

"know what's out there!"

Motivations and Barriers to Collision Reporting among Vulnerable Road Users in Hamilton, ON

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Executive Summary

The City of Hamilton is home to a diverse group of vulnerable road users (VRUs), including pedestrians, cyclists, and mobility device users, who face significant safety risks when interacting with motor vehicles. Despite these risks, many collisions involving VRUs and motor vehicles go unreported, making it difficult to fully understand and respond to their needs. To better understand the motivations and barriers that VRUs encounter when reporting collisions, the Research Shop, in partnership with Cycle Hamilton, conducted a literature review, an analysis of the current collision reporting system, and a survey with VRUs in Hamilton. This report summarizes our findings, offering insight into safety perceptions, reporting practices, and possible advocacy targets for improving current levels of reporting.

The research revealed that official collision reporting is done through police services and collision underreporting is widespread. While collisions resulting in severe injury for the VRU are more likely to be documented, many minor or moderate incidents are unreported. Survey respondents identified key barriers: confusion about reporting requirements, limited awareness of how and where to report, a lack of trust in outcomes, and logistical obstacles like difficulty attending Collision Reporting Centres. These findings align with broader trends identified in our literature review, which consistently show that VRU collisions are underrepresented in official statistics across jurisdictions.

Survey results found that nearly 70% of respondents lacked perceived confidence in knowing how to report a collision as a VRU. Furthermore, many were skeptic that reporting would result in accountability or improved safety. The current reporting system – designed around vehicle-focused infrastructure – likely does not meet the needs of VRUs.

To explore potential improvements to the collision reporting process, we conducted a scan of initiatives aimed at improving collision reporting for VRUs. Toronto's newly opened downtown Collision Reporting Centre for cyclists and pedestrians and platforms like BikeMaps that allow users to enter collision data online offer examples of more accessible and flexible approaches that could be considered in Hamilton.

In response to our findings, we offer considerations to support more effective collision reporting for VRUs: increase public awareness of what collisions are reportable and why reporting matters, develop plain-language, VRU-specific educational materials that clearly outline the reporting process, explore ways to integrate self-reported data with official reports for a more accurate picture of safety conditions, monitor outcomes of

Toronto's downtown Collision Reporting Centre to assess the feasibility of a similar model in Hamilton, and acknowledge and begin to address systemic barriers – such as perceived police inaction or bias – that affect trust in the reporting system.

Introduction

Cycle Hamilton is a non-profit organization and member-supported group of individuals, communities, and organizations that work together to make Hamilton, Ontario a place where people of all ages and abilities can safely bike to all parts of the city. Aiming to create a culture of bike riding in Hamilton, they strive to inspire people to ride their bikes in a growing network of connected and safe bike lanes.

As part of its mission to improve road safety and expand active transportation, Cycle Hamilton is interested in gathering comprehensive data on collisions involving vulnerable road users (VRUs), such as cyclists and pedestrians. VRUs are at a greater risk of serious injury or death in traffic collisions with motor vehicles, yet their experiences are frequently underrepresented in official data sources. To the best of our knowledge, no comprehensive research on collisions involving VRUs has been conducted in Hamilton, leaving a gap in our understanding of local safety challenges. Detailed and localized information about collisions will help support data-driven advocacy for safer street design such as protected bike lanes, improved crosswalks, and traffic calming measures.

In Fall 2024, Cycle Hamilton partnered with the Research Shop to explore why VRUs might (or might not) report collisions with motor vehicles. Over the past 8 months, we conducted an analysis of the collision reporting process, a literature review, and an environmental scan, along with a survey, to address questions regarding the motivations and barriers to collision reporting among VRUs. These findings will be used to help support Cycle Hamilton's continued advocacy efforts for enhanced safety and protection measures for VRUs.

We aimed to answer the following research question:

Broadly, what are the reported motivations and barriers to collision reporting for VRUs in Hamilton ON?

We also aimed to answer the following secondary research questions:

What motivations and barriers to collision reporting for VRUs are identified in the literature and how do these contribute to underreporting?

What is the collision reporting process in Hamilton, ON for VRUs and where in the process do key motivators and barriers emerge?

What best practices in collision reporting processes may help ameliorate identified barriers?

Background on VRUs and the Collision Reporting Process

VRUs are individuals who are at a higher risk of serious injury or death in incidents involving motor vehicles. This includes people who are biking, walking, scootering, using mobility aids, or other forms of non-vehicular transportation, as they are not protected by a vehicular shell. While motorcyclists are sometimes considered VRUs, they are not included in this research, since they typically share the same road spaces as cars and not spaces like bike lanes and sidewalks/crosswalks.

In Canada and around the world, governments use official sources of data to track road safety trends and monitor the effectiveness of road safety interventions. The most common data sources for collisions involving VRUs come from police reports, but insurance claims and hospital records can also provide additional information. In Hamilton, local authorities release an annual report on collisions, but there are concerns that unreported incidents may mean the actual number of collisions is underestimated. Accurate collision data is essential for understanding the full scope of accidents and for advocating for infrastructure improvements that protect VRUs and make communities safer.

