Preparing Students for Uncontrolled Crossings – Part 1:

Background and Basics

Jolene Troisi and Dona Sauerburger

[Jolene] Hello, everyone, and welcome to the webinar preparing students for uncontrolled Crossings. Part one, background and basics. I'm Jolene Troisi.

[Dona] And I'm Dona Sauerburger.

[Jolene] This is part one of three webinars. The second part will cover teaching and assessing. And the third part will cover maximizing your skills for listening and looking. Let's get started!

[Dona] All right. So in this “Part one, background and basics” We're going to first of all talk about “What is an uncontrolled crossing?”

And then we're going to talk about strategies for crossing where there is no traffic control, and when are they reliable? When are those strategies reliable?

And then, what factor determines when the strategy “Cross when quiet” or “cross one clear” is reliable.

Then we're going to talk about “how can we be confident that it is clear to cross.”

And then last, we're going to talk about assessing risks and making choices.

So let's get started with … what the heck is an uncontrolled crossing? It's any crossing, any street or lane that has no stop sign or no traffic signal for the vehicles on the street or lane that you're going to cross. And we have pictures of four uncontrolled crossings here as examples. And this series of webinars is designed to address these kinds of crossings.

The first one shows a man standing on a corner, and he does have a stop sign on the corner there, but it's for the traffic on the street beside him. The traffic on the street he's facing has no stop sign. no traffic signal. So that's an uncontrolled crossing.

The second picture shows two women in South Africa facing a street that, again, has no stop sign and no traffic signal - another example of an uncontrolled crossing.

The third example is a woman crossing at a roundabout. Again, no stop signers for traffic signal. maybe a yield sign. But other than that, uncontrolled.

And the last picture shows what's called a “channelized turning lane” at an intersection with a traffic signal .So the man is leaving an island, a triangular-shaped island where the traffic on the streets beside

him and behind him have a signal, have to obey the signal. But he's crossing the lane where the drivers come and turn right and bypass that signal. So the traffic on the lane he's crossing has no stop sign. no traffic signal to obey. So these are all examples of uncontrolled crossings. So Julene, why don't you take us to the next step.

[Jolene] We're going to list some strategies that we know of for determining when there's a crossable gap in traffic. So what are some strategies that we use to determine that we can be confident that no vehicles are approaching that will arrive before we finish our crossing?

[Dona] Boy, we've got a bunch of hands up . . . Alaisha?

[Alaisha] I guess this is pretty general but How close are the cars to you? How far away are they?

[Dona] This sounds like the strategy of judging that the approaching vehicles are all far enough or slow enough that you know that there's time to cross before they could arrive. In other words, starting to cross when there's a "crossable gap in traffic" . . . which is what most people do. They cross when they can see vehicles are approaching in the distance, but they calculate that they have time to cross before those vehicles can arrive. So that is one common strategy that we can add to our list to evaluate.

Jolene, do you want to call on them? or do you want me to call on them for you?

[Jolene] How about Cindi?

[Cindi] So it might be when it's as quiet as can be and you don't hear any vehicles coming. Or if you're using your vision you're checking both directions and you don't see any vehicles coming and there is nothing that's temporarily interfering with your vision or your ability to see.

[Jolene[Okay, Jenna?

[Jenna] So, a strategy would be potentially knowing the size of the intersection, how far across that crossing is and being able to determine whether using your vision or hearing that the cars have stopped. So they're not going to be moving across the area that you're trying to cross.

[Jolene[Okay, so other options that I haven't seen that nobody mentioned, some crossing with a blocker car.

[Jenna] Is the blocker car . . . So when I was in school we were taught that you didn't cross at the same time as the car. You crossed once the car closest to you was more than halfway through the intersection or was at least halfway through the intersection. Is that what you mean by blocker car?

[Dona] Yes.

[Jolene] Yes.

[Dona] . . . to make sure it's not turning, right?

[Michael] Right.

[Dona] After you've determined it's not turning

[Jolene[Thank you for sharing strategies that folks have come up with over the years. I'm going to just summarize what we have so far.

So, our options are to start to cross when a blocker car that is waiting at the stop sign in the street beside you starts to cross the street, after you've made sure that it's going across all lanes; start to cross after you've verified that vehicles have stopped; start to cross during a crossable gap in traffic -- that is, you can see vehicles approaching but there's still time to cross before they arrive; or start to cross when it's quiet or, if using vision, when it's all clear.

So, Dona, I have a question, though.

[Dona] Yes?

[Jolene[Are all of these strategies reliable?

[Dona] Oh, somebody's shaking her head saying, no, they are not all reliable

The first one is crossing with what Jolene called the “blocker car” and that's a strategy of crossing with the parallel vehicle from the stop sign. And, is that reliable?

Well. The rationale for it -- I'll read you what a guy from United Kingdom wrote just last week … He's saying he uses this all the time, he goes to an intersection where he can wait till a car from the stop sign beside him starts going forward, and then he starts to cross. And he says the rationale is that “vehicles will have to stop And it's safe for me to cross over.“

So when I read it, I wondered if that was effective. Now, how could I test it? The rationale is that when the car pulls out. that it's going to allow enough time for you to cross. And I have a picture here showing what it would look like. There's a little stick figure that I drew at the corner, with a little white cane, waiting to start, and there's a street to his left, and a car is pulling out and is far enough that he's not turning to the right. He's going all the way across the street. And the rationale is that that means that there's enough time for him to cross. How can I test that?

[Jenna] Cindi has raised her hand.

[Dona] Cindi, how would you test that?

[Cindi] You could… just uh … when that car starts crossing you could, you know, at that point consider that sort of the start and if there's a car that would reach across in front of you in less than the amount of time it takes you to cross. things may not end well for you. because the reality is the car that's going through from that stop sign in some ways is doing the same activity we are, except that the amount of time it takes that car to cross the intersection is much less than it takes me because of that…

[Dona] Yeah, that would be my assumption.

[Cindi] Yeah. I mean, I just like, I can't move as fast as a . . .

[Dona] Exactly. So you've nailed it. to test whether that works or not, whether cars pulling out from the stop sign give you enough time to cross, go out and start the timer when the car pulls out, like someone said, far enough that you know is not turning, and then stop the timer when a car comes on, you know, on the street you're crossing when a car reaches the crosswalk, how much time is that?

Let's see what we found out in 2010. Anne Marie McLaughlin, an engineer who had lost her vision . . .we went out with our stopwatches and our lawn chairs and went to 2-lane streets where we timed 156 vehicles pulling out from the stop sign to find out how long did you have once that happened until a car arrives. We went to three lane streets with 104 trials and four-lane streets with 98 trials.

So here's one of the 3-lane streets. So, we have a car pulling out from a stop sign and to his right, I've drawn a little stick figure starting to cross. In this picture, there is a car in the far lane about . . . about three or four car-lengths from the intersection. And so, you can kind of project that by the time that little stick figure gets to that third lane, that car is long gone and he's basically out in the open.

So let's see what we found out. So at the two-lane streets, out of 156 vehicles pulling out. there was a car coming less than two seconds away 13 times, and 42 of those times there was a car coming less than four seconds away.

At the three lane streets, we had 10 vehicles coming at less than four seconds away out of 104 trials. And in four-lane streets out of 98 trials, six had a vehicle coming less than two seconds away, and 14 had less than four seconds away.

So I think… We can conclude… that this “going with a blocker car” is not reliable.

And also there's an added danger. In this picture, we see one of the two-lane streets that we went to. There's a car pulling out. And we can't see the corner on the other side of him to his right because uh He's blocking the view, but that's where a pedestrian would be starting from. And so when you're using this strategy. not only can you not hear the vehicles because of the sound of that car beside you. But their view of you is blocked.

So you're putting yourself in a situation where number one, you're not guaranteeing that you have the time you need to cross. You sometimes have less than two seconds to get across, but you've added the danger that you can't hear them coming. And they can't see you.

So I think we can conclude that that it's not one of the strategies that would be considered viable.

[Jolene[but also keep in mind that this is specific to uncontrolled crossings. we still …blocker cars are a whole different story at stop sign intersections. Traffic signal intersections this is just specifically applied to uncontrolled crossings.

[Dona] Thank you, Jolene. Perfect. So there's a strategy. If you have enough vision. that you can see that there are vehicles coming, but you can determine they will not get there before you can get to the other side. That's called cross when there's a crossable gap.

And is that reliable? Well, it is if you have the skill to do that. It's not if you don't. There's a picture here of Dick Evenson. He and his wife, Lorraine, and his guide dog. all crossed from the median strip that you see here. they had finished crossing the first three lanes of the street and they had three more lanes to go. And they got to the middle lane.

Sorry, let me back up. Lorraine had a lot of vision. She had albinism. So I know she could see the cars coming. It was at night and I know she saw the headlights. But she probably misjudged how close they were, how fast they were, how much time would pass before they get there. So she, you know, she said, come on, Dick, let's go. And they got to the middle lane. The driver in that lane had to slow down for them. The driver behind that vehicle pulled around to the right and killed all of them.

