

**The 2018 Toronto Van Attack:  
Understanding the Disaster by Looking at Vulnerability, Tactics, and Motives**

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## Abstract

On April 23, 2018, an attacker drove a van along Toronto's Yonge Street and its sidewalks, purposely colliding with pedestrians. Ten persons were killed, and 16 were injured. Emergency managers in Canada's urban centres will occasionally face socially mediated disasters originating from anti-social actions taken by ideologically motivated, violent extremists. The Toronto Van attack was a disturbing rapid sequence mass murder, which was especially depraved due to its sheer levels of violence and specific targeting of women. In an attempt to comprehend the disaster, this paper explores issues of vulnerability, tactics, and motives related to the vehicular ramming attack. It is suggested that the pervasive threat of gender-driven violence needs to be recognized, crime prevention through environmental design and counter terrorism-based soft target hardening strategies can work to reduce risks, failure of imagination leading to disregard of criminal and terrorist threats should be avoided, and any security measures to defend pedestrians should be commensurate with the actual risk present.

*Keywords:* Toronto Van Attack, Mass Murder, Ideological Motivated Extremism, Vehicular Ramming Attacks, Gender-Driven Violence, Terrorism, Soft Targets

## Introduction

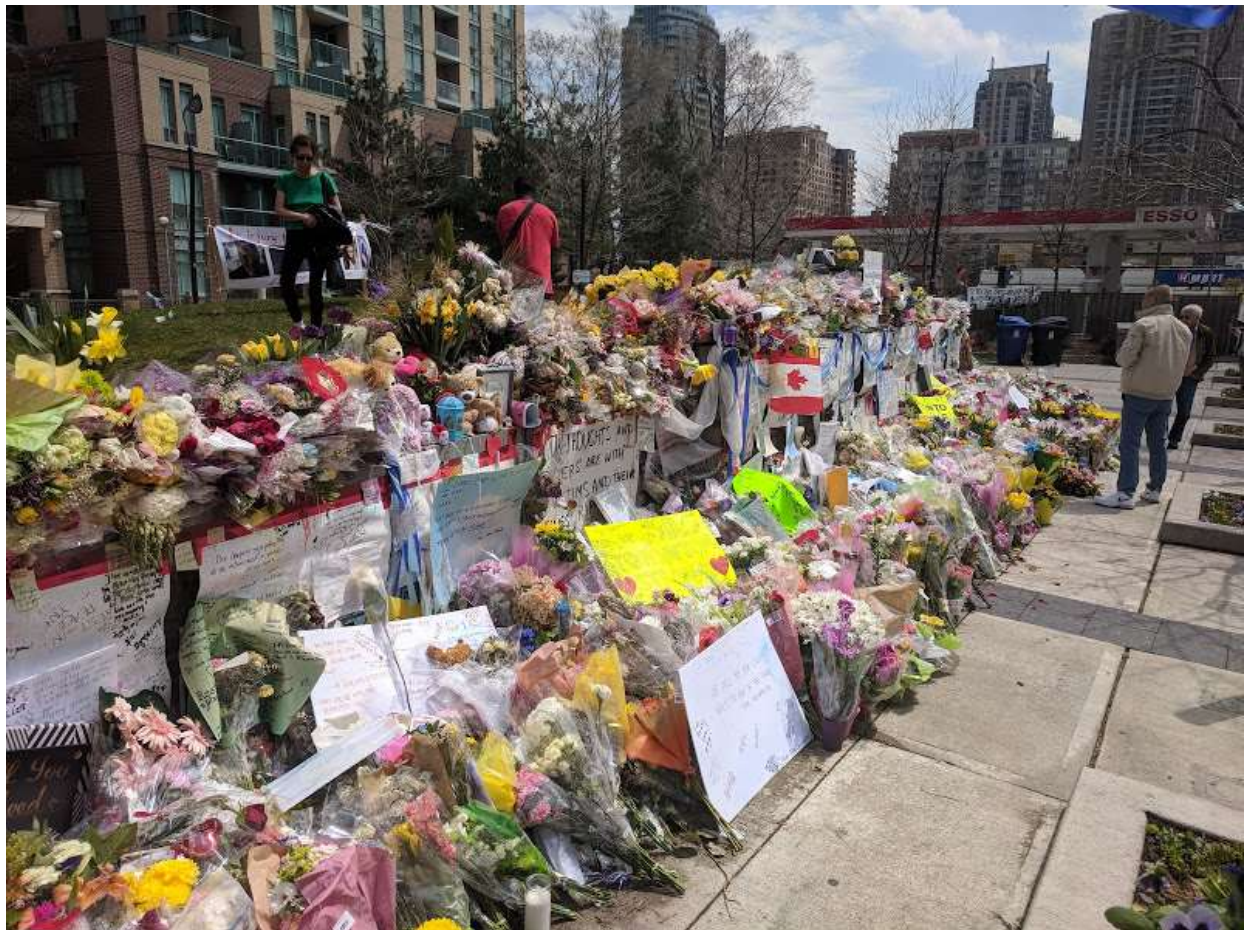
The 2018 Toronto van attack is a particularly difficult socially-mediated disaster to unwind and interpret. The objective of this paper is to provide a framework to analyze and interpret the event itself. To draw focus on specific aspects of the van attack, the authors have limited this paper to consider topics related to vulnerability, tactics, and motives. As a result of direct, longitudinal street-level observations at the Yonge Street attack site in Toronto's North York neighbourhoods, as well as a systematic analysis of relevant literature, it was determined that vulnerability, tactics, and motives are reasonable frames through which the disaster can be interpreted.

