3. UNDERSTANDING THE CRASH DATA

Where the Data Comes From

This study used pedestrian crash data supplied by City of Minneapolis Public Works, which consists of reported crashes from the Minneapolis Police Department. Data was also provided by University of Minnesota Police Department and Metro Transit. To create a complete dataset of all pedestrian crashes that occurred in Minneapolis, additional data was sourced from the Minnesota Department of Transportation (MnDOT) via the Crash Mapping and Analysis Tool (CMAT). This data was needed to capture crashes that were reported by Minnesota State Patrol, Hennepin County sheriff, or other law enforcement agencies not noted above.

This process of acquiring and compiling crash data is challenging. The Minneapolis Traffic and Parking Services Division receives reports from the Minneapolis Police Department (MPD) but does not have direct access to the crash reporting system. Some MPD reports are not transmitted to the Minneapolis Traffic and Parking Services Division due to ongoing investigations or other reporting delays. In addition, the Minneapolis Traffic and Parking Services Division does not have any access to crash reports

filed by other agencies such as the Minnesota State Patrol or Metro Transit Police.

While acquiring all the pedestrian crash reports and data from every reporting agency is a large effort, it is a vital task to produce a complete picture of crashes occurring in Minneapolis. **The more comprehensive the dataset, the more robust and accurate the analysis will be.**

However, a crash is not simply a line item in a database. It is the representation of complex and unique events which are experienced differently by all parties involved, including the victims, witnesses, responding police officers, and staff who input the data. Emotions, adrenaline, and personal perceptions are only some of the intangibles that are directly tied to this data. The results of this analysis must be interpreted with these limitations in mind.

When a crash occurs, there is a process by which the numerous details and factors of the event are documented, organized, and recorded.

› According to Minnesota statute 169.09, an individual involved in a traffic crash that immediately results in property damage or bodily injury is required to remain at the scene of the crash until contact information is exchanged with all parties involved. The involved parties then have up to 72 hours to notify the police.

› If the police are notified at the time of the crash, a police officer joins the involved parties at the scene of the crash, gathers all necessary details of the crash and completes a Minnesota Department of Public Safety (DPS) motor vehicle crash report. Attributes such as location, time, personal information, weather, and road surface conditions are recorded using a standardized coding system. A crash narrative and diagram are also included in the report.

› The Minneapolis Police Department sends copies of their DPS crash reports to Minneapolis Traffic and Parking Services Division (Public Works). The Traffic Division enters the crash data into an internal database tool, which is then used to monitor safety trends, identify locations for further study or improvements, and inform the design of capital improvement projects.

› The Minnesota DPS is the centralized reporting agency for all crashes that occur in Minnesota. Law enforcement officers are required to submit reports on crashes they investigate within 10 days. DPS also collects citizen crash reports. The crash data from all law enforcement agencies and citizens are then aggregated and imported into the MnCMAT system, which is maintained by the Minnesota Department of Transportation. MnCMAT makes the crash data available to engineers and planners for study and analysis.

Limitations of the Data

The process and procedure of reporting and documenting crashes described above provides the best available source of crash data and information.   However, the process has its limitations which arise from conflicting witness accounts, crash victim mental state or motive, innate challenges of reducing complex events to limited codes, and the crash interpretation by law enforcement and engineering staff. However, despite these limitations, the crash reports remain a valuable source of information on crash patterns and locations of crashes occurring over the last 10 years.

Some of the crash attributes that may be subject to the most inconsistency include:

› **Pedestrian position within intersection prior to the crash** – This data is largely dependent on the reporting officer's depiction of how far the pedestrian was from the curb, and some police reports are more robust than others in their description. While most reports give a comprehensive report of crash location, the data is subject to a certain amount of missing location information due to incomplete police reports.

› **Driveway, alley, and mid-block crashes** – Crashes occurring at driveway entrances, alleys or mid-block locations are included in the 10-Year dataset, however the location information is known only as an estimate of distance from the center of the nearest intersection and may not reflect the precise location of the crash.

› **Contributing factors** – Factors that require the person at fault to admit wrong-doing are likely to go underreported. Distracted driving in particular is challenging to prove and report without evidence.

› **Traffic control status** – Because the exact signal phase or operational status of the traffic control device at the time of the crash is not directly observed by those compiling the reports, the report is only reflective of the status of the signal as reported by witnesses and those involved in the crash.

Unreported Crashes

In addition to data limitations of reported crashes, some number of vehicle crashes go unreported. Crashes involving pedestrians may have a higher rate of going unreported. The reasons for not reporting a crash may be that property damage or injury was marginal or that the parties involved were not aware that they are required to report the incident.

One method to understand the general magnitude of unreported pedestrian crashes injuries is to compare hospital records with reported crash numbers. **Figure 3-1** shows a trend of under-reported pedestrian crash injuries, which could have been either an unreported crash or a reported crash where the pedestrian didn't realize they were injured until later (after the report was filed).

In addition, by only considering hospital visits, the exact level of underreporting of injuries is still uncertain for two reasons:

> Not all pedestrian crashes with injuries warrant a visit to the hospital

> A crash victim treated at a hospital within Minneapolis may have been involved in a crash that occurred outside of the city (and vice versa).

Nevertheless, total pedestrian crash numbers presented and analyzed are likely lower than the true number that occurred.

Near misses, which can be tracked and analyzed at an intersection-level, are nearly impossible to capture city-wide. Therefore, these instances are also not included in the datasets of this study.
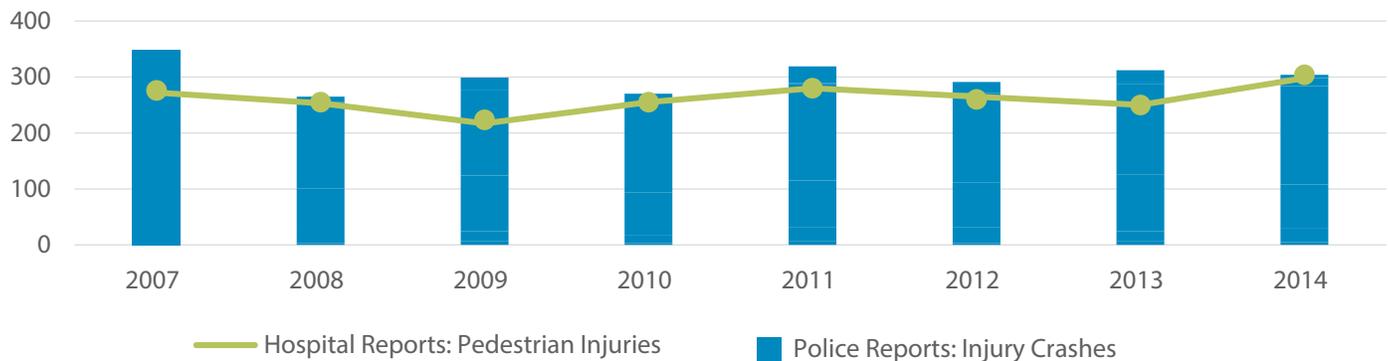

Figure 3-1. Pedestrian Crashes Per Year Compared to Hospital Visits in Minneapolis

Source for Police Report: 10-Year Dataset
Source for Hospital Report: Minnesota Injury Data Access System