Methods

We conducted our research in three phases.

In Phase 1, we conducted a literature review to identify motivations and barriers to reporting collisions among VRUs and the extent and nature of underreporting. In this phase, we also analyzed the collision reporting process for VRUs in Hamilton, ON. The goal of this phase was to help us create meaningful survey questions and to better understand how the local reporting process works.

In Phase 2, we conducted an online survey aimed at VRUs in Hamilton who had been involved in a collision with a motor vehicle. The purpose was to gain a deeper understanding of what locally motivates or hinders VRUs from reporting collisions. The findings from the survey helped us identify characteristics of the local reporting process (as researched in Phase 1) that might be contributing to underreporting or creating barriers.

Phase 3 focused on scanning for best practices that have been used elsewhere to address barriers in reporting and underreporting of collisions for VRUs to help construct recommendations for Cycle Hamilton.

We elaborate on each of these methods below.

Phase 1: Literature Review and Analysis of the Collision Reporting Process

A) Literature Review of Motivations and Barriers to Collision Reporting

The literature review aimed to identify motivations and barriers to collision reporting and related underreporting. We conducted our search using Google Scholar and PUBMED, using a combination of key words (see below). We also expanded our search by incorporating references found in article reference lists.

After compiling articles, we screened the results according to our inclusion and exclusion criteria. The team included articles published in the last 20 years that discussed collision reporting involving VRUS. We excluded articles that described collisions among VRUs but did not discuss reporting specifically.

After compiling and screening articles, the team then extracted information from selected articles according to motivations and barriers, underreporting, and reliability of collision data source.

Keywords included: Cyclist-motorized vehicle collision, under-reporting, pedestrian injuries, cyclist injuries, police-reported collisions, vulnerable road user collisions, vulnerable road user injuries, self-reported collisions

Limitations

There are very few Canadian studies about motivations and barriers to collision reporting or underreporting. Only two studies used Canadian data – one from Toronto and another from Vancouver – potentially limiting the generalizability of the findings to Hamilton.

The majority of studies focus on cyclists as VRUs, while a few covered pedestrians. This potentially overlooks the challenges faced by other VRUs such as those who use mobility devices or scooters as their experiences were not covered in the literature.

B) Analysis of the Collision Reporting Process

To analyze the collision reporting process for VRUs, we conducted a Google search of online resources to identify available public data. The primary source of information was Hamilton Police Service's website and the related Accident Support Services

International Ltd. Hamilton website, where we reviewed collision reporting guidelines and procedures.

Using the information from the analysis, we constructed a process flow diagram of the collision reporting process from the perspective of a VRU, starting from the time of the collision and ending with the successful completion of a collision report.

Phase 2: Survey

Survey Scope, Recruitment, and Participants

The Research Shop developed a survey in consultation with Cycle Hamilton in Fall 2024 using LimeSurvey. The survey was designed to capture the experiences of VRUs who had been involved in a collision with a motor vehicle. The primary aim was to gather information about the circumstances of these collisions — if and how they were reported, and the motivations and barriers that influenced participants' reporting decisions. Demographic information (e.g. age, gender, ethnicity) was also collected to better understand who the survey was reaching and whose experiences were being represented. Participants could select from a list of potential motivations and barriers that influenced their decision to (or not to) report (e.g. lack of information about the reporting process, not seeing the value in reporting). Participants were also able to enter optional open-ended responses to provide additional perspectives. A copy of the survey is included in the Appendix.

The survey was specifically advertised as being for VRUs who had been in a collision with a motor vehicle in Hamilton, ON. To reach participants, the survey was promoted across various online and physical platforms including at Cycle Hamilton's Annual General Meeting, on the social media of Cycle Hamilton, McMaster's Office of Community Engagement and Hamilton Bike Share, and posters in bike shops and coffee shops. The survey was open from November 20, 2024, to January 13, 2025. Cycle Hamilton incentivized participation with a chance to win one of four \$25 gift cards.

A total of 93 responses were collected. Of those, 81 were included in the analysis, while 12 were removed because participants had clicked on the survey link without providing any data.

Survey Analysis

The close-ended and open-ended survey questions collected quantitative and qualitative data, respectively. We used descriptive statistics (counts, averages) and measures of central tendency (e.g. proportions) to summarize numeric data. We used

conventional thematic analysis to summarize open-ended responses and identify key themes.

Limitations

This survey specifically targeted VRUs who had been involved in a collision with a motor vehicle. It did not include individuals who had a near miss with a motor-vehicle nor those who were involved in non-motor vehicle incidents (e.g. a collision between two cyclists). Despite efforts to promote the study across various platforms, the sample likely does not fully represent all VRUs in Hamilton. First, the sample size was relatively small - only 81 usable responses were collected compared to the estimated number of VRUs in the city. For example, Hamilton's cycling population alone is the estimated be in the tens of thousands, meaning the survey captured only a small fraction of potential experiences (Craggs, 2020). Second, the survey was distributed primarily through cycling-focused networks and social media channels, which may have skewed the participant pool toward people who are already engaged in active transportation communities and underrepresenting the experiences of less-connected VRUs such as newcomers.

