Evaluating risk factors for adult school crossing guards intersections in Montreal

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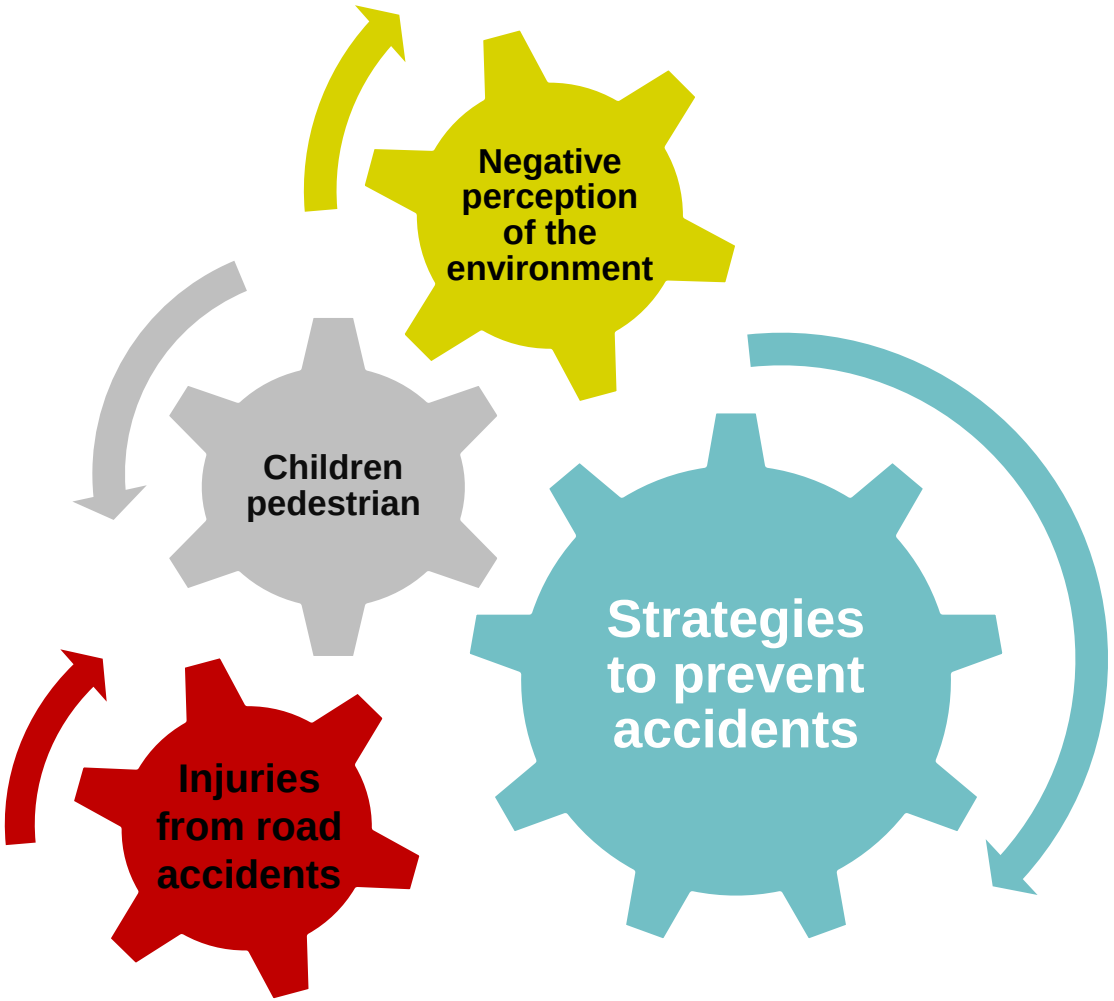
Presentation overview

Problematic → Methodology → Preliminary results

Presentation overview

Problematic

Problematic: children walking on their way to or from school



Adult school crossing guards: what for?

