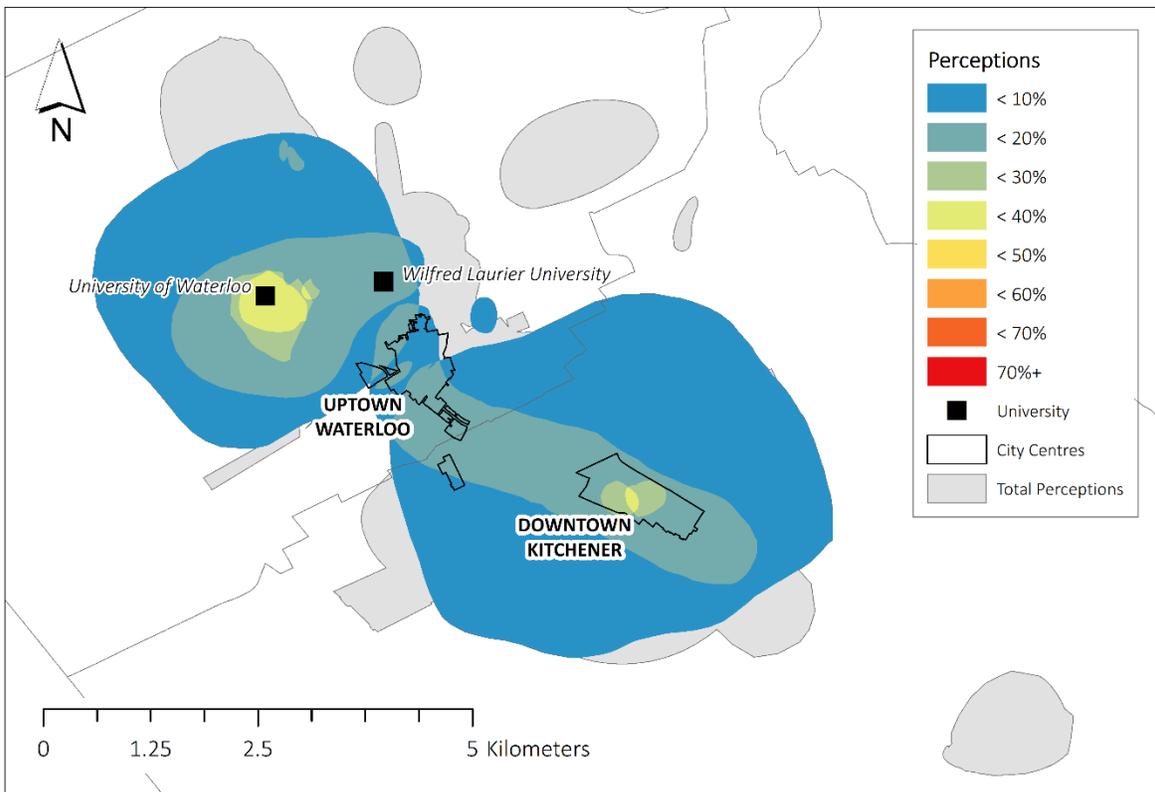
Figure 4.2.4 Male students' spatial perceptions of non-violent crime in Kitchener-Waterloo

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The spatial form of female perceptions of violent crime (Figure 4.2.5) and non-violent crime (Figure 4.2.6) displayed different patterns than male perceptions. Female perceptions of violent crime had higher levels of spatial correspondence than non-violent crime. Over one-third of females perceived higher violent crime risks in downtown Kitchener, an increase from male perceptions. Non-violent crimes were less widely perceived however. While approximately one-quarter of female respondents did mark areas within campus and downtown Kitchener, these areas associated with non-violent crimes are geographically smaller than perceived by their male counterparts. In total, of the 111 areas that females drew where they perceived crime, 47% were associated with violent crime and 46% were associated with non-violent crime.
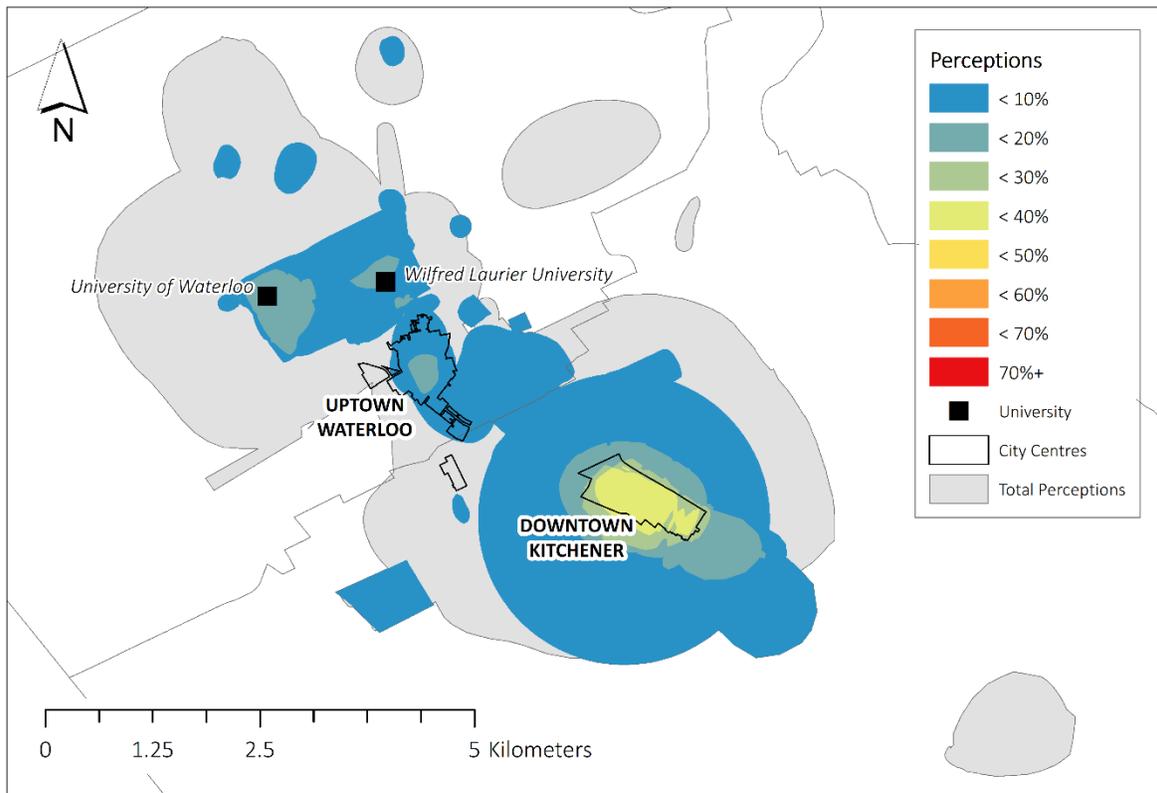
Figure 4.2.5 Female students' spatial perceptions of violent crime in Kitchener-Waterloo
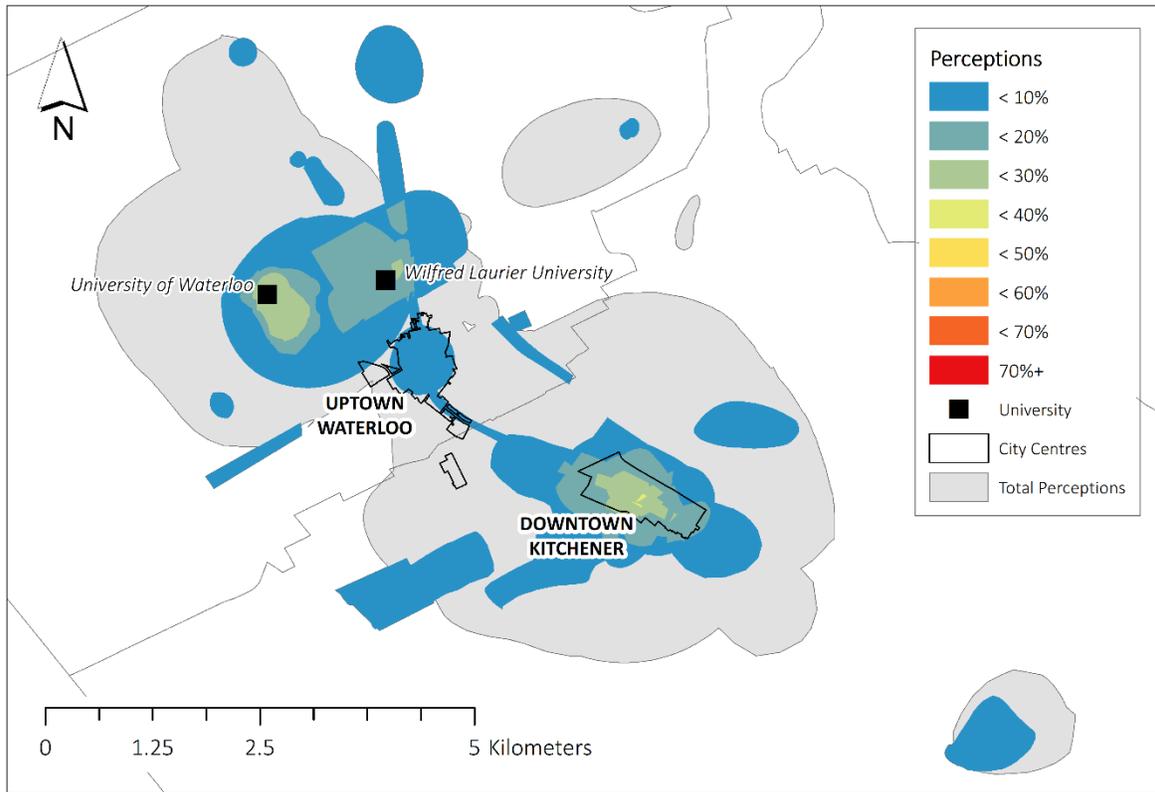
Figure 4.2.6 Female students' spatial perceptions of non-violent crime in Kitchener-Waterloo

4.2.1.2.   PERCEPTIONS OF CRIME BY ACADEMIC YEAR

Perceptions of crime were more cohesive of violent crime (Figure 4.2.7) than of non-violent crime (Figure 4.2.8) among lower academic year students. These perceptions of violent crimes were represented by 50% of all drawn areas by lower-years and concentrated on downtown Kitchener, being reported by up to 40% of low-year students at the peak of the local hotspot. Non-violent crimes were not as described as frequently for any one location (only 39% of all areas drawn by lower-years), but were most associated with the area around the University of Waterloo campus.
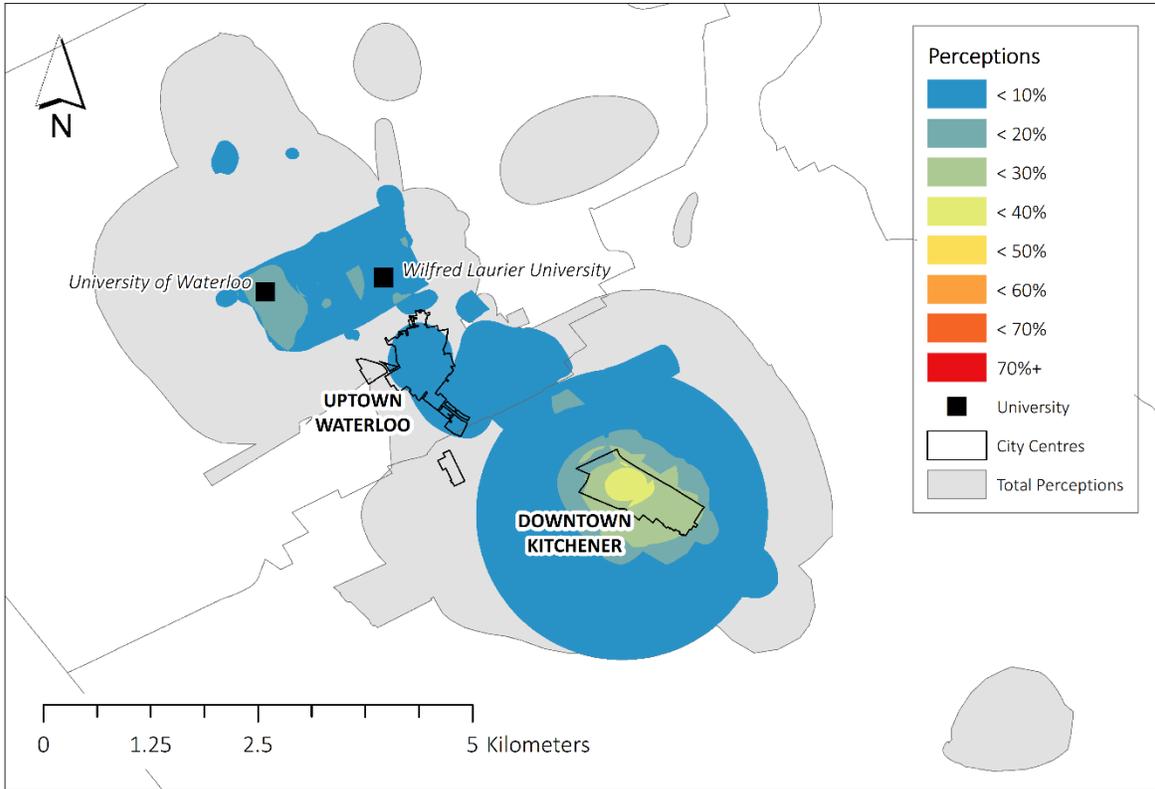
Figure 4.2.7 Lower year students' spatial perceptions of violent crime in Kitchener-Waterloo
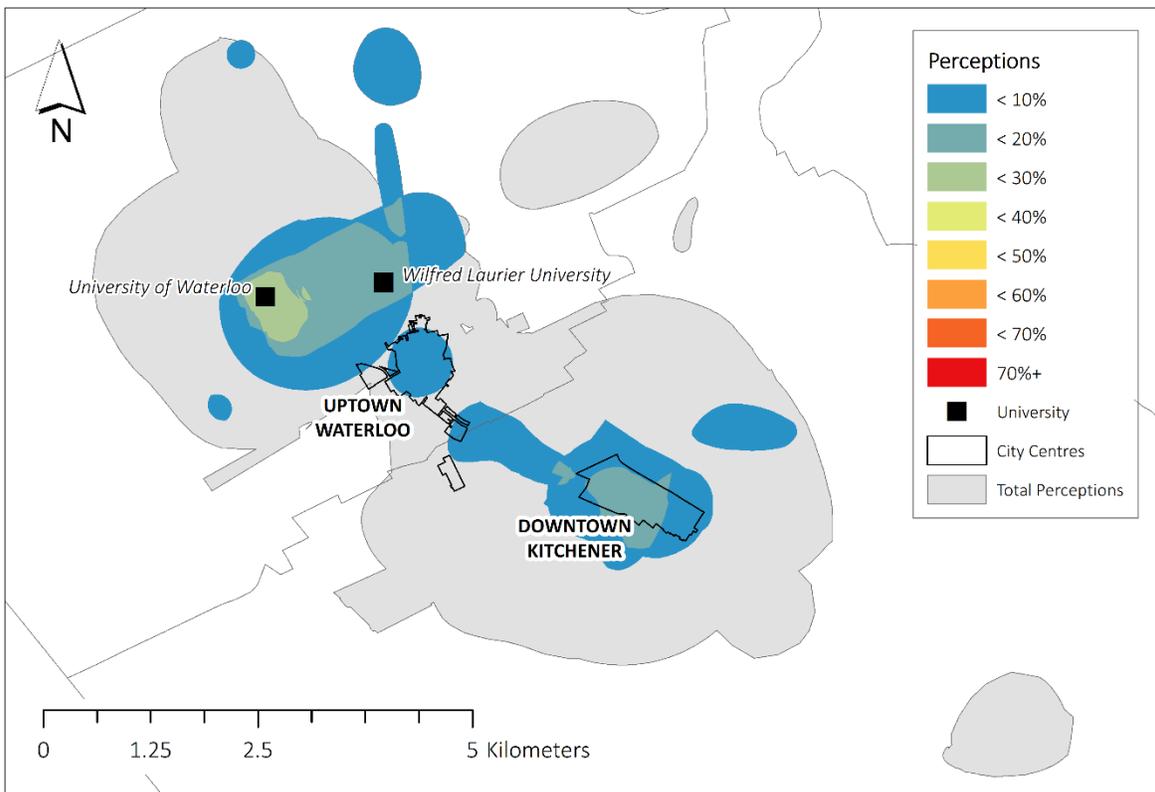
Figure 4.2.8 Lower year students' spatial perceptions of non-violent crime in Kitchener-Waterloo

[56]

Upper-year students had more cohesive perceptions of both violent crimes (Figure 4.2.9) and non-violent crimes (Figure 4.2.10). Like the lower-years, violent crime was most associated with downtown Kitchener, and non-violent crimes were strongly associated with the University of Waterloo campus. However, downtown was equally associated with non-violent crimes like the campus, such that downtown was equivalently associated with violent and non-violent crimes by upper-years. A smaller proportion of areas drawn (43%) were associated by upper-year students with violent crime than lower-years, but upper-years associate more than half of the areas they indicated with non-violent crimes (54%).
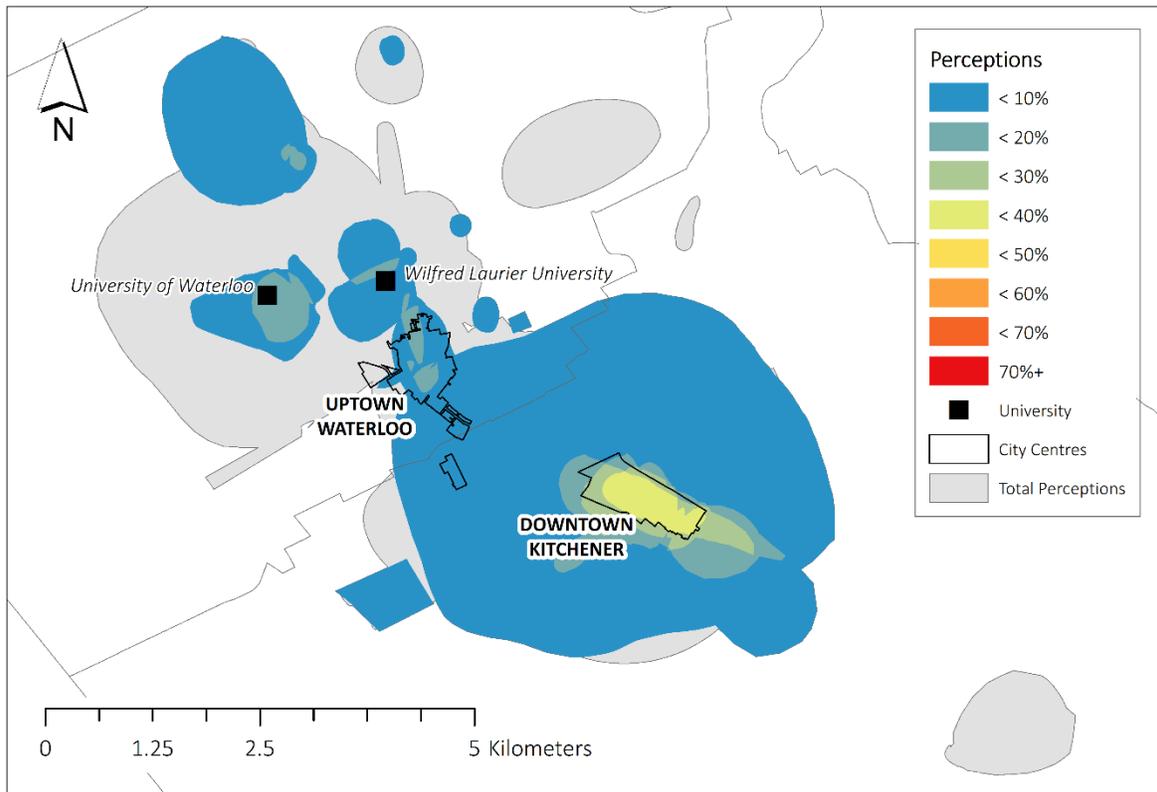