Additionally, because the survey was voluntary and self-reported, it may reflect a bias toward individuals who felt strongly about their experience, rather than offering a balance of collision outcomes. This is especially relevant for the optional open-ended answer questions, which are more likely to be completed by respondents who were particularly motivated to share detailed feedback – such as those with more negative, emotional, or impactful experiences. As a result of these limitations, we are unable to generate an estimate of the true value of underreporting in the City.

Phase 3: Environmental Scan of Case Studies Seeking to Improve the Collision Reporting Process for VRUs

A final environmental scan aimed to identify efforts that have been made to address barriers to collision reporting and underreporting among VRUs. We conducted the scan using an online Google search, employing search terms such as "improvements for collision reporting for cyclists and pedestrians". Our focus was on identifying relevant initiatives through government websites and news coverage related to efforts addressing these barriers.

Limitations

This search may have missed initiatives not well-publicized or covered by major news outlets and government websites. Additionally, the scan was conducted in English and

may have missed initiatives or coverage in other languages, specifically excluding potentially relevant information from non-English-speaking countries.

Findings

Phase 1: Literature Review and Analysis of the Collision Reporting Process

A) Literature Review of Motivations and Barriers to Collision Reporting

Few studies were found regarding motivations and barriers to collision reporting for VRUs.

Motivations to Collision Reporting

Generally, more severe collisions are more likely to be reported to the police (Shinar et al., 2018).

- A study in Ireland found that cyclists are seven times more likely to report serious injuries compared to minor ones (Gildea & Simms, 2021). Additionally, collisions involving VRUs and motor vehicles are more likely to be reported than accidents between cyclists or cyclists and pedestrians.
- A study of VRUs in Belgium, Denmark, Sweden, and Spain found that selfreported collisions tend to be less severe than those recorded by police reports (Madsen, 2018).

Rates of Collision Reporting and Underreporting

Local police departments are typically responsible for recording collisions. However, underreporting of collisions is a large issue, even among serious collisions. Although many studies have shown evidence of underreporting, the extent can vary depending on region and the methods used to generate an estimate.

- A self-reported survey of 30 countries found that an average of only 10% of cyclist collisions were reported to the police (Shinar et al., 2018).
- A review of ten studies analyzing underreporting rates estimated that between 44-75% of pedestrian-motor vehicle collisions were reported, while only 7-46% of bicycle crashes were reported (Doggett et al., 2018).

Sources and Limitations of Collision Data involving VRUs

Recognizing that police data alone is not sufficient to understand the full picture of collisions, many researchers have turned to other sources of information (Gildea and Simms, 2021; MacPherson et al., 2024). These include hospital data for those who

attend an emergency department or insurance claim records for those who seek compensation, but these sources still have gaps. Hospital records miss injuries that don't require medical care, and insurance data only includes accidents where claims are filed.

- A study from Toronto in 2024 found that all cycling injuries reported to the police represented only 8% of emergency department visits for cycling injuries.
- A survey in Ireland found that 61% of self-reported collisions were not reported to the police nor appeared in hospital records (Gildea and Simms, 2021).

Use of Other Tools to Estimate Collision Rates

Any estimation of the number of injuries involving VRUs must recognize the underreporting problem (Loo et al., 2007). Several studies suggest that self-report surveys can be a valuable tool for addressing this gap, as they help capture less severe injuries, as well as near accidents (Loo et al., 2007, Shinar et al., 2018). Self-report data can provide insights into cyclist crash patterns, including crash locations, infrastructure issues, and cyclists' characteristics (Shinar et al., 2018).

B) Analysis of the Collision Reporting Process

Broadly, the Highway Traffic Act highlights rules for people to travel safety and predictably on streets within the province of Ontario. It legislates that collisions where persons are injured, damage is valued at \$5,000 to vehicles or property, or results in damage to highway property, must be reported to police. Reporting to the police can be done through a Collision Reporting Centre (a facility where the public can report traffic collisions to meet legal requirements and insurance needs) or by police investigating at the scene of the collision (Hamilton Police Service, 2025).

In Hamilton, police investigate collisions at the scene under certain conditions such as those resulting in serious injury, death, any involvement of Emergency Medical Services (EMS) transportation, collisions involving criminal activity, or when alcohol or drug use is a suspected factor. If police do attend the collision, they may file the collision report based on the nature or severity of the incident, and no further action from the VRU is needed. Police may also still direct parties to a Collision Reporting Centre for the involved individuals to complete the collision report themselves (Hamilton Police Service, 2025).

Based on available information, in Hamilton, collisions involving VRUs that result in no or minor injuries do not require police to attend the scene nor need to be legally reported but can still be reported voluntarily at a Collision Reporting Centre (Hamilton

Police Service, 2025). If police are not involved, the VRU reports the collision at a Collision Reporting Centre at their own discretion.

If it is determined that a collision report will be completed by the VRU, contact information, insurance details, and vehicle information should be exchanged between parties, and witnesses should be noted. It is also helpful to take photographs of the collision and damages for reporting purposes.