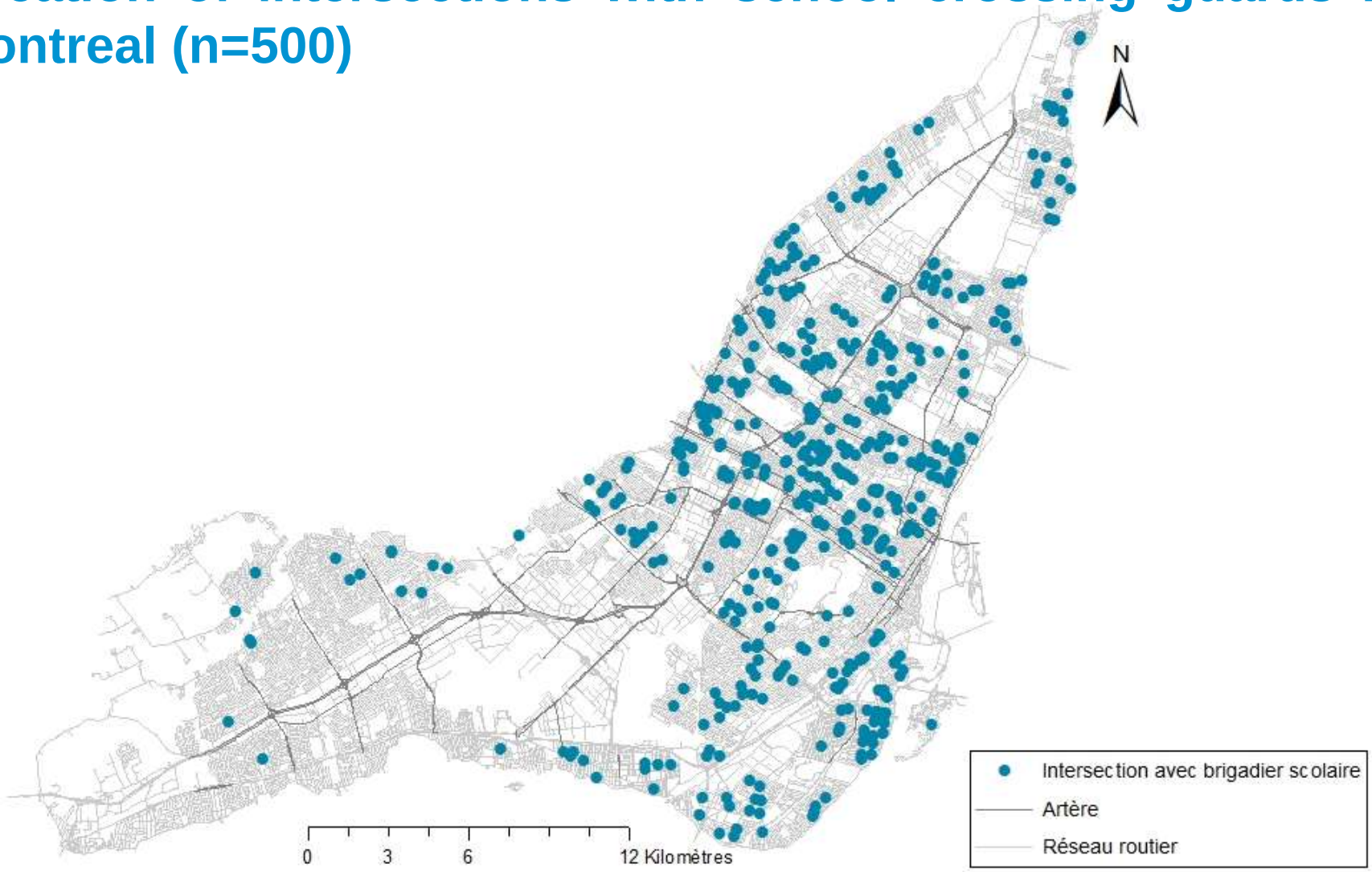
- **Present at an intersection,** the school crossing guard **ensures the security of elementary school students** by indicating the best moment to cross the street.

- They have a **special status** in the traffic safety code:

  Where traffic is directed by a peace officer, a **school crossing guard** or a flag man in charge of directing traffic around or about work sites, every person shall **obey his orders or signals** even if contrary to existing traffic signs or signals. (Article 311)

- When deciding if an intersection is in need of a school crossing guard, the methods used in the evaluation are left to the **local decision makers**.

Location of intersections with school crossing guards in Montreal (n=500)



Research objectives

- Create a standard and objective protocol to evaluate the physical environment characteristics of school crossing guard's intersections.

- Assess the applicability of this protocol for a sample of intersections with crossing guards.

- Evaluate a "potential risk" for these intersections and validate the methodology through accident history.

