Crash Analysis Studio – Session 9 Transcript

Introductory Trailer

Chuck Marohn: I want to give you two scenarios. Scenario number one a plane crashes. Scenario number two, two cars collide. In scenario number one, we pull out all the stops – we bring in the NTSB, we try to figure out exactly what went wrong. Scenario number two – we send out the cops, we sweep up the mess, and we go on our way.

John Pattison: If we, collectively – everyone on this call and the broader Strong Towns movement – if we do this right, we're going to save thousands of lives.

Edward Erfurt: Mayors and local council members want to do the right thing. They have the ability to solve it. We're going to help provide those tools for them.

Session

Tony Harris: Okay. Okay. Hi, everyone. I see that we have some attendees filing in still and we're going to get started here in just a moment. Okay. Well, welcome to the Strong Towns Crash Analysis Studio. We're glad that you're here. My name is Tony Harris and I'm the Action Team Coordinator with Strong Towns. And in a moment, I'll introduce you to the rest of our expert panel. But first, let's talk about why we're here.

Last year, over 40,000 people died in automobile crashes in the United States alone. Hundreds of thousands more suffered traumatic injuries, and despite the best efforts of public safety officials, these numbers have been increasing and they affect all of our lives. There's a prevalent misconception that car crashes are caused solely by the mistakes that drivers make - looking at your phone, changing the radio, drinking alcohol, speeding. When a crash occurs, the North American response is to send out law enforcement and insurance agencies to assign blame. We ask the questions, "Who made the mistake that caused this crash? Who should we blame?"

The reality is that crashes are caused by multiple factors, not just driver error. When a traumatic crash occurs, we need to identify all the contributing factors and learn all we can from the experience so that we can reduce the number of deaths and traumatic injuries in our communities.

What you're going to see now is a Crash Analysis Studio. Drawing from the best practices of the medical profession, we've convened a panel to review a crash that happened in Ottawa, Ontario. During this crash, a driver hit two pedestrians. Though one of the pedestrians survived, their companion died in the hospital shortly after the collision. Today, I'll start by introducing you to our panel, then review the facts of the crash, and with our guests, we'll assess the design factors that contributed to the collision. Again, our goal is not to assign blame; our objective is to learn as much as possible about what happened, and identify the many factors that contributed to this unfortunate event.

So, before we get into the details and talk with our experts, we need to begin with the fact that this tragedy resulted in the death of a pedestrian. Please take a moment of silence with me to honor and acknowledge her and the loss of her life. Thank you.

I'm now going to introduce our expert panel for today. So first we have Suzanne Woo, a professional engineer who specializes in road safety and community traffic issues. She was the Senior Engineer of Road Safety Engineering at the city of Ottawa for over seven years, and has performed engineering safety reviews at countless locations across Canada during her 25 years of work experience. She currently co-chairs the Transportation Association of Canada's Vision Zero and Safe System Approach Subcommittee. Most importantly, Suzanne is a mother of two, a wife and an active community member who believes in the power of involving and engaging the community in all matters related to transportation, especially safety.

Next we have Toon Dreessen, President of Architects DCA, an Ottawa based architectural practice with roots that date back more than 25 years. Toon guides the company's activism,

leads project development initiatives, and is responsible for award winning in field development work. Toon is a respected public speaker and published author. He's been featured on the Globe and Mail, CBC Radio, Ottawa Citizen and other news publications. His background and interest in design thinking has made him interested in Strong Towns and other similar nonprofit ventures.

Next, we have Rob Wilkinson, who has worked in municipal government for over 22 years with the last 10 formerly directing the award-winning Safeer Roads Ottawa program. He was the main catalyst in the creation of the first ever Fatal Collision Review Committee in Ottawa which helps advance traffic safety awareness and prevent crash-related fatalities and injuries. Having been a part of the investigating team for over 100 fatal crashes, Rob is keenly aware of how environmental factors, driver behavior, and aspects of road design can all influence the severity and likelihood of car crashes. Rob joins our panel today as a concerned citizen and road safety consultant for better and safer transportation systems.

And finally, we have Chuck Marohn, the president and founder of Strong Towns, a civil engineer and author of the book *Confessions of a Recovering Engineer: Transportation for a Strong Town.* Chuck developed the initial idea for the Crash Analysis Studio. So now I will walk us through the details of this crash in Ottawa. I'm going to share my screen. Okay. So, pardon me. There we go.

So, what we know about this crash, we know that two young women were hit by a Mazda 3 at the intersection of King Edward Avenue and Somerset Street East. We know that one of the women suffered serious injuries and survived and the second died from her injuries in the hospital after the crash. We know that the crash occurred at 5:38 AM on October 18th, 2022. Our nominator submitted a freedom of information request to get access to the crash report, but was denied because the document contains personal information and our nominator’s name was not listed as a party in the report. We know that the Ottawa Open Data Portal online indicates it was wet and dark in Ottawa that morning. So, Cleber, our nominator documented that King Edward Avenue's speed limit is posted at 40 kilometers per hour, which is about 25

miles per hour. We know that the motorist was traveling in the northbound lane on King Edward Avenue and media coverage leads us to believe that pedestrians were in the crosswalk along King Edward Avenue on the south side of the intersection.

So, here you can see the crash location and we've used blue squares to illustrate the two pedestrians and where we believe they were standing. And then the yellow rectangle depicts the motorists and their path into the intersection with the collision location being outlined in red there. So, media coverage tells us that a paramedic coming off of night shift was the first on the scene with other units following shortly after. We know that after the crash, both pedestrians were transported to the Ottawa Hospital's Civic Campus Trauma Unit. And police said that investigators wanted to speak with anyone who witnessed the collision or had further information.