So if you don't have this skill. it's not going to be reliable. I went to stand at the same place where they started their crossing. And I, with normal vision, it was during the day and I had 20 years of experience teaching people to cross streets – it took me seven and a half seconds to cross, I saw them coming and I started the timer when I thought, “Oh, I have time to cross, I'll have 7 - you know, time to get to the other side before they could arrive.” I started my timer. They arrived five seconds later. I misjudged it completely, as had Lorraine. As have most people when they first try this.

So I have found that most people who have enough vision can make this judgment, can develop this skill in less than an hour. And this is a skill that we'll cover in part three. But it's something that if your students, like people with retinitis pigmentosa and some of the other eye conditions that allow them to see at a distance, they can, most of them can learn to make that judgment, or they learn that they are not able to make that judgment. And so they use other strategies that are reliable. Any questions on that before we go to the next one. Michael?

[Michael] I think that when working with someone, it's very important to have had some low vision testing and information on that person if possible Because personally, as a legally blind person, I see a lot of things very well. When I was a bioptic driver, I learned I had no depth perceptions at all, and I didn't have any business making left turns out into traffic. And I definitely see depth perception as a deficit that we need to be aware of that's going to vary from student to student. Thank you.

[Dona] I'm glad you brought that up, Michael. You would think that depth perception would be required, right? But it's not. I've worked with people who have only one functional eye and they do fine. So there's no real need to evaluate someone's vision to find out if they could benefit from this training. to be able to judge gaps in traffic, just go ahead and try it. If they're not improving in about a half an hour. then you can say maybe this person can't do it.

In the 30 years I've been doing this, there have only been about four or five people who could not do it. And usually they had a very restricted visual field or one woman had just a left upper quadrant of vision, that was all she had. And I'm just guessing now that what people do, what we do when we're making that judgment is not using our depth perception, but kind of watching what the vehicles are passing. And so people who can't do it, they can see the vehicles approaching, but they can't tell what it's passing. So I'm just guessing that that's why they can't do it.

[Michael[well, actually, my depth perception was very good looking one direction at a time. it was looking multiple directions. where I absolutely had no business trying to use depth perception.

[Dona] Oh, Michael, I'm so glad you brought that up. I think that, again, it wasn't depth perception, it was the problem of having to look and make that judgment in two directions at once. And that is actually a skill that has to be developed. many of the skills that we're going to talk about in Part Three of being able to detect vehicles visually, we start by training them to do it in one direction at a time, and then they have to learn how to look from one direction to the other and make that judgment, “is there a vehicle coming?”

And in your case, we do the same thing we have them . . . It sounds like you were able to make that judgment really well in one direction, right?

[Michael[Yes.

[Dona] Okay. So what we do is have them able to do that in one direction at a time and then do it from the other direction. But then the next task is for them to glance over in one direction, make that judgment and glance back and report, did they have enough time? And that looking from one direction to another is a whole different skill.

So I'm glad you brought that up because that will be covered in Part Three. But you can tell it's a complex process and so it deserves a webinar of its own. So we'll be addressing it then. So glad you brought that up, thank you, Michael.

[Michael[Okay, that makes sense.

[Dona] Anyway, if somebody can't learn to make this judgment. The alternative that I've come up with is for them to watch the vehicles come, and pick out a landmark such that if no vehicles have passed that landmark, there's nothing between them and that landmark, they know they have time to cross. And you pick it. … Well, how would you pick that landmark? How would you pick and know that when you know that you found a place that even the fastest vehicles, if they haven't reached that landmark yet. they're not going to be able to reach . . . you'll have time to cross before they can reach you. How would you pick that landmark? Cindi, do you have an idea?

[Cindi] I'm guessing it would, you know, you could pick an arbitrary point and then see how long, you know, what that warning time is and if it's too short, go with something further away. And if it's more than you need, find something that's closer until you

[Dona] Exactly. And it's not warning time, is it? . . . Like, a warning time is from when you first detect it till it arrives, and you detected it long ago, you just want to know if at that point from, let's say, “landmark to arrival” is not less than your crossing time. So, Yeah, exactly.

And if you find some of the vehicles are arriving . . . some of the faster ones are getting there with less time. then like you said, you move the landmark back, “all right, let's try this one,:” and then you just test it. So that's what can be done as an alternative. Wonderful. All right.

[Cindi] I feel like you need a name for that. Like “warning time for . . .

[Dona] Huh?

[Cindi] like “landmark to arrival” like . . .

[Dona] Well Cindi, we're going to ask you to come up with a good name and we'll publish it and we'll have the . . . how about the “Cindi Spot”? That one.

[Cindi] You know, I'm going to give you that honor, Dona. I think that it should really . ..

[Dona] the “Sauerburger Spot”

[Cindi] Yes, the “Sauerburger Spot,” that is just … it's so much better.

[Dona] All right. Jolene, I think we're ready for the next one.

All right, the next strategy is “crossing when the drivers have stopped” and Is that reliable? Yes, it is if - and ONLY IF the drivers in all the lanes have stopped, AND you can reliably determine whether they've all stopped.

You know, there is a problem when, for example, there are more than one lane approaching from one direction. And a driver in one of those lanes stops for you. it could be that the driver in the next lane doesn't see you because his view of you as being blocked by that first vehicle that stopped for you, and it could just come through and hit you.

That's actually what happened with Dick and Lorraine Evenson. They were crossing three lanes from one direction. They had just crossed the first half of the street, and now they're crossing the second half, which has three lanes from the right. And a driver in the second lane slowed down and was getting ready to stop for them because he would have hit them if he hadn't slowed down. So they were right in front of his lane, and the driver behind the driver that was slowing down didn't see them, moved into the far lane and came and hit and killed them.

So this is a real problem. It's called a “multiple threat.” You know, if you have more than one lane coming from one direction then you can't be . . . it's not a reliable strategy unless you know that the drivers in every lane have stopped. Otherwise, it's actually more hazardous to cross when some of the drivers have stopped and some of them haven't.

So the other thing that you need to make this a reliable strategy is that you can tell, you can determine whether drivers have stopped in all the lanes. And this is not easy to do for people who are blind.

I participated in some research at roundabouts where we had the subject who was blind try to determine by listening. whether drivers had stopped in two lanes coming from the roundabout or from the In one case we were in the parking lot. And often they got it right, you know, when there were drivers in both lanes stopped, they said that there were drivers in both lanes stopped, and that would have been a good time to cross. Sometimes drivers were stopped and they couldn't tell, they didn't know

- they thought nobody was there. And so that's not that much of a problem - you miss an opportunity to cross with stopped vehicles. And so that's not that much of a problem.

The problem is that many times they thought people had stopped in both lanes, and there was nobody there. So if they had started to cross, feeling assured that nobody could come, there wasn't any such assurance.

So that strategy will not work unless you can reliably tell that drivers have stopped AND that you know that drivers have stopped in ALL the lanes.

Next, “Cross when quiet,” and is that reliable? And back in the 1940’s. when our profession was being developed. it was reliable. “Cross went quiet” was reliable. I have some pictures here. . . . there's a picture of, I think that's Stan Suterko, one of the first five mobility instructors teaching a blinded soldier how to use a cane. And then there's another picture of two blinded soldiers crossing a street with a mobility instructor.

I talked with Stan, and he said that back then, when it was quiet. you knew it was clear to cross. If there was a car that was coming that could reach you, you would have heard it. And so I said, “oh, how do you know that?” Well, they did kind of a version of what we've been talking about, which is that they timed how much time was needed to cross, and then they timed from when they heard a vehicle until it arrived and it was always longer than crossing time. I said, “were there any exceptions?” “No. no exceptions.”

And so I remember actually, well that was in the 1940’s, and in the 1970’s is when i started teaching, And I remember actually telling a woman … she was starting to cross this quiet little residential, two-lane street, and she started when it was quiet (because I told her “Cross went quiet” because that works), and so she started to cross and then she heard a car . . . It was SO far away, I mean, she just heard this faint sound, so she stepped back and I said, “oh, Mrs. Smith. Don't worry - if it was quiet when you started, even if you hear a vehicle coming after you start. you're good to go.” Because I thought “cross when quiet” worked. And it did at that time.

So, does that work today? Is “cross when quiet” a reliable strategy today?

Well, sometimes, Yes. In 2008, Dr. Rob Wall Emerson and I did a study where we had 21 people who are blind coming two or three at a time and sitting at --- we took them to three crossings so each had approaches from the right and the left, so six approaches. And two of them were Situations of Confidence where “Cross went quiet” was reliable.

In 1970, a law was passed to reduce noise level. And so as a result of that, the manufacturers of vehicles were required to reduce the sound of their vehicles. And so they brought it down from about 70 decibels - I forget what it is today, but all the vehicles today are much quieter.

And so we wonder, can you still hear them with enough warning to know it's clear when quiet?

So if you think about, we have 2 pictures here – well, 3 pictures, but I'm going to talk about 2 of them right now. One is a place where we set up our lawn chairs and had people listening, and the road to the

right is straight for as far as you can see. The next one is a road where to the left it kind of curves a little bit and goes under some trees. So it kind of disappears a little bit there. And in both of those, we had lots of trials so that we could get a kind of a range of how much warning time was being given by the vehicles.