Within 48 hours of the incident, the VRU can visit one of the two collision reporting centres in Hamilton: 400 Rymal Road E or 2825 King Street. VRUs must report to the nearest Collision Reporting Centre to where the collision took place. VRUs can opt to start their report from an electronic device and then bring a reference number to the Collision Reporting Centre to complete the remainder of the collision report, or they can complete the entirety of the report in person at the Collision Reporting Centre. If needed for insurance or legal purposes, individuals can request the full collision report at Hamilton's Records Business Centre (Hamilton Police Service, 2024a).

A process flow-diagram of the collision reporting process from the perspective of a VRU is below (Figure 1).



Figure 1. Reporting Process for VRU Collisions in Hamilton, ON

Phase 2: Survey

We received 81 valid survey responses.

Demographics of Survey Respondents:

- Age: Respondents were 17 to 80 years old, with an average age of 44.
- **Gender**: Fairly balanced, with about half identifying as male (50.6%) and nearly as many identifying as female (45.6%). A small number of respondents identified as non-binary (1.3%), genderqueer (1.3%), or another gender (1.3%).
- **Race**: Most respondents identified as White (84%), though some identified as Southeast Asian (3.7%), Indigenous (2.7%), Black (2.7%) and South Asian (1.2%).

Transportation Habits and Collision Experiences:

- **Mode of transportation**: 42% use non-vehicular modes of transportation daily, and another 37% said they do several times a week.
- **Safety perception**: 40% of respondents felt unsafe or very unsafe while using non-vehicular transportation, while 34% felt safe or very safe.
- **Collision history**: 63% of respondents reported having been involved in a collision with a motor vehicle as a VRU in Hamilton. Of those who had been in a collision, 67% of them had been in one collision, 20% had been in two collisions, and 12% had been in more than three collisions.
 - Most respondents were biking at the time of their collision (81%), while 14% were walking and 5% were using a scooter.
 - Of those cycling, an equal number of respondents were in a bike lane at the time of the collision (49%) as those who were not (49%).
 - Most collisions (53%) involved turning motor vehicles. Collisions with forward-moving vehicles made up 30%, while only a small number involved reversing (3%) or parked vehicles (1%).
 - Most respondents reported being injured in their collision, with nearly 70% experiencing minor (e.g., bruises, cuts, scrapes that do not require medical treatment) to serious (e.g., broken bones, dislocations, or injuries requiring hospitalization or surgery) injuries (Figure 2). Notably, over 1 in 10 respondents reported serious injuries that required hospitalizations or surgery.



Figure 2: Severity of Injuries Sustained in Collisions

Collision Reporting Practices and Location of Collisions:

- Decision to report: Only 29% of participants had their collisions reported.
 - In 19% cases, police attended the scene and either filed the report internally or directed individuals to a Collision Reporting Centre
 - 10% collisions were reported at a Collision Reporting Centre without police involvement
- Location of collisions: Using locations of collisions supplied by respondents, a map of the collisions that were not reported to authorities is below. Figure 3 shows all collisions, including those in the neighbouring areas of Ancaster, Stoney Creek, and Dundas. Figure 4 zooms in on downtown area and the streets surrounding McMaster University



Figure 3. Map of unreported collision locations in Hamilton, ON as reported by survey-takers



Figure 4. Map of unreported collision locations in Hamilton, ON as reported by survey-takers, with a focus on the downtown and areas near McMaster University

Barriers to Collision Reporting among VRUs

As shown in Figure 5, nearly 70% of survey respondents reported feeling not at all or only slightly confident in knowing how to report a collision – pointing to a clear gap in public awareness and accessibility of the reporting process for VRUs.



Figure 5. Confidence in Knowing the Steps to Report a Collision Involving VRUs in Hamilton

To better understand why so many collisions go unreported, we asked survey respondents who did not report their collisions to indicate their reasons. Figure 6 summarizes the most commonly cited barriers.

The most frequently reported reason was that the respondent did not think the collision was serious enough to warrant reporting (78% of respondents). Another significant barrier was uncertainty around whether the collision needed to be reported at all – 75% of respondents indicated that they either did not think it needed to be reported, or they were unsure. These findings point to a broader lack of clarity about when and how collisions should be reported, particularly for VRUs involved in incidents without serious injuries. More than half (56%) of respondents did not think that the other party would be held accountable, potentially reflecting a lack of trust in the collision reporting process for VRUs and the merit of its outcomes.



Figure 6. Barriers to Collision Reporting among VRUs in Hamilton

Insights from Open-Ended Survey Responses

Open-ended responses elaborated on the barriers to collision reporting among VRUs in Hamilton.

Regarding uncertainty about the collision reporting process, one person said, "I'm not even aware of the collision reporting centre," while another noted, "I contacted my councillor and city transportation departments, and they didn't know how to assist."

In terms of holding the other party (motor vehicle) accountable, one VRU mentioned "HPS have done nothing after I reported multiple collisions." Another said, "HPS actually giving a shit about pedestrians and cyclists" would improve reporting.