Presentation overview

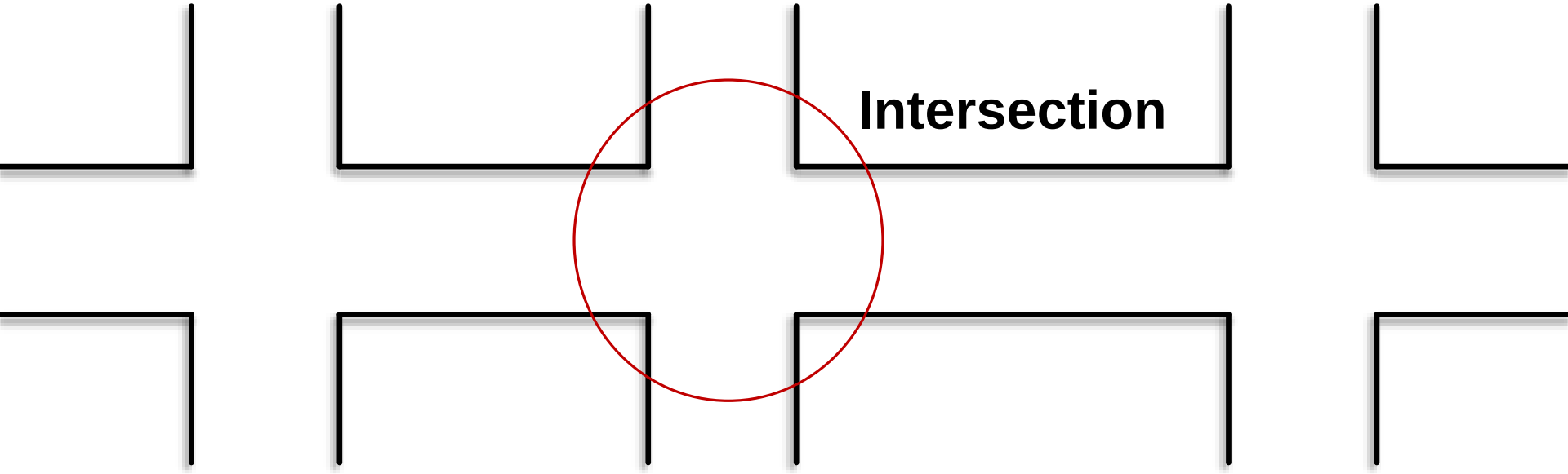
Methodology

Methodology:

1.
   - Through a literature review, identify physical environment risk factors for children crossing the street.
   - Create an evaluation grid based on these factors.
   - Grade the risk factors.
2.
   - Collect data on 100 intersections with school crossing guards.
3.
   - Pool and analyse the data gathered from the field.

Field survey: how the data were collected

- **Two grids** are used to evaluate intersections:
  - Evaluation of the **crossing path**
  - Evaluation of the **street segments** heading toward the crossing.



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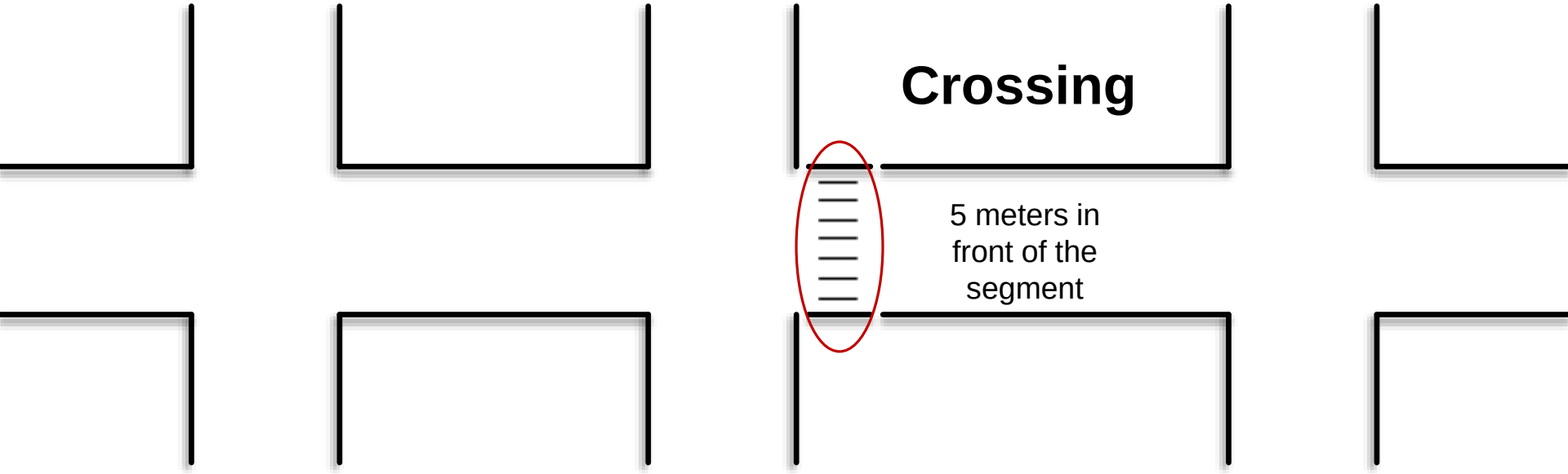
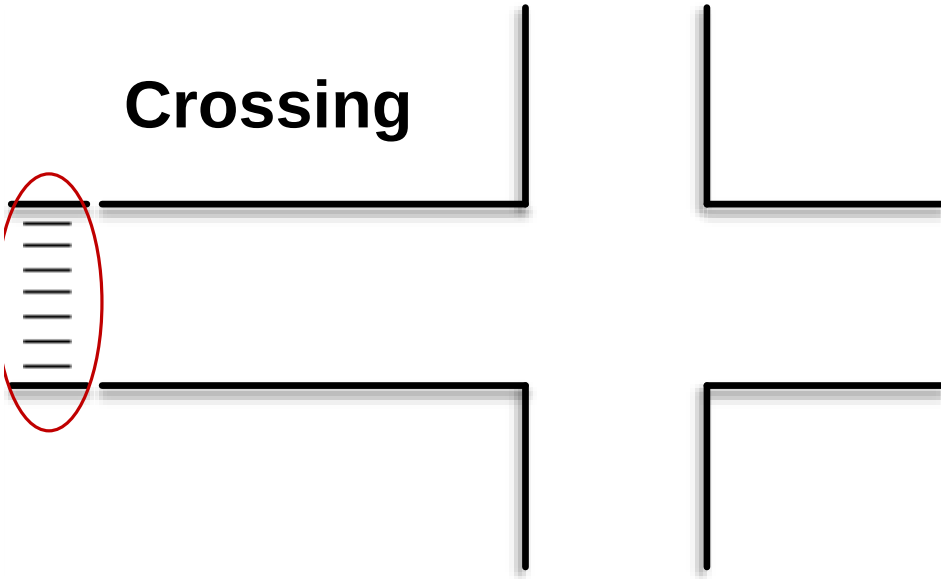