So, again, as we stated, the speed limit on King Edward is 40 kilometers per hour and this segment of King Edward consists of sidewalks on either side. There's a through traffic lane in each direction, so one going north and one going south. And then there's a center lane for left hand turns. We can see streetlights are placed evenly apart on the southbound side of King Edward and then we can also see that traffic signals at this intersection are back plated. So, here is a map of the area surrounding the crash location. We just wanted to give a feel for what this area kind of looks like. We're looking at an auto-oriented urban development pattern here. The crash location, which is marked with the red pin, of course, is north of both the Trans-Canada highway and Mann Avenue. We know that King Edward is also reportedly used as an alternative to highway travel, at least by some travelers. And then we know that the location is nearby the University of Ottawa, which has multiple university buildings in the area and more than 44,000 attending students. We see a mix of residential and commercial uses and we also know that this area is frequented by travel-travelers, excuse me, crossing to Quebec province.

So, here's the crash location outlined once more in red and the intersection here. And you can see that there are various university buildings. So Henderson Residence Hall here, a couple different complexes over on this side and then a few restaurants in the immediate area.

So we can see that our nominator Cleber gathered some useful photos and footage of the area that I want to walk us through briefly. This is the crash location. And we can see that there is a memorial here. Now if we were to zoom in, you would see that this memorial reads R.I.P. Pamela. Since we don't have the crash report, we're not entirely sure if that's the person who lost their life during this collision, though it may very well be. Here is the same area from a pedestrian perspective looking toward the northwest. And then next we have a shot from the point of view of a northbound motorist approaching the intersection. So this is a couple blocks south of where the crash took place, but I wanted to include this just to illustrate that the area is frequented by motorists and pedestrians alike.

And then from that same northbound motorist perspective, we have two shots here. One entering into the intersection with Somerset Street East and then one passing through the intersection again as a motorist. And then just for a little more perspective, we've included a shot here of the intersection just from the opposite direction. So this is looking south.

Next, we have some measurements of northbound king Edward. So I just want to highlight the turn lane in the center there is 11 feet wide and then the northbound traffic lane, drive lane on the right hand side here is about 13 and a third feet wide. We know that from sidewalk to sidewalk, we're looking at 52 feet in width. And then we can see that from planting strip to planting strip on either side brings that with up to 83 feet.

So Cleber our nominator also managed to conduct a speed study for us at this crash location. He noted that traffic was heavier than usual at the time of the study and that transit - light rail transit - was closed at the time of the study as well. So there were more buses on the road than what he considered to be typical. So we found that during this study period 59% of drivers were

speeding so they were going faster than the 40 kilometer per hour speed limit. And we noted that of the 394 cars tracked 85% of them were traveling at or below 48 kilometers per hour.

So, I'm going to stop sharing my screen. And now I'd like to turn to our panel so that we can kind of talk through factors that we see at work here. Suzanne if we could start with you could you tell us a little bit about what you think might have contributed to this crash. And if you have Google Street view up and would like to screen share to point anything out please feel free.

Suzanne Woo: Thanks. Yeah, I know I think you did a great description setting the tone in the context and I just wanted to kind of emphasize that this is a large university campus on one side and a residential area on the other. So there are a lot of pedestrians and cyclists in the area and there is a lot of desire to cross King Edward. Also, you know if you think about why people would be using King Edward I just wanted to note it's not a truck route so trucks are directed to take other routes. And but it is the most direct point to get, to go back from the highway, which means that I think you know a lot of people who are going through there going through there. They're not they don't have a destination within the area - they're going from a distant location to a distant location. And yeah, also it is it's a very constrained area so. Usually when you have these roads that carry a lot of people from distant locations it's not as constrained as this and King Edward does at different sections along the way does get much wider and much bigger and that's a reflection of its necessity in the network so those are some of the things I guess in terms of what we did at a site visit so we noticed we noticed that it was very constrained. And it does have a lot of pavement markings so there are the painted markings and zebra markings but I think from the photos that you just showed that there was resurfacing at the time so it might be that there weren't - the pavement markings may not have been there at the time so that might have been a factor. We also noted that the sight lines were not great so there is a building right on the corner and setbacks are small so that means like the building is quite close and usually you know we would check for sight triangles which means what is the visibility of each of the car or of pedestrians, can they see each other approaching and in this case not only was there the building but there's also a lot of overgrown vegetation and there was there were

a lot of signs look. There were way more signs than a driver could digest so not sure if those signs were all there because some of them looked temporary. But we also noticed that the signal control box was mounted high and it really does block your visibility of pedestrians as you're approaching from the south.

The other thing that's notable is that this is that the top of the hill so if you're a driver and you're trying to maintain a speed you might be stepping on the gas a little bit more and then when you get to the top you might not realize that you are accelerating still. Yeah that's and yeah I think you know. The big things were that it was dark, so visibility is already a factor it's dark and. And then the speed and we don't know we don't know what speed the driver was driving at or we don't know what where the pedestrians were. And if they were making they were running but we have to assume that they didn't see each other. I guess the other thing because it was early in the morning was potentially driver fatigue. So if you're driving at that time are you are you more tired or you're less aware but for sure I think both parties would probably have had a lower expectation of encountering each other just because of the time of day. So yeah those are my notes.

Tony Harris: Great thank you yeah the driver fatigue portion is something that I've been curious about. Especially given the time and like you said there's certain elements and pieces of information that we simply don't know. So it's hard to really account for everything. Thank you. Toon, could we turn to you next in terms of factors and what you see contributing here.