For the sake of this paper, the incident will be termed as the 'van attack'. In this incident, the perpetrator was a male, who at the time of the attack was 25-years old and lived in Richmond Hill, Ontario, which is near the Toronto attack site. Alek Minassian used a rented cargo van in a hostile manner to intentionally run into persons along the sidewalk and street, starting at the corner of Yonge and Finch Streets and proceeding to drive southward along Yonge towards the Highway 401 interchange and Toronto's City Centre. The attack took place on a workday, at a time when the sidewalks were populated with pedestrians, at 1:22pm on Monday, April 23, 2018. Ten persons were killed, 16 persons were injured, and hundreds were traumatized by directly witnessing the brutal attack as it occurred. After the seven-minute, approximately two-kilometre killing-spree, as the van came to a halt following a brief police chase, Minassian acted in a threatening manner towards the first police officer to arrive at the scene. The situation could have easily resulted in a suicide by police circumstance. However, Toronto Police Constable Ken Lam was able to deescalate the tense situation, resulting in a relatively non-violent takedown of the suspect (CBC News - Toronto Bureau Staff, 2018).

The socially mediated incident of the van attack is characterized as a "disaster" due to criminal behaviour, specifically a rapid sequence mass murder. During Minassian's trial, a psychologist retained by the prosecution reported during an interview in 2019 that the suspect said "If he killed 100 people, he would set a world record and be placed on top of a leaderboard of mass killers" (Casey, 2020a). From the criminality perspective, this mass murder incident did not take place in the same way as serial murders or spree killings, but it does share some characteristics with those crimes. The attacker had criminal tendencies related to "Maladaptive patterns of cognition, emotion and behaviour resulting in interpersonal problems and eventually transforming into an outward expression of social dominance" (Yaksic, 2019). Howard (2017) has suggested threats to

ego and hostile rumination can trigger an “emotional cascade”, which results in turning to behaviours like retributive violence.

The violence of the van attack resulted in 10 casualties. The dead ranged in age from 22 to 94; the victims were predominately female, reflective of the diversity of the city of Toronto, and included two overseas visitors to the city (McQuigge, 2018). Those persons killed included one Canadian from a municipality adjacent to Toronto—33-year-old Andrea Bradden of Woodbridge, Ontario. Seven Toronto residents were killed: So He Chung, 22; Anne Marie D’Amico, 30; Beutis Renuka Amarasingha, 45; Chul Min Kang, 45; Dorothy Sewell, 80; Geraldine Brady, 83; and Mary Elizabeth (Betty) Forsyth, 94. Two persons visiting Toronto were killed: Ji Hun Kim, 22, from South Korea; and Munir Abdo Habib Najjar, 85, from Jordan. Immediately following the attack, an improvised temporary memorial was created to honour the dead [see Figure 1].



*Figure 1 - Van Attack Victims Temporary Memorial Site on Yonge Street, Toronto, depicted on May 4, 2018. Photo by Jack Rozdilsky.*

The van attack ranks as the deadliest rapid sequence mass murder event in Toronto's history. The July 2012 Danzig gang-related shooting resulted in fewer deaths but had more injuries, with two dead and 23 wounded (Yang et al., 2012). Another high-profile rapid sequence mass murder in Toronto that had the potential to exceed the toll of the van attack was the June 2012 gang-related public mass shooting in the crowded food court of the Eaton Centre shopping mall in the downtown core. In the end, that public mass shooting resulted in two dead and six bystanders injured (O'Toole, 2012). The July 2018 public mass shooting in Toronto's Greektown along Danforth Avenue was another high-profile mass murder incident with a tragic toll, and it had the potential to become a much larger mass casualty incident. The motives remain unclear for why a lone gunman killed a 10-year-old girl and an 18-year-old woman, injured an additional 13 persons, and then took his own life as he was confronted by police. The Danforth public mass shooting was especially traumatizing as the city was still coping with the aftermath of the van attack, which occurred three months earlier (Rozdilsky, 2018).

This paper is being written at the time the trial of Alek Minassian is underway. Due to the COVID-19 pandemic, as the trial started in November 2020 and is taking place while Toronto is under the "Grey – Lockdown" category of the Provincial COVID-19 Response Framework (Reopening Ontario (A Flexible Response to COVID-19) Act, 2020), social distancing protocols and restrictions on group gatherings are in full effect even for the legal system. Therefore, the trial is taking place under extraordinary circumstances. The Ontario Superior Court justice, lawyers, witnesses, and the accused are all participating via Zoom videoconferencing software from separate locations (Dunn, 2020).

Minassian faces 10 counts of first-degree murder and 16 counts of attempted murder. He has already admitted to police that he drove a rented cargo van on sidewalks along Yonge Street on the afternoon of April 23, 2018, killing 10 pedestrians and wounding 16 others in his path. Whether or not Minassian killed or attempted to kill his victims is not in doubt. The focus of the judge-alone trial is on Minassian's state of mind around the time of the attack. In the end, judgements will be rendered concerning whether he was criminally responsible for the attack or not (Wilson, 2020). The outcome of the trial will influence the nature of his sentencing for the crimes committed. There have also been connections made between Minassian's actions and the "Incel movement" (Brockbank, 2019).

This paper is organized using a structure common to literature reviews and meta-analysis. Following this introduction is a methods section describing the approach taken for this study. Next,

a discussion on the topics of vulnerabilities, tactics, and motives will provide contexts for, and interpretations of, the van attack. To end this paper, the conclusion will draw relationships between the vulnerabilities, tactics, and motivations and offer comments on practical implications of the lessons learned from the van attack that are relevant to the emergency management community. The following four conclusions were obtained:

- The pervasive threat of gender-driven violence needs to be recognized.
- In the wake of the van attack, it is especially important to take advantage of opportunities for crime prevention through environmental design and counter terrorism-based soft target hardening strategies.
- Despite difficulties in comprehending the sheer violence of the van attack, the failure of imagination in considering the potential for future attack needs to be avoided.
- Any security should be commensurate to the actual risk present.