Figure 4.2.9 Upper year students' spatial perceptions of violent crime in Kitchener-Waterloo
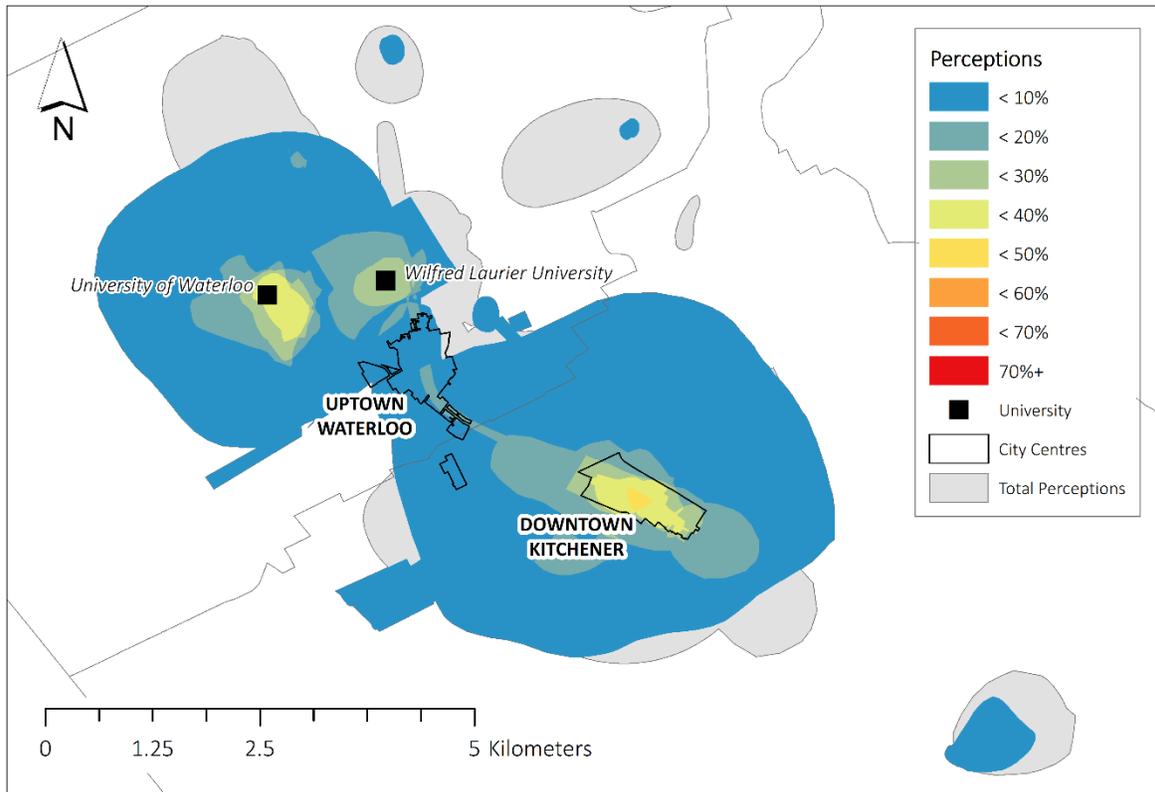
Figure 4.2.10 Upper year students' spatial perceptions of non-violent crime in Kitchener-Waterloo

4.2.1.3.   CRIMES OF OPPORTUNITY AND LOW-CONSEQUENCE

The university campus was identified by 40% of respondents as a place of risk for non-violent crimes. Students did not typically express worry towards most non-violent crimes, despite theft of bicycles, cell phones and laptops mentioned as frequently recurrent incidents. In fact, if interviewees had not experienced a theft on or near campus themselves, they often knew of someone who had. Crimes like this were viewed as a norm of university campuses and student areas. These incidents did not evoke great fear, although still affected students' mindsets:

> V52:   [On campus] it seems nice and I can trust everyone, but immediately if I bike to campus I have to lock it up or it will get stolen. It seems like a nice area, but for some reason I have this perception that if I ever don't lock up my bike it will get stolen within 5 minutes.

There was recognition that peers were at equal risk, in that objects, not people, were being targeted. Students recognized that by taking precautions, they could reduce the chances of being targeted themselves. Many participants put the onus on themselves to secure their belongings:

> V31:   If you leave your door unlocked, you know that there's a risk and it's not your fault that something happens, but you should be aware and take the proper precautions. No one can really do anything about that.

To many students, non-violent crimes represented an inconvenience rather than a threat to their safety. The consequences of experiencing non-violent crimes were often viewed as minor. Crimes with more severe consequences were viewed to be less likely in a "safe" area like Kitchener-Waterloo.

V29:   Maybe like minor theft crimes, because we're students, stuff happens. But not major crimes like shootings or stuff like that. That would have a lot more possibility of happening in Toronto, or the GTA.

V31:   The only crime that I am ever worried about is non-violent theft, and breaking and entering. I don't think that I am going to walk out and be injured and killed. So overall, I feel pretty safe.

Without the threat of violent crimes that could cause bodily harm, students generally felt safe despite any risk of non-violent crimes.

The overall perception was that Waterloo was generally safe. In fact, respondents stressed that Kitchener-Waterloo was not dangerous compared to Toronto, the largest city in Canada located only 100-km to the east with a population tenfold the size of that of the study area. Unprompted comparisons of the cities were made by interviewees who identified as being from Toronto as well as those from smaller towns. Below, Table 4.2.1 summarizes the overall, violent and non-violent crime indices of Toronto and Kitchener-Waterloo-Cambridge, measures of crime by Statistics Canada that considers both volume and seriousness of incidents. Kitchener-Waterloo-Cambridge in fact has greater overall crime severity than Toronto. However, this measure is driven by non-violent crimes, which students expressed less concern about. Crime in Toronto was in contrast characterized by more violent crimes. For students, this severity of violent crime was more worrisome, so that the problem of crime in Toronto overshadowed that of Kitchener-Waterloo, which made living in Kitchener-Waterloo seem safer.

Table 4.2.1 Violent and Non-Violent Crime Severity Indices for Toronto and Kitchener-Waterloo-Cambridge in 2015 (Statistics Canada, 2015c)

	Crime Severity Index	Violent Crime Severity Index	Non-Violent Crime Severity Index
Toronto	45.60	64.90	38.48
Kitchener-Waterloo-Cambridge	60.57	55.44	62.31

4.2.1.4.   PERCEPTIONS BASED ON REPUTATION AND INTUITION

Although crime in Kitchener-Waterloo was generally viewed as non-threatening, this sense of security did not eliminate the perception that violent or other higher consequence crimes could occur in certain areas of the cities. Many perceptions of violent crime were in downtown Kitchener, an area which had a standing reputation that students referenced:

V16: People say don't go there, it's sketchy. Just be careful when you go there. Usually what makes me perceive it more as sketchy is usually when I'm talking to people, and they're saying "Yeah, a couple of things have happened." So I don't want to rent there. I just stay away from the area if I can.

The negative reputation engendered distrust, noticeably shaping perceptions of the cities. The perceptual maps reflect how the area around downtown Kitchener was most frequently identified with violent crimes, even though many perceptions were not derived from actual observances or experiences. One respondent spoke how her perceptions were often made through "just more intuition, I haven't actually heard of crimes that happen there" (V29). An association of distrust to increased potential for violent crimes was intuitively made by many students. The intensity of student fear was not increased in this area, but the range of crimes that were perceived to possibly occur did expand. It was as if once one thing wrong with an area (whether by visible crime, reputation or general aesthetic) was detected, it was easy to extrapolate violent crimes or other behaviours that might fit in the profile of the area:

V16: Possibly petty theft, or pickpocketing, or assault. Possibly, but that's the extent of it. I don't think it's that bad.

V31: I would say drug abuse, drug activity, maybe robbery I guess. I've never personally witnessed it. And I guess probably assault. Then again, personally I don't fear for my safety there.

Students relied on their intuition to stay aware, guessing about of possible dangers like drug activity, robbery, and assault. But again, these instincts did not noticeably conjure more fear.

4.2.1.5. EVIDENCE-BASED FEARS

Not all perceptions were guided by intuition. Some students did express concerns about very specific incidents that they had learned about through reports from the media, public bulletins and social networks. These stories had a stronger emotional impacted to affect how students identified risk and their corresponding levels of safety from both non-violent and violent crimes.

Even though non-violent crimes were viewed as lower consequence, students expressed greater worry when the problems occurred at broader scales. For example, stories of rent fraud, a rash of vehicle break-ins, and a break-and-enter of a friend's house raised specific concerns for some individuals. One participant shared how he had become paranoid of theft because of news of break-ins targeting vehicles in his neighbourhood, emotionally impacting his sense of security in that one area of his life. Others were concerned about the problems they heard of but maintained that "I am not super worried – I have developed strategies" (V10). In every case, students described measures they had taken to reduce their risk. While did not eliminating the threats, these measures did alleviate individuals' concerns.

Violent crimes were concentrated in downtown Kitchener. Specific reports that students shared of violent crimes in this area focused almost exclusively on homicides, even though the homicide rate is quite low in the Kitchener-Waterloo-Cambridge census metropolitan area (1.11 homicides per 100,000 Canadians in 2015) (Mulligan, Axford & Solecki, 2016). A few students referred to one particularly sensationalist homicide that involved a crossbow as the murder weapon. This did not make people more fearful of being killed themselves, but it did add to distrust of the Kitchener urban core. One respondent lived near this neighbourhood, where another homicide had occurred a couple of years prior, said:

> V44: If the incident had never happened, it would never occur to me. I would find it relatively safe, but because of the fact that I know the homicide incidents do exist, I tend to be more alert.

This distrust seems to increase perceived risk of all crime. When another participant had learned that two homicides had occurred near her apartment building in another part of Kitchener, she described how it took an emotional toll on her sense of safety, saying that the news "kind of freaked me out. Then I started to have more - like that was my perception, this area is not the safest" (V22). To stay safe, she implemented the following measures:

> V22: I just lock my doors and I feel like the lock isn't even safe. I just carry my passport and my personal belongings with me, really the essentials, just in case something happens.

Conversely sometimes students become desensitized to reports of crime. Kitchener-Waterloo were widely regarded as safe cities, and reports of crime did not support the perceptions of the lived experiences of residents in the city. During the interviews, two students declined drawing areas of elevated risk of crimes on the map because they felt that there were none. One explained why:

> V53: I know a lot of crime can be exaggerated by people. Also I used to live in an area where there was portrayed by the media there was a lot of crime, but in all of the years I've lived there, I've never seen a single crime. So when I say exaggerated, I mean like that, I'm not saying that people are making stuff up. It's not as bad as it seems.

Clearly evidence of crime – by experience, media, social networks, or other – impacts individuals differently, according to their interpretations of risk. All participants made individual decisions to gauge the severity and spatial extent of crime in Kitchener, relying on their experiences and level of trust in their sources of information.

4.2.1.6.   SEXUAL ASSAULT AROUND CAMPUS

Around the campus, concerns about violent crime concentrated primarily on recent reports and the possibility of sexual attacks and harassment. Pain (1997) describes how fear of sexual violence is a gendered experience, affecting women disproportionately more than men. A larger proportion of women (40%) than men (12%) reported sexual assault as a commonly observed crime in Kitchener-Waterloo. These concerns did

not necessarily affect students' lifestyles, but as one female student described, it was an awareness that "it can happen to anyone" (V06). A similar feeling was expressed by another female student who was alarmed by recent media coverage about sexual misconduct towards women on university campuses in general:

V45: There are profiles [on social media] I'm following that talk about safety of the university students on campus. Like 1 in 5 women or female students are raped every year. Those statistics are concerning because I am a student on campus and I guess I should be careful.

Recent studies from the United States indicate that 1 in 5 female students experience sexual assault (a broader term of sexual contact than rape) during their entire time enrolled at university (AAU, 2015). One respondent shared about a sexual assault incident she had experienced off-campus and her futile attempt to seek help:

V26: I feel like I shouldn't be particularly upset about that story because whenever people talk about sexual assault, there's only one word for it, and they usually mean rape... I tried to report that crime to the police and the man at the desk told me that "There's no real evidence that anything necessarily wrong happened."

Of the area where the incident occurred, she explained that "rationally, I should not be worried. But irrationally, I think it's scary." The respondent rationalized that it was an isolated incident, but memories of the experience and receiving no police support tainted her perception of the area.

Students reflected knowledge or suspicion of sexual attacks on campus but not all of them felt personally vulnerable, but instead felt concern about the safety of other students. Some students, both male and female, spoke about this altruistic fear and indicated why they did not consider themselves a target of a sexual attack:

V17: [Female] I have read some of the reports about sexual assault and physical assault on campus, but at the same time, it doesn't affect me personally because I can defend myself, but I know sometimes other people can't.

V42: [Male] And then sexual assault, probably not as frequent, or at least not as frequently reported, but I am sure that it is also quite common, especially for the residences there first year. Being a tall white male, I never really had to worry about that myself.

This perception of not being a target was also expressed for other crimes like theft, arson and assault. Students expressed confidence in their safety from certain crimes due to their physical characteristics, whether because of their strength to self-defend, being male, or self-perceived unattractiveness. However, students' frequent displays of concern for others showed that even when they believe themselves to be invulnerable to crime, they are not ignorant to others' risks of victimization nor lack compassion for those at risk.

4.2.2.   Perceptions of Incivilities

Physical incivilities were not frequently described by respondents relative to violent and non-violent crimes or social incivilities (Figure 4.2.11). Only 37% of drawn responses described physical incivilities. As such, respondents tended to identify unique areas, dispersed throughout the study that overlapped with a limited number of other respondents' areas. Perceptions amalgamated the most in downtown Kitchener.
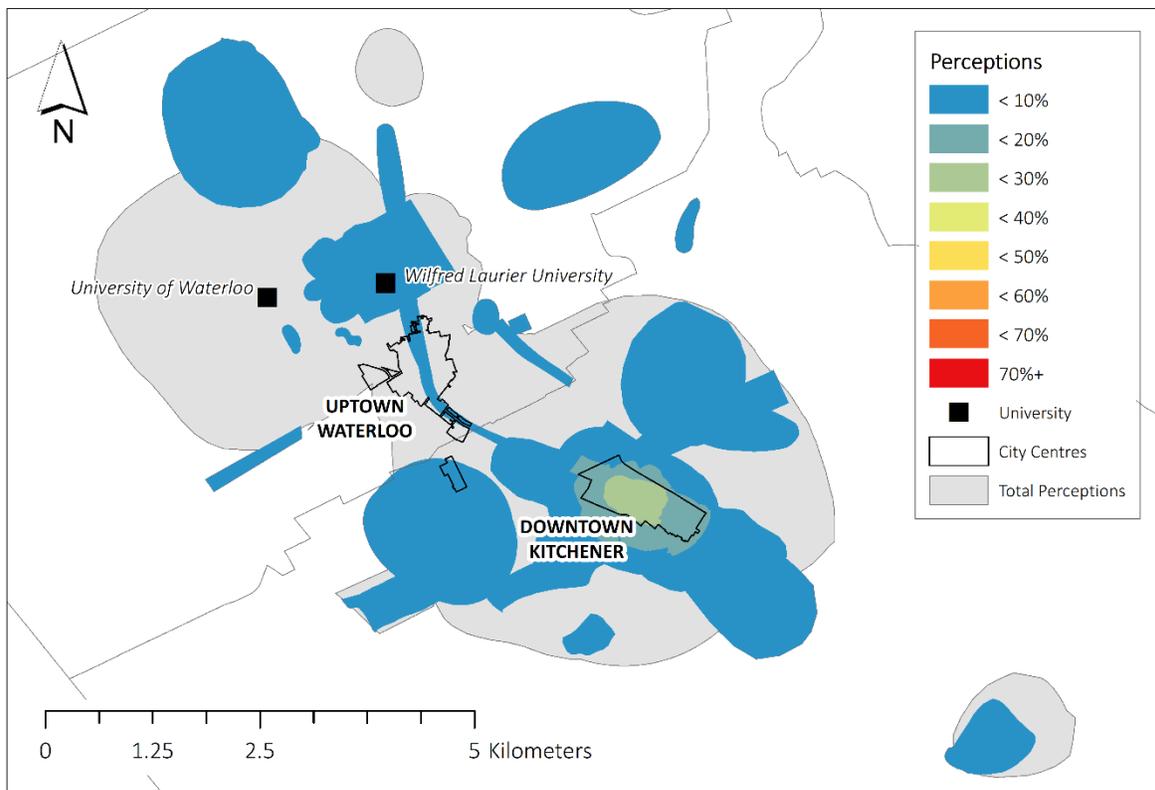
Figure 4.2.11 Student spatial perceptions of physical incivilities in Kitchener-Waterloo

Two-thirds of areas that were drawn were accompanied with descriptions of social incivilities, and a simple pattern emerged for perceptions of social perceptions (Figure 4.2.12). A cohesive hotspot formed in Downtown Kitchener, where up to 70% of all participants identified at least one social incivility. Perceptions across the remainder of the study area were less unified, although a faint strip of perceived incivilities highlighted a corridor along Uptown Waterloo to Wilfred Laurier University.
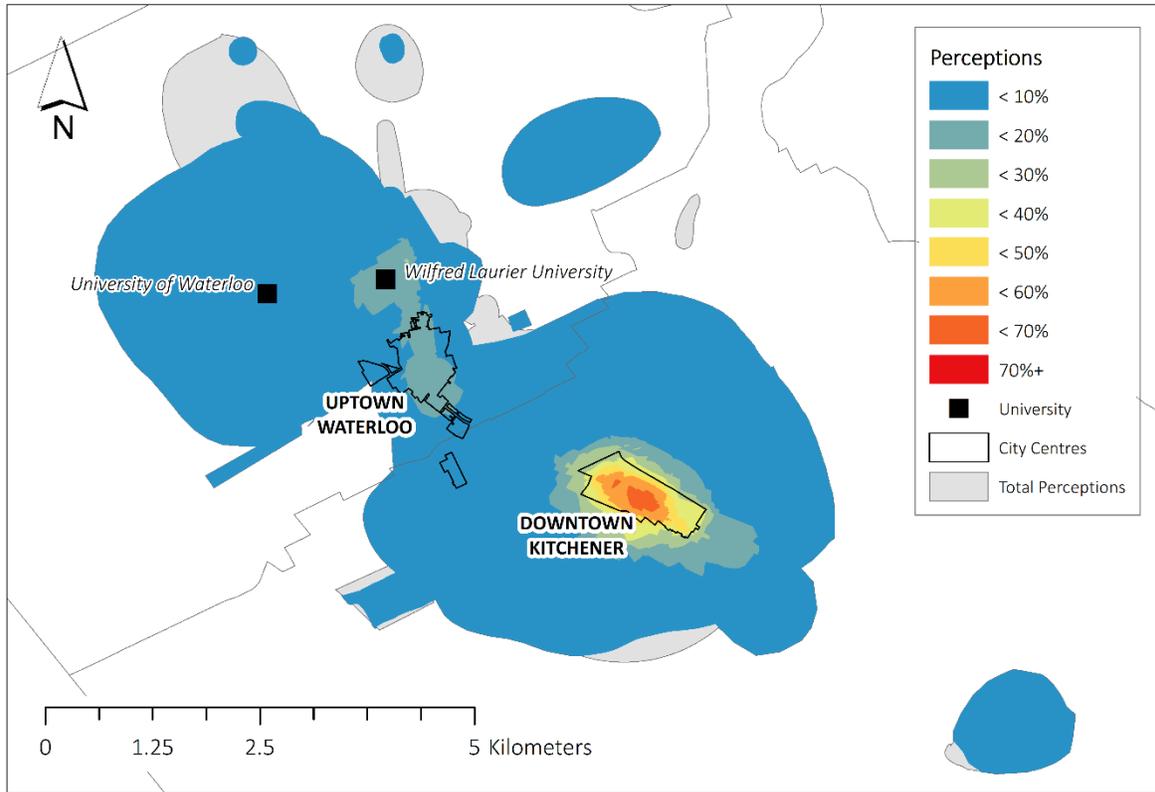
Figure 4.2.12 Students' spatial perceptions of social incivilities in Kitchener-Waterloo