Toon Dreessen: And so I think one of the factors is that and I hate to use the term that's bandied about politically is that there's a sense of balance. You know there's a responsibility on the part of a vehicle driver whether you're driving a Mazda or driving a massive truck. To drive at the appropriate speed and that the harm that can be caused by having that vehicle is different than if you're a cyclist or a pedestrian a cyclist bumping into somebody at even at speed is not going to cause the same degree of injury that a car even travel in 40 kilometers an hour. And so there's a responsibility that has to be thought about and that goes to the heart of

work associated with Vision Zero and what I see as a particular challenges the resistance that is made to integrating proper safe design in the way we design our streets. So for example the street and if I can share the screen when you look at the street. You know it has a fairly narrow sidewalk as you go up King Edward it has a fairly narrow sidewalk it's probably only maybe it's two meters and maybe it's a meter and a half but it's not very wide and there's no boulevard and the curb is quite low and the street trees are off to the side. And so, could a boulevard on a narrow roadway have saved somebody? Probably not given that they were in the intersection, but the street is quite wide and at that early time of day likely not a lot of traffic. And somebody sort of zipping up the street feels like they have three lanes and that sense of openness leads to a little extra weight on the gas pedal as they're climbing the hill. And we have you know a painted stripe in the middle if that painted stripe had been a concrete traffic island in the middle that might have. And we have the left turn lane because we believe that it's important that someone can turn make a left turn into what is largely a car free campus. And I think we should question design decisions around why we allow vehicles to go in here yes there's a parking lot but you have to get here from a left turn lane. Maybe if that left turn lane was not there that would have been different if this intersection was a raised intersection not only would that be more accessible but it would cause crossing traffic to be slower because you'd have to slow down.

And so we have to impact somebody who's already you know in crossing the intersection has reached a point where they're going to you know have an accident with and drive into somebody but that kind of knowledge of the road would encourage people to drive slower. And so we have to be a part of this is also that Ottawa U has grown over the decades to be a much bigger campus than it used to be and that's caused attention with the neighborhood in that the university campus is expanding. And so we have to be a part of the neighborhood with additional buildings, residences and so forth and that's going to cause more people to want to cross what used to be kind of the border of King Edward and that's going to have an impact on the number of people who are going to cross the street.

And so we have to be really thinking about King Edward as being treated like a lunar, a slow speed street maximum 20 kilometer an hour streets, you know very, focused on pedestrian use first and not as a throughfare to get quickly to King Edward Avenue. And so we have to be really thinking about north of this impact site becomes eight lanes wide for trucking route to the back to the highway and I think those are design decisions we really have to think about as the city we want to be.

Tony Harris: Thank you, those seem like really significant design decisions to me. And the components of the hill and the acceleration were something I hadn't necessarily thought about thoroughly before. Rob can we get your thoughts on contributing factors?

Rob Wilkinson: Sure Tony, and just to echo some of the pieces I think Suzanne and Toon have already brough up, we really we have to be really thinking about this as cities - not this particular city, but cities in general, right? Really mature our thinking in a lot of ways right in terms of how do we want people to safely move through our cities. Like enough of just thinking, "They're just going to do it they'll figure it out," we as legislators and or as regulators if you will, and that Vision Zero principle. Too often the responsibility is pushed on to the individual road users so what in this case you know a lot of people will say, "Well what were those pedestrians doing crossing at that time? Were they crossing with the right of way? Were they - was the vehicle driver going too quickly?" But to Toon's point you know as the people as cities are responsible for those roads it falls really on the cities to do more to prevent this from happening and making smarter and more mature decisions.

The one piece for us I mean and you know when we talk about what information is available to the city or to residents and people who want to make their city safer and better. It really kind of you know reminds me of how important it was to really get this first Fatal Collision Review Committee established and get it off the ground and I know we'll probably circle back to that but those questions that you know that came up in the chat in terms of how fast was the driver going? What was their - did they have any kind of medical history or what was their driving history were they good driver, bad driver all those things would come up naturally, I think very

pointedly in an FCRC meeting and I think we'll talk about that a little bit later Tony but I think [that's what] a lot of the answers really come down to. And I think as a city matures and residents demand more, it really falls on city staff and city leaders to change what really are in some cases archaic views about moving people quickly and switching that mindset to the role of the municipality being that making sure people move safely. And it's a big switch right it's a really, really big switch.

Tony Harris: Yeah that's an important switch I think in terms of mindset as we as we look at this intersection and other intersections where crashes are occurring. So Chuck anything on contributing factors.

Chuck Marohn: Yeah thank you Tony when when I look at this intersection and I look at this area. I really am struck by I'll say this on a personal level we just sent our daughter, our oldest daughter to college and you know one of the main things that I think you think of as - after you drop them off and go away is, "Are they safe?" Right, like are they, are they safe and just think about like the tragedy of having. And really a design that is out of alignment or misplaced with this area. This is a beautiful urban area it's an area that's you know we have students living out what you'd hope would be some of the best years of their lives.

And you have this like very dangerous situation. In some ways indifferent to their experience and their needs and how they would be in this place the intersection that we're talking about is is up here but I want to zoom out a little bit and go down to this intersection here because I feel like a lot of the contributing factors to the speed – and I know we don't know the travel speed, we don't because we don't have the crash report we don't know, you know. Did the investigation say that speed wasn't an issue? We've done the speed study out there and certainly speeding is an issue and I think when we look at the design it's kind of easy to understand why. And if we drop in here you are in essentially two highways coming into a downtown and in fact the highway itself extends a little bit into here you can see. It's a sense an at grade on-ramp into the the downtown area or off-ramp from the highway into that this is a

