LEARNING FROM CLOSE CALLS:
A GLIMPSE INTO NEAR-MISS EXPERIENCES
EXECUTIVE SUMMARY

A near-miss incident is a situation in which two or more road users, such as a pedestrian, a bicyclist or a driver, experience a conflict or carry out evasive actions, like making a sudden stop or jumping out of the way, to avoid a collision. At its most basic level, it’s an event that leaves you thinking “that was close.”

WHY DO NEAR-MISS INCIDENTS MATTER?

Crash data plays a key role in assessing transportation safety. But that data may not fully capture existing safety issues. Near-miss incidents and conflicts between road users can complement crash data to enhance safety assessments, helping identify areas where it may be necessary to take preventive measures against potential injury or fatal accidents.¹

NEAR-MISS INCIDENTS REPORTED

- 133 near-miss incidents reported
- 128 reported incidents provided enough details to be mapped
- 87 incidents involved bicycle-automobile
- 36 incidents involved pedestrian-automobile
- 5 incidents involved pedestrian-bicycle
- 5 incidents involved others (automobile-automobile, bus-automobile, bicyclist-bicyclist)
- 49 percent of incidents are either serious incidents where collisions were narrowly avoided or have significant potential for collision

Travel Modes of All Trips

- Bicycle: 42.93%
- Car: 23.85%
- Pedestrian: 13.29%
- Public Transit: 6.81%
- Other: 2.21%

LIMITATIONS OF THE STUDY

Due to the nature of the data collection, limitations of the study are reflected in the demographics of the participants. Although people who participated in our study have a variety of socio-economic profiles, most are people who bike and tended to be white, older and professional individuals.

The inclusion of a wider range of street users is essential because it would capture a larger geographic area and reveal how a wider range of Houstonians experience street travel. Future iterations of this work require additional outreach to non-white Houstonians and those without easy access to a smart phone or computer.

KEY TAKEAWAYS

- Near-misses are often a reoccurring experience, and participants (especially bicyclists and pedestrians) actively anticipate such incidents
- Reported incidents were attributed to lack of awareness of other road users, lack of safety markers, and infrastructure issues, including bad road conditions and non-existent bikeways
- The marginalized position of non-motorized travelers is reflected not only in aggressions from motorized road users but also in the lack of transportation safety investments

BACKGROUND

Collisions involving pedestrians and bicyclists are rare, but often disproportionately result in severe injuries and fatalities making addressing them an important public health intervention. Near-miss data also help illustrate how perceptions of safety may influence a person’s willingness to adopt active travel modes (e.g. biking and walking).²

TYPES OF NEAR-MISS INCIDENTS REPORTED

CLOSE PASS
When an automobile passes without keeping safe distance.

BLOCKED PATH
When a bicyclist’s path is blocked by a parked car or other objects, e.g. trash.

RIGHT-TURN WITHOUT STOPPING
When an automobile or bike makes a right turn at an intersection without stopping.

NEAR LEFT/RIGHT HOOK
When an automobile makes a left or right turn across a bicyclist’s path.

DRIVEN AT
When a narrow road or obstructions cause a driver to encroach on the path of a bicyclist heading in the opposite direction.

VEHICLE PULLING OUT
When an automobile backs out of a driveway or parking space without looking for bicyclists or pedestrians.

DATA COLLECTION METHOD

Daily trips and near-miss incidents information was collected between March 4 and March 10, 2017. Participants were recruited via professional partners, flyers, bike advocacy groups, and social media. Participants were asked to record information a variety of information about their daily trips—including the origin, destination, mode, and purpose. They also recorded any near-miss incidents that occurred during the trip and gave detailed comments.
The map shows that reported near-misses happened in a variety of places, even outside of Harris County but are mostly concentrated downtown and in the Hermann Park-Rice-Medical Center area.

Severity categories were determined based on the actors involved, speed, distance, and action taken. Table 1 shows that although pedestrian and automobile conflicts only make up about 28 percent of the reported near-misses, they also represent the highest percentage of nearly serious incidents.

Most of the serious near-miss incidents between bicycles and automobiles happened when a fast-moving automobile made a close pass by a person riding a bicycle (92 percent). Overtaking situations are particularly dangerous for people on bikes because there is little they can do when both road users are going in the same direction.

In cases where near-miss incidents occurred as bicycles and automobiles were moving towards each other or intersecting with one another, thirty-eight percent of these incidents were perceived to have significant potential for a collision. Sixty percent of these incidents were perceived to require either moderate time and/or distance to avoid a collision.

When both road users are going in different or intersecting directions, both pedestrians and bicyclists stated that they pay extra attention to potential actions of other road users, especially car drivers.

Pedestrians and bicyclists also expressed frustration that even though they’ve taken extra safety measures to be visible, there are still some near-miss incidents that happened when people with faster travel modes are not aware of the presence of other road users. Pedestrians expressed similar concerns about people riding bicycles that encroach on the sidewalk and/or do not seem to be fully concerned about sharing the space.

Car drivers also comment about pedestrians walking on roads; and bicyclists disregrading traffic signals and right-of-way.