And then the one on the left where it's perfectly straight, we had 144 approaches when quiet. I want to emphasize these were vehicles that were heard when the ambient sound level around them was down as low as it gets. It was quiet… they hear a vehicle… and then we time from when they heard it to when it arrived. 144 vehicles. So that was about 18 a day. The average of when they heard it to when it arrived, we'll call it the" warning time. was 12 seconds from that direction. The range of 144 was all the way down to 7 seconds - some of them they couldn't hear till 7 seconds, nothing less than that and up to 35 -- some of them 7-hey could hear 35 seconds away.

So the crossing time here for the average person is 7 seconds. So with that full range, there was nothing that got close enough without being heard, less than 7 seconds away. Meaning that if somebody had started to cross just before they heard it. they would have made it to the other side before that vehicle, even that 7-second one, arrived. They wouldn't have had a lot of time to take a breath before it arrives. I mean, it was just enough, but if they had started before they heard it. they would have had their 7 seconds to cross before it arrives.

The other one with the trees - there were only 24 trials coming from that direction. And being in the nearest lane. being from the left, the average person needs about 3.5 seconds to cross, and the range there was 7 to 26 seconds, the average was 12 seconds from when they heard it coming from that direction. to arrive. So again, if somebody had started to cross just before even one of those 7-second vehicles arrived they would have been on the other side and out of that lane before the car arrived.

The third picture shows a place in front of my neighborhood where I sat in my lawn chair and listened for vehicles to arrive and… the range of that was 7 to 19 seconds. I listened for, actually 36 vehicles coming from that corner. There is a bend in the road to the right and the speed limit, well, there is no speed limit, it's a kind of a highway, but I've often come around there - I'm going to take this out of the recording, but I've come around there at 50 miles an hour myself. And so they're coming fast, and they're coming around a corner. But Jolene, if you could share with them the video

So here we have a two-lane street, we see no cars … [VIDEO] "It just got quiet. .. I hear a car from the right."

[Dona] What do you think? Was that one of the 50-mile-an hour cars? He was coming at a good clip, wasn't he? And yet we heard him 13 seconds away. And again, it takes about 7 seconds to cross there. So this is another situation where the full range, at least when I was there in that situation, I was able to hear them all with enough warning.

So let's look at the next um slide because we're going to see some situations where there was NOT enough warning, where there WAS a situation where you could not rely on "whenever it was quiet, it was clear to cross." We have a picture of me sitting in one of the lawn chairs again. And to my left is a barrier. We set up about 3'x8' barrier propped up right next to where my head is. And we would have the

subjects come and listen, and then one of us would take them for a snack and then go, but the other one would set up that barrier and then, okay, break's over. Let's come back and listen.

And they'd come back and again, listen for approaching vehicles. And some of them would say, "Dona, there's a . . . " I said. "quiet! There's nothing to notice here. Everything's good!" And we want to see if that barrier would make a difference.

And the second picture shows cars coming from the right over a hill. They're coming up over a hill. And the third one is going to the left around a gentle bend. And there's a fourth one, which we're going to look at in a minute, but I want to talk about these three.

When we put the barrier up, we had 50 trials. The range was 5 to 32 seconds, with an average of 13 seconds. The hill coming up over the hill, 43 trials. The average was seven and a half seconds. Some of them were not heard until they were 4 seconds away, and some of them could be heard as far as 20 seconds away. The minor bend here in the third picture, 39 trials, the average was 13 seconds, but some of them couldn't be heard until they were 4 seconds away. The range was 4 to 28 seconds.

And Jolene, if you could share the next video, and I'm going to set this up before we show it. That this is the last place that we used. And so, Jolene, let's hit it and see what happens.

"We are looking at a two-lane, very quiet residential street which has a sharp turn to the right. It takes 7 seconds to cross here. We can hear a car approaching. Now… It arrives. Now, that was 5 seconds of warning time."

So I had heard about that crossing because when Dick and Lorraine were killed and I was starting to realize that "cross when quiet" doesn't always work. I shared that with our local orientation mobility group. And one of them called me a couple weeks later and she said, I found a place where, again, the cars are not heard with enough warning. And so I went out there and that was the place. She had two clients who had to cross to get to the bus stop.

So The answer, the conclusion is the answer is that this strategy, "cross when quiet" works sometimes but not others. And we call situations where it doesn't work because there's not enough warning. or potentially not enough warning of approaching vehicles we call them "Situations of … Uncertainty. And we call situations like the first three that I showed you, where you can be confident that when it's quiet, there's nothing coming that could reach us - if it was coming, we'd have heard it. We call those "Situations of Confidence."

So what factor or factors can determine that "cross when quiet" is going to be reliable? Whenever it's quiet, you know you have enough time to cross. What factor or factors might make that true or false?

Anybody have an . . . ? Oh, Jenna, what kind of factor?

[Jenna] It looked like from your trials that the shape of the road right near the crossing. Whether it was a straight shot or a curve, a hill. other obstacles were nearby.

[Dona] Okay, thank you. Anything else you can think of that would that we could use as a measure that if we see this factor- done-deal . . . puh - we know “cross and quiet” is not going to work. Alaisha. Am I saying that right, Alaisha?

[Alaisha] [pronounces it like “Malaysia”]. Yeah. I'm thinking the setting. like this very, it depends it does depend but if it's a residential area where typically you know from this window to this window there's like nobody leaving the house or you've tested it, you know, to see, okay, these people have left for work already. The kids are at school. No one's driving through here, those kind of thing. Perhaps.

[Dona] So if you could kind of barriers up, right? Nobody's coming so I love it, Alaisha. You're thinking out of the box here. That's great.

Let's step back and look at if you didn't have the barriers or you didn't know “nobody's coming, let's go ahead and cross,” but a factor that you could nail … that you could use to say “Now I know I can be confident that as long as it's quiet, I'm good to go!” or “you know what? that is not reliable -- this factor or these factors determine that I can't tell if it's clear, even when it's quiet.” Michael?

[Michael] Oh. I'm recalling some research about hearing an ambient noise in the area and like, for example, if there is a factory down the road you may not consciously hear the sounds from that factory. but they can mask the sound of oncoming vehicles, et cetera.

[Dona] So ambient noise in the area that could mask the sound. Good. So again, we're looking for something that if you realize that that's going on. you know -done deal. So you're saying that if we have that factory that some kind of noise going on, we know that “cross when quiet” is not going to work. And Cindi…

[Cindi] I was answering what might make it when you might be okay to cross. And I was going to say other than like being on a private road with a locked gate at the end that you control or, you know, they're doing road work and your street’s shut down, like there are no vehicles at all. ..

[Dona] We should have put that as one of the strategies! If you block off the road.

[Cindi] Right. If there are no vehicles that can possibly access the street . . .

[Dona] We're gonna . . . we're going to let that one go.

[Cindi] But I would say other than that, really, there isn't any one thing that we can rely on to say, okay, it's good to go. I mean, unless we can eliminate the vehicles, we can't. There isn't . . .

[Dona] I love it, Cindi. So you're saying that there's no one factor that you could use that when you observe it.. .

[Cindi] Not unless you can close the street.

[Dona] Okay. All right, thank you. Victoria, what do you think?

[Victoria] We get some strong winds and you have to look at the direction the wind is blowing and what the i mean the snow, you know, if it's hitting you in the face and it's coming at you, you're going to get the sounds maybe from that one side, but the other side, it's masked. !

[Dona] Okay, so if there's wind masking the sound, you know that “cross when quiet” is not going to work. Is that what you're saying?

[Victoria] Yes.

[Dona] All right. I see no more hands. So let me share with you what we studied in our research. We looked at four factors. One was… when they heard that vehicle (of these hundreds and hundreds of vehicles) … When they heard it, how much ambient sound was there when they heard it? was there, you know, sound of a receding car or a plane overhead or something like that? We had a sound level meter to measure what was the level of the ambient sound around them when they heard that.

The second thing we looked at is when the car drove by, how loud was the car itself? The third thing we looked at is how fast was that car coming? And the fourth thing we looked at, which you guys have mentioned already, is was it coming up over a hill, coming around a bend, or was it coming nice and straight? So we looked at these four things.

And… what do you think affected most the warning time you What do you think affected it most?

[Cindi] Ambient noise.

[Dona] Ambient sound. DING DING DING DING! You are correct! Exactly! It most affected - even more than whether it was coming around a hill or around a bend or whatever -- ambient sound was the most!

What do you think was the next most? The ones that are left are: how loud was the vehicle itself, how fast was it coming, and was there a hill or a bend? What would be the next most? Anybody want to guess?

All right, how many think it was how loud the vehicle was? Just raise your hand. Nobody? Oh! you must have gone to one of my workshops! We found that how loud the vehicle was had NO effect! None! It was a total scatterplot. Some of the vehicles that were loudest had the shortest warning time. Some of the vehicles that were quietest had the longest warning time. What's with that? I don't know.

And also… Um . . .First of all, I've said that all the cars now are at least twice, if not four times as quiet as they used to be in the 1940’s. So ALL cars have become quiet cars. But If you're talking about cars that are hybrids, electric cars and those kind of things, their engines are very hard to hear, but it's not the engines that we hear when they're going at least 20 miles or 32 kilometers per hour. It's the sound of the tires on the pavement and it's the sound of the wind going over the vehicle.