very generous sweeping curve the geometry of this curve is designed to facilitate speed. So so people who are entering what is an urban area are going to be entering this at speed with all the visual cues that they have but besides the one. So the one sign that says the speed limit it's on the other side of this year this this little sign here is saying 40 maximum everything else on this environment is saying much much faster than that drive drive far faster than that. And so the important to the visual cues here this area says to a driver just because of the geometry of the buildings the fact that the buildings don't come up in front the street there's set back there's a long long kind of dead space along them. And what it cues you into is that you're not in an area with a lot of complexity you're in an area with a lot of simplicity. And so when you're in an area with a lot of simplicity you can kind of as a driver zone out and not have to pay much attention. We know that this is not an area with simplicity there's a lot of people here they're going to be crossing here in different places but it's easy to see how a driver at this point could be lulled into a sense of thinking as I go up this hill, “I can hit the accelerator, there’s nothing here, both sides are kind of clear and easy, there’s nothing causing me any friction or distress.” I did note that the lengths of these blocks are very long, between this point here and the crash site, this intersection here and the next intersection, is 660 feet, you know, over 300 meters. It's a long stretch. I'm sorry, over 200 meters, my English to imperial conversions are not what you all in Ottawa, I'm sure, are used to have to do. It's a long stretch. And when you have a long stretch like that, as a designer, as someone who's looking at this, we kind of know inherently that drivers tend to pick up speed. The longer the blocks are, kind of the more time you have to pick up speed between that and the time you get to the next intersection, the next space.

That sense is reinforced here on the second block. Because when you get to the second block again, you have a very large building that doesn't front the street. A building that is set back, a building whose geometry says, don't, don't worry about me. Don't worry about anything on this side because there's no action here. On the other side of the street, you have the same thing. You do have the little entrance here. So maybe if there was a vehicle, but for the most part, you're not worried about people crossing, people walking, people on bikes. There's no visual cues here that you need to be concerned about anything. And so you can imagine someone at,

you know, 530 in the morning or what have you or your manager's on that really at any time of the day, if the street was open and clear, feeling like you had, you know, free flow, a free flowing condition with very little obstacles and very few things in your way.

Incidentally, I know that along part of the street, there is on street parking. I saw some photos and some of the things we looked at and I think there's a couple of here on Google Earth that show people actually parked here. But these are not places where you're going to have a lot of parking. And so what you end up just because it doesn't feel safe to park there, there's no reason to park there. There's adequate parking in other places. And so what happens is that the street is wide enough to accommodate a wide driving lane, and parking lane, and it effectively becomes just a really, really wide drag strip style driving lane without the cars that are there to create that, that edge friction. When we get up to here, you do have this, kind of beginning of, and I think this is kind of the spot right here, a beginning where your peripheral vision starts to suggest an urban area, it starts to suggest that this is going to be different, and maybe you should transition your thinking from the highway kind of pattern to something more urban. There's nothing in the street design that suggests that the street design doesn't change at all the geometry of the street stays the exact same. It stays essentially highway dimensions, but the periphery starts to change ever so subtly. At the speed that you're going, the time before you really register that shift and the time you may actually adjust is going to take you to the intersection. There isn't enough transition here for you to see, we've entered a new space, a new kind of spatial awareness, and adjust to that before you are at the intersection where the crash occurred.

I noticed a couple things about this intersection that give me some pause in terms of overall design. At 5:30 in the morning, this would be dark, right? There is one street light, and I think you can see it up there. When you look at that street light itself, there isn't another one that I could pick out or see in this intersection, and none of our other things showed one either. If the humans, if the people that were standing here were hit, walking out in this place, this light here is not a light that is going to shine through the entire intersection. Those kinds of lights, those

older kind of incandescent lights, are really infamous for spraying lights in a lot of places, but actually creating a lot of shadow and a lot of darkness. We saw this earlier this year when we looked at the Hyattsville [crash]. The Hyattsville situation, the intersection was lit up for the drivers eye, but it put the person walking in the person standing on the edge in darkness in actually extra shadow. And since it provided a blinding light in the street, but nothing really to denote anybody on the edge. And it feels like we have a little bit of that situation here.

Certainly the area where the people would have been standing before they stepped out would not have been well lit. And there are reasons to expect that that they actually would have been maybe hidden in a shadow created by this lighting situation. I also just took note, I know that it looks like whoever owns this building, the kind of first building as we come here, take some care with their plantings. You get into a little bit what I think would call more natural situation. It's not really urban vegetation, but it is kind of this trend. And from where we're sitting right here, this intersection here on the right where someone would be standing is rather obscured. It was easy to see how someone could blend in, someone could not be seen even if they were out beyond this vegetation. With the lighting effects and the speed, that was probably one of the factors here in someone not noticing. Someone and certainly someone standing on the edge may perhaps not noticing an oncoming vehicle coming at speed either. I think the lights, the traffic signals here are probably adequate for an urban intersection. They are a little bit, they're a little bit diminutive in the sense that they don't. If we were in a stroad environment, a more suburban kind of environment where you had the traffic volumes, you would expect a more visible signal presence. This is an urban signal. And I feel like the signal works in this urban intersection, but only if you had urban speeds. And only if you had speeds that were slower, if you had some type of proactive way of slowing people down, heading into this intersection, then this more diminutive kind of urban signalized intersection works really well. With the speeds that you have coming through here and with the highway kind of cross-section that you have in the street, this traffic signal winds up to be more of a suggestion as opposed to a really rigid stop. And I think looking at the geometry and the way you would approach this intersection at speed, as well as that vegetation, it's easy to see how someone could, it's easy

to see how someone could miss. You still see my Google, I hit the wrong button. Tony are you still seeing Google from me?

Tony Harris: I am.