4.2.2.1. PERCEPTIONS OF INCIVILITIES BY GENDER

Responses from male students appeared infrequent and highly dispersed observations of physical incivilities (Figure 4.2.13). In fact, nearly half of the 33 areas drawn by males (48%) were described with signs of physical incivilities. Social incivilities followed a similar pattern as the total sample, in which they concentrated in downtown Kitchener (Figure 4.2.14). Two-thirds (64%) of areas were associated with social incivilities.
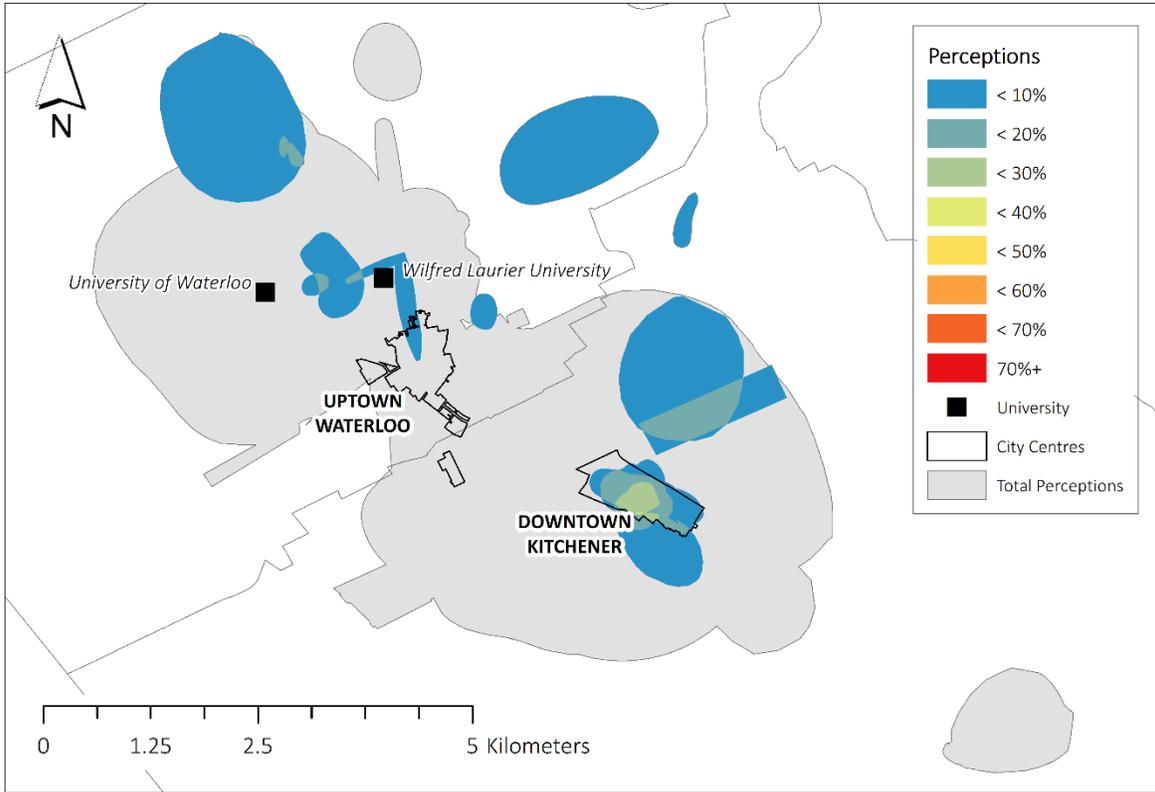
Figure 4.2.13 Male students' spatial perceptions of physical incivilities in Kitchener-Waterloo
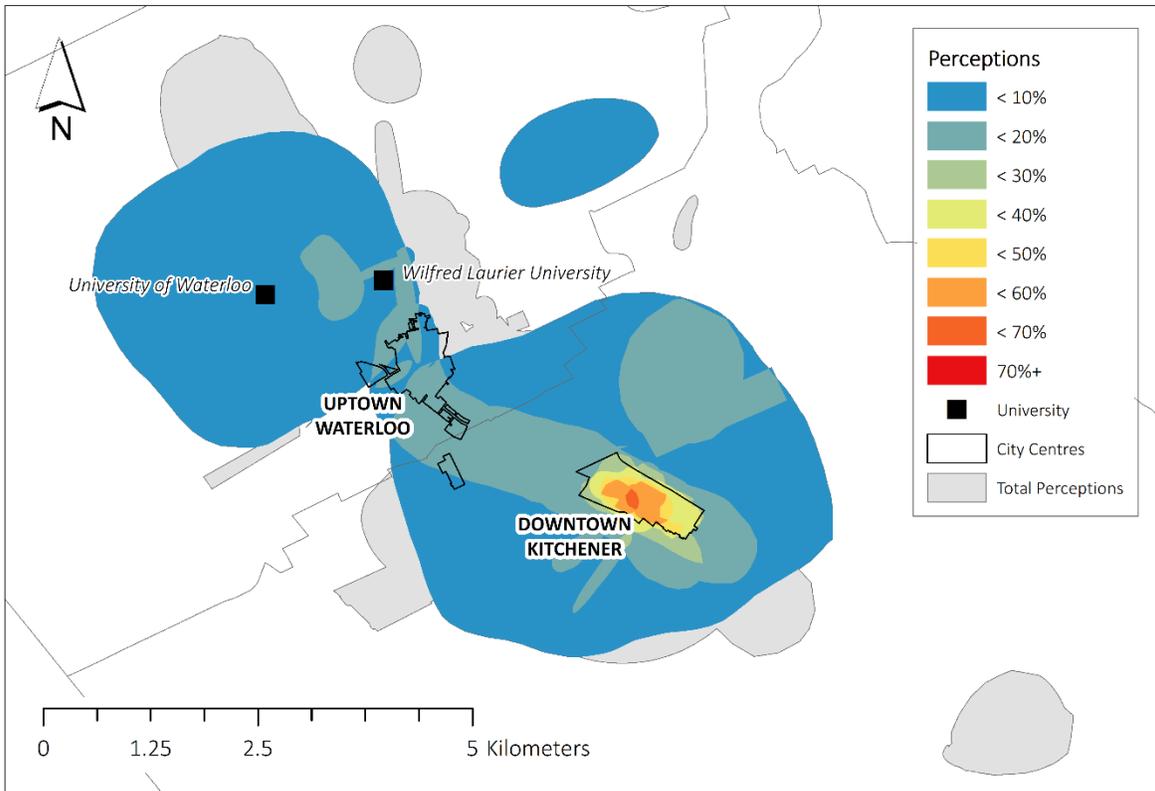
Figure 4.2.14 Male students' spatial perceptions of social incivilities in Kitchener-Waterloo

Similar patterns were observed among female responses for perceptions of both physical (Figure 4.2.15) and social incivilities (Figure 4.2.16), echoing hotspot peaks in downtown Kitchener with greater cohesion than male perceptions. Areas around Uptown Waterloo and WLU areas were also marked by females with low moderate frequency. Among female-drawn areas, one-third (33%) were connected physical incivilities and two-thirds (68%(with social incivilities.
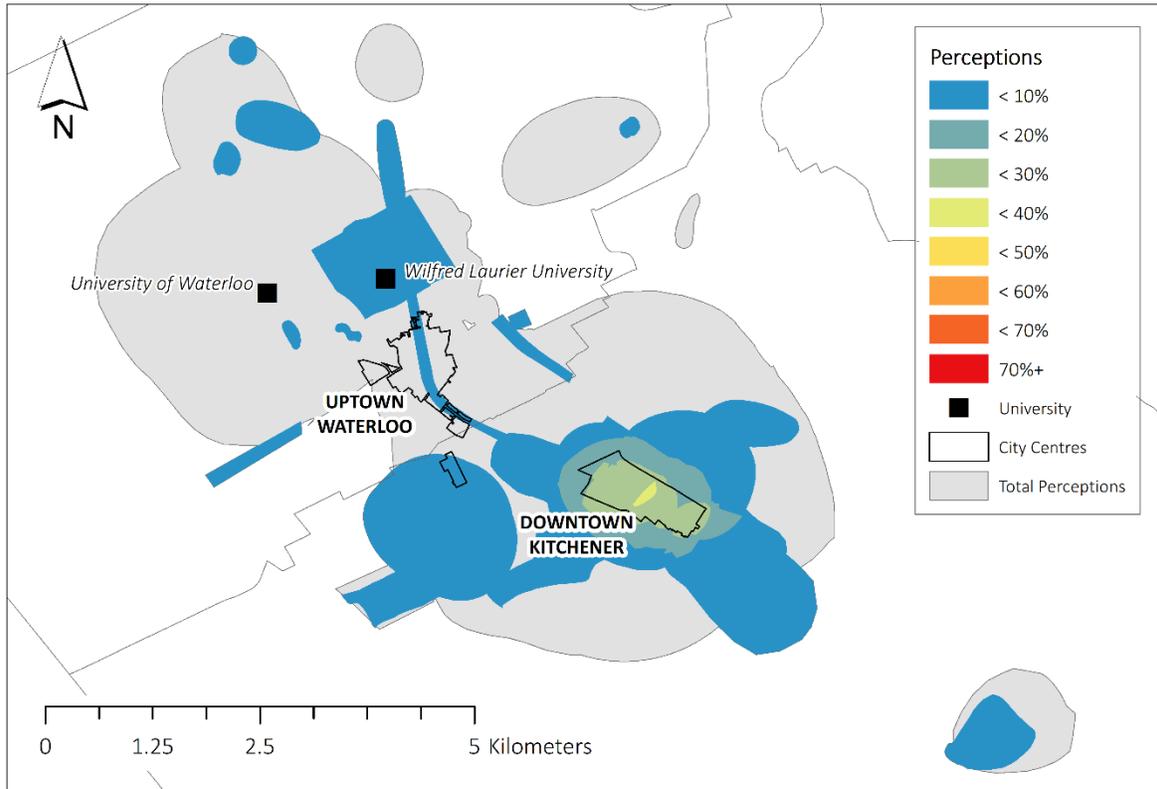
Figure 4.2.15 Female students' spatial perceptions of physical incivilities in Kitchener-Waterloo
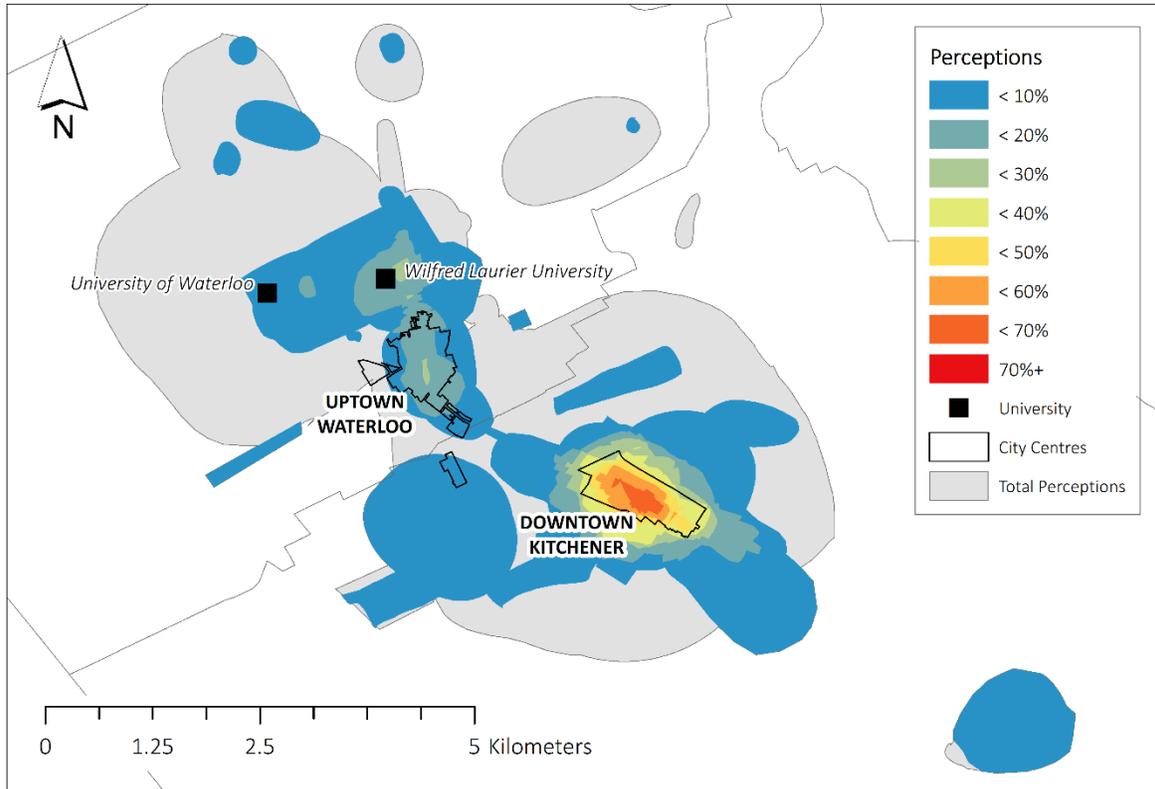
Figure 4.2.16 Female students' spatial perceptions of social incivilities in Kitchener-Waterloo

4.2.2.2. PERCEPTIONS OF INCIVILITIES BY ACADEMIC YEAR

Lower-year students' reports of physical incivilities were fragmented across neighbourhoods, but prominently focused on Kitchener (Figure 4.2.17). In contrast, perceptions of social incivilities were tightly defined in Downtown Kitchener, and to some extent, also in Uptown Waterloo and around Wilfred Laurier University (Figure 4.2.18). Physical incivilities were described in 30% of lower-year areas, while social incivilities were described in 69% areas.
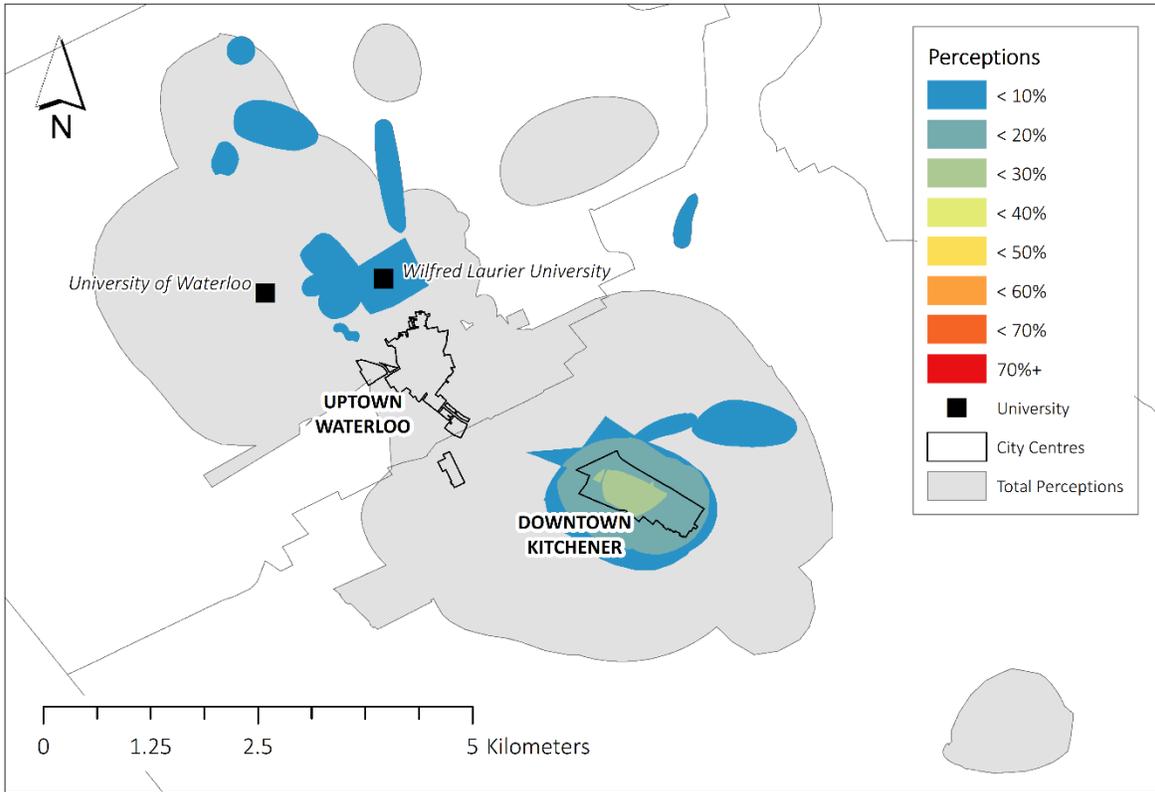
Figure 4.2.17 Lower year students' spatial perceptions of physical incivilities in Kitchener-Waterloo
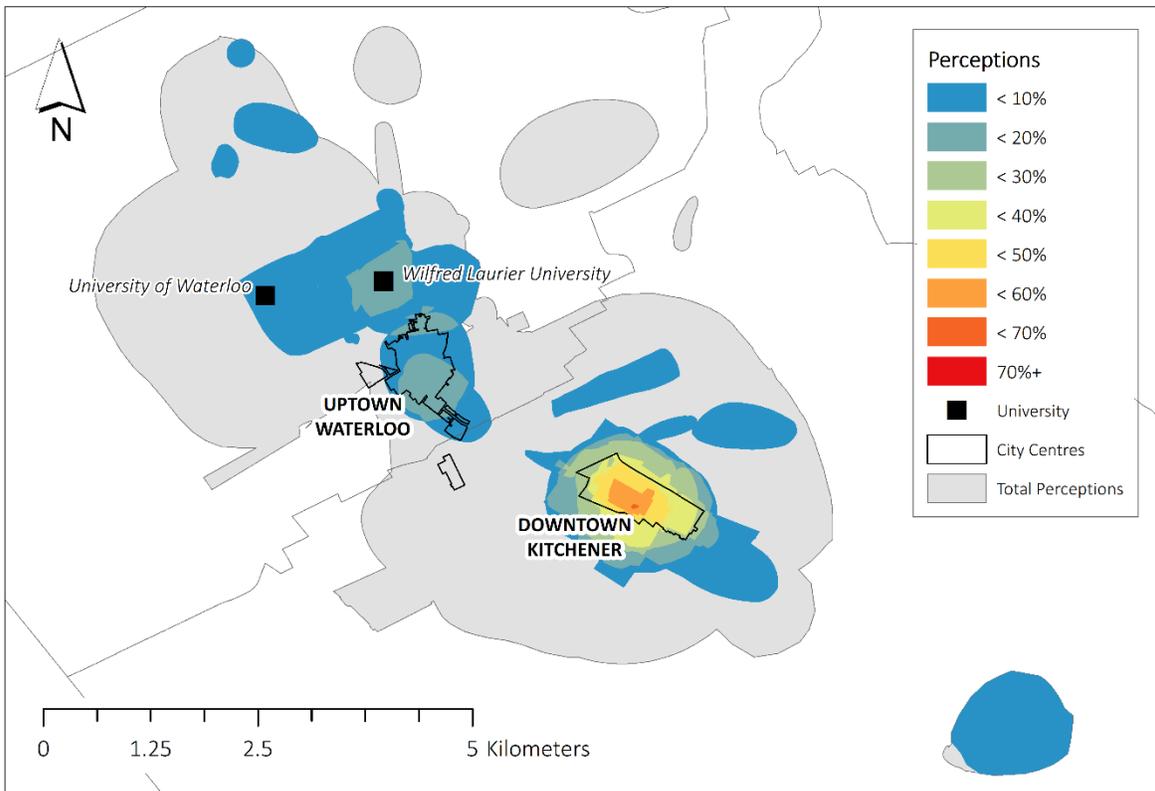
Figure 4.2.18 Lower year students' spatial perceptions of social incivilities in Kitchener-Waterloo