So these hybrid electrics sound just like every other car at that speed. It IS a problem when they're going slower, like in parking lots, and when they're sitting at a traffic signal and you're trying to listen for the surge of traffic and there's no sound. So at that speed, these hybrids and electrics are a problem, but an uncontrolled, where they're going at least 20 miles / 32 kilometers per hour, they're not a problem.

So how loud the vehicle was had no effect. There are two things left, and I'll just go ahead and tell you. that the speed of the cars / vehicles had almost . . . it had a little bit of an effect and i can't remember if the faster ones had less warning time or the other . . . it must have been, how else could it be? But it was almost not statistically significant.

So there's very little effect of the speed of the vehicles. And the bends and the hills and the road did have some effect, but none of them - NONE of them - could be singled out as a factor that you could look at and say, “oh. There's a hill in the road; There's a bend over there, so I know that it’s not going to work. Oh, it's straight. or it's only two lanes or there's no factory sound - I've got my audiometer (whatever you call it) to measure the sound and it's very low.”

There's NO factor that, alone, can tell you that in this situation you can be confident that it's going to be clear whenever it's quiet.

So, there IS one factor that nobody has mentioned yet, which is … let me see if you can guess, now that you realize all those other things that you raised -- good points, all of them (ambient sound, bends in the road, I forget what, let me see what else you guys came up with . . .

[Jolene] The wind, the snow . . .

[Dona] Oh yes, the wind, snow in your face Yeah, you came up with some good stuff. And I'm going to tell you right now. ALL of them, they are NOT a determining factor. They AFFECT it, they can have an influence on it, but they are NOT a factor that we can look at and say, “hey, there it is, now I know I can be confident that it's going to be clear to cross when quiet” or “no, I can't.”

Does anybody have any ideas what that one factor might be? Hmmmm Yes, Jenna.

[Jenna] Is it how quick of a walker you are?

[Dona] That's a part of it! So you're going to look at your crossing time, right?

[Jenna] Yes.

[Dona] So crossing time is part of it. What else do we want to know besides . . . let's say you're the fastest, you're one of the one of the one of the olympic um….

[Jenna] A speedwalker.

[Dona] You're a speed walker! and you can…

So you have that figure. can we automatically know, “oh sweet! As long as I walk real fast, I know it's going to be clear to cross when quiet”? Or is there another factor we need to look at?

[Jenna] is it .. [Cindi starts to speak] oh, go ahead, Cindi. Oh, okay. is it studying the intersection or studying the crossing, like the…?

[Dona] Good thing - that's what we're going to study. What factor are we studying? Cindi, what do you think? What do you think we're going to study in addition to how much time we need to cross?

[Cindi] the detection-to-arrival time.

[Dona] I'm sorry, could you say that again, please?

[Cindi] the detection-to-arrival time, also known as the "warning time."

[Dona] Oh, thank you. Yes. The one factor - the ONE factor that you can use to observe, to figure out If you're going to be confident it's clear across from quiet is to . . . Sorry, what was that again, Cindi?

[Cindi] comparing how much time you need with the actual warning time. In other words, from when you detect the vehicle to when it crosses your path. And not just for one car.

[Dona] And not just for one car – oh ho ho!

[Cindi] And not just one direction.

[Dona] Oh, and not just from one direction. Oh, gee whiz. Jolene, they're like… Setting us up. They're leading us into what we're going to do to next.

So the one factor, guys - the ONE factor that you can use to figure out if in this situation you can be confident that if there was a car coming that would have reached you, you would have heard it, is comparing how much time you need to get across with how much warning you're getting from the vehicles. AND not just one vehicle but the range of warning times for that situation AND not just from one direction but both directions. Okay? And that's true whether you're listening whether you're looking, because sometimes you can, well, we saw that one situation where, when you're looking, you still don't have enough warning of it coming. In the place in front of my neighborhood, if you're using your vision, you don't have enough warning, but if you're listening, you can hear them WAY before you see them.

So anyway, so Jolene, let me see - I'm so excited, I've lost my place here.

[Jolene] Well, so the point is what we're trying to get across is that even in combination there's no checklist that you can go through and say "okay this street has a bend but the traffic's less than 25 miles per hour, but it's really nice and quiet. And so check, check, check - this is a Situation of Uncertainty." or "it's a straight road and it's less than 25 miles per hour and It's super quiet so check it's a Situation of Confidence " The whole idea is that we can't make our job simple with a little checklist. The only thing that we can do is find out our crossing time, find out the warning time, and compare the two.

[Michael] Looking at the same thing from a different perspective. Seems to me in teaching students or working with instructors on how to teach this stuff. If I see there is a crossing that has a curved bend Yes, I understand that that curve and bend ahead may not create a Situation of Uncertainty. But what that tells me until we've done a thorough analysis of that area, that it is a Situation of Uncertainty without having done those calculations and bits of research. Just in my gut, if I see a large bend and it's

impossible to … it would appear to be impossible to see around it, etc. I'm going to assume it's a Situation of Uncertainty until we've done the types of analysis that you're teaching here and have determined that it's not.

[Jolene] Well, I think along those lines, along that reasoning I would go to the step of saying that without doing this analysis, EVERY crossing is a Situation of Uncertainty.

[Michael] And I would agree.

[Jolene] Yeah, there is no characteristic that you can say gives you a Situation of Confidence.

[Michael] Right.

[Jolene] So yes, absolutely. I think that's just that we don't want to jump the gun and start thinking of labeling Situation of Uncertainty or Situation of Confidence UNTIL we've done the analysis.

[Michael] Oh, okay.

[Dona] You just raised such a good point, Michael, because seeing that bend in the road, I've had people, instructors, saying they don't even start thinking of worrying about it UNTIL they see the bend in the road and then they think, “oh. I need to kick in this analysis.“

No, no, no, your students - people who are going to be using your training - need to have that awareness ALL THE TIME. Just like Jolene said - EVERYTHING's uncertain.

You can't … I've seen instructors, I've actually seen this written that if the road is narrow, and has no curves or bends, and the traffic is low, and I forget . . . when it’s going slowly that you can be confident.

[Jolene] the speed limit is 25

[Dona] Yeah, that you can be confident that it's going to be a Situation of Confidence, that whenever it's quiet, it's going to be clear to across.

there are no - NO characteristics - straight, speed, width - there is NO characteristics that can tell you, “sweet! you can be confident that whenever it's quiet, it's clear to cross.” Or “no, you can never be confident if these situations exist.”

There's only one characteristic that you can study. What would that be? What one factor would you consider that would define “oh! I'm good to go – ‘cross when quiet’ works!” or “no, I can't be confident.“ What's that one factor?

[Cindi] The warning time.

[Dona] The warning time. Compared to …?

[Cindi] Crossing time.

[Dona] crossing time. That's it. None of these . . . like she said, there's no checklist that you can say, “oh, if these conditions are all met, I could be confident it's clear to cross when quiet.” There's none of that. There's only one way. And that's, I'm sorry, what was it again, Cindi?

[Cindi] comparing the warning time with the crossing time.

[Dona] That's right. That's right.

[Jenna] when we're thinking, and again, we're thinking with the entire O&M brain of looking at we're going, okay, so there are certain things that make … even if we're not talking about uncertainty and confidence … where there are certain things that make a crossing more complex, certain factors that are in the environment that add complications, whether that's turn lanes, or sharp bends that there are extra things that you need to consider when you're evaluating that crossing. That's at least how we were, at least how I was taught.

[Dona] I say there is nothing that you can look at and say, “oh, this is more complex. This is not.” There's only one. I remember I was looking for a place to teach a student. And so I drove by and it was perfect. It had everything. The road was narrow. the street could be seen for miles and everything was perfect. And I said, that's where we're going to do it. And I show up with the video camera and the tripods and my son's videotaping and everything. And I asked her, “how wide is this?” So she's listening to see how wide it is. And she said, “you know what? I'm not hearing …” (and we had different words for it back then. I didn't know what to call it) … but she was telling me “I'm not hearing them with enough warning.” And I'm thinking - the video is showing my face and my face just drops because, you know -- what the??! So there's only one thing to look at. That's it. Make sense?

[Jenna] It does.

[Michael] Yep

[Cindi] So, I have to say, actually, I found with curves anymore I don't even try and make a prediction of whether it's going to be what the warning time is. We just have to go out and assess it. In the beginning, a lot of times I was sure that we weren't going to hear traffic in enough time, and I kept finding at some curves that we'd hear cars way, way … you know, so much time, so much warning that the person could basically cross the street and back, and others where there was no warning.

So I don't even make a prediction now. I just go out and say, “listen, you know, we've got to just check this out. We have to check out the situation.”

I was actually surprised, though, last week with a client, we went out and it was a T-intersection. There was a really significant curve to the left and, like usual, I'm like, “well, who knows? Maybe we're going to have lots of warning, maybe we're not going to have much at all.” I can tell you visually there was no warning, but we were using hearing, so we're going to check that out. And then to the right actually was really straight as far as you could see, with just a low, moderate hill, so … It was interesting - we actually found that for the curve, we got warning times of 13 to 14 seconds, and so this was one of those places where … She only needed six seconds total, so she could have been across that street and back.

