

**Group Case Study #2**

**Group 5**

Diana Dang (1003119546) - diana.dang@mail.utoronto.ca

Hai Nguyen (1006327422) - hain.nguyen@mail.utoronto.ca

Jeremy Nguyen (1004439583) - jeremym.nguyen@mail.utoronto.ca

Samuel Din (1005798889) - samuel.din@mail.utoronto.ca

University of Toronto Mississauga

CCT478: UX Design - Prototyping and Evaluation

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Lucus Thung

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## **Community Prototype**

After viewing Google maps, we noticed that the campus was located in an area with high car traffic as it is next to the major highway 401 entrance and exit. This combined with the high pedestrian traffic, local food hotspots, and lack of pedestrian safety makes a dangerous commuting environment for the students.

Our community prototype idea to protect students and pedestrians involves moving the railguard for cars to be between the cars and pedestrians rather than between roads and cliffs. This idea ensures that both pedestrians and drivers are safe and protected in the case of an accident. It may be suggested that this idea could lead to even more car accidents if one were to happen, however, our rationale was that cars have additional safety implementations to protect drivers, such as airbags and seatbelts, compared to pedestrians without any safety measures.

As stated by Gelh (2007), guard rails are installed in order to prevent conflicts between pedestrians and automobiles, minimize crashes, and direct people to cross the street at a few predetermined locations when there are too many people using the footpath. According to a different study, guard railing reduces pedestrian conflict on average, total collisions, and pedestrian collisions that are statistically significantly lower on all sites. (Zheng & Hall, 2003)

Low-fidelity prototypes of this proposal are depicted in Figures 2 and 3.



Figure 1: A screenshot of Google Street Maps at Progress Ave. and Markham Rd.

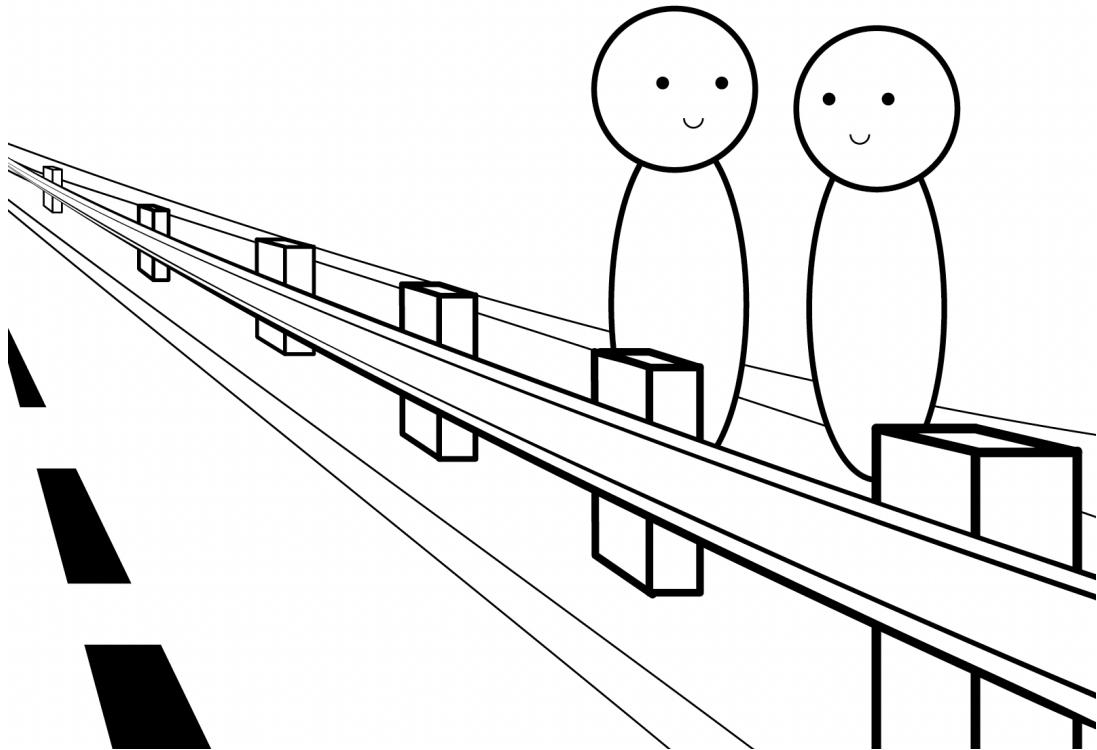


Figure 2: A low-fidelity prototype of the proposed alternative railguard concept.