[68]

Perceptions among upper-years were much more cohesive. A total of 43% of areas were perceived to exhibit physical incivilities, which concentrated in the centre of downtown Kitchener (Figure 4.2.19). Patterns of perceived social incivilities can be observed in downtown Kitchener and extending along the transit corridor from Uptown Waterloo to the neighbourhoods around Wilfred Laurier University (Figure 4.2.20). Upper-years associated two-thirds of the areas they drew with social incivilities.
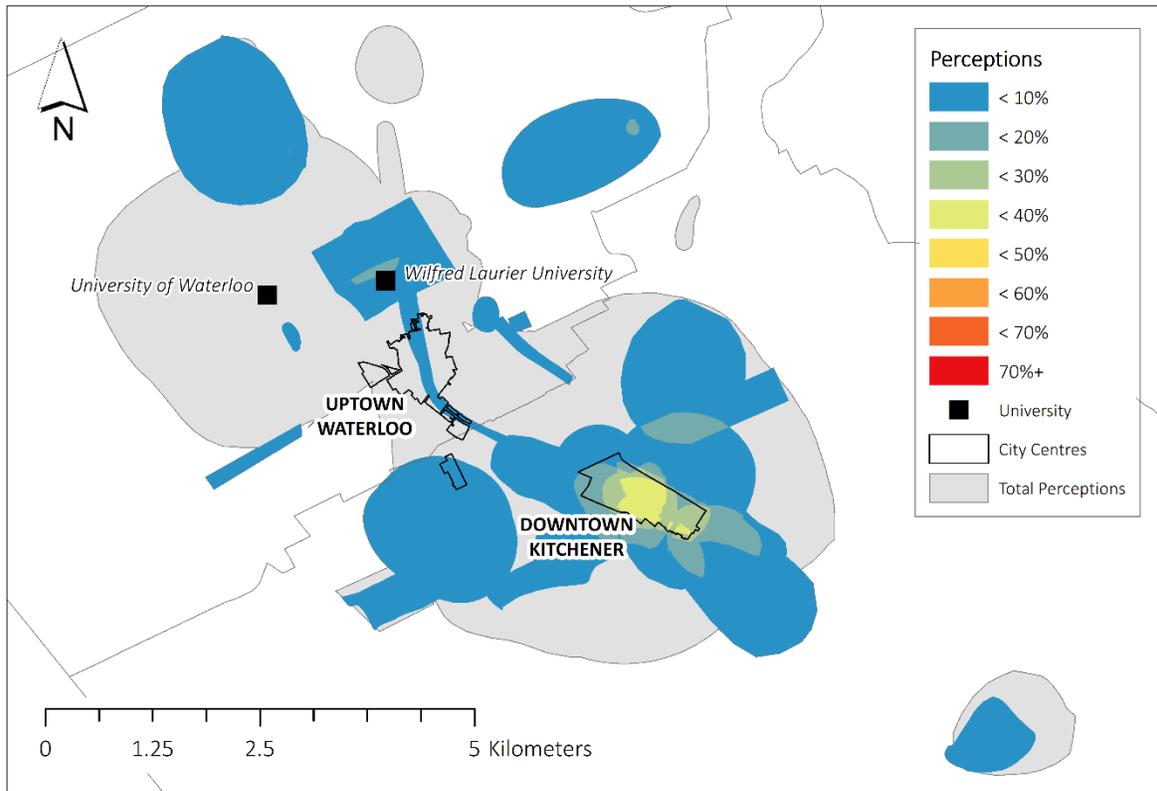
**Figure 4.2.19 Upper year students' spatial perceptions of physical incivilities in Kitchener-Waterloo**
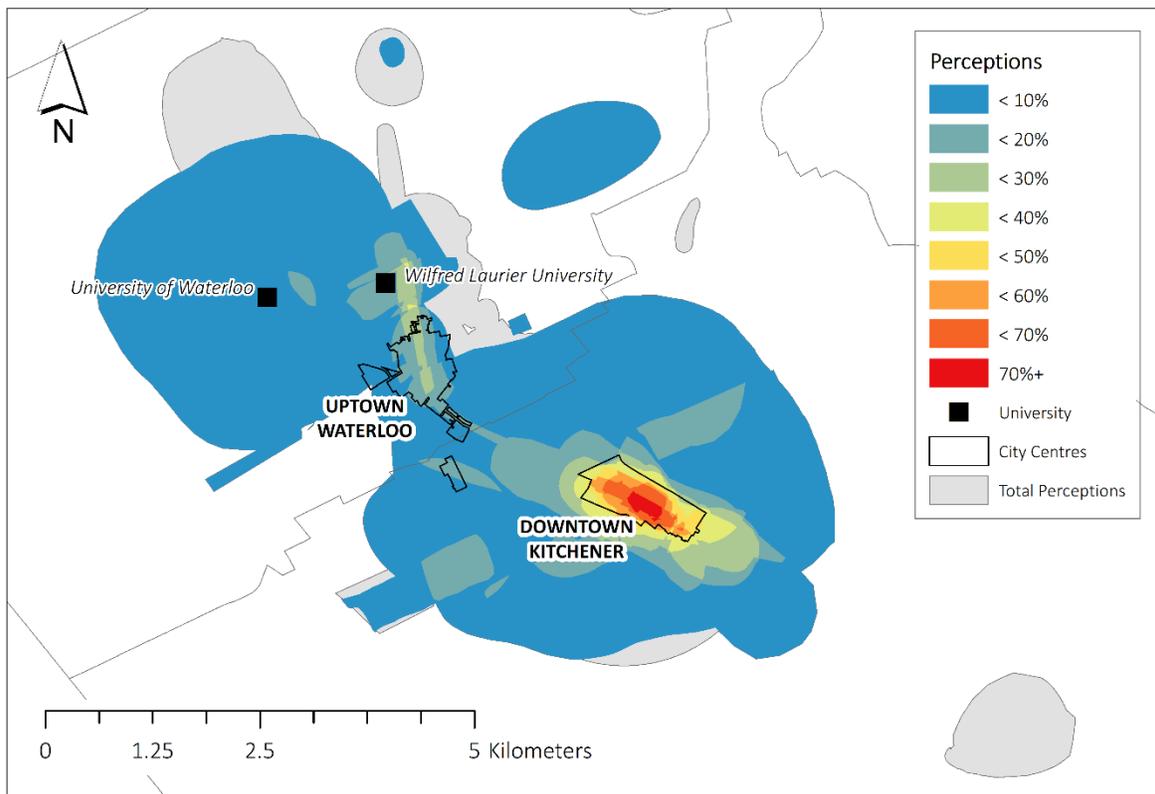
Figure 4.2.20 Upper year students' spatial perceptions of social incivilities in Kitchener-Waterloo

4.2.2.3.   PHYSICAL SIGNS OF AN EMOTIONAL SPACE

Signs of physical disorder were observed almost exclusively in downtown Kitchener. One participant described the area as having a "weird dichotomy" (V08) of development and stagnation, characterized by signs of gentrification, the presence of some attractive shops and some failing ones, and litter of glass pipes and needles from drug users. Feelings of insecurity and wariness were triggered by rundown buildings, the presence of active front-line social-based community services (e.g. shelters, soup kitchens, mental health services, etc.) and the users they attracted, as well as insufficient night-time lighting. Temporary signs of disorder, like ongoing construction for the regional transit system, also had negative effects on the perceived safety of space both Kitchener and Waterloo.

Dilapidated and disorderly environments evoked negative emotions towards the surroundings. Descriptions of the physical surroundings were frequently reduced to that of the emotional atmosphere of the area, typically reflecting feelings of discomfort rather than concern towards any particular threat of crime. The general ambiance had a decisive impact in the interpretation of an area, as if the surroundings provided the backdrop for the imagination:

V54:   It is just the atmosphere. Although it doesn't necessarily mean that they are bad people living there, it gives off a bit of an atmosphere that like, oh, it feels kind of unsafe.

V27:   I see homeless people, buildings that aren't well-kept, or recreation centres and playgrounds that make me sad when I look at them because they're not well-maintained. So that's like the scary parts of Kitchener.

As the map of physical incivilities shows, Kitchener is almost exclusively associated with these problems and thus produces different experiences of fear than elsewhere in the cities, by this emotive ambiance.

4.2.2.4.   SIGNS OF GENTRIFICATION IN KITCHENER

But Kitchener was not a decaying city; it had its rough edges, but students who had lived in the area for over a year observed change and revitalization in the downtown core. While urban Kitchener was viewed by many to be "not as pretty as Waterloo" (V36), ongoing construction to improve public transit and a growing presence of technology companies and start-ups meant that the urban centre was seen as a rapidly transforming space.

Although construction projects and developments to the space were noticed by participants, signs of gentrification were not always viewed positively. Concern was expressed for the lower-income population that visibly resided in downtown Kitchener:

V36:   I actually feel bad for the people in the low-income area, because I feel like that area is going to become more expensive and they'll have nowhere else to go.

Another participant agreed with this sentiment, but conceded:

V26:   I'm not particularly a fan of this, but I think that it will make it seem safer.

Students noticed that Downtown Kitchener was a changing space. Its redevelopment would have the potential to redefine a space that had a negative atmosphere to some. However, construction sites were noted to be particularly areas dark at night, and some respondents were concerned that the outcome would further disadvantage vulnerable groups. These expectations and social concerns were weaved into students' perceptions of crime.

4.2.2.5.   DEMOGRAPHIC DIFFERENCES

Participants noticed differences in demographics of the people occupying spaces, and these distinctions affected how safe individuals felt. Intuitively, unfamiliar types of people who did not resemble families or students were viewed with distrust. Three broad categories were described by respondents. First, families occupied neighbourhoods away from the city cores were viewed as safe and trustworthy. College students composed of the second category invoking mixed views of trust. As peers to most of the respondents, this group was inherently viewed as more familiar and thus reasonably safe. Finally, Kitchener

was perceived to be a city of vulnerable communities, distinctly different from Waterloo. More than any crime, participants related underlying social problems in Kitchener as the source of their unease. When asked what crimes they thought of in their drawn areas of downtown Kitchener, one participant said:

> V19:   It wouldn't be a crime, but it would be like homelessness and panhandling. That'd be the only thing.

Social problems took the forms of homelessness, mental illness, substance abuse, poverty and rudeness. This social environment was a stark contrast to the student-centric neighbourhoods that most participants were used to. The cultural differences were palpable:

> V17:   At night there are a lot of stray individuals around too. You're away from the student area and more so towards the general public with the more demographic area where you see just different individuals I guess outside what you usually see, which is students, professors, and families and old people.

To this respondent, the "stray individuals" represented groups of people who were unfamiliar to her regular sphere of activity, like people who were homeless, pickpockets, and commuters. Other participants revealed their biases and made similar references about drug users, drunken revelers, unemployed loiterers, panhandlers, individuals dressed in dark oversized clothing, older and uneducated people, and otherwise "weird" people. These characterizations emphasize how students were intimidated by people who differed from the familiar images of more homogenous segments of society of families and university students.

Homelessness was a frequently observed social problem. Students discussed its prevalence in downtown Kitchener and how it negatively affected their feelings of safety. Homeless people were not accused of being the source of crime, but signaled underlying problems to observers. As one respondent described, they "made me perceive things I didn't before" (V43). Consequently, students felt more cautious when in this space, uncertain about how homeless individuals would act in public. Some students noted the presence of mental illness among homeless individuals and questioned whether they were even in control of their behaviours, especially when on the streets in uncontrolled space. Some students talked about their interactions with and witness of some of these individuals in downtown Kitchener, which involved aggressive panhandling for money, yelling, screaming and catcalling, being followed along the street, and being stared at. These behaviours raised distrust and the perception of risk among many:

> V31:   I don't mean to be rude to say just because they are homeless, but I feel like that sort of population dealing with those kind of issues, there's more of an increase that they will snap.

> V38:   On average there are more homeless people. There are people who hang on the street and maybe yell at each other. I think that communicates to me that there is a higher risk. I'm not sure what they would do.

Despite feeling less safe in this social environment, one participant summarized a sentiment that was expressed by others:

V41:   In Kitchener, people – homeless people scare me, but I don't think they will do any harm.

Even though the presence of different populations could be worrisome, participants were empathetic to the struggles faced by individuals in vulnerable situations. Students made connections of the problems they witnessed to drug use, mental illness and poverty, and although it made them uneasy, they were also aware of the concentration of social services in the area: group homes, an adult school, soup kitchens, community counselling, family support, employment help and community café. These resources were perhaps reassuring to participants, that help was available to those in need. A few students shared of their volunteer experiences working with vulnerable communities in downtown and demonstrated how understanding lessened their fear.

4.2.2.6.   DRUGS AND ALCOHOL

At its core, social disorder can be considered as any behaviour that does not conform with expected social etiquette. One student described the area that she drew as being a place where:

V25:   There are some people who are just – they don't look polite at all. I say polite – I hope you know what I mean. Like, they're... people who are not stable themselves, doing something physically or verbally, something that I wouldn't feel comfortable with.

According to participants, drug and alcohol abuse were perceived induced non-conforming behaviour. Of course, drugs and alcohol were not considered to be of any criminal nature, as were realized to be "not necessarily harmful to other people" (V22). Nevertheless, public intoxication raised concern among participants as it made inebriated strangers seem unstable and a potential threat to personal safety. Downtown Kitchener had the most observances of drug use. It was part of the stereotype of what made Kitchener unsafe. Drug-use was related to problems of litter, squatting in condemned apartments, and the transformation of the downtown park from being a family-friendly place during daytime into a hub of illicit behaviour at night.

V13:   I've gone through there at all hours of the day and I've never been a victim of crime ever, but I still have the perception of downtown Kitchener, just a large – a lot of crackheads. You don't know when they're going to snap.

In Waterloo, bars and clubs catering to the student clientele are located near the universities, and so unsurprisingly, drunken behaviour was more commonly observed. As one participant astutely noted, "You cannot expect not to see drunken people if there is a bar" (V14). Like drug use, excessive alcohol consumption itself was not viewed as a criminal act, but still put participants on edge:

> V10:   So I'm like I don't want to be around that area at [night] because I don't know what they might do.

> V34:   It doesn't seem as safe as it should be.

Although students had high trust in their peers, drunk students were seen as unstable, acting "very rowdy and not very respectful of the law" (V39). The atmosphere of the city was felt to change in the evenings on weekends and holidays, influenced by some students whose drinking and behaviour gets out of hand. The resulting effect of the change from day to night made students feel less safe.

4.3. COMPARISON TO POLICE RESPONSE DATA

This section compares student perceptions of crime to police response incidents within Kitchener-Waterloo. Each year the Waterloo Region Police Service (WRPS) release occurrence data, which is point location data (aggregated by nearest intersection) of police responses to community demands in all of the Waterloo Region. This data gives a rich opportunity to compare student perceptions against a measure of police experience.

4.3.1. Crime in Kitchener-Waterloo

Five crime-related incident types were extracted from the city boundaries of Kitchener-Waterloo: assault, sex offence, robbery, break and enter, and theft (< $5000). The frequency of these incidents is plotted below in Figure 4.3.1, revealing that the vast majority of these crimes were non-violent, largely due to a high volume of minor theft (theft under $5,000). Minor theft comprised 70% of crimes in the data subset, but only 4% of total incidents responded by police in Kitchener-Waterloo in 2014.

Violent Crimes
9070-ASSAULT	0.94
9040-SEX OFFENCE	0.35
9090-ROBBERY	0.14

Non-Violent Crimes
| 9110-BREAK & ENTER | 1.52 |
| 9790-THEFT UNDER $5000 | 6.74 |

Number of Incidents in 2014 (Thousands)
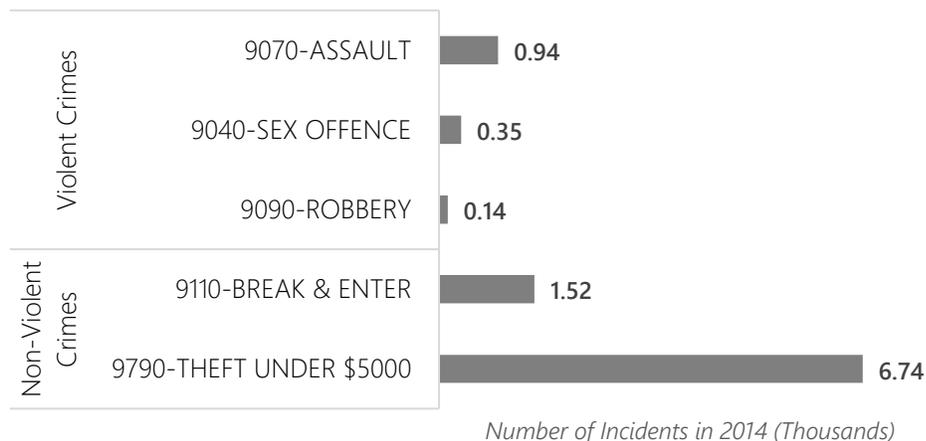
Figure 4.3.1 Frequency of incidents in Kitchener-Waterloo by crime type, 2014

Displayed in the following figures, kernel density maps show how the distributions of five crime types compares to collective perceptions. Each crime type has a distinct distribution, but the highest volumes of crime tend to be located within the extent of participant boundaries. Downtown Kitchener is a hotspot for each of the crime types, the most stable of locations for crime to occur. Over 50% of respondent perceptions identified an area in downtown Kitchener, indicating a high general awareness of crime activity. One quarter of perceptions also identified the campuses of Wilfred Laurier University and the University of Waterloo as areas of crime risk. The area around University of Waterloo is less affected by these crimes, except for thefts. Conversely, Wilfred Laurier University and the neighbouring Uptown Waterloo neighbourhood is a hotspot of crime, with exception of robberies. Hotspots south of Downtown Kitchener are largely peripheral to where students have formed perceptions of safety and crime risk.