And yet, coming from the right, this straight road where actually … I had kind of forgotten the whole, you know, “no assumptions” and I HAD assumed that we would hear everything, there was one car we didn't hear until it was five seconds… The warning time was five seconds! another was seven seconds. And we were both like, “nope! not enough time, we’re definitely in a Situation of Uncertainty from the right.” and you know, like I said, I thought we would hear them plenty far away, or if not, at least we might kind of hear them and then they might disappear and then reappear. I've had that happen sometimes - I don't know if you've ever experienced that, Dona?

[Dona] Yes, I have! I have seen that - I'm surprised you have! You must do this a LOT with your students - Wow. In the 30 years I've been doing this, I've only seen it three or four times, when I can hear them way down the road, and then they kind of disappear, into kind of like a little pocket, it's either - I guess in your case, it was going down below the dip, and then the cases I've seen, they're going around another bend - and then they come back out again out of the pocket

And… When you see that, you're going to have a very - you're going to have two distinct ranges of warning times. You're going to have the warning time for the vehicles coming out from the very far bend, but if it's noisy when they first appear down there so you don't hear them, and then it gets quiet, but by that time they're in that pocket where you can't hear them, and you think, “oh, sweet! nothing's coming!” And then this thing comes out of the pocket, you know, with very little warning time.

So when you find yourself in that situation. you need to -- if you find that the range of detection time of vehicles coming out of the pocket is long enough, then you're fine - as long as it's quiet, you know that you have time to cross.

But in front of my neighborhood, by the time they come out of the pocket, it's not enough warning time. If it was quiet, I couldn't be sure that there's nothing in that pocket that's going to pop up and surprise me, so … But the warning time from the far bend - when they first appear - is more than enough. I mean, I could cross several times before they get here.

When you have that kind of situation, where you have enough warning time to be confident from the first time that you hear them but not enough from when they come out of the pocket, what you can do is find out how long it takes from when they disappear into that little pocket and then come back out. I think in the case where I was, by the time they went in and came back it was about three or four seconds.

And so, to make sure that you have enough time to cross, what you can do is wait till it's quiet, and then you know that you have time UNLESS there's a car in that pocket, and to make sure that there's no car in that pocket, you wait another three or four seconds to give that car time to come out of the pocket. And if you don't hear anything in that 3-4 seconds, then you know “Okay, there's nothing in the pocket, there's nothing that came around the farthest bend so I can be confident I have time to cross.”

I'm glad you brought that up. Thank you and I will let you get back to your adventure at your T-intersection and your crossing with your student. Thanks.

[Cindi] Yeah, so basically the assessment - like I said, if there had been anything that was going to be short, I figured it would be the curve. It was the complete opposite.

[Jenna] Interesting.

[Dona] I think that's such a beautiful example … what you think it's going to be. isn't.

I have a video and I don't know what happened to it, but it's been lost off of YouTube. But it's a video that was taken by Rickilyn Layer, where you can see for several blocks, but you can't hear them until they get really close. And she made the video and sent it, and I would love to find that again.

And she took Daniel Kish to that crossing later, and they could hear them WAY down. Well, it turns out that they had repaved the road. So now this, yeah. So… Really, Jenna, there's nothing … you can't say one's complicated and one's not. There's only one way.

[Cindi] The interesting thing here, there was a T intersection, and actually, like you said, if you tried to do this with vision, it was definitely, you did not have enough time. And we were watching cars, it was the top of the T, and we were watching cars pull up to the stop sign on the stem. And, drivers were looking, and looking left, right? They do not, the drivers that wanted to pull left, they were not comfortable. They're like "I can't see a car." So the student and I, we were like, you know, we needed to just put up a sign here that tells drivers like "roll down your window. You'll hear them coming!"

[Jolene] Thank you, Cindi. What a great discussion. That's a great point.

So another thing that came up when we were … actually i was teaching a class for University of Pittsburgh future O&M specialists, and we were going through Sauerburger.org training and self-study guide and they kept asking, "well, how many samples do I take? How long do we stand here and do this?" Of course, for them, it was a project so they had to do a lot of streets and it felt very time-consuming to them but I also think, you know, for our students, I think they have the same thing, the same feeling like "how long do we stand there."

But… how do you know that you've got enough samples? I mean, there's part of me that wants to stand there all day to make absolutely positive that none of the cars coming that the warning time will be shorter than my crossing time. And then there's another part of me that's just like, "oh my gosh, can we get this over with already? Can I just do one or two or three samples and move on? I can't stand here all day." but I don't want to put myself in danger. I don't want to put my students in danger. But how do you make that decision? How do you know enough is enough? And I just think that it's interesting that it keeps coming up. In many of the discussions that we've had. And of course, there is research on this and Dona? Would you like to discuss that?

[Dona] Wow, you put it so well. You know, when I first started doing this 35 years ago and i published "To Cross or Not to Cross, blah, blah, blah." I got only one published response and that was a letter to the editor called "The fallacy of the timing methods" by a mobility instructor in California, Jane Bennett. And she raised a question that Jolene, 30 years later, is pondering as she's trying to apply this. She wrote, "no sample of timed cars will ever be sufficient. What if the next car or any succeeding car arrives in less time than what you observed? Would timing not 15, but rather 50 or 500 or 5,000 vehicles be enough? how many people would bother to wait so long?"

So this is a real problem - how many samples do you need to take to be confident the next car that comes is going to give you enough warning? And so what we did in the beginning, for the first 10 years or more that I was doing this, I thought that I should analyze crossings. And I would go with my client and we would spend an hour, two hours assessing that crossing. But even then, like Jolene said, the question comes, how many are enough? so in 1995, I did a study with Dr. Mary Maureen Hill at Peabody, and Dr. Rob Wall Emerson, who did the study I was telling you about earlier, was one of the students there at that time, so he was also involved in there.

Anyway, we measured the detection-to-arrival time of 20 vehicles in 24 situations, some of them we were looking and timing the detection from when we first saw them to when they arrived. And then others we were listening, timing the detection from when we first heard them until they arrived. In 24 situations, 20 vehicles in each situation, and we found that 95% of the time, in that range of warning times, 95% of the time one of the shortest in that range was observed within the first 12 approaching vehicles.

So we thought "12, this makes sense - you can be 95% confident that you've got the full range if you observe 12 vehicles… from each direction." So, we could take the time to analyze crossings and then rely on that analysis for the future – the time would have been well spent. They wouldn't have to come every time, they would know that, "yeah, two years ago, we assessed it, it's good to go." And so we're very good and so … Yeah, so problem solved, right, Jolene?

[Jolene] But what about the fact that situations change?

[Dona] Oh! Darn!

[Jolene] things are different. I have a video here. of a crossing where Gordon Parks was killed. You couldn't hear the approaching truck until it was four seconds away, but the next evening, you could hear the truck several blocks away.

[Dona] All the vehicles. Yeah, I could.

[Jolene] So let's check out this video. It's a two-lane street that is straight as far as we can see in both directions. When the video starts, we don't hear any or see anything coming. We hear a pickup truck coming fast to our right, and it arrives just four seconds later.

[Dona] Thank you. When I came back, yeah, I was going to say, I came back to that same place the next night I could hear them from several blocks away when it was quiet. I could hear them way with more than enough warning at the same crossing.

[Jolene] So if we had stood there for an hour and analyzed this intersection or this crossing at the time of this video we would have been done. But then if we analyzed it the next night, we would have had a whole other story.

So, my lovely O&Ms - what are some situations - or what are some things that make situations change. What are some factors?

[Michael] Weather.

[Jolene] Weather like what? What kinds of things about the weather?

[Michael] changes in humidity, changes in barometric pressure. Um, I don't know what else you're looking for exactly.

[Jolene] Okay. Thank you. Claire, do you have something else?

[Claire] I was just thinking certain crossing points are very different depending on the time of the day because of traffic times. You know, they're just busier parts of the day versus times when everybody's in school.

[Jolene] Yeah.

[Dona] Well, we're not looking at how much traffic is there, but how well we can hear them when it's quiet.

[Claire] I just mentioned the traffic in the instance that they create a lot of ambient noises, even if it's not obvious, it’s behind you or around that area?

[Jolene] Yes. Yes.

[Dona] Would this be a good time, Jolene, to talk about ambient sound changes? Since she brought it up?

[Jolene] Sure.

[Dona] Okay. Claire, I was shocked to find out, well, let me put it this way. In 1970, when they passed the law to reduce the sound of noise, they decided to find out how much noise is there. So they set up sound level meters in more than 20 situations. One was in a farm next to the Grand Canyon, one was downtown Manhattan. And so they just left it there for a day. And so in each case, there would be a sound like a dog barking, so the sound level meter would go up and then come back down to a certain level. And then a car would pass by and it would go up and come back down to a certain level. And so whenever a cow will moo it would come up and go back down.

And they would always come back down to this one level. And they call that the “residual sound level.” And it's what you and I would call the “sound level of ‘quiet.’”