## Methodology

Qualitative methods aligned with those used in literature reviews and meta-analysis were applied. Qualitative research is concerned with the subjective world and offers insight into social, emotional, and experiential phenomena (Littell et al., 2008). In studying the van attack during the past two-and-a-half years, data collection to support this paper took place in two ways: Field-based observations were made at the van attack site, and a systematic literature review took place. Systematic reviews aim to identify, evaluate, and summarise the findings of all relevant individual studies (Centre for Reviews and Dissemination, 2009). The goal is to make available evidence more accessible to decisionmakers. In this case, the decisionmakers are members of the emergency management community, who may one day have to manage disasters like mass murder incidents. The authors suggest it is not if but when criminal incidents or terrorist attacks will again bring tragedy to Canadian urban centres.

As the review of information on the van attack can easily lead to information overload, the authors made the decision to limit this paper to findings that could best be supported by the collected data. Those findings concern the aspects of the van attack related to vulnerability, tactics, and motives.

The observational and literature-review data collected is applied to answer the question: What disaster and emergency management-related interdisciplinary topical domains are useful in attempting to analyze the van attack?

Data to inform this paper was collected in two phases. Phase one consisted of 22 months of direct field observations made between April 2018 and February 2020 at the location of the van attack itself. For phase one, the authors of this paper self-deployed to the van attack field site on the day after the attack, April 24 2018 [see Figure 2], and made consistent daily observations at the attack site for 45 days until mid-June 2018. Subsequent field observations continued monthly until winter 2020, when the COVID-19 pandemic halted all field-based data collection. Data collected on Yonge Street for approximately 22 months was limited to physical observation, note taking, and photographs. Given the potential to retraumatize persons by questioning them in the months after the attack, along with the challenges of the hesitancy and reluctance of public officials to engage in detailed conversations regarding specifics of the attack, no interview data was collected from interactions with human subjects. Due to the ongoing trial, as many public officials are involved in the court proceedings, reasons exist for them not to provide specific information on the mass murder to outside researchers. While barriers were present at the time, making primary informant

interviews difficult, if not impossible, that circumstance is now recognized as a limitation of this work in retrospect.



*Figure 2 - Location of van attack, one day after at corner of Yonge and Finch Streets in Toronto, note crime scene cleanup ongoing in background, depicted on April 24, 2018. Photo by Jack Rozdilsky.*

Phase two took place from June 2018 to October 2020, in which, the authors devised a list of key words and phrases to guide a systematic search of literature. Next, a range of methods was used to identify studies, manage the references retrieved by the searches, and obtain documents. The bibliographic software Zotero was used to organize the references. Activities for phase two included visually scanning reference lists from relevant studies, hand searching key journals and conference proceedings, contacting selected study authors for guidance, and searching relevant Internet resources.

In terms of analysis, the synthesis involved iterative meetings, where the authors collated, combined, and summarized the field-based observations and systematic literature review results. The results are presented in this paper through a narrative approach.



The findings are that the concepts of vulnerability, tactics, and motivations were determined to be relevant in interpreting the van attack. The defining characteristic of narrative synthesis is the adoption of a textual approach that provides an analysis of the relationships within and between studies (Centre for Reviews and Dissemination, 2009). The conclusion of the paper attempts to describe such relationships by providing lessons learned about physical protection from the van attack that are relevant to the emergency management community.

### **Van Attack Vulnerability**

Vulnerability is defined as, “The characteristics determined by physical, social, economic, and environmental factors or processes, which increase the susceptibility of an individual, a community, assets, or systems to the impacts of hazards” (Prevention Web, n.d., para. 1).

In the case of the van attack, the physical, social, and economic characteristics of Yonge Street contributed to the impact of the hazard. Along Yonge Street, from a physical infrastructure perspective, the rapid pace of urban growth and development has outpaced the existing infrastructure. Yonge Street has six active traffic lanes, as well as sidewalks of varying widths and conditions [see Figure 3]. Socially, the street and sidewalk are a dynamic space of interaction, with a mix of both residential and commercial functions. Economically, the streetscape is a mercantile hub filled with a variety of office, service provision, retail, and dining opportunities. City reports have described the area as “Yonge Street is the central corridor within North York Centre, one of four mixed-use and transit accessible centres identified in the (City of Toronto’s) Official Plan where jobs, housing, and services will be concentrated” (Transportation Services - City of Toronto, 2020, p. 1). The mixed-use environment with multiple high-rise condominium towers lining Yonge Street—the Willowdale neighbourhood—has a population density of more than 244 persons per hectare (McKeen, 2018). In addition, two subway stops and a public space at Mel Lastman Square Civic centre make for an active urban environment rivaling Toronto’s downtown core. Taken together, these characteristics are viewed as positive in terms of urban quality of life.



*Figure 3 - Yonge Street Toronto typical streetscape depicted two days after van attack on April 25, 2018. Photo by Jack Rozdilsky.*

However, the combination of activity centres, motorized and non-motorized forms of transit, and pedestrians does create safety challenges. Not related to the van attack deaths, vehicle-pedestrian accidents resulting in death and injury have occurred along Yonge Street. In the area where the van attack took place, City of Toronto traffic studies over a nine-year period, between January 2011 and December 2019, indicated “a total of 143 collisions involving pedestrians. Of those collisions, 10 involved fatalities or serious injuries” (Transportation Services - City of Toronto, 2020, p. 13). In addition, at locations that are within the boundaries of the van attack crime scene, it was estimated that vulnerable road users make up a quarter of the on-street occupancy at key intersections, with pedestrians and cyclists accounting for approximately 27% of road users at the Yonge and Sheppard intersection and approximately 25% of road users at the Yonge and Finch intersection (Transportation Services - City of Toronto, 2020).