Figure 3: An alternative prototype of the proposed alternative railguard concept projected on top of the Google Maps Street View.

Following the example above, we decided to extend the railguard idea to the locations depicted in Figure 4 and 5. As stated in the *2 pedestrians killed in Scarborough collision* video by CityNews, the involved students were coming from getting food from a nearby establishment. With this in mind, we conducted research on nearby food spots within 30-minute walks from the campus on Google Maps to determine the best areas to add rail guards. Ultimately, we identified the areas in Figure 4 and 5 as hotspots which students would most likely visit or would have high pedestrian traffic.

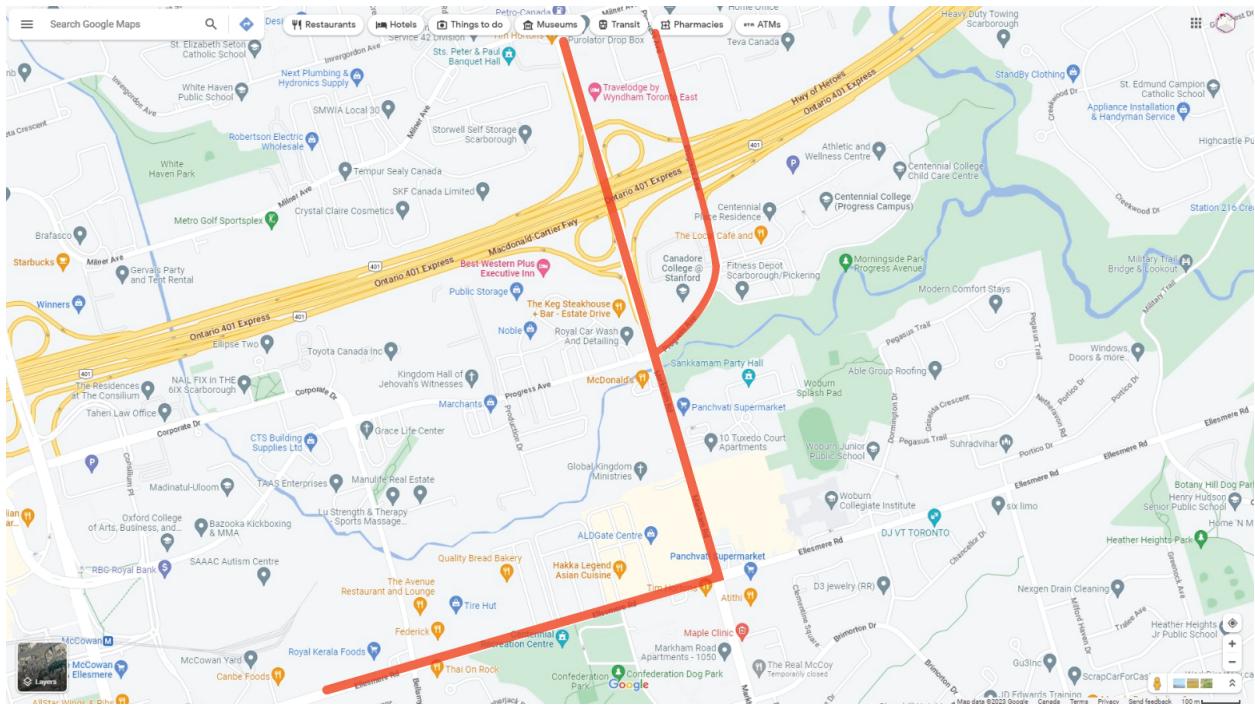


Figure 4: A proposed map of rail guard extension locations South of Centennial College.