So as you can imagine, the sound level of “quiet” in the farm next to the Grand Canyon was really quiet. And the sound level of “quiet” in downtown Manhattan was not so quiet. So that wasn't surprising.

But what shocked me is that in every community the sound level of “quiet” CHANGED, so that at four o'clock in the afternoon, it was twice as loud at “quiet” than it was at quiet in the middle of the night.

So, Claire, you nailed it. One thing that can make it so that you can hear well when quiet at one time but not at another is because the sound level of quiet has changed - the ambient sound level.

Good. We had a lot of hands up on other suggestions. And by the way, each one of these is good. Michael, I'm sure that sound carries differently when it's humid than when it's not. So that could change it.

[Michael] So, I was thinking when I said "weather."

[Dona] let me add to weather is "temperature" because temperature carries faster in, I forget if it's cold or warm. … It travels faster in warm temperature than cold.

[Cindi] But it travels further in cold weather.

[Dona] Interesting. … Interesting.

[Jolene] Some other things to note is if the person who is traveling is like if it's cold out and they have a headband on, or earmuffs, or if they have a cold and their hearing is affected. Cindi, what else?

[Cindi] sometimes weather can you know if it's like a snow, it's going to definitely dampen the sound of vehicles, but a wet road, especially if there's not active rainfall, you can hear cars coming from WAY far down there. … I think we should just make all the roads wet.

[Dona] That makes a huge difference, Cindi. exactly. I'll tell a little story. I was looking for a place to bring some students from one of the universities, and I found a perfect place. There was a factory behind me, there was this low rumbling sound going on, it was steady. And I thought, oh, there's no way you can hear it but I could hear them really far. So I brought the students there the next day. And we couldn't hear it at all. And I realized, oh, when I was there last night, the roads were wet. now the roads are dry. So, you nailed it Cindi that wet and dry roads can make a huge difference.

[Jolene] Another … not so much weather, but climate, is if there are leaves on the trees versus not on the trees. Some leaves absorb sound and some reflect, so in summer, it could muffle or enhance sound depending on the type of tree and the environment.

[Dona] Cindi, did you have something?

[Cindi] One thing that I don't know if it's part of the curriculum, but that i've tried to kind of work with students on is especially if there's other people around, that they can act as sound shadows.

[Dona] So glad you brought that up. I haven't had people blocking the sound, but I have had vehicles parked, blocking the sound. I once assessed, again, this is when I was assessing crossings, assessed a crossing with my client and he could hear very far to the right. I came back later to record that and I couldn't hear to the right. And I thought, what's with that? And then I realized, oh. people had just come home and parked and now they were blocking to the right. So, you know it totally changed.

One other little story is I was… I was working with a tall student And… she was standing on the curb And she kept reporting vehicles that I couldn't hear. And I'm standing in front of her and i thought She's making it up. I started the timer anyway and I thought, "whatever…" And sure enough, here comes the car. I'm like, "oh!" And she kept doing that.

And I thought, why is she… Oh, geez, Dona, you're standing next to a parked van. Okay? She's standing up above it where she could hear it. So, parked cars and vans and trucks can change it from one moment to the other. And Jolene, I think that completes the list.

[Jolene] Okay, but before we move on, why don't you tell us about the recordings for Part Two that you made?

[Dona] Ooooh, yes, thank you - that's a great example! to make the recordings for the lessons that we're going to do in Part Two, I went to a crossing in my community and recorded approaching vehicles at three different times once when the roads were dry, once when there was a car parked to my right (it was my car), and once when the roads were wet.

And you'll see in Part Two that the same crossing - because of the parked car and the wet roads - had three completely different situations. So thank you for reminding me. Oh – Victoria, did you want to add something?

[Victoria] a young man I know, he wants to get to his mailbox. He has to cross a highway with traffic that goes 60 miles an hour, it has a straight part and a curve. And first thing he does even before he walks out the house, he looks at the weather, he thinks about it and kind of puts his hand out, stands at the front door and goes, "Oh, it's pouring down rain, great day to get the mail!" or "It's snowing - uh, I won't be able to hear anything." If the humidity is high, and it's real thick, he won't cross. If it's extremely cold out, he'll actually go out because you can hear better. Or definitely when it's raining, he says you can hear the tires farther away. And when the wind is going in the direction where it comes toward him, he can hear the cars on that curve. He knows this, now, because of all the many times he analyzes. He looks at the weather, makes his decision to go to the mailbox, and once he's there, he'll stand there at the driveway before he crosses. He always does two analyzing of the warnings when it crosses in front of his face. From there, he makes his decision whether it's a Situation of Confidence to go, if he can get across in seven seconds (he's a fast walker).

[Dona] Oh Victoria, that's such an amazing example! So he has analyzed that crossing SO many times that he can predict whether he's likely to be able to hear with enough warning – if it's really cold, or the roads are wet, or if the wind is blowing from the direction of the curve, he's more likely to hear with enough warning but if it's humid or it's snowing, he's not.

You know, but even with all that experience, even he can't predict for sure whether he'll get enough warning! And so with vehicles coming at 60 miles an hour, he doesn't want to take any chances, so before each crossing, he still takes just a few minutes – he doesn't want to wait all day – he takes a few minutes because he wants to listen for at least 2 vehicles and make sure he can be confident that he has time to cross when it's quiet.

So that brings us to think about … well if you can only observe 2 or 3 samples of warning times, how can we assess the likelihood that we're in a SItuation of Uncertainty, or a Situation of

Confidence? You know . . . a situation where we can be confident that it's extremely unlikely that the range of warning times of approaching vehicles for that situation would include some that are less than the crossing time. Anyone have any thoughts?

[Cindi] If you have a single warning time that's less than your crossing time, you're automatically in a Situation of Uncertainty.

[Dona] Oh, indeed! You know, if a Situation of Uncertainty is one where the range of approaching vehicles is likely to include some that are less than crossing time, and we observe one that is less than crossing time, we KNOW it's a Situation of Uncertainty! Oh, and I should remind you that when we're talking about warning times, we're talking about the time from when a vehicle is heard WHEN QUIET until it reaches our crosswalk. So Cindi was talking about a vehicle that was not heard even when it was quiet until it was close enough to reach you during your crossing. So if you observe one of those, it's easy to determine that it's a Situation of Uncertainty! You KNOW that the strategy "cross when quiet" will not be reliable because if you start to cross when quiet, there could be a vehicle that could reach you during your crossing.

But now, let's think about how you can determine that it's a Situation of Confidence, a situation where it's extremely unlikely that the range of warning times includes any that are below the crossing time. I mean, how can we figure out how likely it is that if we stood there collecting data long enough to determine the full range of warning times, it would all be longer than the crossing time? How can we be assured of that?

Well, let's think about it this way. I'm showing here a drawing of two warning times that are about 9 and 14 seconds. We know that if we take just a few samples, it's theoretically possible that one of those was the shortest warning time in the FULL range for that situation. But that is very, very unlikely. So, to err on the side of caution, we should assume that if we stood there for hours, we would find that the full range of warning times for that situation include some that are less than the 2-3 samples we observed.

So that means that if one of the warning times that was observed is just a little more than the crossing time, for example a warning time of 9 seconds and a crossing time of 7 seconds, it's highly likely that the range of warning times includes some that are less than the crossing time.

But the greater the difference between the warning times and the crossing time, the more likely that the full range does not include any that are less than the crossing time - that is, the more likely it is a Situation of Confidence, where you can feel confident that whenever it's quiet - or clear, if you're using your vision, you have time to cross because it's extremely unlikely that a vehicle could get close enough to reach you when it's quiet without you hearing or seeing it when you started your crossing.

So you and your student will need to decide at what point you can feel confident that it is extremely unlikely that the full range of warning times for that situation could include any that are less than the crossing time. If you don't feel confident that that is extremely unlikely, either because your sample of warning times weren't far enough above the crossing time, or you couldn't gather enough data points because you never heard any vehicles approaching when quiet or saw any vehicles approaching when clear, then you're in a Situation of Uncertainty!

Now, this probably sounds very complicated. So Jolene has made a flow chart that captures the thought process that we just explained - Jolene, can you please take us through your flow chart?

[Jolene] Absolutely! So here is the big picture of the whole flow chart, and I will zoom in on it now to make it easier to read. So the first question is very basic: Were you able to gather enough data of vehicles heard when quiet or seen when clear? As Dona said, you have to have enough data to make a determination. So if the answer to that is no, you are automatically in a SItuation of Uncertainty.

But if the answer is yes, then you can move to the next question: were any warning times less than the crossing time? As Cindi said, if even one warning time is shorter than crossing time, you are in a Situation of Uncertainty, you don't need to gather any further data.

If the answer is no, then you ask the next question: Is the difference between the crossing time and the shortest warning time long enough that you think it would be extremely unlikely that there would be a warning time less than crossing time? If the answer to that is no, then you are in a Situation of Uncertainty. If the answer to that is yes, then you are in a Situation of Confidence and you can cross when clear, knowing that the strategy of "to cross when quiet" can be reliable for you in that situation.