As the rate of development in North York Centre and its rapid transformation into a dense, transit-oriented, dynamic, mixed-use area has not kept pace with the existing streetscape, the city has recognized a number of transportation and safety challenges that need to be addressed. Therefore, a multi-year project, “RE imagining Yonge Street,” is currently underway to improve the streetscape and public realm for pedestrians, cyclists, transit, and vehicles. At the time of writing, the project is now in the environmental assessment phase (Consultation Unit - City of Toronto, n.d.).

In expanding the concept of vulnerability beyond traffic safety to risk reduction for vehicular attack, the concept of soft targets is useful to consider. Soft targets are generally defined as compared to hard targets, “in order to differentiate the degree to which vulnerabilities are mitigated or hardened” (Matthews, 2017, p. 460). Sites having characteristics of armed and highly trained security teams in place, strict access control, and physical barriers preventing incursions are hard targets. Sites that are public, with little security oversight, open access, and no physical barriers to prevent criminal or terrorist incursions are soft targets. To determine the degree to which a particular location is ‘soft’ requires a vulnerability assessment of the location (physical), and potentially an internal assessment with respect to processes and individuals (Matthews, 2017).

In the year following the van attack, the authors were able to conduct an informal physical assessment of the Yonge Street van attack physical environment based on elements of the U.S. Federal Bureau of Investigation’s Terrorism Self-Assessment Checklist, as provided by Hesterman’s book *Soft Target Hardening* (Hesterman, 2015). It was concluded that a majority of the Yonge Street van attack area had characteristics of the “softest” of soft targets.

These soft features included minimal curb-based level changes between active traffic lanes and sidewalks [see Figure 4]; multiple barrier free locations, where a would-be attacker could easily jump a vehicle from street to sidewalk [see Figure 5]; and long stretches of unobstructed sidewalk as wide as traffic lanes, where an attacker could actually accelerate [see Figure 6]. At the same time, a few hardening features were also in place that would counter a vehicular attack. On-street curbside parking during certain time intervals, building construction related barriers intruding onto sidewalks, and some streetscaping elements like cement planters [see Figure 7] along certain blocks all act to deter a would-be vehicular attacker from mounting the sidewalk. While these hardening elements act to partially buffer Yonge Street from a vehicular attacker, they did not appear to be put in place in a manner reflecting any consistent plan for safety.



*Figure 4 - Factors that increase soft target risk, zero level change on curb separating the sidewalk and street, situation facilitates easy driving onto sidewalk, corner of Yonge and Finch in Toronto, location where van attack started, depicted on one-year anniversary of van attack on April 23, 2019. Photo by Jack Rozdilsky.*



*Figure 5 - Factors that increase soft target risk, view along van attack path at a barrier free corner location where a would-be attacker could easily drive onto the sidewalk, Yonge Street Toronto, depicted on March 26, 2019. Photo by Jack Rozdilsky.*



Figure 6 - Factors that increase soft target risk, view along van attack path at location where multiple casualties occurred on April 23, 2018, attacker was able to drive unencumbered down sidewalks as wide as traffic lanes and accelerate to strike pedestrians, Yonge Street Toronto, depicted on March 26, 2019. Photo by Jack Rozdilsky.



Figure 7 - Soft target risk reduction example, Cement planters can act as barriers to prevent vehicular attacks on sidewalks, Yonge Street Toronto, depicted on September 25, 2019. Photo by Jack Rozdilsky.

At one location, directly across from a site of multiple van attack casualties at Mel Lastman Square, an electronics retailer did have protective bollards in place [see Figure 8]. Perhaps for loss prevention reasons, the owners took proactive steps to protect their business from smash and grab looting attacks facilitated by vehicles crashing through storefronts. Ironically, this private sector target hardening effort is not matched by any public sector efforts to protect the sidewalk for pedestrians at that location.



*Figure 8 - Soft target risk reduction example, Cement bollards act to protect this storefront from vehicular attack, but while the building is protected pedestrians remain exposed, Yonge Street Toronto, depicted on November 29, 2018. Photo by Jack Rozdilsky.*

The authors are not suggesting that Yonge Street is any more dangerous than most Toronto streets. What is being suggested is that going forward after the van attack, perhaps more focus can be put on pedestrian safety to harden soft targets like the sidewalks of Yonge Street.

## Van Attack Tactics

The tactic chosen for mass murder on Yonge Street was by no means a new or novel tactic for mass killing. The tactic chosen by Minassian to attack Toronto indicates that he was by no means an especially smart or creative man. Vehicle attacks are a well-worn terrorist attack tactic due to their simplicity. Terrorists have long understood the level of fear that could be raised by engaging in vehicle ramming attacks against pedestrians. In recent times, individuals engaging in political violence have used vehicular ramming attacks to target protestors. It is understood that vehicle attacks are an effective method of killing, not constrained by logistics or considerable planning (Jenkins & Butterworth, 2017). While at one time, vehicle ramming attacks were initially considered to be an anomaly, these attacks are now considered to be mainstream, thus forcing security officials to rethink their paradigms and realize that foolproof solutions to such instances of low-tech terrorism remain elusive (Clarke & Klarevas, 2017). In this section of the paper, selected instances of the use of vehicle ramming attacks are presented and provided with comments in order to highlight tactics. The tactic of vehicular ramming attacks has been used as means for a variety of ends, including anti-social behaviours of mentally ill individuals, acts of political violence, and terrorism.

