

# Crash Analysis Studio

Session 9: Ottawa, Ontario

Held on September 22, 2023

## Session Participants:

- **Suzanne Woo**, Professional Engineer; Co-chair of the Transportation Association of Canada's Vision Zero and Safe System Approach Subcommittee; Former Senior Engineer of Road Safety Engineering at the City of Ottawa
- **Toon Dreessen**, President of Architects DCA and leader of award-winning infill development work; Public speaker and distinguished author featured on the Globe and Mail, CBC Radio, and Ottawa Citizen
- **Rob Wilkinson**, Road Safety Consultant; Former director of Safer Roads Ottawa program; Founding member of the Fatal Collision Review Committee in Ottawa
- **Chuck Marohn**, President of Strong Towns
- **Tony Harris** (moderator), Action Team Coordinator at Strong Towns

## Summary of Crash Event

- The crash occurred at 5:38 a.m. (EDT) on October 18, 2022 at the intersection of King Edward Avenue and Somerset Street East in Ottawa, Ontario.
  - Law enforcement denied access to the crash report on this collision.
  - Law enforcement representatives stated that the report contains confidential personal information and that the local who submitted the request could not receive access since their name was not listed in the report.
- Media coverage of the crash indicates the following:
  - A northbound motorist driving a Mazda 3 struck two women at the intersection.
  - The pedestrians were westbound and crossing King Edward Avenue in the crosswalk on the south side of the intersection.
  - One of the women suffered serious injuries and survived. The second woman died from her injuries in the hospital shortly after the crash.
- Both pedestrians were transported to the Ottawa Hospital's Civic Campus trauma unit.
- The posted speed limit on King Edward Avenue is 40 kilometers per hour (km/h), or approximately 25 miles per hour (mph).

- Media coverage did not mention charges or citations, but did report that investigators wanted to speak with anyone who witnessed the collision or had further information.

## Primary Contributing Factors

The design of King Edward Avenue demonstrates inadequate concern for the safety of pedestrians, cyclists, and other non-motorists traveling outside of a privately-owned and operated automobile.

Designers acknowledge the existence of pedestrians and cyclists at this location by constructing sidewalks and including push buttons for pedestrian crossings. Lane widths, dedicated turn lanes, and excessive block lengths indicate that non-motorist safety, accessibility, and usage are not priorities.

Designers have recognized that motorists are fallible and have provided ample margin for error through forgiving design features like dedicated left-turn lanes and wide through traffic lanes. These elements illustrate designers' recognition that King Edward Avenue is often used as an alternative to highway travel and that concern for automobile-on-automobile crashes is worthwhile.

When evaluating collisions between motorists and cyclists or pedestrians, designers did not elect to create a similar margin for error. King Edward Avenue—a roadway with a design speed that substantively surpasses the posted limit—was placed in a complex urban environment alongside an educational institution consistently frequented by pedestrians and cyclists; this decision illustrates disregard for pedestrian and non-motorist safety. Design elements that decrease visibility at this intersection also heighten risk of danger for motorists.

Design and transportation professionals have intentionally chosen to expose non-motorists to unnecessary major risk by placing them in an atmosphere constructed to prioritize high-speed traffic flow. Substantive changes to King Edward Avenue and similar roadways are necessary to reduce fatalities and traumatic injuries.

Session participants identified the following primary factors that contributed to this crash:

- 1. The design of King Edward Avenue facilitates high automobile speeds that are unsafe for pedestrians.**
  - a. Both the southbound and the northbound lanes exceed 3.65 meters (12 feet) in width; the northbound lane was measured to be 4 meters (13.3 feet) wide. These dimensions are commonly used on highways and are inappropriate for local urban streets.
  - b. King Edward Avenue has a dedicated left turn lane at the approach of Somerset Street East. At approximately 3.3 meters (10.8 feet) wide, this lane is designed to increase traffic flow (both traffic speed and volume) by separating turning automobiles from automobiles flowing through the intersection.

- c. Block lengths along King Edward that exceed 200 meters (656 feet) create dead spaces that may lull motorists into a false sense of security and make them more likely to accelerate or speed through the area.
- d. The Trans-Canada Highway (417) and Mann Avenue (Highway 64) both empty into downtown with sweeping curves and no measures or visual cues to calm traffic other than one 40 km/h speed limit sign. Panelists described this section of King Edward as an extension of the highway off-ramp.

**2. The design speed, and the observed travel speed, of King Edward Avenue is incompatible with pedestrian travel.**

- a. Though the speed of the motorist in this crash is unknown without a crash report. A speed study at the crash location indicated that drivers feel comfortable traveling at speeds higher than the posted 40 (km/h) speed limit.
  - i. Of the 394 cars tracked, 59% were traveling above the posted speed limit.
  - ii. The study also stated the 85th percentile speed, or the speed at which 85% of drivers were traveling at or below, to be 48 km/h (30 mph).
  - iii. The [Insurance Institute for Highway Safety](#) indicates that fatality rates climb exponentially for pedestrian automobile collisions exceeding 40 km/h (25 mph). When auto speeds exceed 64 km/h (40 mph), pedestrian collisions are most likely to become fatal.
  - iv. By design, automobile travel speeds on King Edward Avenue are highly dangerous to pedestrians and non-motorists.
- b. Edge friction along King Edward Avenue is further limited by underutilized on-street parking, limited curb cuts, and large suburban style buildings; motorists are more likely to speed in environments with little to no friction.