### Table 1. Incidents by Categorized by Severity Level

<table>
<thead>
<tr>
<th>Severity Categories</th>
<th>Bicycle-Vehicle</th>
<th>Pedestrian-Vehicle</th>
<th>Pedestrian-Bicycle</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>A serious incident in which a collision is narrowly avoided</td>
<td>10%</td>
<td>14%</td>
<td>2%</td>
<td>26%</td>
</tr>
<tr>
<td>An incident with significant potential for a collision where separation decreases and incident may result in a time critical response to avoid a collision</td>
<td>20%</td>
<td>2%</td>
<td>1%</td>
<td>23%</td>
</tr>
<tr>
<td>An incident characterized by moderate time and/or distance to avoid a collision</td>
<td>31%</td>
<td>4%</td>
<td>1%</td>
<td>36%</td>
</tr>
<tr>
<td>An incident with no immediate safety consequences but met the definition of a conflict such as encroachment of the space/area of a roadway surface designated for a single vehicle/person</td>
<td>6%</td>
<td>8%</td>
<td>1%</td>
<td>15%</td>
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</tbody>
</table>
Bicyclists and pedestrians reported feeling a disproportionate burden to take safety measures and actions to avoid collisions. This ranged from feeling the need to make eye contact, wearing bright colored clothes, and installing flashing lights on bicycles. Comments from participants suggest that collisions were avoided due to their constant awareness of traffic and anticipation of other road users’ action. Even if there is no near-miss incidents, observational comments suggest that the expectation of being visible is placed on pedestrians and bicyclists, e.g. crossing the crosswalk wearing dark-colored clothing on a poorly lit road.

The marginalized position of pedestrians and bicyclists as road users contribute to near-misses. This is especially true when road users, travelling at a faster speed than the observer, do not pay attention to others in traffic. This could be a car driver not paying attention to pedestrians when making a right turn or a bicyclist not keeping a safe distance when passing a pedestrian.

The spillover effects that occur after near-miss incidents suggest that pedestrians and bicyclists are both verbally and physically marginalized. Because most of the participants are people on bikes, comments about aggression on the road mostly refer to bicycle-vehicle conflicts. Aggressive behavior exhibited by drivers was sometimes the result of a lack of awareness. At other times, it was more intentional and even included forms of physical intimidation and verbal attacks. Aggression ranged from yelling, tailgating, and physically engaged in dangerous overtaking. Several comments highlight similar concerns from pedestrians about both automobiles and bicycles. Comments from bicyclists suggest that either drivers are not aware that by law bicyclists are considered a vehicle and have the right to share the road, or that some drivers are simply agitated by people on the street for non-automobile travel.

Other comments refer to complex traffic patterns requiring everyone’s attention, bad road conditions, the lack of safety markers and infrastructural issues. This suggests that there is an ongoing need for improvements in these areas. Pedestrians and bicyclists often avoid already known dangerous roads to minimize risk for collisions. If priorities for road safety interventions are only based on crash incidents alone, there will be no attempt to mitigate the dangerous roads already avoided by pedestrians and bicyclists.5

Although road users’ behavior is cited as a major factor in these near-miss incidents, safety interventions need to go beyond educational awareness of rules and regulations to include more investments in physically adding safety markers. For example, informal pedestrian crossings may be an indication that crosswalks need to be located in these areas. There is also a need to improve active transportation infrastructure, e.g. design of separated or clearly marked bikeways.

THEMES FROM THE DETAILED COMMENTS

“Always try to make eye contact at this intersection. In fact, I frequently try to make eye contact with drivers to let them know I’m there!!!!!”
- Female, 58, pedestrian

“I was traveling by bike (on a bike route)... . . . [A] car ran red light... . . . causing me to need to slow down to avoid [a collision]. I was able to see he was going to run light, but that was lucky.”
- Male, 30, bicyclist

“. . . in my experience, if nothing is physically stopping a car from making an unsafe maneuver, there is at least a chance—so be ready. . . . I stopped abruptly, but safely due to the anticipation. This is a common occurrence at this intersection.”
- Male, 35, bicyclist

“A Silver Chrysler . . . . violated the 3 ft safe passing distance, laid on his horn the entire time to approach/pass, and swerved in front of me so sharply he hits the curb to block me from passing him again in the traffic . . . . [and] at a stop sign. He yelled out his window that, I’m a dumb bitch, I am not a vehicle, and that I should be run over. This is one of multiple times I have crossed paths with the same driver in the past year and a half . . . .”
- Female, 27, bicyclist

“Had green and walk signal. Cars turning at light blew horns. [A] car turned into me deliberately.
Yelled, I should get a job.”
- Male, 60, pedestrian

“This section of S. Post Oak is too busy to safely cycle on street (fast traffic and trash on street) and there is no good shoulder. Had to use sidewalk but those are in very bad condition.”
- Male, 62, bicyclist

“Two women were running abreast in our lane in the street. There were parked cars on both sides of the street. We had to swerve to miss the pedestrians but also avoid an oncoming truck.”
- Female, 29, car driver

FUTURE ANALYSIS

Further analyses include comparing the near-miss data with crash data to identify dangerous hot spot locations. There is also a need to identify relationships with the existing built-environment such as land use, road type, safety markers, and transportation infrastructures such as bikeways. To conduct this analysis, an approximated routes based on trip origins and destinations will be mapped on road networks and overlaid with existing bikeways and surrounding land use.
REFERENCES


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