But if you are in a Situation of Uncertainty, the next step is to analyze the risk. And you can see the Risk Analysis Checklist for that. Once you've gone through the Risk Analysis Checklist, you decide "Is the risk acceptable?" If the risk is not acceptable, then you do not cross, but you consider alternatives. If the risk IS acceptable, then you can cross when it seems clear, with the awareness that you may be accepting a level of risk but you have decided, through the process of risk analysis, that that level of risk is acceptable for you.

So, what is this process of risk analysis? You're in a situation of Uncertainty, what do you do next? What's the next step? Remember, a Situation of Uncertainty means that you cannot be confident that whenever it's quiet or clear that you have enough time to cross. You know that it's possible that when you start to cross there could be a vehicle approaching that could reach you during your crossing.

So the next step is to figure out how likely that is to happen. How likely is it that if you started to cross that a vehicle could reach you. And then if there IS a vehicle coming, we need to figure out how likely is it that that vehicle would hit you, and then how likely is it that IF the vehicle hit you, that you would be seriously injured or killed.

So in other words, the first step after you realize that you're in a Situation of Uncertainty is to analyze the risk. And that's what Part Two of this webinar is going to be about. Meanwhile, let's talk about analyzing risks and making decisions. Dona, do you have thoughts on that?

[Dona] Oh, yeah. You know, this is an issue that I've actually been concerned about since long before I even worried about uncontrolled crossings, you know, so this is more than 35 years ago, and it's because I was working exclusively with people who are deafblind. And for them - for people who have little or no hearing or vision - everything is a Situation of Uncertainty. I didn't have a word for it back then, but basically everything, including driveways. .. I remember… I was following a client who's deafblind in a beautiful neighborhood, very quiet, nobody was around it was very very quiet. And he was crossing

driveways And I thought, should he be doing that? What should I… Is that something I should be teaching? How do I handle that?

And I'm so grateful that my boss at the time - her husband was deafblind. And she had been working with people who were deafblind for many years - not as a mobility instructor, but in different capacities. And what she did was to help the person who's deafblind to know what's going on around them, what the risks are so that they could make decisions.

And that just made so much sense to me. I can't be responsible for making decisions, I can't say “this is safe, that's not, you can cross here, you can't in this situation” … You know, everything has risk. I actually know a woman, Maxine DePlane, who was killed walking from her car to the store in a parking lot. So… I couldn't say “this has no risks.” And so the best thing to do, I believe, you know, I learned from her, is to prepare the student to gather the information they need in order to assess how much risk is there.

So what she would do is go with a person who's deafblind to the area he's considering crossing or to his community or whatever. And they would just watch what's happening. And she would report what traffic what cars were coming by, if people were coming by, where people seem to be congregating. She would explain what's going on around so that he could then, or she could then make decisions about how much risk there is and whether to take that risk.

I have videos showing the decisions that two men who are deafblind made about crossing streets and driveways. One lived in a community with only about 20 homes and he chose to cross a street that usually was empty as well as a driveway into the back of a little shopping center. He would raise his cane and let drivers know that he intended to cross - I didn't teach him that! He came up with it on his own. And then he'd cross, having decided that the risk of a vehicle coming and then hitting him as he crossed was acceptable. I know other people who are deafblind who were not willing to take this kind of risk.

The other man who was deafblind lived in a busy urban area and he got help to cross the streets there. But he did accept the risk of crossing driveways into shopping centers and gas stations that had a lot of vehicles going in and out. After years of doing this, he once had his cane run over by a driver who was coming out of the driveway, the driver was probably looking to his left to pull it out into traffic and didn't see him. But he was not injured and continued to cross these driveways thinking that the risk of that was acceptable.

So… That's what I started doing, long before I even looked at uncontrolled crossings, is to have students figure out what the risk is. And that's what I draw from when I started working with uncontrolled crossings. is to help students recognize how much risk there is and empower them, help them learn to collect information.

I have a a… I developed sort of a risk analysis for Situations of Uncertainty. And so, you know. So I've developed a things which we're going to, as Jolene said, we're going to cover in part two as part of the teaching the students. So we'll go into that in more detail.

But basically. what I do is what i do is help the student learn to analyze situations throughout their lives. and to make decisions about whether those risks are acceptable or not, which is, by the way, industry's

definition of “safe” - a thing is safe if its risks are determined to be acceptable. And so that will differ from person to person - what might be acceptable to you might not be acceptable to me and vice versa.

So… That is how I approach it. And one thing that's very important is that I recognize my responsibility to prepare them to analyze what the risk is, and document that they learned how to assess risks and make these decisions.

[Jolene] Every one of these things can be a measurable IEP goal or objective or however your state does it. Because some states don't do objectives, but ALL of these can be in the IEP and documented. Easily.

[Dona] You know, another thing to think about is dignity of risk, which is the idea that “self-determination and the right to take reasonable risks are essential for dignity and self-esteem, and so should not be impeded by excessively cautious caregivers concerned about their duty of care.”

And, you know, the same is true of instructors, isn't it, you know, who are concerned about their liability. We are not liable for making people's decisions. We are liable for preparing them to gather the information they need to make educated decisions about the risks.

So. I think, Jolene … did you have something - you had worked with students and young people and so i think you had something to share

[Jolene] Dona mostly works with adults, but I work with school age as well. I have worked with adults in the past, but at this point I work with just school aged. And I have one student who is Absolutely not the kind of person who would do something just because their O&M specialist told him to do it. and he freely tells me that he'll cross he knows how to cross the right way during O&M lessons But he's not going to bother with that when he's out walking around by himself. And of course, he lives in a heavy pedestrian area near the school and he walks everywhere but all I can do is give him the tools so that he can make educated decisions for himself and his own level of comfort and give him the dignity of making those decisions. But I also have noticed that as he's walking away from me on our lessons, even if I follow him a little bit when he doesn't know I'm following him, but he is using what I teach him to influence his decisions and he maybe brags a little bit about not always doing things right, but really truly we give our kids the tools to make good decisions and adults as well. And once we give them the tools and we encourage them to use them wisely, we’re ultimately not liable for the decisions that they make.

And… I believe that it is a gift that we can give people the dignity of risk, the dignity of making their own decisions. And not just telling them “no, don't cross here. This is a bad choice,” but giving them the tools to maybe decide that they don't want to cross there for themselves. And then they're going to keep doing that. As opposed to just “Oh, well, Ms. Troisi told me never to cross here, but I don't care what she says, so I'm just going to go ahead and go anyway.” I think it's really important to give our people the tools to make decisions just like we would.

[Michael] I would like to thank you for this part of the training tonight because one of the things that I have, having taken several of your workshops Dona, is that for a few days afterwards I become too conservative as an instructor, and you actually have presented more tonight about balancing that than I've heard you present in past workshops that I've been in And I really appreciate that because i really appreciate that it does level out the training a little bit.

[Dona] Wow, We were going to open this up to get consensus from everybody, and Michael, I'm so glad you opened it up with that!

Let's see what you guys think about … You know, you're in a Situation of Uncertainty, you can't be confident that it's clear to cross when quiet - what is our responsibility there? Shelly.

[Shelly] I was just going to say that maybe teach a different route if the route, you know, if the risk is too high or if the student is not confident

[Dona] That's beautiful. So, we offer them alternatives. I have twice asked my clients, “is the risk acceptable for crossing here?” And they say, “well, what choice do I have? I need my prescription. I need that …” you know. And so, I'm so glad you raised that because one very important part of our training that we should make sure we check it off on the list is that they have alternatives when the risk is not acceptable, that they have alternatives to achieve what they want to achieve. That's beautiful. Thank you so much. Sherry? or Cindi, Cindi!

[Cindi] I mean, I think Jolene and you've already sort of answered in terms of saying you know, doing the risk assessment. And I always tell people … “We're not seeing this as, you know, we're defining ‘safe’ as meaning the risk is acceptable to you.”

A lot of times I explain to them that they will never, ever hear that I've gone and jumped out of a plane. even like a tandem jump. As far as I'm concerned, it's not a safe thing to do - you're supposed to stay in the plane until it lands on the ground, right? And so we kind of talk about objective and subjective risk. So, you know, my risk jumping out attached to a qualified instructor is, in theory, the same as the other person who DOES want to jump out of the plane and is also doing a tandem jump. Our risk is the same. But I am like, “nope. not safe, not happening!” that other person feels like this is totally safe, right? “This is going to be the adventure of a lifetime.”

[Dona] Cindi, you brought up such beautiful examples! people do things that some of us would never consider accepting that risk. So, it really, really varies.

And I think we never have to agree on what “safe” is. Because as you said, it's very individual. what's safe for you may not be safe to me. What's safe to me may not be safe to you.

[Jolene] But we can use this risk analysis checklist once we get into it to really bring home some of the like ”right now we're looking at the likelihood that you will die.” We can use this to remind people that there absolutely is a risk. There is never a crossing for anybody in the face of the planet that is risk-free. And some, you know, when kids start to feel or anybody starts to feel overconfident or, you know, like they are just that nothing can go wrong, we can use this to kind of put that in perspective and be like, ”Well, I mean, no, really, here are all the things that COULD go wrong. So we want to make sure you're thinking of those too when you're making these decisions and don't just assume everything will be fine.” Yeah.

[Dona] Um, Victoria?