Numerous protests had occurred in the United States during summer 2020 to highlight grievances concerning racial injustices and various other polarizing issues dividing the nation during a tense Presidential election year. Tens of thousands of protestors took their grievances to the streets. Protest strategies have included mass gatherings and marches that had inadvertently spilled into active traffic lanes, and in other cases, protestors engaged in civil disobedience by purposely blocking arterial routes and interstate highways. This created dangerous circumstances for potential interactions between pedestrians and vehicles, whether accidental or purposeful. After George Floyd was killed in an incident of police brutality in Minneapolis, about 5,000 protestors gathered on Interstate Highway 35W on May 31 to take a knee on a bridge in a symbolic act of protest against the killing. As the protestors were on the interstate highway, a tanker truck barreled into the mass gathering at a high rate of speed. Protestors were able to escape from the truck's path at the last second, and a mass casualty incident was barely averted. Apparently, the driver was delivering a load of gasoline to a black-owned gas station at the time of the protests and got onto the interstate before authorities blocked access to the highway, unexpectedly and unintentionally arriving upon the protestors (Lagoe et al., 2020).

There is always the potential for accidents in these tense protest-related highway occupation situations, but the attacks on protestors were deliberate in many other cases. In the context of

political violence in the United States and vehicular ramming attacks, a vehicular ramming attack occurred in Charlottesville, Virginia. In this high-profile incident in June 2017, a white supremacist plowed his car into a crowd of anti-racism protestors during a ‘Unite the Right’ rally, killing one person and injuring more than thirty others (Fieldstadt, 2019). Right-wing extremists have been increasingly turning vehicles into weapons, as reports from the U.S. indicate at least 50 vehicle-ramming incidents since protests against police violence erupted nationwide in May and June 2020 (Allam, 2020).

In a report from the Center for Extremism titled *Vehicles as a Weapon of Terror*, it was indicated through the documentation of various vehicle ramming incidents that from May to October 2020, at least 20 instances of cars striking protestors have been documented, and it was suggested that “Protests also provide desirable targets because of the large crowds and flaring tempers among both protesters and counter-protesters” (Counter Extremism Project Staff Researchers, 2020, p. 30). One example typical of the type of incidents in summer 2020 was in Bloomington, Indiana, on July 6 2020, where an anti-racism protest attracted several hundred demonstrators to the city courthouse’s front lawn to show solidarity with a black man who was previously attacked. As the rally was dispersing, hundreds of persons were crossing a street and protestors told a driver to stop and wait for the crowd to disperse, or to find another route. The driver accelerated into the crowd instead, injuring two persons, and then drove away before being arrested (Fortin, 2020). In incidents where vehicles have rammed into protestors, it was sometimes “difficult to assess which attacks [were] premeditated [as in Seattle] and which [were] prompted by rage when drivers [found] their route blocked by crowds” (MacFarquhar, 2020, para. 5).

In another study indicative of this current issue of vehicles striking protestors, a researcher released unpublished initial findings tracking vehicular attacks in summer of 2020. The findings suggested that from May 27 to September 5 2020, there were 104 incidents of drivers going into protests, with 96 by civilians and 8 by police (Weil, 2020).

In addition to the vehicle attacks themselves, an alarming trend of sloganeering contributes to the creation of a permissive environment that normalizes vehicle attacks. Internet-based pictorial memes based on the ‘All lives splatter’ theme, depicting a cartoon drawing of a vehicle striking people along with the phrases “Your protests don’t matter” or “block a vehicle and break the windshield with the driver still in it? Congratulations! You are now a speed bump!” have circulated amongst adherents of right-wing extremist views (Niewart, 2020).



Well before the recent vehicular attacks on protestors, there have been numerous examples of terrorist and non-terrorist use of vehicular ramming attacks around the globe. In addition to its simplicity, these types of amateur terrorist tactics have as much of a psychological as a physical impact, because the vehicular attacks send the message that objects we take for granted can be transformed into weapons in the blink of an eye (Keaton, 2014).

Israel is one location with a great deal of experience in terrorism-related vehicular ramming attacks. Since its founding in 1948, Israel has faced many warfare and terrorism related disaster management challenges. The region has been affected by conflict between Israel and Palestine due to the nature and historical context of the events that led to the founding of the Israeli state after World War II. The nation has successfully defended itself as it has engaged in at least six major wars, dealt with Palestinian uprisings, engaged in numerous smaller conflicts, and absorbed thousands of individual terrorist attacks (Rozdilsky, 2009). During the last decade, vehicular ramming attacks have been increasingly used as Israel has tightened its defenses. Specifically, Miller and Hayward (2019) cited David (2016) in the characterization of the spike in vehicular ramming attacks around 2015 as a component of a larger wave of violence that has been called the “The *intifada* of the individuals.” In terms of context, *intifada* is an Arabic word, meaning “the act of shaking off” (Merriam-Webster, n.d.), and in relation to this paper refers to the Palestinian uprisings against Israeli occupation of the Gaza and the West Bank. ‘Intifada of the individuals’ refers to situations where perpetrators of attacks are driven by personal motives, and not formally commissioned by any organizations to engage in terrorist acts (David, 2016). In an analysis of emerging threats in the mid-2010s in Israel, while vehicular attacks were previously not prevalent, they became the second most common type of attack in both Israel and the West Bank (Booth & Eglash, 2015).

Since Israel’s defensive measures of constructing the West Bank separation barrier, the Jerusalem Envelope barrier, and their associated security checkpoints, there has been a reduction in suicide bombings, as attackers have been prevented from bringing explosive devices overland into Israeli cities. However, attackers have turned to using other modes of attack by using readily available vehicles of all types to attack civilians, soldiers, and border guards. In 2019, as Israel is erecting additional barriers around Gaza, making it harder for groups such as Hamas and Islamic Jihad to attack, Hamas may resort to new asymmetrical tactics, such as the car-ramming attacks used in the West Bank (Aly, 2019).