Chuck Marohn: Yeah. Okay. It's easy to see how someone could miss that particular traffic signal. The last thing that I noticed, and it goes a little bit to what Toon said, and I think it was right on about the left turn lane. This left turn lane is designed. I mean, look at the length of it. I realize that part of it is to turn into this business here, but this is really designed with a mentality of stacking. How we're going to have so many vehicles turning left that we need to get them out of the way and let them stack up so that the through traffic is unhindered. And at 530 in the morning, there's certainly, I mean, my guess is they're not a lot of stacking here. You can see in this photo, no stacking on the other side, but plenty of plenty of through traffic. In an urban intersection like this, especially at a university, a little bit with the data that we collected out here suggests as Toon kind of reinforced, there's probably not a lot of people taking this left turn going into this this university. There's probably not a lot of volume there to man there. It would be very easy to have this intersection tightened up quite a bit and allow people to enter that space, navigate around each other and let the turning traffic kind of sit there out in the middle, make the turn when they're available, but not have a dedicated turn lane. The fact that there is a dedicated turn lane there and that it's not used or are very lightly used or unnecessary, just as that extra dimension of space that gives that driver, the kind of comforting reinforcement that there's nothing that they need to worry about here. There's nothing that they need to be heightened in a way of here and it allows them to enter this intersection kind of logged into a false sense of security. So that's what I've got, Tony, I will stop sharing my screen. Thank you.

Tony Harris: Yeah, thank you, Chuck. That was really really helpful here. Toon did you have something you wanted to add?

Toon Dreessen: Yeah, I just, I wanted to add just some thoughts. I think a lot of what you had to say Chuck is really right on. Part of the challenge is that this stretch of King Edward, as you go down the hill, on the right side what you see is the university's central heating plant. This was sort of on the edge of what was the university in the sixties and this was all sort of residential neighborhood and stuff here. And so this central heating plant doesn't really get any visitors. It's not like people go to it. No one very other than maybe the occasional mechanical engineer. No one really goes and hangs out at the central heating plant for funsies. But it does have truck needs and deliveries and all that kind of nonsense. So they do need to have this access, but there's not like there's like a lot of pedestrians crossing here. And the new building that was built, this is one of the science and research buildings, for whatever functional reason I have no idea who designed it or why, but it doesn't really have any connection to the street. So as you're right, this is sort of a really long, desolate block. But that doesn't stop, you know, the city from saying, wow, this is a 600 and whatever you said, feet, foot long, uninterrupted street. We should have some midblock crossings. And to create some midblock crossings across here with a traffic island that's, you know, concrete in the middle and actually improve this street. You know, the fact that it would if it was a midblock crossing with a raised intersection would slow traffic down. And I know that in a couple of design projects I've worked on, I've proposed things like pedestrian - raised pedestrian crossings. I'm getting told no, can't do that because it's going to interfere with snow-plowing operations. And I think that's something we really have to address as a mentality is, "Do we design our city for the convenience of a snow-plowing operator or do we design our city for people?" And I think that's something you have to rethink. There are some, there is an opportunity.

Chuck Marohn: So can you stay right there for a second? Because I'd like to add a point out a factor here and have you maybe react to it. Because I, I look at that, I'm glad you explained what that facility was. From a design standpoint, again, when you're looking at this desolate, you know, kind of very, this space that I think what we should be thinking about in terms of causing this crash, lulls of driver and a sense of complacency. It gives them lots of room to move. What we have decided here from a design standpoint is that the very small number of

turning movements there warrants its own turn lane. And I think that that in itself feels questionable, especially given the trade-off of higher speeds that you're seeing. But I think it's important also to point out how the higher speeds are actually what makes that turn lane required. If speeds were much lower, you wouldn't need such a large gap in order to turn. You wouldn't need to get vehicles out of the way so that the other ones could get through. You wouldn't be worried about like rear end collisions. If someone slowed down and was making a turn, you would have a more functional urban area. And it's, it's almost like the design assumptions have built upon themselves and given us, you know, delivered to us a highway with highway geometries in the middle of a university, an urban university.

Toon Dreessen: That's right.

Chuck Marohn: And those two things don't mix, right?

Toon Dressen: And I think that's goes to the heart of sort of the other point that I want to make is, oh, how do I go back here to, to the original Google is, you know, King Edward is a miserable - the street itself is quite miserable because it's treated as a shortcut because the normal route that you would take to get off the highway if you were following truck routes and so forth is you would go along the Nicholas bypass which is this horrendously ugly thing that runs along the canal and then you would make a series of absolutely miserable as a a traffic engineer you must hate this - Suzanne is laughing at those, you make an absolutely horrible series of left and right and left and right through urban streets to get back on to the eight-lane wide King Edward Avenue to get on to the bridge to take you across the river. And it's, I mean, dozens of people have been killed on King Edward Avenue on the further north end of it, passing university campus. So because it's such a miserable road and it's so awful, but it's used by trucks cars will take the rest of King Edward as a shortcut through campus. So I don't want to say we have to make people's lives miserable, but if we made King Edward Avenue as it goes through the campus a more pedestrian friendly - pedestrian or a cyclist - for a street and really radically slow down traffic car drivers would say, oh, this is such a terrible street. I hate driving down

here. I'm going to go take the streets as actually designed for me and go use Nicholas. Now that's not going to solve the problem of the misery of that design, but it underpins the whole problem of our overall design for getting traffic from the highway to Quebec is miserable. And we don't have a good solution to that because our only answer seems to be several billion dollars for a tunnel that most trucks can't use.