**3. Placement of a high-speed roadway like King Edward Avenue within a complex urban environment is inherently unsafe, especially given the presence of a major university with high demand for pedestrian crossing.**

- a. Motorists traveling between highways who access this area as commuters or inter-provincial travelers do not treat the crash location as an urban destination; the mentality of non-destination drivers may make them more likely to accelerate beyond posted speed limits.
- b. The University of Ottawa is a public research university with over 44,000 attending students. There is a student residence hall on the same block as the crash location. The high volume of students and professionals traveling by foot is incompatible with high-speed automobile travel along King Edward Avenue.

**4. Visibility within the intersection is decreased by design aspects of the built environment.**

- a. The signal control box at the intersection is mounted high enough to obstruct both motorists' view of pedestrians and pedestrians' view of traffic.
- b. Reports of overgrown vegetation and shrubbery have been documented as obstacles that reduce sight lines at this intersection.

- c. The signal presence at this intersection is adequate for urban traffic at urban speeds; actual traffic flow through this area moves quickly enough to warrant a more visible signal presence.

## Related Contributing Factors

Session participants identified the following related factors that contributed to this crash:

- 5. Pedestrian and motorist expectations of encountering each other may have been lower than usual since the collision occurred during the early morning hours.**
  - a. Driver fatigue or drowsy-driving may have been a factor. The National Highway Traffic Safety Administration [states](#) that drowsy-driving crashes most frequently occur between midnight and 6 a.m., or during the later afternoon hours.
  - b. The one streetlight present on the intersection's northwest corner may not have adequately illuminated pedestrians crossing from the southeast corner since it was dark when the collision occurred.
  
- 6. Crossing desirability and frequency along King Edward Avenue continues to increase as the neighborhood thickens and develops.**
  - a. The University of Ottawa campus expansions continue to increase pedestrian traffic within this area; the institution has even built out a [Transformation 2030](#) strategic plan and made strides toward a car-free campus.
  - b. Population density within Sandy Hill, the neighborhood where the crash occurred, was [1657% higher than Ottawa's population density in 2021](#); with more than a quarter of locals falling between the ages of 25 and 34, the area's walkability is valued and utilized.

## Recommendations

There are multiple ways to address these factors and minimize the likelihood of future collisions, fatalities, and traumatic injuries. At the intersection of King Edward Avenue and Somerset Street East, the following practices should be adopted.

### Immediate:

1. Shorten or remove the dedicated left turn lane on King Edward Avenue. This could be initiated with temporary measures, such as orange cones and barrels.
2. Place orange cones and barrels in parking spaces on the two blocks prior to the intersection to create temporary curb extensions. This temporary measure is a technique that physically and visually narrows the space and total road width available to motorists along King Edward Avenue.
3. Use paint and signage to stripe midblock crossings across King Edward Avenue, particularly where blocks run over 200 meters (656 feet) in length; designated crossings will raise driver awareness of pedestrians, cyclists, and other non-motorists traveling outside of a privately-owned and operated automobile.

4. Place temporary lights on the signalized poles to better illuminate the intersection.
5. Clean up any overgrown vegetation and excessive signage that may be decreasing visibility or otherwise distracting motorists as they pass through the intersection.

**Near Term (within the next 12 months):**

6. Introduce differentiated textures—such as stamped asphalt or pervious concrete—and distinct colors during street maintenance to encourage traffic calming and heighten driver awareness.
7. Based on successes with barrels, cones, and midblock crossings, introduce permanent bump outs or curb extensions along King Edward Avenue.
8. Engage the public in building more active street frontage along King Edward Avenue, particularly on the side aligned with the University of Ottawa campus.
9. Drawing on learnings from the [Ottawa Fatal Collision Review Committee \(FCRC\)](#), form a multidisciplinary team of 3-4 city staff that encourages better design processes responsive to crashes and their contributing factors within this area; charge this team with analyzing factors and implementing temporary changes to strengthen public safety.

**Long Term and Systematic:**

10. Complete a permanent redesign of the crash location and surrounding area that includes one or more of the following:
  - a. Street segments that feature cobblestones, differentiated textures, and/or distinct colors to encourage traffic calming.
  - b. Through travel lanes that do not exceed the minimum requirement of 3.2 meters (10.5 feet).
  - c. Raised pedestrian crossings and medians at the crash location and surrounding area.
11. Install an additional streetlight or other source of lighting to better illuminate the intersection.
12. Work with public officials to introduce smart cars that [feature intelligent speed assistance \(ISA\)](#) to limit how fast drivers can speed through this intersection or area<sup>1</sup>.

## Concluding Statement

The series of design flaws present along King Edward Avenue and at the crash location are problematic and commonplace, both within and beyond Ottawa. Design emphasis that prioritizes traffic flow at high speeds over the safety of pedestrians and cyclists has caused deaths and injuries in places like Ottawa and communities throughout much of North America.

By evaluating the many factors that contribute to a crash, we believe that decision-makers, the public, and designers can move beyond the current approach, which seeks only to assign blame to involved parties, to a model that helps change the way these spaces are designed, developed, and maintained. In Ottawa, we believe ongoing changes to this location should focus on improving the experience of pedestrians and cyclists within this area.

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<sup>1</sup> You can read more about ISA and retrofit solutions [here](#).