[Victoria] So, I embrace the analyzing for crossing no-control street crossings. I learned about it when you came up here Dona, in 2011 and you taught a whole bunch of us. We hadn't heard about it at all. And all of us, at least in Alaska, teachers and O&M instructors instantly embraced it, and we were using it in schools and stuff. And I have one student that - way back when I taught, that I didn't teach this when I was teaching in high school and junior high -- and now she's coming as an adult, she's 24 now. And I taught her no=control crossings and what to do, and she says “oh, Victoria, I wish I had known this sooner!” and all. She said, “This really helps me to get out and get in the community and cross these roads.”

The young man I was telling you about who had to cross the highway to get to his mailbox, his O&M instructor, back when he was 15, taught him how to cross at uncontrolled intersections. He's now an ADL instructor and works with older blind. Once he figures out whether it’s a Situation of Confidence, he decides whether to cross. He can get across in 7 seconds, and he says if he gets even one where it's like five and a half seconds, he usually doesn't take it, and will come back later in the day, or tomorrow, and get his mail. His alternative route if he really wants that Amazon package, he has to walk about a mile, or a mile and a half around to the back part of his mailbox, pick up his mail and walk back. But I think the best part of all of this - he likes that he is in control And it's fallen into other parts of his life, to where he's able to help other clients, as he explains this to them of analyzing the crossing, and that, with you being in control, you make your decisions. But it has really made him strong in all other aspects of his life, to where he is a very successful person.

[Dona] Thank you, Victoria! Jen, did you have something to share?

[Jen] You know, risk assessments is becoming so commonplace in our everyday life. Personally, as a deafblind individual working in the field and studying emergency management, my role is to educate people how they can do risk assessments by eliminating, reducing, or mitigating for any type of disaster in the world. So in the orientation and mobility perspective, there's risk assessment, and it's just like in my field of trying to figure out how to prepare and indicate for disaster. So, I am actually very excited to learn more about how risk assessments are utilized in lessons in orientation and mobility.

[Dona] Thank you so much, Jen. Michael?

[Michael] The people I'm working with right now are generally very risk-aversive. They want to know the safest way to travel from point A to point B.

They're having to plan bus routes and one of the things that I have found generally, they are most willing to accept is, “okay, you've got this Situation of Uncertainty, and it could be pretty severe at times. You can choose to take that risk but if you stay on the bus 30 minutes longer it's going to come back by on the other side of the street And then you don't have the risk because you have planned your route in a way that avoids that crossing entirely.” And I find most of the time the safer choice is the one that gets selected.

[Dona] Thank you, Michael. Denise?

[Denise] So in 1999, I moved to New Zealand and I lived there for 16 years and New Zealand has a reputation for high-risk activities and extreme sports. And that's how I came to discover risk assessment

When people over there, when the people I worked with over there ran camps and immersion course, they did a risk assessment and I had brought kids with vision impairment over to France twice, I don't think we did that in such a formalized way.

So I kind of really liked it. It made me feel safer in my practice and whatnot. And I'm not an extreme sports person, but my daughter is. And so through her endeavors, I informed myself a little bit more and and that's how I came to find out that people that that do such extreme sports - like that's where bungee jumping was invented was in New Zealand - they actually analyze and they assess the risk to the nth degree to such a point they get ready for it, and so they actually… they don't eliminate the risk, but it's an informed risk and they get ready, they practice, they do what they need to do so that when they're doing their extreme sports, they minimize the risk, I guess, and they know what they're doing and what's going to happen and they understand the risk.

So when I started working with you and started reading research that you and Eugene and Rob ran, I felt, "oh. Here's a nice set of rules, I guess, or parameters that make me feel a lot more safer when I'm out doing my work with my students," rather than telling them to just cross when it's quiet.

So yeah, so that, I guess then helped me, I feel, become a better practitioner - it made me more comfortable when I was working with my students.

And yeah, so I'd like to read a definition, if I may, that I found online, and that I felt sums it up really well. And it says "informed risk-taking is the act of exposing yourself to a potential loss or harm to gain some benefit or reward. This risk is backed up by careful analysis of the situation and possible outcome."

So yeah, so that's kind of my take on it, I guess.

[Dona] Oh, wow. Thank you, Denise. "Informed risk?" I'm so glad that you were the last to speak because that concept, "informed risk" - it just puts everything together that we've been talking about.

The folks here have talked about mitigating risks. the importance of having alternatives when the risk is not acceptable, making choices and how everyone's decision will be different - some choosing to jump out of an airplane and others not willing to take that exact same risk. Some choosing a safer route even though it makes them take a bus far out of their way. and others choosing to get their mail by crossing in a risky situation rather than walk a mile and a half out of their way.

You know, this makes me think of Gordon Parks, and how all of these issues that you folks have brought up about informed risks. mitigating risks, making choices might have changed his story. Gordon is the man who was killed crossing the two-lane street that Jolene showed you in the video earlier in this webinar. I have a picture of the street with a little cross that someone made with Gordon's and his guide dog Wendy's names on it. I'll show it here.

I made the video that Jolene showed you just a few weeks after Gordon and Wendy were killed. At that time, even when it was quiet, I couldn't hear that pickup truck from the right until it was four seconds away. But when I came back to that same crossing the next evening. I could hear all the vehicles in both directions more than a block away with plenty of warning

So you know, back when Gordon learned to travel, most O&Ms believe that ”cross when quiet” is a reliable strategy. So I'm assuming that Gordon probably thought that whenever it's quiet at this crossing, he's going to have time to cross. I doubt that he realized that before you can be confident that it's clear to cross when quiet, you need to analyze the situation and make sure that when it's quiet, you're getting enough warning of approaching vehicles.

And if he did realize you need to analyze the warning times of those vehicles. he may not have realized that situations can change. I myself didn't realize that for the first TEN YEARS that I was working on these crossings. So even if he realized he needs to analyze the warning times of approaching vehicles. If he did that analysis at a time like when I could hear the vehicle several blocks away, he'd think, “sweet! ‘Cross when quiet’ works here!” And not realize that the next time he comes to this crossing, that may not be true.

And, you know, we talked about choices… Gordon actually had another choice. At his request, an accessible pedestrian signal had been installed at a crossing that was just about a half a block out of his way. But his neighbors told me that he didn't feel safe crossing there because of the turning traffic. Jen had talked about mitigating risks, and I wonder if Gordon would have felt safe crossing at that signal … and “safe” means that for him, the risk would be acceptable … if would he feel safe if he had known about the strategies that our research indicates can make the turning drivers more likely to yield.

But he chose to cross in the middle of the block, where he felt safer. You know, talk about informed risk! That's such an important concept. Denise, I'm so glad you brought that to us. Thank you.

I think that informed risk would… Gordon might have made a different decision if he had analyzed the risks of his choices and (1) realize that at the time he chose to cross, he was in a Situation of Uncertainty and secondly, If he had learned how to analyze the risks of that situation at that particular time…

You know, in Part Two of this webinar, you're going to learn that in Situations of Uncertainty, high traffic volume makes it more likely that there IS a vehicle that could reach you when you think it's clear. And I'm pretty sure that the traffic volume was high when he crossed because his guide dog, Wendy, walked right in front of the truck. you know … And I'm thinking the only reason that she would do that is because her attention was distracted as she was looking to the left to get out of the way of another vehicle coming from that direction. Why else would she just walk right in front of the truck? So I'm assuming it was pretty busy with vehicles coming from both directions when they crossed.

And you also learn in Part Two that, in the highly-likely event that there is a vehicle coming when he starts to cross, there were many other factors that we can see there in that video that make it more likely that the vehicle would hit him and seriously injure or kill him.

If he had been able to realize this, he may have made another choice. And even if the signalized crossing still seemed unsafe to him after reducing the risk, as Shelly said, it's important that he be able to implement alternatives that have risks that he would be able to accept.

So I'm hoping that with the insights that you folks have shared just now, and the information that you're learning in this series of webinars, that this kind of tragedy of UNinformed risk-taking can be avoided by

preparing your students to (1) understand these concepts, and (2) have the tools to analyze the risks so they can make informed decisions.

So I'm hopeful that things will change. So, on that note, Jolene. I think we're ready to, first of all, deeply thank all the participants who helped and provided their insights and ideas, and close Part One of our webinar. Could you please wrap it up and take us home? Thanks.

[Jolene] Yes, absolutely.

We've reached the end of this first segment of preparing students for uncontrolled crossings. Again, my name is Jolene Troisi. My email is Truisi.jolene T-R-O-I-S-I dot J-O-L-E-N-E at gmail.com. And Dona's contact information, is Dona Sauerburger is D-O-N-A. at sauerburger.org, S-A-U-E-R. B-U-R-G-E-R.org.

Some resources that you should be aware of at sauerburger.org - there is a self-study guide for preparing visually impaired students to assess and cross streets with no stop sign or traffic signal. And there's also an APH software download titled “Crossings with No Traffic Control.” And we have the QR codes for both of those resources on this screen.

Thank you all for attending, contributing and conversing with us during this deep dive into backgrounds and basics. Please be sure to join us for Part Two. We will be discussing and practicing Teaching and Assessing Students. Thank you very much.