Chuck Marohn: Tony and Suzanne, I think you might have something to add here too, but maybe to reinforce that - I'm sure that it is a factor in inducing traffic volumes. I know we've looked at the intersection and the things that would cause people to speed, cause people to not see a pedestrian standing there, cause this crash. But I think the underlying question of what is causing the traffic to choose this route itself is very important. On the south here, you see the highways converging and this kind of off-ramp thing I showed earlier into the intersection that we're at. People might not be aware if you drop in up here on the north end of this, if you continue going through the crash site and continue going north, you end up in a section that is very stroadish. I mean, this is a highway in the middle of an urban neighborhood and something really, really not compatible with a city, not compatible with trying to bike a cross or to whatever. It's easy to see why a people, especially at 530 in the morning would choose this as a shortcut as opposed to other routes they could take to get further north. That certainly is inducing people with a non-destination mentality. Maybe I'll say that. Someone who is a destination driver. I'm exiting off the highway. I'm exiting off the road. I'm entering an urban street and I'm going to look to find a place to drop my car and then walk to wherever I'm going. That person will have a different mentality as they navigate than the person who is, I'm on my commute, I'm heading through and I'm heading to places for their north. We don't know the mentality of the driver. We don't know what their destination was. We don't know what they were. But I think it's certainly a factor in making this intersection more dangerous that we have decided as a policy that we're going to channel people who are non-destination drivers through this area that we are prioritizing university students, people walking, people biking and just urban life. Suzanne, is that fair? You're on the ground. I'm looking at it.

Suzanne Woo: I think for sure, obviously these things have developed organically over hundreds of years. Right, King Edward, it's a very old road. It's had to change its function many times over the years. I think one other thing worth mentioning is that it operates very differently most of the day than [at] 5:30 in the morning, the operations would be very different. But if you were looking for a shortcut in the middle of the day, it would not be a good choice because it's very congested. Speeds will be lower. It's not super convenient. I think that's one of the challenges we have. I was looking at the left-hand lane and I was thinking, why is this so long? Because really some reset dead ends after a block later, it could be that it used to be or maybe it still is access to parking facilities. It might have these search access times and that's why not not I'm not trying to justify that as a continuing excuse to have it there. But there might be these kinds of reasons and it takes time to change things. But yeah, like this to recognize that it does operate very differently at different times of day. That means that anything that we do to change the design might not actually make a difference in the off-peak periods. Even if so, the King Edward has about 10,000 vehicles per day. Even if we say 99.99% of the people that drive there are responsible, their conscientious, they're going to pay attention to the cues that we're giving them to drive slower. That still leaves room for one person a day who is a risk taker, who will drive aggressively even when conditions are not conducive for them to do that. There's an exposure there's an end I don't know anything about the driver who was involved in this crash. I'm not saying that that could be that person. We can't design the road for that 0.01% of people who, and actually like what we found out from the Fatal Collision Review Committee was that a lot of drivers, a lot of the people involved in fatal crashes do have a very bad driving record. That's another piece of the puzzle that we were trying to learn more about as we tried to figure out how the world the road design make a difference. Will people still decide to drive aggressively even when it's not conducive?

Toon Dreessen: I feel like that's the key factor is there are always going to be, well, very rarely is someone going to maliciously drive badly, but the chances are that somebody can make a mistake, we can have a problem, there's a vehicle malfunction that they hit a patch of black ice, there's always the possibility that unintentionally something can go wrong through their error

or otherwise. That underpins the entire city of Ottawa approach is we should be adopting a Vision Zero approach. Our goal is instead to reduce and set a vision 20 - Vision Zero, our goal is to reduce fatalities by 20%. Which isn't really a very aspirational goal and that's part of our problem is that we need to think about this from a design perspective of solving these issues and actually prioritizing what's at stake which is someone may make a mistake, this driver of this car, you know, made a mistake drove too fast. What were the factors that induced them to drive at an excessive speed and that led to this that how it could have been either avoided completely or avoided catastrophic entry or death.

I think there are a number of design factors and we've talked about them, narrowing the road, the maximum width for a bus is 3.2 meters. So in my opinion if a street has a bus, well you need two lanes of 3.2 meters wide. So that means the bus has to go really slowly when they come air to air. But you know we can make the road 6.4 meters wide and that would be fine and it doesn't need to be any wider than that and we need to think about how we design our roads and our streets especially in tight urban conditions like this.

Rob Wilkinson: And if I can just jump on that for a second, I also think that we need to have these discussions before crashes happen. So we're doing this reactive kind of response thing. So someone's killed what can we do to prevent it and go from there. But really we know it's about exposure. We know there's thousands of pedestrians, relatively young people as young as 18 to 20s, we're crossing there every day and that's just the University of Ottawa population. So we have to take a look at those things and my point about maturing is the way we look at how we move people for our cities is coming up with these proactive solutions prior to the problem happening. And I think you know to piggyback on what Toon, and you all are saying you know that's really where we need to be going and regardless if you have a Vision Zero statement or not we know it's a responsibility of municipalities to do the right thing, move people safely.

Tony Harris: Yeah, that's really, that's really well stated and could be a good segue to kind of move us into recommendations if if we're ready. I know I heard one recommendation there

around narrowing the road and kind of looking at 3.2 meter lanes and then potentially a full width of 6.4 meters. I'm curious if Suzanne maybe if you've had other recommendations come to mind as you were going through the materials and as you as you did your site visit.

Suzanne Woo: Yeah, so actually Rob and I we did a site visit the other day and I did go through the intersection at night. So and I did actually see I actually wasn't night, it was morning it was at 5.30 in the morning that I went and I did actually see if it has been a lot of stuff in the street and the signals were very visible. I know we talked about you know, was it possible that the trees would block the signals or even camouflage them if they were in their full beautiful fall color mode possibly a factor but at night it's dark and the signals are very bright. So yeah, I really do agree with are there ways to enhance visibility using lighting and then clearing some of the vegetation and maybe even improving the sight distances but the idea of narrowing the road and and even creating a zone through there where there are repeated raised intersections recognizing that there are many places along King Edward where students and and people will be crossing. There's desire lines all along there to access the campus. There's many places at further north especially that the students would want to cross.