Respondents also shared how time and travel constraints affected them, such as: "I don't drive so had to take transit", "I had to travel by Uber... it cost \$16.00," and "I took time away from work to report the collision".

Together, these responses highlight the need for clearer communication, improved accountability, and more accessible reporting systems for VRUs in Hamilton.

Phase 3: Environmental Scan of Case Studies Seeking to Improve the Collision Reporting Process for VRUs

Acknowledging the barriers that lead to underreporting of collisions among VRUs, some areas have made attempts to improve the collision reporting process for VRUs.

Toronto's New Downtown Collision Reporting Centre for VRUs

In Toronto, a new downtown collision reporting centre dedicated for cyclists and pedestrians was opened in October 2024 at 350 Dovercourt Road (Zhang & Edwards, 2024). Previously, VRUs had to attend locations in North York and Scarborough. It is anticipated that these centres will encourage people to report, especially for minor injuries. Increased reporting improves data collection, which can inform policymakers on high-risk areas, policy changes, and infrastructure upgrades. However, due to the recent implementation of this new centre, it is unknown if this action will successfully reduce barriers to reporting.

Reducing Wait Times at Collision Reporting Centres in Hamilton

Although not directed at VRUs specifically, Hamilton implemented an initiative, *Start from Home,* to reduce collision centre wait times in November 2018. This is done by allowing individuals to complete up to 85% of the report form online on their own device. Users are given a reference number and must still attend a collision reporting centre to complete the report (Hamilton Police Service, 2024b). While this does not address issues of accessing the collision reporting centre, it may help reduce time barriers. No evaluation of this program could be located.

Mapping Tools and Integrating with other Road Safety Tools

Mapping tools, although not directly related to the collision reporting process, can help VRUs identify areas with safe and unsafe traffic conditions. Based on user reports, *BikeMaps* is a useful tool for cyclists to visualize collision hot spots (BikeMaps, n.d.; Nelson et al., 2015). Likewise, the *Vision Zero Road Safety Plan*, implemented in 25 Canadian cities across three provinces, aims to reduce traffic-related fatalities and injuries (Parachute, 2023). A key tool is its road safety map in which users can view areas with historical collisions and information on countermeasures by the city such as safer speed limits and pedestrian head start signals (City of Toronto, 2019; City of Edmonton, n.d.). Overall, these tools serve as collision prevention measures for VRUs and provide valuable data to inform road safety strategies.

Increasing the monetary damage value threshold for reporting: pro or con?

In Ontario, the threshold for mandatory collision reporting was increased from \$2,000 to \$5,000 in property damages (Wiens, 2025). Although it was meant to reduce burdens

associated with reporting, it exacerbates the pre-existing issue with collision underreporting. This change may lead to reduced reporting of minor collisions, potentially underestimating the safety risks faced by VRUs. Although voluntary reporting is still an option, it suggests that policymakers may not prioritize minor collision reports, implying that such incidents are seen as less impactful in improving road safety.

Implications

Summary of Challenges with Hamilton's Collision Reporting Process

Several challenges exist with the current reporting process for VRUs. As seen in survey responses, one major issue is the lack of knowledge about who is required to report, when reporting should occur, and how to navigate the process – particularly since the system is primarily designed for collisions between motor vehicles. It is not well advertised nor communicated that incidents involving VRUs can and still should be reported, even when police do not attend the scene of the collision.

Accessibility is also a concern. There are only two collision reporting centres in Hamilton, which can be difficult to reach given the 48-hour time window, especially for individuals who rely on active transportation or public transit, as identified by survey respondents. As identified in the analysis of the collision reporting process, the limited hours of operation (for example, the 2825 King Street location open Monday to Friday 10 am – 6 pm and is closed on weekends) could further restrict access (Hamilton Police Service, 2025).

Another limitation is that police in Hamilton only attend collision scenes under specific circumstances, such as those involving serious injuries, EMS transport, or criminal activity. As a result, collisions involving VRUs that result in minor or no injuries are not legally required to be reported to police, nor do they typically involve police attendance. This places the burden of reporting on the individuals involved, which can be overwhelming or confusing; the system lacks incentives to report minor collisions. This is consistent with findings of the literature review in which less serious collisions are less likely to be reported (Shinar et al., 2018; Gildea & Simms, 2021; Madsen, 2018).

Lastly, trust in police services could influence whether people choose to report at all, with some seeing the process as ineffective or not worth the effort; many survey respondents expressed that they did not feel police services cared about VRUs or their collision reports but rather prioritized a car-based travel system. These limitations are visually represented along with the collision reporting process in Figure 7 below.



Figure 7. Reporting Process for VRU Collisions in Hamilton, ON (blue squares) with identified challenges overlaid (pink ovals)

Recommendations

Alignment of our literature review and survey findings suggest that collisions between VRUs and motor vehicles are being underreported in Hamilton, ON, though we can't specify to what extent. Our research further specifies several barriers preventing people from reporting these incidents – particularly when injuries are perceived as minor. This underreporting not only limits public understanding of the risks faced by VRUs but also distorts data that planners and advocates rely on to push for meaningful change.