Three hotspots formed from student perceptions were 25% or more of student perceptions coalesced: on downtown Kitchener, the University of Waterloo and Wilfred Laurier University. The hotspot on downtown Kitchener was the only area where over half of students identified overlapping perceptions of crime.
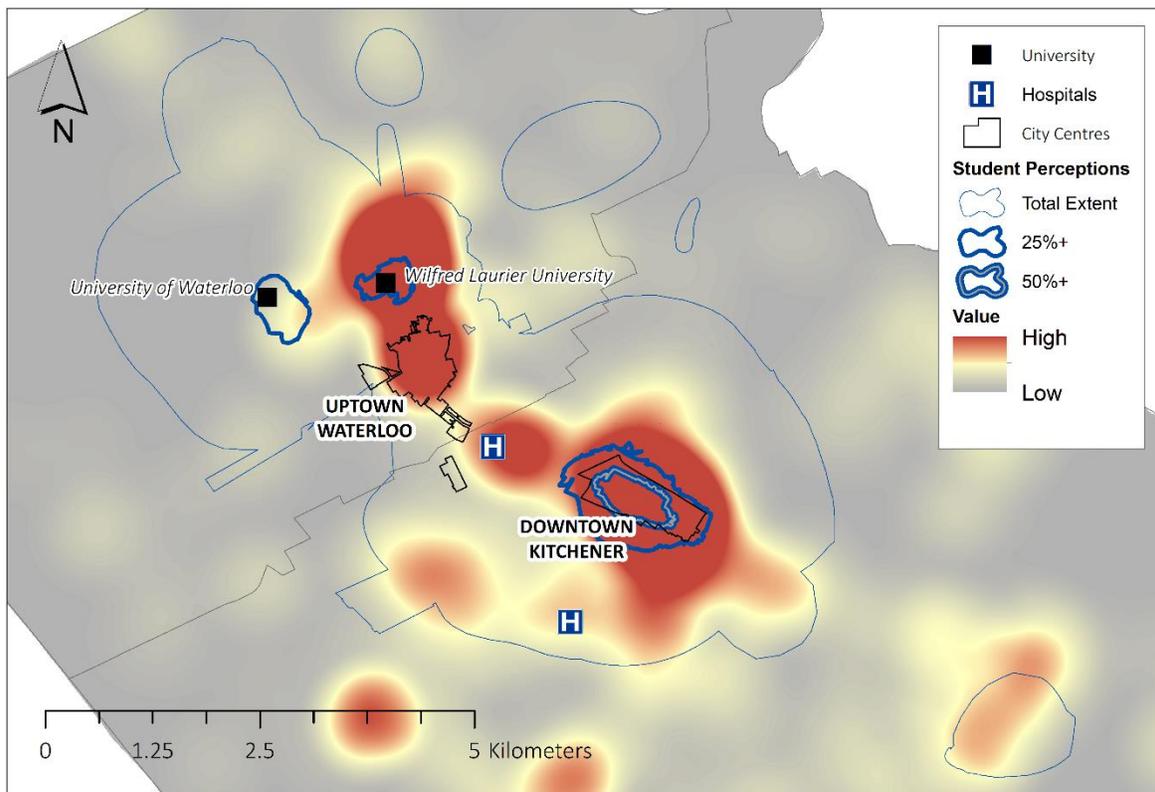
Figure 4.3.2 Kernel density raster of police response to assault in Kitchener-Waterloo, 2015
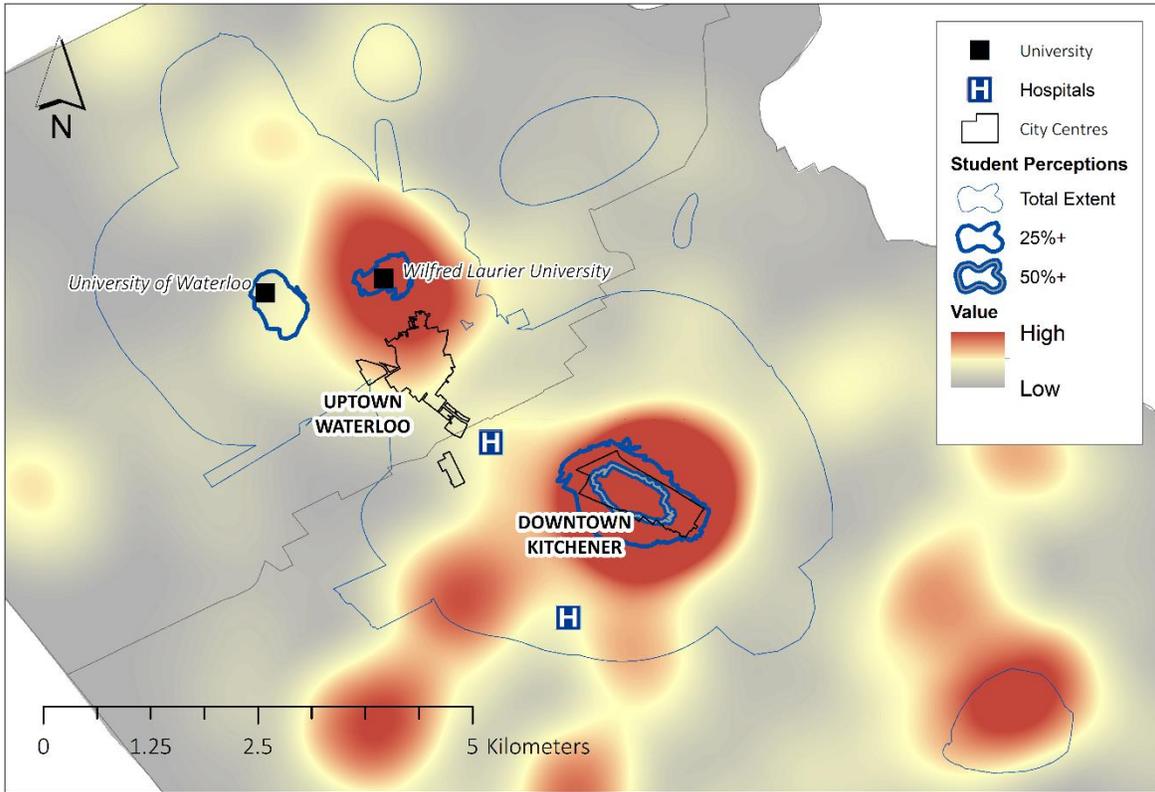
Figure 4.3.3 Kernel density raster of police response to sexual offences in Kitchener-Waterloo, 2015
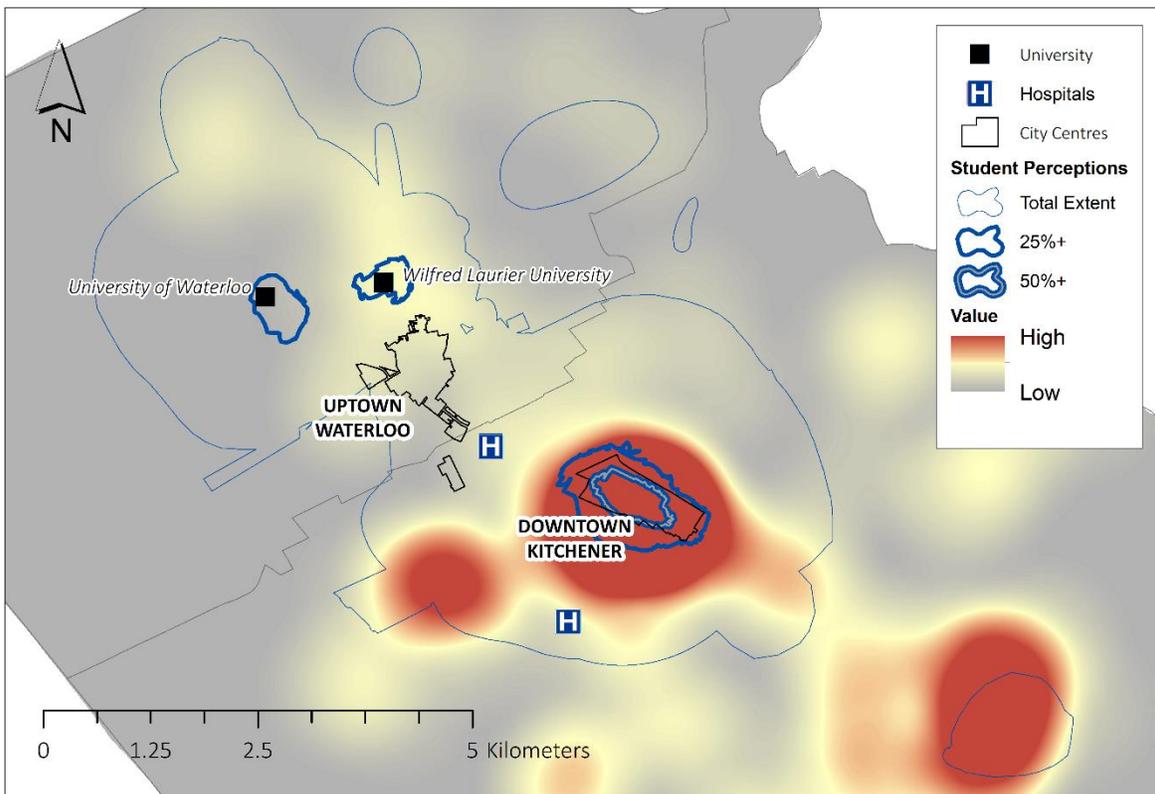
Figure 4.3.4 Kernel density raster of police response to robbery in Kitchener-Waterloo, 2015
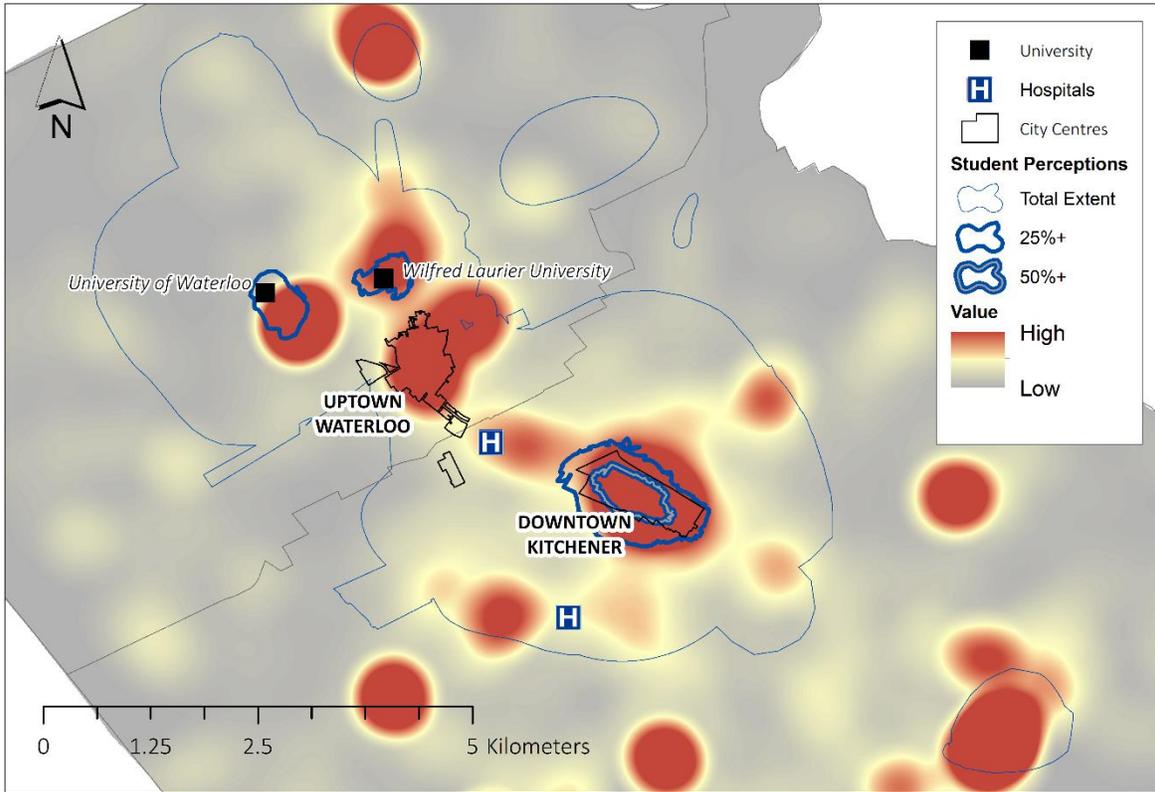
Figure 4.3.5 Kernel density raster of police response to theft in Kitchener-Waterloo, 2015
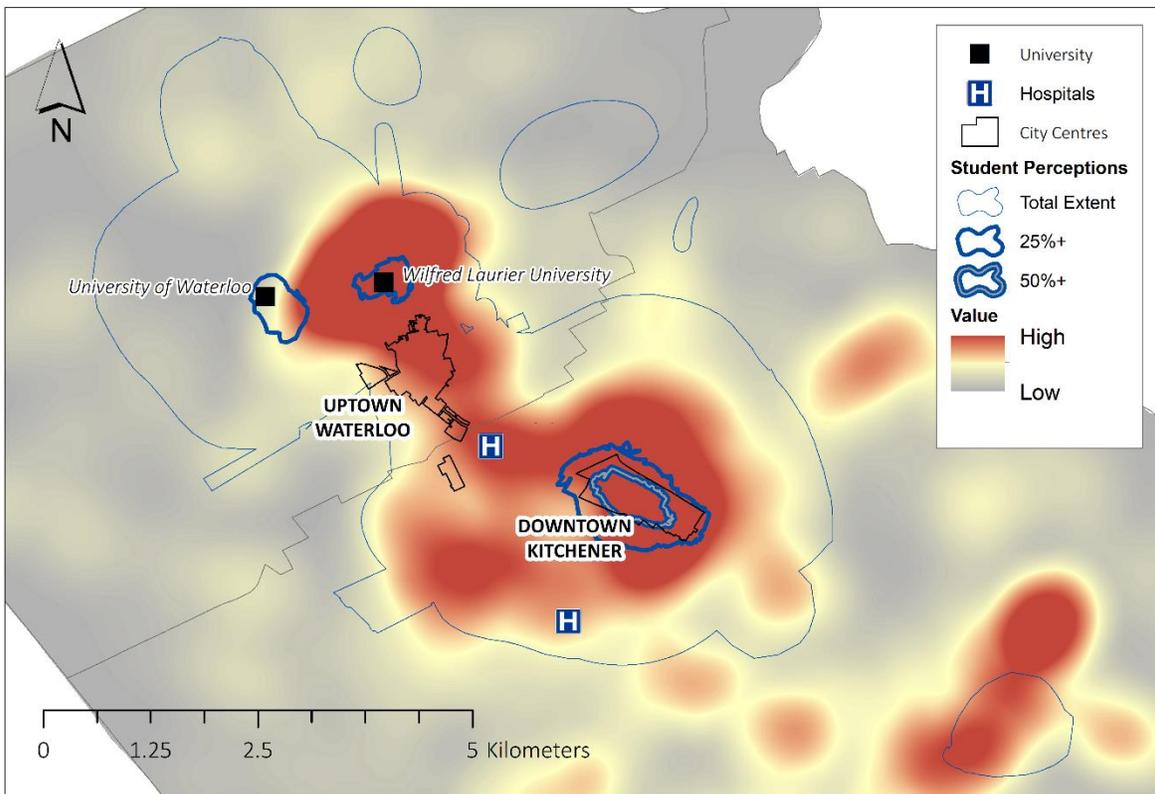
Figure 4.3.6 Kernel density raster of police response to break-and-enters in Kitchener-Waterloo, 2015

4.3.2. Frequency of student worry by crime

In the questionnaire, students were asked how frequently they worried about a series of violent and non-violent crimes (Figure 4.3.7). Respondents had the opportunity to describe the frequency of their worry on a 5-point scale, but no participant indicated either of the two most frequency options ("once everyday" or "more than once everyday") for any crime type. Many types of crimes are never worried about by most participants, including physical and sexual assaults. The crime most worried about was theft, with 24% of respondents worrying about it once or twice a week.

Over the past month, how often have you worried about becoming a victim of the following crimes in Kitchener-Waterloo?

■ Not at all   ■ Once or twice in the past month   ■ Once or twice a week

	Not at all	Once or twice in the past month	Once or twice a week
Violent crimes			
Physical Assault	71	22	8
Sexual Assault	63	27	10
Robbery	45	43	12
Non-violent crimes			
Breaking & entering	49	41	10
Theft	35	41	24

Figure 4.3.7 Frequency of student worry of victimization by crime types in Kitchener-Waterloo

4.3.3. Percentage of Incidents Individuals captures in their cognitive maps

Each respondent's total are of drawn areas was used to calculate the number of incidents in 2014 that their boundaries captured. Although their perceptions did not necessarily include the compared crime type, it a preliminary of how students' general awareness of crime aligns with police reported crime. The average participant spatial perceptions captured between 5% and 13% of these five crime types that occurred in Kitchener-Waterloo in 2014. Crime awareness is lowest for non-violent crimes, suggesting that either there is a gap in students understanding of crime risks or that non-violent crimes are not as strongly valued in student perceptions of crime in Kitchener-Waterloo.
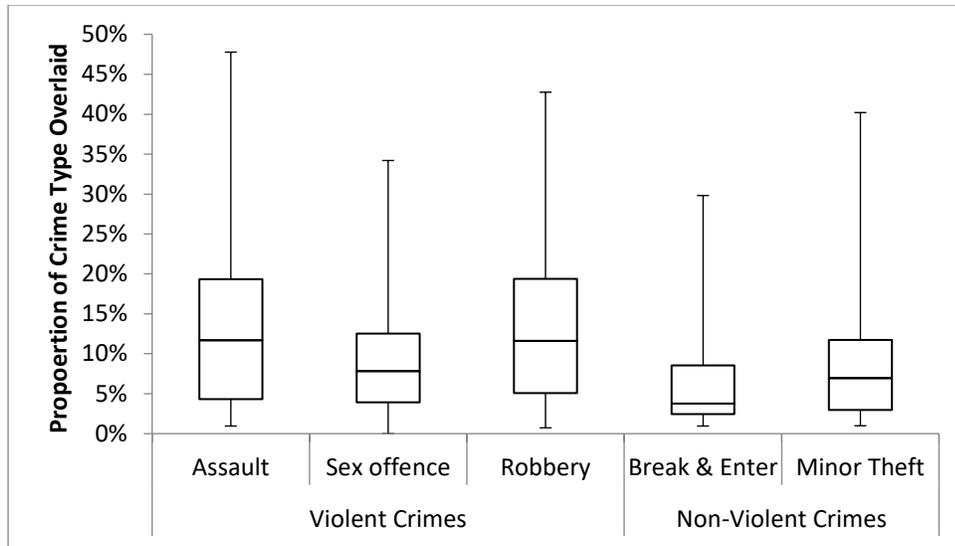
Figure 4.3.8 Average number of incidents captured by each participants' areas

4.4. SUMMARY OF RESULTS

This chapter has presented a synthesis of student perceptions and experiences of crime and life in Kitchener-Waterloo. It used questionnaire responses to establish a standardized baseline of trust, observations of local crime and disorder, previous victimization, and multiple dimensions of how crime is perceived emotionally and cognitively. While the past 5-year victimization rate was moderately high among the sample, crime was not a significant concern of students at the University of Waterloo. Although crime was not strongly feared, the threat of crime still permeated students' interpretation of neighbourhoods in the study area.

Interview responses were organized thematically, centring around four annotated student-created maps. Eight themes were explored, relating to crime-specific concerns and fears directed by signs of disorder. Results show that students perceive violent crime and non-violent crime in different ways. Violent crimes are considered to as significantly negative events, but also as unlikely in the study area. Non-violent crime, although observed in the local area, were viewed as low-consequence incidents. Perceptions were instead strongly directed by disorder and the presence of strangers, and as such were most concentrated on Downtown Kitchener. Fears were compared to WRPS occurrence data, which showed how the frequency of student fears mirrored the volumes of their occurrences. Results are discussed in the context of literature in the next chapter.

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DISCUSSION

"Though a sketch map may begin as a simple sheet of paper, it is anything but a simplistic approach to accessing people's feelings about their environment. "

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Curtis, 2012

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This chapter will discuss the findings presented in the previous chapter. First, students' sense of safety will be discussed in the context of other surveys conducted in Kitchener-Waterloo and across Canada. Second, four themes from the findings are compared with other findings in the literature to understand the factors that cause students to perceive risks of crime and to understand how these risks influence individuals' interactions with the city. The chapter is concluded by a discussion of the alignment of perceptions with police data.