“In learning from Israel regarding vehicular ramming attacks, motivations for vehicular ramming attacks included lack of economic opportunity for Palestinian youths, lack of progress in

peace negotiations, and clashes over [Israeli] access to specific areas of political and religious significance in Jerusalem [the Temple Mount]” (Miller & Hayward, 2019, p. 6). In addition, vehicular attackers in Israel have been particularly creative with tactics that use a variety of non-standard vehicles for ramming attacks, including commandeered construction equipment. For example, in a Jerusalem bulldozer attack in July 2008, three people were killed and 44 were injured in an attack where a bulldozer was stolen from a construction site and used by terrorists to crush persons in their cars and ram a crowded bus (McCarthy, 2008).

Perry et al. (2018) suggested that the “run-over” attacks that have been common in Israel during the wave of terrorism in 2015 and 2016 have spread to Europe. In fact, the risk exists in any locale where multiple targets of clusters of undefended pedestrians are present and the weapon of a vehicle is easily obtained. As in Israel and elsewhere, the tools and training needed to stage the attack are not a limiting factor. Conditions facilitating attacks are numerous making the availability of potential targets for vehicular ramming attacks unlimited (Perry et al., 2018).

In 2016 and 2017, there seemed to be an increase in high-profile vehicular terrorist attacks on Western targets. As reported in a summary compiled by Cable News Network editors (CNN Editorial Research Group, 2020), significant attacks included the following:

- a July 2016 attack in Nice, France, where a man drove a 20-ton rental truck into a crowd watching Bastille day fireworks and killed 86 people;
- a December 2016 attack in Berlin, Germany, where a tractor trailer was driven into a Christmas market, killing 12 people;
- a March 2017 attack in London, England, where an SUV was driven into a crowd on the sidewalk along Westminster Bridge, killing at least four;
- an April 2017 attack in Stockholm, Sweden, where a truck drove into pedestrians on a busy street in the city centre, killing four;
- an August, 2017 incident in Barcelona, Spain, where a van plowed through crowds of people in the La Rambla tourist district, killing 13 and injuring about 100;
- a September 2017 violent spree incident in Edmonton, Canada, where a man purposely struck a police officer with a car and then sped through the downtown in a rental truck in another incident later in the day while deliberately attempting to hit pedestrians, injuring at least four;

- an October, 2017 attack in New York City, United States, where a rented pickup truck was driven down a bicycle path near the World Trade Center, killing eight and injuring a dozen.

In addition to terrorism-related vehicular ramming attacks, non terrorism-associated incidents, where mentally unstable individuals use vehicles as weapons, are becoming increasingly common in Europe and North America. The following are two of many recent examples, where the attacks are not motivated by radical political or religious ideologies. On May 18, 2017, an attacker drove a vehicle down Seventh Avenue along sidewalks for three blocks in New York City's Times Square, killing one person and injuring 20. The attacker rambled incoherently during the attack and later told police he had smoked PCP-laced marijuana before the rampage. He was charged with murder in the second-degree, 20 counts of attempted murder, and five counts of aggravated vehicular homicide (BBC News - U.S. & Canada Staff, 2017). On December 2 2020, in Trier, Germany, an attacker used a vehicle as a weapon to strike pedestrians in the city centre during the holiday shopping season. In the incident, five persons were killed, including a baby, and 24 persons were injured. It was reported that despite the cancellation of the Christmas market due to the COVID-19 pandemic, shops were open and bollards that would usually be in place to protect the pedestrianised area because of the Christmas market were, therefore, not put up (BBC News - Europe Staff, 2020). Authorities indicated that the attacker was intoxicated, and it is suspected that he had mental health problems. At the time of writing, a psychiatric assessment is underway to evaluate the criminal liability of the 51-year-old German suspect (Lambert, 2020). All things considered, there are many varieties of vehicular attackers, as "such incidents illustrate that not only has vehicle ramming spread beyond the Israeli-Palestinian conflict and into Western cities, but it is now also a favoured practice of Jihadists, anti-Islamists, right-wing Christians, and unbalanced members of the public at large" (Miller & Hayward, 2019, p. 9). Information sources on such tactics are available. In fact, in the November 2016 edition of the ISIS online propaganda magazine *Rumiyah*, an article featured information on using a vehicle as a primary weapon of attack before using a knife or gun as a secondary means. That article was considered as a potential source of inspiration for the October 2017 New York City bike path vehicular ramming attack that killed eight persons. Actions inspiring followers to carry-out attacks in the name of ISIS, along with providing a self-help guide on how to do it, has been a major goal of the terror group's media efforts (U.S. House of Representatives Homeland Security Committee, 2018). Such information could be used by lone wolf terrorists to act independently to carry out ISIS related goals, or it could be used by persons with violent tendencies or criminal motives to learn how to initiate acts of mass murder using a vehicle as a weapon.

Due to the simplicity and availability of the tactic, it is not unreasonable to suggest that future threats may exist, where deranged and agitated members of the public may exploit soft target vulnerabilities in Canadian cities for whatever reason by using vehicles as weapons.

## Van Attack Motivations

In addition to vulnerability and tactics, the motivations are key to understanding the attack. In both the post-attack investigation and ongoing trial, van attack suspect Alek Minassian has admitted to awareness of, and motivation by, a subculture known as the “Incel movement.” Adherents to the misogynistic Incel philosophy typically interact with like-minded men in online forums to express frustration towards women over their own lack of sexual relations. In turn, some of the more radical adherents threaten violence against women (Boisvert, 2020).