When collisions go unreported, it can skew perceptions of safety and lead to assumptions about the effectiveness of existing infrastructure. As a result, the current collision reporting system in Hamilton for VRUs prevents accurate data-driven decisions that could improve safety for those who walk, bike, or use other forms of active transportation.

Based on our findings, we offer the following considerations to help address barriers to collision reporting in Hamilton, ON:

Raise Awareness of Underreporting and its Impact.

Understanding of what constitutes a reportable collision among VRUs – and why reporting matters – is limited. Our survey found that many VRUs in Hamilton do not believe minor or moderate injuries are not worth reporting or are unsure whether they can be reported.

- Educate VRUs and the community about how unreported collisions can hinder advocacy for evidence-driven infrastructure changes, such as protected bike lanes and crosswalk visibility enhancements.
- Promote the message that minor, or no-injury collisions still reflect unsafe infrastructure, and that their exclusion from official data undermines the full picture of road safety in Hamilton.

Develop Plain-Language Educational Resources about the Collision Reporting Process for VRUs.

Survey responses showed that many VRUs in Hamilton are not confident about how to report a collision with a motor vehicle.

- Work with Police Services to either update current resources or create clear, plain-language educational materials specifically tailored to VRUs that explain:
 - When a collision *must* be reported, and when a collision *can* be reported,
 - \circ Where and how to report (including timelines, required information, etc.),
 - What happens after a report is made.
- Explore the feasibility of making materials available in multiple languages and distributing them through channels such as community centres, libraries, and schools.

Explore the Integration of User-Reported Collision Data.

Official collision statistics capture only a fraction of incidents. Survey data shows many collisions in Hamilton involving VRUs are unreported. Findings from the literature review recognize the need to utilize additional methods to capture the full picture of collisions.

- Advocate for options to consolidate police collision data with user-entered collision data platforms such as BikeMaps or other road safety tools like VisionZero, that could provide more accurate collision statistics.
 - Encourage transit planning decision-makers to recognize self-reported data as valid and valuable, especially when backed by existing patterns and collision clusters.

Monitor the Feasibility of a Centrally located Collision Reporting Centre for VRUs in Hamilton.

Toronto's recent introduction of a downtown Collision Reporting Centre for cyclists and pedestrians provides an opportunity to observe how this model affects reporting rates

from VRUs. Survey responses from Hamilton revealed that lack of transportation access and travel costs can present a barrier to visiting existing centres, which are located on the periphery of the city.

- Track and evaluate the impact of Toronto's new Collision Reporting Centre on VRU reporting rates
- Explore the feasibility of advocating for a centrally located Collision Reporting Centre in Hamilton, such as within the downtown core.

Acknowledge Systemic Barriers in Police-Based Reporting.

Our survey revealed that some VRUs are reluctant to report collisions because they don't believe that police will value their experience.

Recognize barriers in the existing reporting system, including distrust and bias.
 Work to understand the unique motivations and barriers faced by VRUs from diverse groups in reporting collisions.

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Appendix: Survey Questions

Cycle Hamilton is a member-supported group of individuals, communities, and organizations that work together to make Hamilton a place where people of all ages and abilities can safely get around by bike to all parts of the City. Cycle Hamilton is working with the McMaster Research Shop to better understand collisions involving vulnerable road users (e.g. pedestrians and cyclists) in Hamilton, ON. This data will be used to help support continued advocacy efforts for enhanced safety and protection measures for vulnerable road users.

This survey will ask about your experiences as being a vulnerable road user in Hamilton, including collision history and perspectives about collision reporting. The survey will take approximately 5-15 minutes to complete.

As a token of our appreciation, you will have the chance to win one of X gift cards worth X to X place. At the end of the survey, you will have an option to enter your email address if you would like to be entered into the draw. Your responses will remain anonymous and separate from your gift card entry.

If you have any questions about how the data from this survey will be used, please contact Mark Anderson (Cycle Hamilton): advocacy@cyclehamont.ca and Evan Gravely (McMaster Research Shop): rshop@mcmaster.ca If you are experiencing technical issues with this survey, please email

jonesc36@mcmaster.ca

Important Information

- Completion of the survey is voluntary.
- We encourage anyone who is a vulnerable road user in Hamilton, ON to complete this survey. Please note that this survey focuses on experiences in Hamilton, ON only.
- The information and answers you provide will remain anonymous and confidential.
- All data will be stored in a One Drive folder that only the Research Team has access to.

Thank you for your time and insights!

SECTION 1 DEMOGRAPHICS

*This section displayed to all survey-takers.

This information will help us determine who filled out the survey.

1.What is your age? Two-digit open-ended box 2.What is your gender identity?

- Female
- Male
- Non-Binary
- Genderqueer
- Two-Spirit
- Other (please specify)
- Prefer not to disclose

3.Are you a member of the transgender, non-binary, Two-Spirit, or gender fluid community?