5.1. SENSE OF SECURITY IN KITCHENER-WATERLOO

The first research objective sought to conduct a survey among post-secondary students at the University of Waterloo to characterize their feelings of safety, fear, and risk in regard to local crime. The survey tool employed a measure of fear of crime by feelings of safety, like that used by local surveys for the Waterloo Region Crime Prevention Council (WRCPC) and the nationally-covered Statistics Canada 2009 General Social Survey (GSS). The central question by these studies and included in the present study asked, *When you walk alone in your neighbourhood, how safe do you feel after dark?* For the local and national

surveys, fear of crime is quite low, and in fact, has exhibited a downward trend in the Region of Waterloo since 2011 until last reported in 2013 (Maharaj, 2014). In contrast, the results of this study, while also low, indicate that students are more fearful than either the 2013 local or 2009 national averages but equal to that of local residents in 2007 (Table 5.1.1).

Table 5.1.1 Feeling of safety while walking in neighbourhood of residence during the night (excludes non-responses)

	Very or Reasonably Safe	Somewhat or Very unsafe
Study Sample from the University of Waterloo	71%	28%
2007 WRPS Citizen Survey *	72%	27%
2013 WRAS *	91%	9%
2009 Statistics Canada GSS **	90%	10%

*Kitchener-Waterloo responses only; ** National sample*

At first glance, this difference in fear might be very concerning. Statistics show that post-secondary student-aged adults (particularly those aged 20 to 24 years) have the highest violent victimization rates in Canada, and Ontario has the lowest rate of reporting incidents to the police in Canada (Perreault, 2015). The past 5-year victimization rate among the sample was quite high (35%), of whom only half ever reported the offenses to police. This result may simply reflect a bias within the sampling method of the study, which relied on the interest of volunteers rather than a truly random sample. That is, rather than being randomly selected to participate, the volunteers for this study may have taken initiative to participate because of heightened concern for safety, and thus expressed greater levels of fear on the surveys.

Conversely, neighbourhood safety during the day is unanimously viewed as very or reasonably safe, and subsequent interviews did not reveal high concern for personal safety from living in Kitchener-Waterloo. In social research, the survey instrument is recognized as a source of potential bias, according to the wording and ordering of questions. Although identically-worded questions were compared, the surveys from 2007, 2009 and 2013 used only this one question to gauge fear levels whereas an entire section in the present study was devoted to exploring respondents' intensity and frequency of worry, assessment of risks and impacts on lifestyle. These topics which preceded this question of nighttime neighbourhood safety may have shaped a different understanding of the context, influencing the outcome. Farrall et al. (1997) address the possibility of misrepresentation of fear by quantitative surveys, and due to survey variations, such as these stated, they suggest that quantitative measurements overestimate levels of worry.

5.2. EVALUATION OF SKETCH MAPPING TOOLS

This study was distinguished from previous local surveys by its approach to have respondents illustrate their perceptions of crime spatially. The results visualize how concerns for safety varies in neighbourhoods across the city, and provide deeper insight into the factors that generate these views. Questionnaires are the longstanding tool used to measure fear of crime, but they struggle to capture the scope of detail the describes the concept (Jackson, 2005). Hale (1996) recommends integrating approaches to better understand the role of fear of crime in society. Geographic approaches help to better understand the social and geographical context in which perspectives formed and emotional responses triggered. This research affirms the position of Curtis (2012) that mental mapping is an ideal technique in which to ease the difficulties of capturing perception and emotion.

Of the two mapping techniques, the paper map seemed to have greater immediate appeal among respondents. The simplicity of the approach remains capable of capturing complex information and it reduces the burden on the respondent to learning software, which even if small, could encumber interviews when discussing sensitive matters like experiences of victimization. It also has the advantage of improving accessibility to all to give feedback by eliminating technological barriers in accessing and using electronic options (Kohm, 2009). In an age where technological advances may be difficult and expensive to adopt, this success provides anecdotal evidence that "old-fashioned" techniques can be straightforward to execute, effective to engage the respondent and provide clear results.

The other option presented was the computer tablet-based mapping tool. It required an upfront investment of time and skill development to build the tool, but its advantages were realized in its standardization of inputs, which reduced the labour required for digitizing responses and other pre-processing tasks. While this tool was custom-made for the study, PPGIS research tools are also now commercially available to facilitate map-based data collection (e.g. Maptionnaire). However, surveys that are conducted in person should consider how hardware specifications may affect the success of respondent engagement, as the 10.1" screen in this study felt small to some and may have been a deterrent. Nonetheless, student respondents of this sample proved to be highly capable of using the tablet to participate in the mapping exercise, as similarly experienced by Schoepfer & Rogers (2014). Still, researchers should remain cognizant of possible barriers related to physical limitations or disability that may inhibit readability and usability with electronic maps.

The maps were designed to capture respondents' freehanded expressions of where they perceived elevated crime risks in the study area. Similar cognitive mapping designs have been employed to identify areas perceived as safe or unsafe (e.g. Kohm, 2009; Lopez & Lukinbeal, 2010). Other approaches have

standardized response inputs using pre-defined boundaries (e.g. Podör & Dobos, 2014), or by aggregating point-based responses to a grid (e.g. Fuhrmann, et al., 2013). Some research has leveraged smart-phone capabilities to explore the minute spatial-temporal variances of how individuals are affected by the threat of crime throughout the day, capturing multiple geo-tagged responses a day to monitor state of emotions in regard to crime and location (Hamilton, et al., 2012; Solymosi, et al., 2015). The underlying data model should be informed by the researcher's conceptual framework. Cognitive perceptions may tend to associate regions (rather than single locations) with crime, with varying levels of emotional association. Thus while emotional responses like fear may vary over time, space and social situations (Pain, 2000), cognitive perceptions may be less volatile. Of course, Curtis, et al. (2014) recommends a grid cell-LISA method for a flexible method of aggregation of point, line and polygon inputs, to facilitate standard spatial analysis and partly address the problem of conceptualizing fuzzy and vague data. Still, reflections on complexity and stability of perceptions and emotion represent an opportune avenue to develop critical consideration of the role of geography in fear of crime and perceptions of crime.

5.3. TRENDS OF PERCEPTIONS

The second research objective sought to examine the factors that cause students to perceive risks of crime and to understand how these risks influence individuals' interactions with the city. This research objective was derived out of a desire to understand how students in Kitchener-Waterloo form perceptions and react to threats to their safety. Understanding the motivations of students' fears and the points of differences (and similarities) to the greater KW community will help to identify potential strategies to mediate fear or enhance risk assessment. Four themes have been pulled from the findings and are discussed below.

5.3.1. STORIES FRAMED HOW SPACE WAS INTERPRETED

The image of a city is formed in part by experiences and in part by shared information. People tend to gather information about local crime through local media or social networks, tinting the interpretive lens that is used to understand their own experiences (Matei, et al., 2001; Wittebrood, 2002). Media reports are described to be influential on the formation of fears and perceptions of crime (Chadee, 2001), yet students claimed they did not follow or hear much about local crime in the news. Low media consumers have been characterized as low-worriers of crime, who overrule media imagery with a reliance on personal experiences (Ditton, et al., 2004), a description befitting the interviewed students. Students did share stories of their own experiences that shaped their perceptions, and sometimes these events or observations gave credence to news reports that they could recall. Students also trusted stories learned from within their social networks. These personal and shared stories were integrated into student mental maps.

Crime risk was rarely identified in their own current or past neighbourhoods of residence, with exception if they were aware of specific incidents like homicide or drug-dealing that had occurred locally. One hypothesis for this isolation of knowledge is that students' may have geographically-fractured social networks; that is, presumably students' social networks centre on campus rather than their neighbourhoods. Stories are more easily shared and mentally fixed to common landmarks. Students may not be familiar with every student neighbourhood, but most would share a degree of familiarity with the social centres of the cities, notably campus, Uptown Waterloo and Downtown Kitchener. This may reduce their awareness of issues in their own neighbourhoods (like break-and-enters), while emphasizing known crimes in high traffic areas.

But as mentioned in the results, the overall perception was the Kitchener-Waterloo was generally safe, particularly in comparison to Toronto. To the author's knowledge, the halo effect of one city on another has not been explored in previous literature; however, neighbourhood-level research has shown evidence of residents interpreting their local safety in comparison to their perceptions of neighbouring communities (Lopez & Lukinbeal, 2010). At a city level, this comparison could be a function of the media from a larger population centre overshadowing local news. As such, the assessment of relative safety in such a broad context might characterize mid-size cities located (and overshadowed by) nearby large cities, like Kitchener-Waterloo. It also suggests the macroscopic context that individuals may base their sense of security, relative to how their risks may be different in other, even vastly different, contexts.

5.3.2. NEIGHBOURHOOD FAMILIARITY REDUCED WORRY

Student perceptions of crime were tightly constrained to areas where they had demarcated familiarity. Students' reported perceptions based on their own autobiographical memory, effectively a sample-defined reduction of the study area (Craig, Conniff & Galan-Diaz, 2012). Four key regions were identified by mapped responses: the two campuses of the University of Waterloo and of Wilfred Laurier University, Uptown Waterloo and Downtown Kitchener. That these areas emerged as key regions of familiarity and perceived crime is not surprising, as each of these areas can be described as high-traffic and easily accessible, and thus served as likely common spaces for students.

A moderate proportion of all respondents reported familiarity with Downtown Kitchener, yet the space was the most frequent recurring hotspot among student perceptions. It was where the peak concentration of perceptions was found for each map of total perceptions of violent and non-violent crime, as well as physical and social incivilities. Together, it is possible that these unfamiliar elements enforced negative perceptions, as multiple observations of interpreted criminogenic elements confirm distrust and become "self-fulfilling prophecies" (Sampson & Raudenbush, 2004). A lack of familiarity may not only

increase perceptions of danger, but also increase avoidance behaviours (Jorgensen, Ellis, & Ruddell, 2013), which was evidenced by some respondents' decisions to not linger in downtown Kitchener, even choosing not to rent there.

The juxtaposition in perceptions between the university campus and downtown core illustrate how the degree of familiarity frames elements of concern. The main campus for the University of Waterloo was a space familiar to all respondents, being the geographic centre of the population for the sample. Regular exposure to an environment can desensitize individuals to environmental elements that may cause them fear in other settings (Perkins et al., 1993). When students identified campus as a place of crime, they were generally aware of types of crimes (if not specific incidents) that occurred on campus, including theft and sexual assault, but mainly associated non-violent crimes. Collectively, it is reasonable to assume that students spent more time on campus than elsewhere; perhaps perceived risks diminished over time as students spent more time on campus without being victimized. More distant areas (like Kitchener) are likely to not be visited as frequently, reducing familiarity and disrupting overall safety perceptions (Lopez & Lukinbeal, 2010).

5.3.3. PERCEIVED DISORDER AS CAUSE & EFFECT TO NEIGHBOURHOOD STIGMA IN KITCHENER

Students consistently related disorderly features in the areas they associated with crime. Physical signs of "untended" property aligned with those noted elsewhere in literature: abandoned buildings, litter, poor lighting (Doran & Burgess, 2012; Fisher & May, 2009; Hale, 1996; Robinson, Lawton, Talyor & Perkins, 2003). Sampson and Raudenbush (2004) have theorized that the perceived volume of disorder impacts how significant the problem of disorder is. With no formal assessment of disorder conducted of the study area to corroborate, this would suggest a much greater problem in Kitchener than in Waterloo. Kitchener was also differentiated by unique details that students mentioned in their descriptions of local disorder. For example, while litter was not observed to be restricted to Kitchener, it was characterized distinctly and was noted to include needles scattered around an abandoned building and park. In this case, the needles as litter from suspected drug-use was observed as evidence of illicit activities that may signal reason for concern.

Interpretation of disorder is also impacted by the demographic composition of the neighbourhood context (Sampson & Raudenbush, 2004). That is, disorder may be perceived more in the presence of certain stigmatized social groups. Stereotypes may cause misperception of crime in a city by perpetuating concerns of safety where certain ethnic communities are found rather than where crime is most problematic (Matei et al., 2001). Racial biases were not evident in any students' perceptions, but the presence of low-economic class formed the foundation of stereotypes in Kitchener. Kitchener was associated with having visible populations of homeless people, people with mental illnesses and other residents who displayed signs of low-

income and did not fit in students' definition of the familiar. These groups had been observed to act out in unconventional ways. Without an understanding of the motives of these "others", students formed an innate sense of distrust of strangers in Kitchener. The environment with its disorder and unfamiliar people reinforced the unfamiliarity of the space, and students formed an innate sense of distrust and association of crime with Kitchener.

5.3.4.   SOCIAL "OTHER" & ALTRUISTIC FEAR

The presence of social "other" groups was concerning, but the interpretation of safety in this context should be understood in a broad sense. Students did express concern about the likelihood of strangers committing crimes against them like theft, but many fears were also unformulated. This general sense of unease has been described as an instinctual response to an environment defined by social disorder, bereaving the individual of a sense of control (Jackson, 2006). For students, the prospect of being approached by panhandlers or someone who might be mentally unstable was intimidating and left potential outcomes unknown. This spurious link between crime and observed social disorder was discussed sometimes apologetically, but the concern remained.

A few student interviewees also expressed their concerns about the safety of others, a form of concern sometimes referred to as "altruistic" fear (Haynes & Rader, 2015; Warr, 1992). Students were aware that the possibilities of crime extended beyond themselves, and so the strangers that students were fearful of were also the strangers whom students expressed concern for safety. Indeed, individuals living on the streets of the Waterloo Region are at higher risks both to commit crime and to be victims of crime than those with stable housing (Piscitelli, 2012), suggesting that students' personal and altruistic concerns are both warranted. Some of these perceptions were enhanced because of volunteering with organizations which had given them special perspective into the vulnerabilities of these "other" people. University students have been previously shown to have more concern for others than for their own individual safety, attributed to housing patterns and collective efficacy of the university campus (Rader & Cossman, 2011). Concern for others is a sign of compassion, a virtue which the Waterloo Region Crime Prevention Council recognizes as a core value to promote safety from crime and healthy communities (WRCPC, 2017). As such, this 'altruistic' fear of students may contribute to the municipalities' goal to building strong communities by working to overcome local divisions of 'otherness'.

5.4. ALIGNMENT WITH POLICE DATA

An outstanding perspective in the discussion of student perceptions would consider how student perceptions align with "reality". "Reality" in this sense is impossible to truly quantify, given the unknown

volume of unreported crime, and also the susceptibility of crime to be interpreted by different cultural definitions (a prime example of which is the legality of certain drug use in different jurisdictional contexts). Technically this study did not employ a conventional measure of crime, instead utilizing a dataset of demands on police resources as a proxy of criminal activity. This standard of reality was further reduced by extracting a subset of five crime types that occurred within Kitchener-Waterloo during the calendar year of 2014. These incident types were composed of three violent criminal incidents (assault, sex offences and robbery) and two-non-violent criminal incidents (break-and-enter, and theft).

5.4.1. Analytical Approach

Comparisons from mental maps to police response data were made using spatial overlays. Previous studies have compared spatial distributions of crime against where residents who fear crime (Alkimim, et al., 2013; Phillips & Piscitelli, 2013), but few have explicitly compared the spatial distributions of both perceptions and crime. Podör & Dobos (2014) took an approach of having respondents indicate their fear of crime on a scale for several standardized city regions that aligned with areas of official crime aggregates, while Fuhrmann, et al. (2013) compared point data of crime and perceptions by superimposing a tessellated reference grid over a university campus. This current study collected crime perceptions as freeform polygons. These areas were aggregated then overlaid crime occurrence point data, which allowed for direct comparison of how perceptions of neighbourhood areas compare to crime activity in the area.

5.4.2. Alignment of Perceptions with Crime

At a high level, aggregated study perceptions were moderately well aligned with the hotspots of crime in Kitchener-Waterloo. Both crime and perceptions predominantly aligned on the urban centres of Kitchener and Waterloo. The primary hotspot of student perceptions formed over Downtown Kitchener, which was consistently a hotspot location for each of the crime types. However, these perceptions do not appear to be related to measured reality, but instead reflect the indirectly experienced reality of day-to-day observations. When perceptions were separated by crime class and incivility type, this negative perception of downtown Kitchener appeared to be most strongly driven by social incivilities. Environmental perceptions, which may be related to actual knowledge of crime, may also include elements of broader discontent with a space (Lorenc, Clayton, Neary et al., 2012). The findings by Matei et al. (2001) noted that discomfort from feelings of crime risk in neighbourhoods across Los Angeles was related to the presence of untrusted ethnic groups. In a similar way, students' ideation of crime in Kitchener does not seem founded in actual crime occurrences, but rather driven by observations of unfamiliar communities and undesirable behaviours.

Secondary perceptual hotspots also formed on the two universities located in Waterloo. Interestingly, the University of Waterloo was more strongly associated with descriptions of violent and non-

violent crimes, whereas Wilfred Laurier University was more frequently characterized by incivilities. Both these secondary hotspots corresponded with problem areas with high concentrations of theft and of break-and-enters, but rates of physical and sexual assaults were noticeably higher around Wilfred Laurier University only. Thus, the distribution of crimes differed from the distribution of students' perceptions – an imbalance possibly due to level of familiarity and knowledge with the two campuses. Although the two universities are geographically close, students from this sample would undoubtedly be more exposed to education and knowledge sharing (including crime prevention initiatives led by campus police) on campus at the University of Waterloo to have a more well-informed (if not accurate) perspective of the area. Observations or reports of crime of similar nature around Wilfred Laurier might have had lower resonance with students' own "crime reality" (Chiricos, Padgett & Gertz, 2000). Instead, students relied on their understanding of the physical and social landscape to shape their perceptions of the neighbourhood.

Overall, it might be said that students' perceptions generally corresponded well to the patterns of crime in the study area, although this awareness may not align with their own risks. Unfortunately, data limitations prevent a better understanding of actual student victimization rates. Students may be aware of where the highest rates of crime occur, yet still uninformed of where their personal risks are highest. Independent research by the local regional newspaper, The Waterloo Record, helps to fill this knowledge gap. Three years of WRPS service calls (2011 to 2013) were analyzed, regardless of whether a charge resulted or not (whereas the present study examined only a subset of cases where the incident resulted in charges being placed in 2014) (Outhit, 2015). The investigation found that the two most policed areas of the region were in Central Waterloo (where student housing is centralized) and Downtown Kitchener (where low-income residents concentrate). Thus, the disproportionate perception of crime in Kitchener over Waterloo gives reason for concern of misperception, given the high volume of calls for police service among student residential areas.

5.4.3. Misperceptions of Risks

Kitchener had been stereotyped by students as the more dangerous part of town, of which poverty and homelessness are the most salient signals of crime. As mentioned above, this casting of fear on the visible "other" (often socially disadvantaged groups) is noted to occur on ethnic minorities and low socio-economic groups (Kitchen & Williams, 2010; Matei, et al., 2001; Modly, 2009). In fact, Matei, et al. (2001) identified a paradox in that fears are more strongly driven by distrusted visible populations than by local crime rates. A high volume of crime did occur in Kitchener, but student perceptions were more strongly driven by distrust in local incivilities. Crime in Waterloo did not occur equally around both campuses, and overall, students misperceived the balance of crime between the two institutions.

The misperception of crime in Waterloo suggests the need to raise students' awareness of their risks, not as a fearmongering tactic but to empower students with knowledge to keep themselves safe. The current state of student misperceptions emphasizes the need for the WCAT initiatives to raise student and community awareness of crime by partnering students with police to run campaigns like putting posters on campus, and knocking door-to-door to give residents reminders of how to stay safe.