When he was interviewed by Toronto Police Service detectives, Minassian indicated that he had previously communicated with mass murderers who were motivated by Incel-related ideology. He also told detectives that previous Incel-related mass murders inspired him to use a rented van as a weapon on Yonge Street (Brockbank, 2019). Minassian made claims that he had communicated online with a man he called the Incel movement’s “founding forefather”, Elliot Rodger, before the killing spree in the community of Isla Vista in Santa Barbara, California (Humphreys, 2019).

Elliot Rodger was a 22-year-old man who killed six people, injured 14 others, and then killed himself in the Isla Vista killing spree of May 23, 2014. The killing spree involved shootings, stabbings, and the purposeful running down of pedestrians with his car near the University of California Santa Barbara campus. Shortly before the killing spree, he posted a video on the internet ranting about his sexual frustration and the women who had rejected him. Rodger had also written a 137-page manifesto, in which he described his frustration with women and why he felt that life was unfair. Part of the manifesto outlined a “Day of Retribution,” which explicitly included driving around the Isla Vista community to intentionally collide with as many people as possible (Brown, 2015).

Rodger is considered as one of the forefathers inspiring a new type of misogyny that has emerged on the internet, where “guys, who range in age from their teens to their fifties, embrace

misogyny as an ideology, as a sort of symbolic solution to the frustrations in their lives—whether financial, social, or sexual” (Futrelle, n.d., para. 2).

Prior to his trial, when Minassian was interviewed by a forensic psychiatrist in September 2018, he spoke freely about the attack and also mentioned stumbling across the manifesto written by Elliot Rodger while searching online for information about spree-killers. During the trial, testimony from a psychiatrist reported that “he [Minassian] realized he was hitting random people. But that in his mind—and these are his words—[he was] wishing for more female victims” (Hayes, 2020, para. 18).

About two-and-a-half years after the attack, Minassian has pleaded not guilty to 10 counts of first-degree murder and 16 counts of attempted murder. His defense argues that he should be found not criminally responsible due to autism spectrum disorder. However, criminal responsibility is a legal opinion, not a psychiatric one (Casey, 2020b). Through his own admissions and evidence, Minassian was exposed to misogynistic ideologies as espoused by the Incel movement, some type of process led to his self-radicalization, and he admitted to having an overt intent to kill women during the van attack.

## Conclusions

The conclusions of this paper reflect upon cross-cutting lessons learned from the van attack, which draw connections between vulnerabilities, tactics, and motives. Given that the attack has taken place in Toronto, these conclusions are not simply in the theoretical realm, but they apply to a practical event that was realized. Despite the risk being realized, it is important to remember that taking a realistic risk perspective also implies that while possible vehicular ramming attacks can have a high impact, their probability of occurrence in Toronto is low.

### **Conclusion One: The pervasive threat of gender-driven violence**

From the Canadian public safety perspective, more threats of gender-driven violence have been realized than international terrorism threats in recent years. The van attack itself is representative of a type of threat that has existed in Canada in the past and continues to renew itself in the present. Canada has a sordid history with gender-driven violence resulting in mass casualties.

On December 6, 1989, a 25-year-old male armed with a semi-automatic assault rifle went on a killing spree at the École Polytechnique in Montréal, killing 14 women. During the attack, the gunman declared his hatred for feminists. While there was an initial reluctance to call the École Polytechnique shooting an anti-feminist attack, it is viewed in the context of gender related violence today (Blais & Dupuis-Déri, 2019). Twenty-nine years later, in the van attack, another 25-year-old male armed with a rented cargo van went on a killing spree, where 8 out of the 10 casualties were women.

The Canadian Security Intelligence Service (CSIS) has recognized gender driven violence as a threat to the nation. A CSIS public report released in April 2020 suggested that amongst the international and domestic threats to Canada's national security, ideologically motivated violent extremism (IMVE) is an element of the threat spectrum (Canadian Security Intelligence Service, 2020). Specifically, IMVE is broken down into categories of xenophobic violence, anti-authoritarian violence, gender-driven violence, and other grievance driven and ideologically motivated violence that originates from across the ideological spectrum. The worldview of IMVE consists of a personalized narrative centred around an extremist's willingness to incite, enable, and/or mobilize violence. Gender-driven violence is specifically defined as the hatred against those of a different gender and/or sexual orientation, which, for example, can lead to violent misogyny. CSIS suggested the 2018 Toronto van attack was an example of gender-driven violence.

## **Conclusion Two: Take advantage of opportunities for CPTED and soft target hardening**

While the risks related to vehicular ramming attack-type mass murder alone do not justify tearing out existing infrastructure to rebuild with stronger pedestrian defenses, when the opportunity beckons for redesign or reconstruction, crime prevention through environmental design (CPTED) techniques, along with more counterterrorism orientated soft target hardening, should be incorporated into streetscape improvement projects. The concept of CPTED offers potential solutions that have already had application for a variety of purposes in Canadian cities. While counterterrorism strategies and CPTED are not exactly the same, there is some overlap.

Crime prevention through environmental design (CPTED) has been defined as a crime prevention approach based on a theory that the built environment influences the behaviour of people (Crime Prevention Unit - Toronto Police Service, 2003). The purpose of CPTED is “to reduce crime opportunities rather than change criminal motivation” (Mair & Mair, 2003, p. 213).