- Yes
- No
- Prefer not to disclose

4. Which category best describes your racial or ethno-cultural identity? Select all that apply.

- Indigenous (First Nations, Métis, Inuit)
- Indigenous outside of Canada (e.g., Māori, Maya, Nahuatl, Quechua, Indigenous Hawaiians)

• Black (including Black African, Black Caribbean/West Indian, Black North American, Afro-Latinx/Black Latin American, multi-racial students who have Black ancestry that they identify with, and other Black identities)

- East Asian (Chinese, Japanese, Korean, Taiwanese descent)
- Southeast Asian (Cambodian, Filipino, Indonesian, Thai, Vietnamese, other Southeast Asian descent)

• Latin American/Latinx (from, descent, or heritage from Latin America including South America, Central America, Latin Caribbean (Spanish-speaking Caribbean and/or Haiti), and México)

- Middle Eastern (Arab, Persian, West Asian descent)
- South Asian (Bangladeshi, Bhutanese, Indian, Indo-Caribbean, Indo-Fijian, Pakistani, Sri Lankan descent)
- White (European descent)
- Other (please specify)
- Prefer not to disclose

5.Please choose the answer that best describes your citizenship status.

• Canadian citizen or permanent resident

- Recently immigrated (less than one year includes study and work permits)
- Immigrated (1+ year in Canada includes study and work permits)
- Refugee
- Other (please specify)
- Prefer not to disclose

6.Over the past year, what has been your primary mode of transportation in Hamilton? Select all that apply.

- Bicycling
- Walking
- Public transit
- Vehicle (personal or shared)
- Other: _____

7. How often do you currently use non-vehicular forms of transportation (e.g., walking, biking, scooters, mobility aids) in Hamilton?

- Daily
- Several times a week
- Once a week
- A few times a month
- Rarely
- Never

8.In general, how safe do you feel walking, biking, scootering, using mobility aids and/or other forms of non-vehicular transportation in Hamilton?

- Very safe
- Safe
- Neither safe nor unsafe
- Unsafe
- Very unsafe

9. If you were hit by a motor vehicle while walking, biking, scootering, using mobility aids and/or other forms of non-vehicular transportation in Hamilton and you felt the need to report the collision to authorities, how confident would you be in knowing what the steps are?

- Not at all confident
- Slightly confident
- Somewhat confident
- Fairly Confident

• Very confident

SECTION 2: COLLISION EXPERIENCES

*This section will be displayed to all survey-takers, with some questions dependent on previous answers.

The following questions ask about your experiences (if any) with collisions in Hamilton, ON.

10.When walking, biking, scootering, using mobility aids and/or other forms of non-vehicular transportation, have you ever been involved in a collision with a motor vehicle (e.g., car, trucks, buses) in Hamilton, ON. Please do not include collisions outside of Hamilton, ON.

- Yes
- No

If YES to the preceding question,

11. How many separate collisions have you been in? Please do not include collisions outside of Hamilton, ON.

- 1
- 2
- 3
- 4
- 5
- >5

This section will ask for more information about each of your collisions. If you have experienced more than three collisions, please consider your three most recent collisions:

12. When did the collision occur? Please provide a month and year estimate.

- Empty text box
- 13. At the time of the collision, were you:
 - Walking
 - Biking (including e-bikes)
 - Scootering (including e-scooters), skateboarding, or rollerblading

- Using a mobility aid user (e.g., manual wheelchairs, power wheelchairs, power scooters)
- Other (please specify)

14. To the best of your memory, where did the collision occur in Hamilton? Please provide the street name and nearest intersection to the best of your ability. If you do not recall, please provide the neighbourhood or reference a nearby landmark. (e.g., near Hamilton Public Library – Barton Branch)

• Open ended

*For yes to biking, scootering (including e-scooters), skateboarding, or rollerblading only for question 15:

15. Were you in a designated bicycle lane at the time of the collision

- Yes
- No
- Other (please specify)

16. What type of collision did you experience?

- Collision with a forward-moving motor vehicle
- Collision with a reversing motor vehicle
- Collision with a turning motor vehicle
- Collision with a stationary/ parked motor vehicle (including being hit by an opening door)
- Other (please specify)
- 17. How severe was the injury (if any) sustained in the collision?
 - No injury
 - Minor injury (e.g., bruises, cuts, scrapes that do not require medical treatment)

• Moderate injury (e.g., sprains, strains, or injuries that require medical attention)

• Serious injury (e.g., broken bones, dislocations, or injuries requiring hospitalization or surgery)

- Other (Please specify)
- 18. Did police attend the collision at the time of the incident?
 - Yes
 - No
 - Unsure

• Other (Please specify)

19. Did a party involved in the incident subsequently attend a Collision Reporting Centre in Hamilton to report it?

- Yes
- No
- Unsure
- Other (please specify)

If yes to the preceding question:

20. Did you, as the victim, attend a Collision Reporting Centre in Hamilton to report the incident?

- Yes
- No
- Unsure
- Other (please specify)

If yes to #19, but no to #20

21. Who reported the collision?

- open text box

If yes to #20:

22. Was this collision the first time you reported a collision at a Collision Reporting Centre?

- Yes
- No
- Unsure
- Other (please specify)

SECTION 3: MOTIVATIONS AND BARRIERS TO COLLISION REPORTING

*This section will only be displayed to those who have answered yes to being in a collision, and yes to reporting the collision.