Aggregated student perceptions corresponded well with the general pattern of crime hotspots, although individually, perceptions tend to capture low proportions of incidents. Indicated areas that do not correspond with police crime data reflect potential misperceptions of unsafe locations or areas of potentially underreported crime (Fuhrmann et al., 2013). Most of the hotspots of each crime type were either captured by at least some student perceptions or were located away from the downtown core in Kitchener where students did not frequent. However, unique experiences that negatively affect student perceptions of an area may be hard to change, even when such perceptions do not align in an area with a problem of crime. For example, some participants drew areas which they associated with crime exclusively due to observations of poor or erratic driving (which were later removed from analyses to focus responses). Traffic violations do represent potential threats to safety but do not necessarily constitute a criminal act and are not always performed with criminal intent. Similarly, even ongoing construction activities impacted perceptions because of the changed landscape and poor lighting. Negative interactions, whether criminal or disorderly in nature, may cast a negative label on an entire region. In such cases when fears are driven by signs of disorder, environmental design strategies may help alleviate concerns (Kohm, 2009; Marzbali, Abdullah, Razak & Tilaki, 2012).

5.5. SUMMARY OF DISCUSSION

The context of the discussion focused on perceptions of crime within the study area of Kitchener-Waterloo. Students, as the subjects of inquiry, were found to express low levels of concerns for safety, which although higher than recent measures among the cities' residents, were possibly overstated in the context of the question in the survey and by comparison other supporting measures. While their concerns for safety may not be high, their general perceptions provide insight into their process of evaluating threats of crime in the cities and the effect it has on their attitudes and behaviours.

The mental mapping exercise helped to tease out these nuances. The two formats, paper and computer, both facilitated effective interviews. The information collected from these interviews provided meaningful insight into drivers of distrust and feelings of being unsafe. Spatial trends of perceptions across the city were noted to be particularly influenced by how narratives framed the interpretation of places, familiarity with neighbourhoods, the presence of disorder and awareness of social differences. Stereotypes

and distrust often characterized the essence of perceptions, but students also expressed compassion through their concern towards the same strangers who caused them to fear.

The last point of the discussion assessed the analytical approach and interpretation of how perceptions aligned with local police response data. Few studies have explicitly compared spatial perceptions against spatial crime data. The data model used to capture perceptions (e.g. by point, line, polygon or grid) influences the methods used to compare against police data. While student perceptions of city-wide crime were found to generally correspond to hotspots, these hotspots may not reflect students' actual risks of crime because the WRPS has cited student as being at higher risks than other parts of the population in the service region.

CONCLUSIONS

The goal of this research was to investigate the perceptions of crime in Kitchener-Waterloo among University of Waterloo students. This purpose contributed to two areas within fear of crime research: to better represent student concerns and experiences in the local understanding of fear of crime, and to develop the integration of geographic research methods to better understand how individuals conceptualize crime and risks to their safety across an urban landscape. In this study, spatial location was used to guide interviews and organize results. Respondents defined the geographies of their perceptions, which characterized their fears and evaluations of risks.

6.1. SUMMARY OF OBJECTIVES

This study explored student perceptions using a traditional survey and mapping exercise to gain feedback about their perceptions of crime. The results show how students navigate the city, and illustrating their awareness of crime as a factor of risk Spatial patterns emerged in their perceptions of violent and non-violent crimes, as well in their descriptions of incivilities. There is evidence that differences of perception exist between gender and academic year. High-traffic and accessible locations were recurrent hotspots of student perceptions. Crime reports, degree of familiarity and visible signs of disorder all contributed students' interpretation of crime activity and risk throughout the study area.

Perceptions were compared against a dataset of police resources, as a proxy for understanding crime occurrences in the study area. Boundaries of perceptions where overlaid kernel density rasters of different crime types. Most students do acknowledge crime as a factor of risk in their lives, and for some, the fear of crime has the potential to degrade their quality of life. The WRPS have identified university students as

disproportionately vulnerable to crime (University of Waterloo, 2013), but even with the high victimization rate of the current sample, students do not always acknowledge that the incidents they have been involved in have significantly negative impact. Students are also vulnerable to incomplete information in their awareness of crime; they predominantly perceive the threat of crime away from areas of familiarity like their residences and campus, and as such students' perceptual realities may misinform them of risks they face closer to home. This designates a need for better safety education targeted towards university students.

6.2. IMPROVING THE MAPPING EXERCISE

Maps provide compelling evidence of how perceptions are conceived. Maps also hold great potential in understanding the influences that shape and the outcomes that result from these perceptions. This study used mental maps as support to qualitative analysis and to directly compare perceptions of crime to police response data. Paper and electronic maps were utilized to capture respondent feedback, to focus interview dialogue, and enable effective communication of situational context. While mapping techniques helps to better define traditionally quantified survey responses and further elaborate interview feedback of perceptions of crime, limitations remain. The current study attempted to mitigate sources of bias from the maps by offering respondents the opportunity to use an interactive map capable of dynamic scale. Yet, limitations were experienced with each format, and additional challenges were faced when integrating the different formats.

Individuals were instinctively drawn to the paper maps – which is hypothesized to have been a tactile activity that represented an atypical experience for digital natives. Due to issues in supply and demand with the paper maps, additional bias was introduced when not all respondents had a choice to use the map input format of their preferred choice. While the computer option was not limited in the number of times it could be used, the screen-size was approximately four times smaller than the surface of the paper map, which may have reduced its relative appeal when offered a choice and also may have hindered ease of use. Additionally, the features that respondents created were created directly on the cloud, and lag resulted.

The findings of the results were limited by inconsistent forms of input, which over-estimated familiarity and introduced different degrees of interaction to guide and accommodate input. Future studies would benefit from committed to one format to ease analytical process. Both formats present strengths that benefit studies. However, this study did not compare differences between the two groups of inputs, but more research into spatial data capture methods may be warranted to not only ensure accurate data, but to effectively engage respondents in future studies.

Future research that seeks to integrate spatial perspectives in perceptions of crime would benefit from aligning itself within (public) participatory geographic information system (P)PGIS literature. PPGIS has the goal to "incorporate local knowledge, integrate and contextualize complex spatial information, allow participants to dynamically interact with input, analyze alternatives, and empower individuals and groups" (Sieber, 2006). The exploration of awareness and perceptions of crime is an opportunity to build dialogue between policymakers, law enforcement and communities. The knowledge base in PPGIS would aid the diverse interdisciplinary researchers of perceptions of crime to navigate best practices of spatial methods and technology, to engage effectively with individuals, and to gain local spatial knowledge.

6.3. ADJUSTING THE SCOPE

The results shed light on the collective urban experience of living in Kitchener-Waterloo. Crime has a pervasive influence in shaping everyday behaviours and decisions and in defining the paradigms in which neighborhoods are perceived. Kitchener-Waterloo is a place that strives to foster community, but growing populations "undermine the social ties between neighbors, like common set of values & commonly experienced problems" (Bursik, 1988). Student responses revealed barriers between themselves and other communities due to concerns for safety. Signs of homelessness and mental illness were the most common barriers mentioned, and as such remain ongoing problems for the cities to work to overcome. But student experiences of life in Kitchener-Waterloo is just one perspective. While students may largely overlook the rowdy behavior of their peers and be at ease with their own low-income and high-density rentals, other city residents may be concerned by the presence and behaviors of university students. Indeed, more concerns not mentioned by the students of this sample may be relevant to other segments of the cities' populations; this study establishes just one local perspective. Future research may benefit from sampling from multiple communities to tease out more nuances in perceptions.

This research is the first study to document spatial perceptions of crime in Kitchener-Waterloo, but perceptions are dynamic over time as they are over space. Like repeated WRAS surveys that have measured fear of crime thrice since 2007, continued research might investigate these spatial perceptions change or persist over time. The Region of Waterloo is experiencing rapid population growth spurred by new housing developments and revitalization efforts in Kitchener-Waterloo that include the brownfield redevelopment of Breithaupt Block in downtown Kitchener and the building of a regional LRT system (Region of Waterloo, 2017). In a diverse and growing city, perspectives of local crime and neighbourhoods are likely to change over time and could complement studies on gentrification, demographic shifts and other socio-economic changes. Even permanent residents of the city may sense a social divide between themselves and the transient student population. Future studies should strive to better understand the role of disorder in shaping

neighbourhood perceptions, to identify biases that form, and to assess the impact that stigmatization has on communities.

Results indicated that students perceived crime more strongly in Kitchener than in Waterloo, but this is not where their likely risks of victimization are located. This research was limited in how it captured criminal activity (by proxy of police response data), which also did not specify the victims, so that student likelihood of victimization could not be estimated. Future research should examine in more detail the risks of crime faced by post-secondary students at the University of Waterloo, Wilfred Laurier University and Conestoga College. A better understanding of student risks of crime, their misperceptions and the spread of criminal reputations of neighbourhoods may help to guide efforts to better educate the student collective throughout the study area on how to remain safe. Of course, perceptions of crime should not be shifted from Kitchener to Waterloo at the peril of making students feel unsafe on campus or at their residences.

6.4. PERSONAL REFLECTIONS

As a student who lived in the city of Waterloo for the better part of eight years, this study allowed me to understand a city from a new perspective: the threat of crime. As I mentioned in my statement on positionality, I have been fortunate to have never been directly impacted by crime, yet admittedly the threat of crime has played an unseen force that has impacted my behaviour in the city and interactions with strangers. The opportunity to discuss with my peers about their own experiences and perceptions of crime was enlightening. Nearly everyone had a story to tell, whether it was of an incident they were involved in directly, or whether it was a report they had heard elsewhere. These stories represented the filters that coloured how students viewed the city they lived in. Even though the overall sense was that Kitchener-Waterloo was a safe place to live, mapped responses showed how some areas could be exceptions. Students described how these exceptions encouraged them to adapt their behaviours to moderate their risks and to maintain suspicions in areas they associated with crime potential.

The students I interviewed were not ignorant to the possibility of crime around them. Their perceptions of crime varied geographically, unique to each person's familiarity and experiences with the study area. Aggregated perceptions of crime risk did generally correspond with greatest hotspots of five crime types in city. However, this study was unable to comment on crime that put students at greatest risk. Since many locations were marked towards Kitchener, students are possibly unaware of the risks they face around Waterloo, and police and university officials should consider new approaches to overcome possible misperceptions of safety and of threats.

This study also affirmed that the study of perceptions of crime is not solely a criminological pursuit, but an effective measure of community behaviour and city social health. Students noticed the socio-economic divides that separated themselves from visible groups occupying downtown Kitchener, and they expressed discomfort and distrust around homeless people there. I could identify with their concerns as I share many similar experiences as those expressed by the students. Significant portions of this thesis were written in coffee shops in the downtown centres of Kitchener and Toronto; it was not uncommon for me to be approached by homeless people who asked for money, yelled and swore, or acted out in some other unnerving way. But I was heartened by students' expressions of compassion. Students empathized with these populations – their altruistic fear not to be completely overshadowed by concern for their own safety.

Perceptions of crime has the power to illuminate both the stigmas that divide communities within cities and the foundation of social capital that acts against such divisions. Perceptions of crime is not a problem unto itself but a symptom that reflects the state of social wellbeing. This latent measure can be leveraged by municipalities like Kitchener and Waterloo as they continue strive towards building strong community in safe cities.

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APPENDIX A
Questionnaire

GEOGRAPHIES OF FEAR: MAPPING UNIVERSITY STUDENTS' PERCEPTIONS OF CRIME IN KITCHENER-WATERLOO, ONTARIO

Thank you for agreeing to participate in this study, "Geographies of Fear: Mapping university students' perceptions of crime in Kitchener-Waterloo, Ontario".

This in-person session is expected to take 45 minutes to complete and consists of two parts, (a) a questionnaire and (b) a face-to-face interview.

In the first section, you will be asked to complete a questionnaire that inquires about your academic background, residential history, current community, media consumption, perceptions and experiences of crime, perceptions of police, precautions you take for safety and basic demographic information. This questionnaire will take approximately 25 minutes to complete.

A short interview will follow. During this time, you will be asked to share your experiences and perceptions of crime in Waterloo by answering questions verbally and by drawing responses on a map. This interview will take no more than 20 minutes.

In appreciation of your participation in this research, you will receive a $5 in cash. In addition, you will be entered into a draw to have an opportunity to win a $30 Amazon.ca gift card.

Data collected during the study will remain confidential and will be stored up to five years on a secure, password protected computer in the Department of Geography to which only authorized researchers have access.

As with all University of Waterloo projects involving human participants, this project was reviewed by and received ethics clearance through a University of Waterloo Research Ethics Committee. Should you have any comments or concerns resulting from your participation in this study, please contact Dr. Maureen Nummelin, the Director, Office of Research Ethics, at 1-519-888-4567, ext. 36005 or maureen.nummelin@uwaterloo.ca.

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A. ACADEMICS

This section asks about basic academic information relating to your university attendance.

1. **What is your enrollment status?**
   Check one: ○ Full time   ○ Part time   ○ Other: _____

2. **Are you an international student?** *Check one:*   ○ Yes   ○ No

3. **Which academic year are you enrolled in?**
   Check one: ○ First year (1A / 1B)   ○ Third year (3A / 3B)   ○ Fifth year or above
                   ○ Second year (2A / 2B)   ○ Fourth (4A / 4B)

4. **Are you enrolled in co-op?** *Check one:* ○ Yes   ○ No

B. RESIDENTIAL HISTORY

Your familiarity and social ties with Kitchener-Waterloo are affected by where you have previously lived. The following questions will inquire about your residential history in these cities.

5. **What type of building is your current place of residence?**
   Check one: ○ Single-detached house   ○ Apartment in a building with fewer than 5 storeys
                   ○ Row house   ○ Apartment in a building of 5+ storeys
                   ○ University-owned residence ○ Other: _____

6. **Do you rent or own your current place of residence?**
   Check one: ○ Rent
                                         ○ Own

7. **Including yourself, how many people live in your current place of residence that you rent or own?**
   Check one: ○ Live alone
                                         ○ 2
                                         ○ 3 – 4
                                         ○ 5+

8. **Who do you share your current living space with?**
   Check as many as apply: ☐ Friends   ☐ Strangers
                              ☐ Family   ☐ Do not live with others
                              ☐ Land owner   ☐ Other: _____

9. **How long have you lived at your current place of residence?**
   Check one: ○ Less than 1 month   ○ Between 1 year to less than 5 years
                   ○ Between 1 month to less than 6 months   ○ 5+ years
                   ○ Between 6 months to less than 1 year

10. **Since the beginning of your studies and within Kitchener-Waterloo, how many unique addresses have you lived in (not including returning to a previous residence after summer break or a co-op term)?** *Check one:*   ○ 1
                                        ○ 2
                                        ○ 3
                                        ○ 4
                                        ○ 5+

11. **If you have moved between residences, what are some of the reasons that influenced you to move?**

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C. COMMUNITY OF RESIDENCE

This section on 'Community of Residence' seeks to learn about your social ties, feelings and perceptions towards life in Kitchener-Waterloo.

12. How long have you lived in Canada?

Check one:
- ○ Less than 1 month
- ○ Between 1 month to less than 6 months
- ○ Between 6 months to less than 1 year
- ○ Between 1 year to less than 5 years
- ○ 5+ years

13. How long have you lived in Kitchener-Waterloo?

Check one:
- ○ Less than 1 month
- ○ Between 1 month to less than 6 months
- ○ Between 6 months to less than 1 year
- ○ Between 1 year to less than 5 years
- ○ 5+ years

14. Do you feel that you belong in Kitchener-Waterloo?

Circle the answer that best describes your feeling.

Belong	Very much	Somewhat	Neutral	Not much	Not at all	Do not belong
	○--------------------	○--------------------	○--------------------	○--------------------	○	

15. a) Overall do you enjoy living in Kitchener-Waterloo?

Circle the answer that best describes your feeling.

Enjoy	Very much	Somewhat	Neutral	Not much	Not at all	Do not enjoy
	○--------------------	○--------------------	○--------------------	○--------------------	○	

b) Referring to the previous Question 15a, please explain your response. Why did you choose that answer?

_____

16. Generally speaking, would you say that people in Kitchener-Waterloo can be trusted (i.e. reliable to ensure each other's safety and well-being)? For each of the groups listed in the table below, indicate whether you believe you can trust them a lot, some, only a little, or not at all.

	Trust a lot	Trust some	Trust only a little	Trust not at all	Don't know / Not Applicable
People residing on your street (or in your campus residence)	○	○	○	○	○
Strangers in Kitchener-Waterloo	○	○	○	○	○
Students on campus	○	○	○	○	○
University faculty and staff	○	○	○	○	○
University Police	○	○	○	○	○
Campus Health Services	○	○	○	○	○
Campus counselling services	○	○	○	○	○
Waterloo Regional Police Service	○	○	○	○	○

17. In general, do you believe that you <u>share the same values</u> as…

a) … people in Kitchener-Waterloo?

Circle the answer that best describes your feeling.

Shared Values	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Different Values
	○--------------------	○--------------------	○--------------------	○--------------------	○	

b) … students, staff and faculty at your university?

Circle the answer that best describes your feeling.

Shared Values	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Different Values
	○--------------------	○--------------------	○--------------------	○--------------------	○	

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18. **From your observations, which of the following crimes and/or behaviours are commonly found in Kitchener-Waterloo and in your neighbourhood of residence?**
In each column, place an 'X' to indicate which crimes and/or behaviours you have observed in your neighbourhood and/or Kitchener-Waterloo. Leave blank if not applicable.

a) Violent crime and/or behaviours

	Your neighbourhood	Kitchener-Waterloo
Hate crimes (e.g. against religion, sexual orientation, ethnicity)		
Physical assault		
Sexual assault		
Homicide		
Robbery		

b) Non-violent and property-related crimes and/or behaviours

	Your neighbourhood	Kitchener-Waterloo
Litter		
Vandalism, graffiti and other property damage		
Street harassment and catcalling by strangers		
Rundown and/or abandoned buildings and property		
Breaking and entering		
Theft in public (i.e. pick-pocketing)		
Fraud and/or identity theft		

c) Social problems and/or behaviours

	Your neighbourhood	Kitchener-Waterloo
Homelessness/panhandling		
People using or selling drugs		
Public drinking or public drunkenness		
Poverty		
Prostitution		
Unsafe or speeding drivers		
Homelessness/panhandling		

D. MEDIA CONSUMPTION

This part of the questionnaire will ask you about your awareness and response to news media.

19. **What types of media-reported news do you follow?**
Check as many that apply:

- ☐ Traffic and weather
- ☐ Environment and natural disasters
- ☐ Local Kitchener-Waterloo events
- ☐ Local events of other municipalities
- ☐ National government and politics
- ☐ Business and the economy
- ☐ Crime and public safety
- ☐ Foreign or international issues
- ☐ Health and medicine

- ☐ Schools and education
- ☐ Science and technology
- ☐ Social issues (e.g. abortion, race, gay rights, marijuana, environment, guns)
- ☐ Sports
- ☐ Lifestyle topics
- ☐ Entertainment and celebrities
- ☐ Art and culture
- ☐ Other: _____

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20. What sources of media do you refer to? Indicate the approximate frequency with which you use each of these sources for news updates.

	Multiple times daily	Once Daily	Weekly	Monthly	Never
Print newspaper	○	○	○	○	○
Online news site(s)	○	○	○	○	○
Television	○	○	○	○	○
Radio	○	○	○	○	○
Social media	○	○	○	○	○
University news (e.g. UW Daily Bulletin)	○	○	○	○	○
Student newspaper(s) (e.g. Imprint)	○	○	○	○	○
Word of mouth	○	○	○	○	○
Other (specify):	○	○	○	○	○

21. How much do you trust the information you get from each of the types of news sources listed in the table below?

	Trust completely	Trust a lot	Trust slightly	Do not trust at all	Unsure/Not applicable
Print newspaper	○	○	○	○	○
Online news site(s)	○	○	○	○	○
Television	○	○	○	○	○
Radio	○	○	○	○	○
Social media	○	○	○	○	○
University news (e.g. UW Daily Bulletin)	○	○	○	○	○
Student newspaper(s) (e.g. Imprint)	○	○	○	○	○
Word of mouth	○	○	○	○	○
Other (specify):	○	○	○	○	○

22. Do you feel that media-reported crime has affected your views/concerns about personal safety?

Check one:
- ○ Yes
- ○ No
- ○ Maybe

E. PERCEPTIONS OF CRIME

This section is about your perception of crime activity and risk of personal victimization in Kitchener-Waterloo.