For many cities in Canada, CPTED has been a part of the urban design process. In one example, Saskatoon, Saskatchewan has adopted 14 principles of CPTED into its planning, including territoriality, natural surveillance, access control, image, conflicting user groups, activity support, crime generators, land use mix, movement predictors, displacement, cohesion, connectivity, capacity, and culture (Planning and Development Branch - City of Saskatoon, 2010). Such planning and design principles are illustrative of the wide range of applications of CPTED to most types of urban development. In another example, guidelines for the City of Kelowna, British Columbia include territorial reinforcement that focuses on public spaces, semi-private zones, private zones, natural access control, and target hardening (Community Planning Division - City of Kelowna, 1999). In this case, target hardening refers to prohibiting entry of access with window locks, dead bolts for doors, etc.

CPTED has its “limitations to using approaches that were created for non-terrorism issues, as the psychological relationship between a criminal and a terrorist may differ, and terrorist threats are not easily quantified” (Harre-Young et al., 2009, p. 1288). For places like Yonge Street in Toronto, a mix of complementary CPTED design elements along with more specific counterterrorism target hardening strategies may be appropriate. Counterterrorism soft targeting hardening activities may be more difficult to deploy, as they can have high impact trade-offs in terms of costs, restrictions on movement, perceived impacts on freedom, and image.

However, there are types of counterterrorism soft target hardening features that are examples of lower impact defensive techniques that have been used in urban environments. The following suggestions are adapted from work of Australian National Security, and they are representative of what could be designed into the streetscape (Australia-New Zealand Counter-Terrorism Committee, 2017, Passive Barriers section):

- Landscape features (e.g. sculpted or clad earthworks, steep verges)
- Shrouded bollards (designed to match local architecture)
- Decorative, structural, or energy absorbing planters (more aesthetically acceptable)
- Strengthened 'light' structures (e.g. bus or smoking shelters, information signs)
- Large immovable landmarks (e.g. statues, walls)
- Integrated street furniture (e.g. lighting columns, traffic signals, seating, cycle racks)
- Level changes (e.g. steps, high curbs)
- Water features (e.g. fountains, ponds, or pools)

Given that the "RE imagining Yonge Street" project is now underway to improve the streetscape and public realm in the area where the van attack occurred, the authors suggest that CPTED principles, or perhaps even more aggressive elements of counterterrorism target hardening, should be considered for the redesign.

### **Conclusion Three: Avoid failure of imagination**

The depths of depravity that the criminal mind can fall to in devising innovative tactics for men to kill other men and women can be shocking. Despite learning more about the details of the motivations for the van attack, it is still difficult to comprehend why innocent persons going about their day-to-day lives were targeted, and more difficult to fathom why women were especially targeted.

The heinous attacks can lead to a failure of imagination, where numbness sets in and the risk of disasters due to the extremes of criminality or terrorism are not taken seriously. In Toronto, we have only a few instances of gender-driven mass murders, and even fewer incidents of vehicular attacks on which to base our future prevention and mitigation plans. Given the rarity of these



incidents, an awareness of history, along with knowledge of international comparative emergency management, is important to better understand the attacks.

Regarding history, the 1989 École Polytechnique mass shooting, the 2014 Isla Vista killing spree, and the November 2018 mass shooting resulting in the killing of three persons (including two women) and 5 other injuries at a hot yoga studio in Tallahassee, Florida (Rueb, 2019), are all examples of misogynistic killings. A significant development occurred in Toronto in 2019, involving a 17-year-old male who attacked an erotic spa and massage parlour on February 24, killing one woman and injuring two others with a machete. The perpetrator's charges were upgraded from first-degree murder and attempted murder to include terrorist activity after investigators allegedly uncovered evidence linking the attacker to the Incel movement. Researchers such as Little have suggested that the framing of the issue can detract from a reality of the existence of extreme anti-woman violence, as “until recently, attacks by people of colour or certain faiths have been more readily dubbed terrorist acts while extreme misogynist violence perpetuated by white men is often attributed to mental health issues” (as cited in Edwards & Gillis, 2020, para. 23).

Regarding international comparative emergency management, we have much to learn from Europe or Israel, where vehicular attacks have been more frequent and deadly. In Israel, even construction equipment has been commandeered to crush cars, ram buses, and maim pedestrians. While jarring and seemingly far removed from Canadian circumstances, awareness of such events can help to prevent failure of imagination concerning the extent of anti-social tendencies and depraved criminal actions.

#### **Conclusion Four: Security should be commensurate to the risk**

Overreacting to the van attack by hardening soft targets too much can make streetscapes appear like life during wartime. Losing one's sense of proportion in defending sidewalks can antagonize pedestrians. Hence, taking a realistic risk perspective is important.

According to data from the National Safety Council concerning the lifetime odds of death for selected causes in the United States in 2018, the risk of death from pedestrian accidents is 1 in 541 (National Safety Council, n.d.). In another analysis of risk data from the U.S., from 2008 through 2015, the chance of being murdered in a terrorist attack on U.S. soil was 1 in 3,269,432 per year. Simply put, the chances are higher of an American dying from an animal attack than a terrorist attack (Nowrasteh, 2018). The same rationale can be applied to risks in Canada.

From a day-to-day risk perspective, the authors' greatest fear is that of routine incidents of car accidents causing death and injury along locations like the Yonge Street corridor. For instance, it is not far fetched to consider the scenario of a driver having a sudden heart attack behind the wheel and losing control of their vehicle, which then jumps the curb at the wrong place and the wrong time, strikes numerous pedestrians, and ends the incident by plowing into a street-side outdoor patio dining area.

It can be stated that another extraordinary mass murder incident using a vehicle to attack pedestrians in Toronto remains possible, but unlikely. Nonetheless, we cannot let our guard down concerning vehicular ramming attacks. CPTED activities or counterterrorism target hardening strategies can have dual-use applications, both for extreme and everyday events. In day-to-day life, everyday accidents have a much greater likelihood of creating a mass casualty incident on Toronto's streets than mass murder killing sprees.

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