This section will ask about your opinions on motivations and barriers to reporting collisions with vulnerable road users in Hamilton, ON

- 23. Which Hamilton Collision Reporting Centre did you attend?
 - Attended Hamilton Mountain Location: 400 Rymal Road E, Hamilton, ON
 - Attended Hamilton East Location: 2825 King Street, Hamilton, ON
 - Other (please specify):

24. Why did you report the collision? Select all that apply.

- It thought it was required by law
- I felt like it was important for safety and public awareness
- I wanted to hold someone accountable
- I wanted proper documentation for insurance purposes
- Other (please specify):

25. Did someone help you with the collision reporting process (e.g., friend, family member, police officer, etc.).

- No

- Yes. If yes: please state who helped you and how they assisted.

Please indicate your level of agreement with the following statements.

26. I felt supported by employees of the Collision Reporting Centre during the process of reporting the collision.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

Feel free to elaborate on your response above. E.g., what made you feel, or not feel supported?) Open text box.

27. Reporting the collision caused me to feel anxious.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

Feel free to elaborate on your response above. E.g., if you felt anxious, why? Open text box.

28. Reporting the collision was easy.

- Strongly Agree
- Agree
- Disagree

• Strongly Disagree

Feel free to elaborate on your response above. E.g. Why did you find reporting easy or difficult? Open text box.

29. I felt that my report was taken seriously.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

Feel free to elaborate on your response above. Open text box

The following questions will ask about challenges/barriers (if any) that you may have experienced when reporting the collision? Please indicate your level of agreement with the following statements.

30. I did not face any challenges reporting the collision.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

Feel free to elaborate on your response above. Open text box

31. Time constraints (e.g., it was difficult to find time to attend a Collision Reporting Centre, the hours of operation were limiting) were a barrier for me.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree
- Feel free to elaborate on your response above. Open text box

32. Travel constraints (e.g., It was difficult for me to get to the Collision Reporting Centre in-person) were a barrier for me.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree
- Feel free to elaborate on your response above. Open text box.

33. Uncertainty about the reporting process (e.g., I didn't know where to go, I didn't know what my options were) was a barrier for me.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree
- Feel free to elaborate on your response above. Open text box

34. Please use this space to comment on any other challenges or barriers you faced when reporting the collision.

- OPEN BOX

35. Are there any improvements you feel could be made to the reporting process for vulnerable road users? Please share.

- OPEN BOX

*This section will only be displayed to those who have answered yes to being in a collision, but no to reporting the collision.

The following questions will ask about challenges/barriers that discouraged you from reporting the collision. (Please indicate your level of agreement with the following statements.

36. I did not report the collision because I didn't think it was serious enough.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree
- Feel free to elaborate on your response above. E.g., if you did not think it was serious, why?

37. I did not report the collision because I did not think it had to be reported, or I was unsure if the collision needed to be reported.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

• Feel free to elaborate on your response above. E.g., if you did not think it had to be reported, why?

38. I did not report the collision because of time constraints (e.g., I did not have time to attend a Collision Reporting Centre, the hours of operation were limiting, too much paperwork).

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

• Feel free to elaborate on your response above. E.g., what time constraints did you face?

39. I did not report the collision because of travel constraints (e.g., It was difficult for me to attend a Collision Reporting Centre.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree
- Feel free to elaborate on your response above.

40. I did not report the collision because I was uncertain about the reporting process (e.g., I didn't know where to go, I didn't know (what my options were).

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree
- Feel free to elaborate on your response above.

41. I did not report the collision because I felt the reporting process was too complex or difficult to navigate.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree
- Feel free to elaborate on your response above.

42. I did not report the collision because I felt that the collision was my fault.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree
- Feel free to elaborate on your response above:

43. I did not report the collision because I did not believe my account of the collision would be taken seriously.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree
- Feel free to elaborate on your response above:

44. I did not report the collision because I did not think the other party would be held accountable.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree
- Feel free to elaborate on your response above:

45. Please comment on any additional challenges or barriers that discouraged you from reporting.

- open box

46. What factors would have made you more likely to report the collision (select all that apply)

- A more serious collision
- Less time commitment to attending a Collision Reporting Centre (e.g., shorter wait times, less paperwork)
- Fewer travel constrains to a Collision Reporting Centre (e.g., easier access to a Collision Reporting Centre, a closer location)
- Having more information about the reporting process, particularly for vulnerable road users
- A simplified or more user-friendly reporting process
- Confidence that the motor-vehicle driver would be held accountable
- Assistance or support during the reporting process (e.g., guidance on how to report)
- Better availability of reporting options (e.g., online reporting, phone-in options)

47. Are there any improvements you feel could be made to the collision reporting process for vulnerable road users? Please share.

- open box