23. In general, how worried are you about becoming a victim of crime in Kitchener-Waterloo?

Check one:
- ○ Very worried
- ○ A little worried
- ○ Not very worried
- ○ Not at all worried
- ○ Unsure

24. How do you perceive your risk of crime in the neighbourhood where you live?
Circle the number that best describes your perception.

Low Crime Risk	1	2	3	4	5	High Crime Risk
	○	○	○	○	○	

25. How do you perceive your risk of crime in the cities of in Kitchener-Waterloo in general?
Circle the number that best describes your perception.

Low Crime Risk	1	2	3	4	5	High Crime Risk
	○	○	○	○	○	

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26. To what extent do you agree or disagree with the following statement:

"The possibility of crime keeps me from doing things I'd like to do."

Circle the number that best represents your agreement.

Strongly Disagree	1	2	3	4	5	Strongly Agree
	O	O	O	O	O	

27. Over the past month, how often have you <u>worried</u> about becoming a victim of the following crimes in Kitchener-Waterloo?

a) <u>Violent crimes and/or behaviours</u>

	Not at all	Once or twice in the past month	Once or twice a week	Once everyday	More than once everyday
Hate crimes (e.g. against religion, sexual orientation, ethnicity)	O	O	O	O	O
Physical assault	O	O	O	O	O
Sexual assault	O	O	O	O	O
Robbery	O	O	O	O	O
Other:	O	O	O	O	O

a) <u>Non-violent and property-related crimes and/or behaviours</u>

	Not at all	Once or twice in the past month	Once or twice a week	Once everyday	More than once everyday
Vandalism, graffiti and other property damage	O	O	O	O	O
Breaking and entering	O	O	O	O	O
Theft	O	O	O	O	O
Fraud and/or identity theft	O	O	O	O	O
Uttering threats	O	O	O	O	O
Being personally harmed or having property damaged by speeding or unsafe drivers	O	O	O	O	O
Other:	O	O	O	O	O

28. Over the past year, how do you think crime rates have changed...

	Increased	Unchanged	Decreased	Unsure
On campus?	O	O	O	O
In Kitchener-Waterloo?	O	O	O	O
In Canada?	O	O	O	O

29. a) When you walk alone in your neighbourhood, how safe do you feel...

	Very safe	Reasonably safe	Somewhat unsafe	Very Unsafe	Do not walk alone	Don't know
During the day?	O	O	O	O	O	O
After dark?	O	O	O	O	O	O

b) Referring to the previous question, please explain your response. What affects your feelings of safety?

[112]

F. EXPERIENCE OF CRIME

This section will ask about your personal experiences of crime (if any) and your resulting interactions with the police. Your responses will help clarify how previous victimization and police response affects fear of crime.

30. Have you personally been a victim of crime in the past 5 years?

    Check one: ○ Yes

                                  ○ No *(If "no", continue to question 36.)*

31. What type(s) of crime have you fallen victim to? Indicate the number of occurrences in each time period (1, 2, 3).

b) Violent crime and/or behaviours

	Less than 1 month ago	1 month to less than 6 months ago	6 months to less than 1 year ago	1 year to less than 3 years ago	Between 3 to 5 years ago
Hate crimes (e.g. against religion, sexual orientation, ethnicity)	*(e.g. 1, 2, 3)*				
Physical assault					
Sexual assault					
Robbery					
Other:					

c) Non-violent and property-related crimes and/or behaviours

	Less than 1 month ago	1 month to less than 6 months ago	6 months to less than 1 year ago	1 year to less than 3 years ago	Between 3 to 5 years ago
Vandalism, graffiti and other property damage	*(e.g. 1, 2, 3)*				
Breaking and entering					
Theft					
Fraud and/or identity theft					
Uttering threats					
Being personally harmed or having property damaged by speeding or unsafe drivers					
Other:					

32. Where did the crime(s) indicated in Question 31 occur? Please indicate the number of cases (e.g. 1, 2, 3) in each category.

a) Violent crime and/or behaviours

	On Campus	Local neighbourhood of residence	Occurred in Kitchener-Waterloo	Occurred elsewhere in Canada	Occurred in another country
Hate crimes (e.g. against religion, sexual orientation, ethnicity)	*(e.g. 1, 2, 3)*				
Physical assault					
Sexual assault					
Robbery					
Other:					

[113]

b) Non-violent and property-related crimes and/or behaviours

	On Campus	Local neighbourhood of residence	Occurred in Kitchener-Waterloo	Occurred elsewhere in Canada	Occurred in another country
Vandalism, graffiti and other property damage	(e.g. 1, 2, 3)				
Breaking and entering					
Theft					
Fraud and/or identity theft					
Uttering threats					
Being personally harmed or having property damaged by speeding or unsafe drivers					
Other:					

33. a) **Were the incident(s) reported to the police?** *Check one:* ○ Yes   ○ No

   b) **If you did not report the crime(s) to the police, why did you not report them?**

   [ ]

34. **Did you seek or receive help from Victim Services?** *Check one:* ○ Yes   ○ No

35. **Has your awareness/concern of crime changed after your experience(s) of victimisation?**
   Circle one:

Much more concerned	Somewhat more concerned	No change	Somewhat less concerned	Much less concerned
○	○	○	○	○

G. PRECAUTIONS FOR SAFETY

This section will ask a series of questions to identify the measures you take to ensure your personal safety. The following questions refer to your habits while living in Kitchener-Waterloo.

36. **Do you lock the entrance door to your residence when…**

	Always	Usually	Sometimes	Never	Not applicable
… leaving your residence (e.g. to run an errand, go to class)?	○	○	○	○	○
… returning to your residence (e.g. to sleep for the night)?	○	○	○	○	○

37. **Do you lock the doors to your personal car when…**

	Always	Usually	Sometimes	Never	Do not own / Not applicable
… parked at your place of residence?	○	○	○	○	○
… parked in a public space (e.g. at the mall, at school)?	○	○	○	○	○

38. **Do you lock up your bicycle when…**

	Always	Usually	Sometimes	Never	Do not own / Not applicable
… parked at your place of residence?	○	○	○	○	○
… parked in a public space (e.g. at the mall, at school)?	○	○	○	○	○

39. **Do you have a security system (e.g. alarm system) installed at your place of residence?**
   Check one: ○ Yes
   ○ No
   ○ Unsure

[114]

40. Do you ever leave your belongings unattended in a public space (e.g. coffee shop, library)?
Check one:
- ○ Frequently
- ○ Occasionally
- ○ Very Rarely
- ○ Never

41. Do you have anti-theft software installed on your electronics (e.g. laptop, phone, etc.)?
Check one:
- ○ Yes, all electronics
- ○ Some electronics, but not all
- ○ No

42. Which campus resources have you made use of?

	Weekly or more often	Monthly	Once a term	Once ever	Never / Don't know
Turnkey desk	○	○	○	○	○
Health Services	○	○	○	○	○
Safety Office	○	○	○	○	○
Counselling Services	○	○	○	○	○
Campus Police	○	○	○	○	○
Emergency assistance phone button found on poles around campus	○	○	○	○	○
Campus Shuttle	○	○	○	○	○
Foot Patrol walk	○	○	○	○	○
Dialed for campus police assistance using campus payphone extension 22222	○	○	○	○	○
Installed and used the WatSAFE smartphone app	○	○	○	○	○

H. DEMOGRAPHICS

In this final section, our last questions are interested in your background, which will help us to analyze the responses from this questionnaire.

43. What is your gender? *Check one:*   ○ Male   ○ Female

44. What is your age? *Please print:* _____ **years old**

45. What is your country of birth? *Check one:*
- ○ Canada
- ○ Other (*Please print*):_____

46. What is your ethnicity?
Check one:
- ○ White
- ○ Latin American
- ○ Korean
- ○ Chinese
- ○ Filipino
- ○ Japanese
- ○ Black
- ○ Aboriginal
- ○ West Asian / Arab
- ○ South Asian (e.g. Indian)
- ○ Multiple minorities
- ○ Other: _____

47. What is your citizenship status?
Check one:
- ○ A Canadian citizen
- ○ A landed immigrant
- ○ In Canada on a visa
- ○ Other: _____

48. a) Do you consider yourself to have a disability? *Check one:*   ○ Yes   ○ No

  b) If 'yes', do you have a physical disability? *Check one:*   ○ Yes   ○ No

49. What is your current employment status?
Check one:
- ○ Employed, full-time
- ○ Employed, part-time
- ○ Unemployed

APPENDIX B

Interview Structure

INTERVIEW FRAMEWORK

Preamble

Thank you for participating in this survey! The purpose of this interview is to follow-up on your responses to the "Geographies of Fear" questionnaire and capture how your perception of crime varies spatially across Kitchener-Waterloo.

This interview is a discussion of your experiences and perceptions of Kitchener-Waterloo. I will ask you to draw on a map to help me understand what areas of the cities you are familiar with, and how your feelings of safety vary by location. Our conversation will be divided into three sections. In the first two sections, you will be asked to draw on the map to indicate areas a) that you are familiar with and b) that you associate as being unsafe. We will finish the interview with time for an open-discussion of experiences of crime and feelings of unsafety that you would like to share.

If you are uncomfortable or unwilling to respond to any question of this interview, please let me know and we can skip the question(s). You are not obligated to provide any information you do not want to share. I assure you that everything you say and/or all of the mapped information you enter will be kept completely anonymous and will not be linked back to you. It is up to you to decide how much detailed information you wish to draw on the map.

1. For the purposes of my research, I would like to audio-record this interview so that I can transcribe it later. The recording will not be shared with anyone else. The transcription will be used to help with analysis, and quotes from this transcription may be referenced by your PID and used in publications. Do you agree to allow me to audio-record this interview?

    Yes   No

2. During this interview, I will be asking you to draw some responses on a map. Would you prefer to use a paper map or an electronic map on the tablet?
    - Paper
        - o Provide participant with colour markers
          I will let you know when to use the different colours.
    - Electronic
        - o Demonstrate how to use (how to draw, change labels, zoom in and out, purpose of different tabs)

3. Do you have any questions before we begin?

Question 1 – Establish Familiarity   *[Map]*   [5 minutes]

- A) Indicate areas where you have lived, currently or in the past.
- B) Indicate your activity space.
  - This might include areas that:
    - You are familiar with
    - You spend time in
    - You travel through frequently

Question 2 – Identify areas of perceived crime / unsafety   *[Map]*   [15 minutes]

- A) Draw boundaries of areas in Kitchener-Waterloo where you feel there is an elevated risk of crime.
- B) For each area, discuss the following questions.
  - i. On a scale of 1 to 7, how worried are you about becoming a victim of crime in this area?
    - Which area are you most fearful at night? Which area are you most fearful during the day?
  - ii. How would you describe this area?
  - iii. How has your perception of crime in this area developed?
  - iv. Are there any crimes in particular that you believe occur most frequently in this area?
    - **Prompt:** If no response, suggest:
      - Property?
      - Physical?

Question 3 – Effect of crime on participant's life, further comments   *[Audio]* [5 minutes]

- How would you describe the effect of crime on your life in Kitchener-Waterloo?
- Do you have any further comments you would like to share about your perception of crime in the area?

APPENDIX C
Information Consent Form

<div align="center">**Information & Consent Form**</div>

Date:	November 1, 2015
Title of Project:	Geographies of Fear: Mapping university students' perceptions of crime in Kitchener-Waterloo, Ontario
Faculty Supervisor:	Dr. Su-Yin Tan (su-yin.tan@uwaterloo.ca) Department of Geography
Student Investigator:	Carolyn McCormick (camccormick@uwaterloo.ca) Department of Geography

Study Overview:

You are being asked to volunteer in a research project, which explores the geographies of fear in Kitchener-Waterloo that result from the perceived risk of crime among university students. Fear of crime is of interest because it reflects cultural perceptions, is a factor affecting individuals' quality of life, and influences policy decisions.

What You Will be Asked To Do:

The study will take place over one 45-minute in-person session. It will consist of two parts: a questionnaire and a face-to-face interview.

In the first part, you will be asked to complete a questionnaire that inquires about your academic background, residential history, current community, media consumption, perceptions and experiences of crime, perceptions of police, precautions you take for safety and basic demographic information. This questionnaire will take approximately 25 minutes to complete.

A short interview will follow. During this time, you will be asked to share your experiences and perceptions of crime in Waterloo by answering questions verbally and by drawing responses on a map. This interview will take no more than 20 minutes.

Participation and Remuneration

Participation in this study is voluntary. The study requires a 45-minute in-person appointment for your participation in a short questionnaire and interview. In appreciation for your help in this study, you will receive a $5 in cash as remuneration. Additionally, you will be entered into a draw for an additional $30 gift card to Amazon.ca. Your odds of winning is based on the number of individuals who participate in the study. We expect that approximately 80 individuals will take part in the study (which would result in 1 in 80 chances of winning the prize draw). Information collected for the prize draw will not be linked to the study data in any way, and this identification information will be stored separately and destroyed after the prize has been awarded. The draw will be conducted mid-December and the winner will be contacted by e-mail. The entire amount received from the study is taxable. It is your responsibility to report this amount for income tax purposes.

You may decline to answer any questions or to perform any tasks presented during the study. Further, you may request for any responses to be omitted from analysis or publication. Finally, you can decide to withdraw from this study at any time by advising the researcher and may do so without any penalty or forfeit of remuneration.

Personal Benefits of the Study

There are no known or anticipated personal benefits to participation.

<div align="center">1</div>

Risks to Participation in this Study

Some questions from the survey and interview will ask you about your experiences of crime and whether you have been victimized before, such as from sexual assault. Recalling these experiences may be especially upsetting or trigger unpleasant memories. The purpose of asking these types of questions is to understand how past experiences of crime affect current perceptions. Your identity will be kept confidential, and your responses will not be linked to your name. We respect your right to privacy if you choose to withhold information that you do not feel comfortable sharing.

In addition, you will be asked to draw on a map of Kitchener-Waterloo to share your familiarity and perceptions of crime in the area. Follow-up questions will be asked to establish further details about these areas. You are at liberty to decide how much detail to include in drawing and describing these areas. Some quotes from your interview may be used in written reports resulting from this research; all other collected data will be aggregated in the analysis and results, and your identity will be kept anonymous.

Confidentiality

Your participation in this study is considered completely confidential. Your name will not be included or in any other way associated with the data collected in the study.

With your explicit permission, we will audio-record your in-person interview to ensure that your comments are accurately recorded and transcribed. These audio recordings will remain confidential, will be used to generate or verify transcripts, and will only be accessible to the above-named researchers.

Some personally identifiable information must be collected as part of administering this study. Such data includes contact information and signed copies of the consent agreement. Hard-copies of this information will remain confidential at all times, and will be destroyed one year after the completion of the study. The information will be securely stored on a hard-drive for up to 5 years. Access will be granted only to researchers directly involved in this study.

You will only be directly contacted after the study if you have won the $30 Amazon.ca card prize draw.

Questions and Research Ethics Clearance

If after receiving this letter, you have any questions about this study or would like additional information to assist you in reaching a decision about participation, please feel free to ask the student investigator or faculty supervisor listed at the beginning of this document.

We would like to assure you that the study has been reviewed and received ethics clearance through a University of Waterloo Research Ethics Committee. However, the final decision about participation is yours. If you have any comments or concerns resulting from your participation in this study, please contact Dr. Maureen Nummelin, the Director, Office of Research Ethics, at 1-519-888-4567, Ext. 36005 or maureen.nummelin@uwaterloo.ca.

Thank you for your interest in our research and your assistance with this project.

Consent of Participant

I agree to participate in this study being conducted by Dr. Su-Yin Tan and Carolyn McCormick of the Department of Geography, University of Waterloo. I have made this decision based on the information I have read in this Information-Consent Letter and I have had the opportunity to receive any additional details I wanted about the study.

I am aware that my interview will be audio-recorded.

I am aware that electronic data, written transcripts, and questionnaire responses will be made anonymous and may be published in part or in entirety.

I am aware, and was informed, that I may withdraw my consent at any time without penalty by advising the researcher.

This study has been reviewed and received ethics clearance through a University of Waterloo Research Ethics Committee. I was informed that if I have any comments or concerns resulting from your participation in this study, I may contact Dr. Maureen Nummelin, the Director, Office of Research Ethics, at 1-519-888-4567, Ext. 36005 or maureen.nummelin@uwaterloo.ca.

_____

With full knowledge of all foregoing, I agree, of my own free will, to participate in this study.

_____ YES   _____ NO

I agree to the use of anonymized quotations in the reports and papers that result from this study.

_____ YES   _____ NO

I agree to have my spoken observations and feedback recorded using an audio recording device.

_____ YES   _____ NO

I agree to be entered into a draw for a $30 Amazon.ca gift card and I consent to being contacted after the data collection period, if I have won.

_____ YES   _____ No

Name of participant: Name of witness:

_____   _____
(please print)   (please print)

Signature of participant: Signature of witness:

_____   _____

Date:

_____

3

APPENDIX D
Recruitment Poster

Volunteers Needed

SHARE YOUR PERCEPTIONS ON
CRIME & SAFETY

We are looking for volunteers to complete a questionnaire and short interview about your perceptions of crime in Kitchener-Waterloo. You will be asked to draw on a map.

This in-person survey will take 45 minutes to complete.

**Schedule your appointment:
November 9 – December 4**

Receive **$5** + A chance to win **$30**
for Amazon.ca

INTERESTED?
For more information, contact:

Carolyn McCormick
Department of Geography
camccormick@uwaterloo.ca

This study has been reviewed by and has received ethics clearance through a University of Waterloo Research Ethics Committee.

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APPENDIX E

Web Recruitment Advertisement

APPLICATION: Request for participants to support graduate research

First Name:	Carolyn
Last Name:	McCormick
E-mail:	camccormick@uwaterloo.ca
First name of supervisor:	Su-Yin
Last name of supervisor:	Tan
Department/School:	Geography and Environmental Management
Degree:	MSc
Title of Research Study:	Geographies of Fear: Mapping University Students' Perceptions of Crime in Kitchener-Waterloo, Ontario
Participant requirements:	Open to all current UWaterloo students (undergraduate or graduate)
Length of time required for study:	
	45 minutes
Description of study:	Do you have a perception of where the "sketchy" parts of town are? Are there certain areas in Kitchener-Waterloo that you believe are safer than others?
	This study is recruiting volunteers to participate in a questionnaire / interview. It will take approximately 45 minutes, and will cover some of your residential and community experiences in KW, exposure to media, experiences of crime and basic demographic information. The interview will include a mapping exercise, in which you will be asked to drawn some of your perceptions and experiences out on a map.
	No experience of crime is necessary. No expectation of familiarity with Kitchener-Waterloo.
Additional comments:	Each participant will receive $5, and a chance to win a $30 Amazon.ca gift card at the end of the study.

GLOSSARY

Familiarity

"The result of repeated exposure to a particular stimulus or environment." (Craig, Conniff & Galan-Diaz, 2011)

Fear of Crime

"The range of emotional and practical responses from pain to uneasiness caused by the sense of a perceived threat or danger, often concerning one's own safety." (Modly, 2009)

Perceived Risk

The assessment of a threat or potential danger that is posed by crime, specific or general, concerning the safety of one's self or others; "The risk individuals assess to deal with the threat of victimization" (Rader, 2004)

Perceptions of Crime

An awareness of crime characterized by a range of rational and affectional encompassments of judgments, values and emotions (Ferraro & LaGrange, 1987)