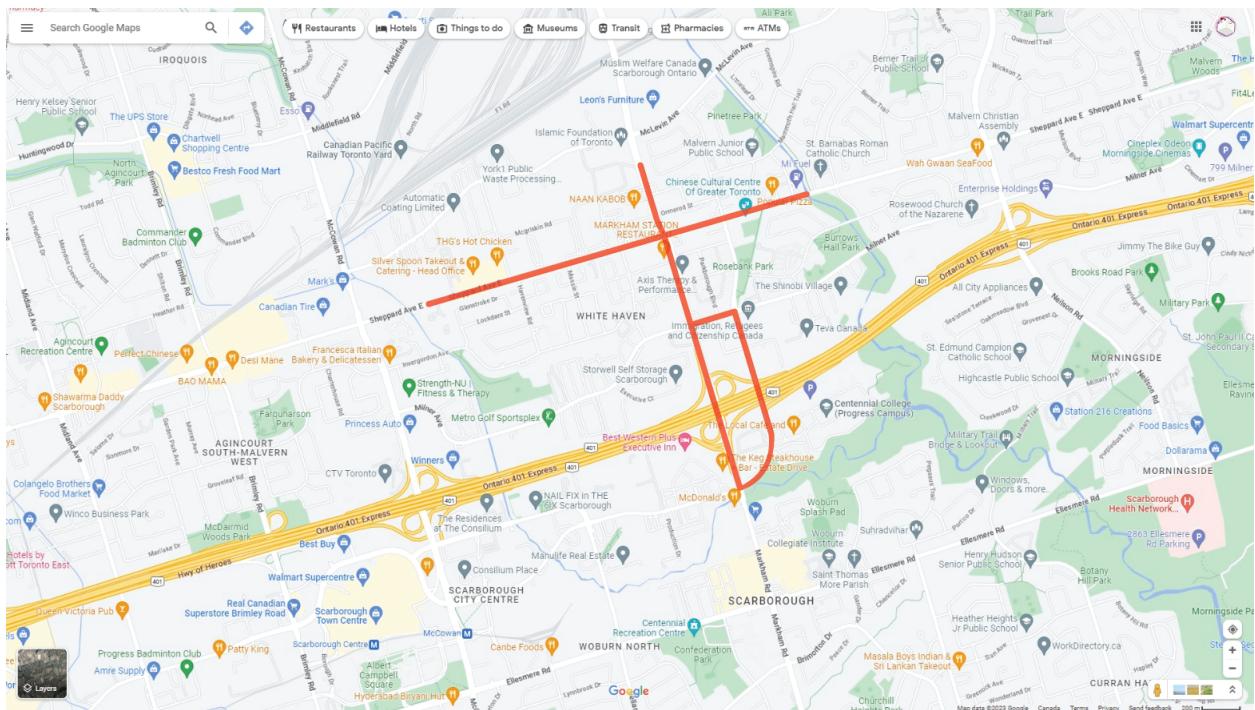


Figure 5: A proposed map of rail guard extension locations North of Centennial College.

## **Non-Design Recommendations**

1. Speed humps are a type of traffic calming tool that are effective at reducing vehicle speeds and improving safety for pedestrians near the college. These humps are longer and more gradual than speed bumps, allowing vehicles to pass over them at slightly higher speeds while still slowing down and can be strategically put in high-risk areas. According to Rothman et al.(2015), after implementing speed humps the pedestrian-motor vehicle collision (PMVC) incidence rates decreased. Speed humps can create a safer road environment by reducing accidents and distracted driving.
2. Road signs address problems with the road infrastructure; using road signage to alert users to potential dangers and to control behavior with laws pertaining to the limitations of certain roadways was a good way to reduce crashes (Bazire, 2009). “Slow-down”, “school/community zone” signs would affirm the drivers of the area they will drive towards and signify how they should proceed. Signs should be put at a substantial distance from the campus area for the drivers to adjust.
3. The installation of automated speed enforcement cameras can help to reduce speeding and create a safer road environment by enforcing speed limits and discouraging drivers from breaking the law. This technology can accurately detect the speed of vehicles and automatically issue citations, leading to greater adherence to speed limits and ultimately fewer accidents on the road. Studies show that the presence of 50-speed cameras in Toronto prompted drivers to slow down. Where the percentage of speeding vehicles in 40km/h speed limit zones dropped from 49% to 28%. (Draaisma, 2021)
4. The institution could try to replace current street lights near campus with LED lights that produce white light, as opposed to its current dim orange color. Research has shown that

“LED lights (which produce white light) can improve peripheral vision at night, reduce braking distance, and help drivers see obstacles better.” (Brown, 2021)

5. Providing students with fabric inserts, such as reflective strips or tape, for their clothing and backpacks may also be a low-cost and effective solution. This solution aims at increasing pedestrian visibility for oncoming cars and has proven to work, based on a Danish study viewing two groups of cyclists, one with high-visibility clothing and one without. “In total, the ‘accident rate’ (accidents per person per month) was 47% lower among those wearing a hi-vis jacket.” (RoadSafetyGB, 2017)
6. Collaborate with community organizations: colleges can work with community groups to promote road safety both on and off campus, such as neighborhood/campus police departments or neighborhood safety watch. This may involve coordinated awareness efforts, instruction, or education for students to be aware of the campus infrastructure. As an example, universities can provide programmes or lectures on subjects including defensive driving techniques, pedestrian safety, and cycling safety, such as a week-long “Back to School” road safety campaign (Palamarchuk, 2021).

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