So yeah, if there are ways to actually physically require that that cars slow down then that's that's great. I think and we know that raised intersections do- do that. But that forces drivers to slow down and I used to work in traffic calming so I know like that our standard response to that is what people say or well then traffic's going to go to other routes and ensure we kind of want them to go to that necklace route but the other thing is that or they just drive at a more appropriate speed for what the conditions are requiring and they stay in in a focused mode. So yeah and I guess the other thing on my list I was just looking is the tunnel right that Toon mentioned that we actually have studied that repeatedly this is such a contentious corridor that considering spending billions of dollars on a tunnel because being studied and then I wanted to just put a plug for one thing because I know so Vision Aero and Safe System approach it it's we're thinking about transportation as a system and one of those is safe vehicles and we sort of we focus on the safe road design a lot but I think you know at the end of the day like I was

trying to express earlier you know if the road is straight it's people are going to drive fast if that's what they are wanting to do and and so having cars that actually limit the speed that that they can drive at I think that's great. So it's happening in Europe it's intelligent speed assist and we could potentially start thinking about that here too just taking that decision away from drivers we will drive the speed limit yeah I I've been doing this for a long time and I know like we we have roads that have you know very very narrow because they're fully maintained and people will still drive you know and I see winter conditions they will still go 120 kilometers per hour and end up dying or telling somebody because of that risky behavior routinely and there's just a part of me that thinks that we can't design the road can't design that away from those drivers.

Tony Harris: Yeah, yeah understood routinely risky behavior I think that's a good way to kind of summarize that okay thank you thank you. Maybe Toon any further thoughts on recommendations?

Toon Dreessen: So one of the thoughts is that we need to make a much more accessible city and we do we pay a lot of lip service to accessibility in the public realm and it's it's tough to implement especially when you think about snow and winter and snow plows and things but I think about something like you know if the driving surface was cobblestones and that that already automatically causes people to go slower not precast concrete but actual like stone cobblestones that combined with you know using different colored stones using a dark granite for the stones and then a white granite for the lines or not having lines at all and making the street narrower so that it's a smaller and induces smaller speed and making the sidewalks and raised the intersections out of concrete so that they're smooth and they're accessible things like that subtle clues that are auditory you know driving cobblestones in your cars wobbling and bumping is going to cause people to start to go slower and we can see how that can impact behavior and influence behavior through better design.

I think we have an absence of policy and I hate to be the guy who says we should have one more policy but we have an absence of coherent policy and how it's applied. You know we have a city of Ottawa guidelines that say you shouldn't ever put in sweeping corners at intersections and they should be a hard right and yet we still build them the sort of slip lane design we still build them and we build them on brand new roads even though we say you shouldn't do them and you should only do them under certain conditions. We don't have some sort of a mechanism for encouraging through a better design process that is collaborative that certain provincial legislation that's never been enacted would cause that kind of design thinking to be more prevalent and to be more predominant and we would get better design quality and we would spend a little bit more effort in figuring out those solutions upfront when it's on paper mapped out tested and then we would have better test cases.

Tony Harris: Yeah the design thinking with coherent policy and then I like what you said about cobblestones too, right? Like in the auditory aspect of that is something that happens to me in my city quite often as I go across different textures thank you. Rob, anything you'd like to add in the way of recommendations?

Rob Wilkinson: Yeah and certainly from my perspective Tony I am an advocate of technology and so that corridor itself led itself exceptionally well to automated speed enforcement in terms of clear sight lines and kind of getting people to comply and so one of my recommendations would be for any municipality to look at making that into a community safety ceremony doubling the fines for speeding and all sorts of different interactions that drivers can do and then adding in speed cameras and making them function at all hours of the day knowing the amount of volume that crosses over east to west we would just have them staggered you know all throughout that corridor which would be another way in you know until we can physically modify it would be just a massive way to increase compliance with the post speed limit.

Tony Harris: Right, right compliance with the post speed limit yeah I think I think that makes sense to me too. Chuck anything you'd like to add on recommendations?

Chuck Marohn: I have a lot. Yeah I feel this sense of urgency and it's something like this and if this for me if I you know were in a position to do this that sense of urgency would make me focusing immediately on speed being a problem. We're seeing you know it's one thing to say there's reckless people out there and they're going to drive in deviant ways. It's another thing to recognize that we have a high percentage I mean what was it 59% of people are going over the speed limit. This is not a few bad apples. This is like a broad thing and either we're going to say that the citizens of Ottawa are just deviant people or we're going to acknowledge that there's something about the design here. I don't think that's true Toon - I don't think they are deviant people. I think they are great wonderful beautiful people and I think that we have given them a system that appeals to their worst kind of instincts and it does like I said earlier kind of lull them into a sense of security which the natural thing and I prefer was vehicle when you have a sense of security is to put the foot on the gas.

I would go out today because I have a sense of urgency and I would take the orange construction bollards and I would place them periodically on those two blocks prior to this intersection. I would bring them out. I would place them in those parking spaces and I would just constrict the space. I wouldn't have a whole line of ballards but you can think of them as where would you have temporary crossings ultimately be built, I would space them like that. What you want to do is in the absence of any kind of side thing that signals to drivers, you're entering an urban space. You actually want to constrict their movement so that they feel that urgency to okay I'm off the highway now. I'm entering some places. I'm going to slow down. We could literally do that in the next hour and it would have a huge impact on speeding. It would reduce speeds and it would reduce the tension in that intersection. By the end of next week I would go out and I would put lights on those signalized poles. Temporary lights. I mean we can put those on the poles. We can attach electricity to it. It would be very cheap a couple hundred bucks each and I would light up where the people are going to be standing on the corners of

that intersection so that as I'm coming into that I could I could I could see them. They would be lit up. They wouldn't be in shadow. They wouldn't be hidden and at those kind of very sensitive vulnerable times of day they would be more lit up. I would also just you know at this particular intersection trim back some of those trees that were up. They were kind of blocking or blending in with the specific crash site here. Long term I would take those places where we put bollards and I would experiment with where they needed to be in order to create that edge friction that slowed traffic down enough. And I would have in my kind of short term capital improvements plan to go out and turn those into bump outs that would could evolve into those midblock crossings. You've got some very long blocks. You could have two crossings on each one. Even if they weren't high pedestrian use, having that friction there that edge friction for drivers is going to slow things down and kind of give them that transition to the urban area. I think if you were serious about it you could get a urban designer out to help with how those looked and and make them even more useful for people on foot.

Ultimately the intersection itself needs to be redesigned. I realize that we can't do that today or tomorrow but with paint we could actually go out and and constrict some of that driving space allow it to open up once you enter the intersection but as you enter the intersection have it constrict people what we want is we want the driver to slow down when they're in and then navigate the intersection Toon use the WOONERF concept earlier. I'm not suggesting that we go full that way in that intersection but I think we can start to work towards that certainly when you have a green light what we want is not the aggression of the space is wide open I own it but we want people to be kind of aware that there's complexity and turning movements and things going on. So, enter the intersection slow and within the intersection have a lot of movement. I think we can design that and do those changes with paint temporarily like right now like next week but over time that intersection needs to be redesigned, tightened up the bulbs the things need to the corners need to bulb out a little bit more tighten up that space but allow the movement within.

I think we can actually do that with a reasonable price tag to something that would be you know five to six figures not six to seven figures if it were a priority for us I don't know as you'd have to prioritize that if you did the other things to slow down traffic coming in here which like I said I think you could do this after oon with ten you know construction barrels go out and make a transformative difference that that's the way that I would approach this.

Tony Harris: Great thank you Chuck that's some helpful ways to think about it particularly the immediate versus kind of like the near term and then the more systematic changes that I think you outlined any other thoughts on recommendations or responses.

Suzanne Woo: I'll jump in. Well I was just reflecting on what you guys were talking about and thinking that even having a raised median that could be wider in some places where there was room and recognizing that I think even in those sections where there isn't a lot of scrunch-age happening there's still a desire for pedestrians to cross students are heading to the buildings on the other side and and the northern section as well and I think about the raising sections even even the raised medians could provide a refuge if there even if there wasn't at an official crossing there and we know that that does that does improve pedestrian safety wouldn't impact necessarily the intersection itself.
Tony Harris: Thank you. Yeah well said. Go ahead.

Toon Dreessen: I was also thinking and this is very much long-term and aspirational is you know there's not much we can do about the new building that was just built but across the street from it there's a healthy chunk of grass there's one lonely picnic table kind of orphan on the edge. I don't know who's you know using that picnic table but things that we could do to make that street frontage more animated you know you're up against the back end of a heating plant so I can't imagine that's going to be an incredibly intensive use but if it was you know parks if it was public washrooms if it was you know maybe there's a playground along there you know if maybe there's something narrow that can be built in there maybe some stock townhouses or something for student residences there's I think things that could be built that could encourage

a more active street frontage on the university campus side that encourages that street frontage to become a more active and engaged space.

And maybe that's only in certain areas you go a little further north of the crash site and there are heritage homes there's a couple of embassies along there it's a much more engaged street frontage and I think there are things we could do to engage that street frontage and if we need more land for example between the street edge and the and the back of the heating plant maybe one solution is to actually give the street a bit of an S curve you know keep the same right of way but hug the right side sort of the east side of the right of way and as you approach the top of the hill kind of swoop up to the west a little bit to give a little bit more land on the west side of the street. To do something interesting with a built form that that columns traffic by making a deal a bit of an S curve and also does something with some building form that provides needed functional uses.

Tony Harris: Excellent thank you for that elaboration. I think that makes sense to me. Anything else before we before we move into closing out our session today>

Rob Wilkinson: Going to the thing I would say to one is as residents of cities that where we want to see change happen we can't be quiet about these things, right? We can't let the issue disappear off the public radar and so you've got to advocate you've got advocate with your local counselor you've got advocate with your provincial members of parliament and beyond because if we don't continue to try and push the envelope we let people off the hook. And so we really can't get into a position where we tolerate people being killed on our roads and too often that's where it kind of comes across. There's massive demonstrations when people on bicycles are killed in our city, in our cities we have to take the same approach when it's pedestrians we have to take the same approach when it's you know people on mobility devices and so on like we really have to keep elected officials and senior staff and decision makers feet to the fire and - because without it we're not going to see those kind of - aspirational kind of goals hit the uh get the marketplace so much.

Tony Harris: Right right. Okay I'm going to lead us into close out then. I'm going to share my screen more time. So I want to say thank you to our panelists today so Suzanne, Toon, Rob, Chuck - thank you for being with us. I also want to give a special thanks to Matthew Pinder who was a colleague that introduced me to Suzanne Woo as we were planning this session and assembling our panel. A big thank you to Cleber for nominating this crash in the first place and going through the information gathering and resource organizing that that took a fair amount of time and work. Thank you to some of our other community members and colleagues both inside and outside of Ottawa who were involved over the past few month. And a thank you to our sponsor for this event who is an anonymous donor and thank you to Strong Towns staff who helped with preparing us for today. So you'll be able to find a recording of this session and all of our Crash Analysis Studio sessions by going to strongtowns.org/crash-studio there you'll also soon find resources for building a crash analysis studio in your own community. Our next studio session will take place on October 27th and you'll be able to find more information about that on our website as well. So on behalf of my colleagues and the assembled panel thank you for watching this session of the crash analysis studio keep doing what you can to build a strong town take care.

Keep doing what you can to build a strong town. Take care.