Field survey: how the data were collected

ÉLÉMENTS À OBSERVER À LA TRAVERSE	
Facteur	**Variable**
Caractéristiques de la traverse	Hiérarchie de la rue lié à la traverse
	Largeur de la chaussée
	Signalisation
	Bouton d'appel sur feu piéton
	Présence de ligne d'arrêt sur feux de la circulation
	Présence de ligne d'arrêt
	Marquage de la traverse
Caractéristiques liées à la visibilité de la traverse	Pente et courbe
	Mobilier urbain de plus de 1,2 mètres de hauteur
	Végétation de plus de 1,2 mètres de hauteur
	Entrée de stationnement à la traverse
	Identification claire d'interdiction de stationnée
Mesures d'apaisement de la circulation	Saillie de trottoir
	Dos d'âne
	Refuge central
	Bollard

ersections:

nts heading toward the crossing.



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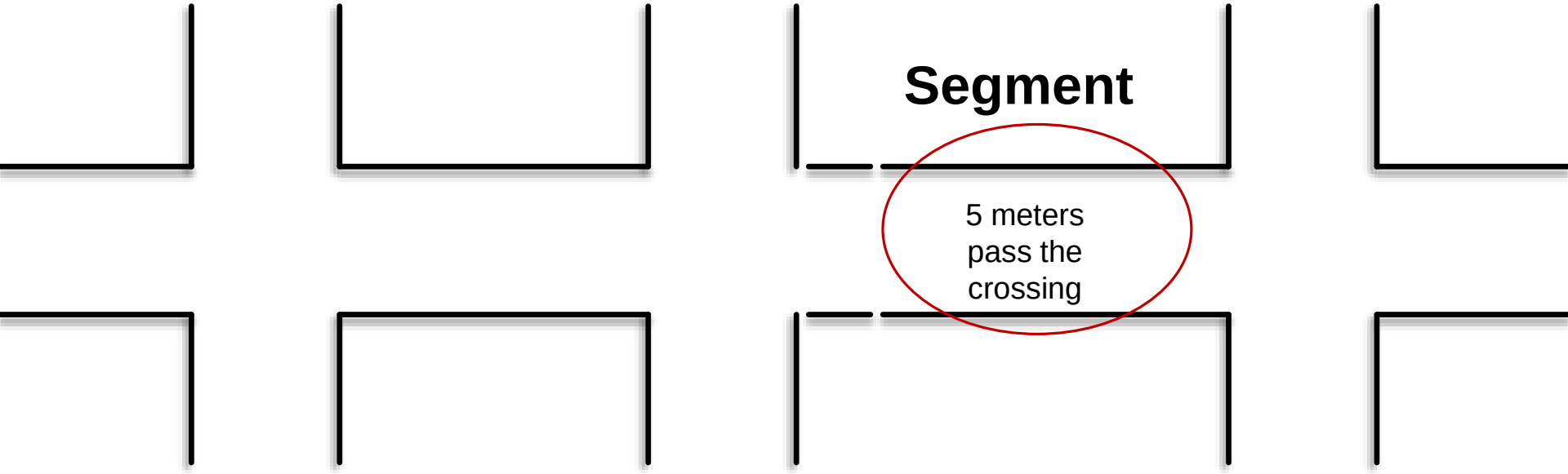

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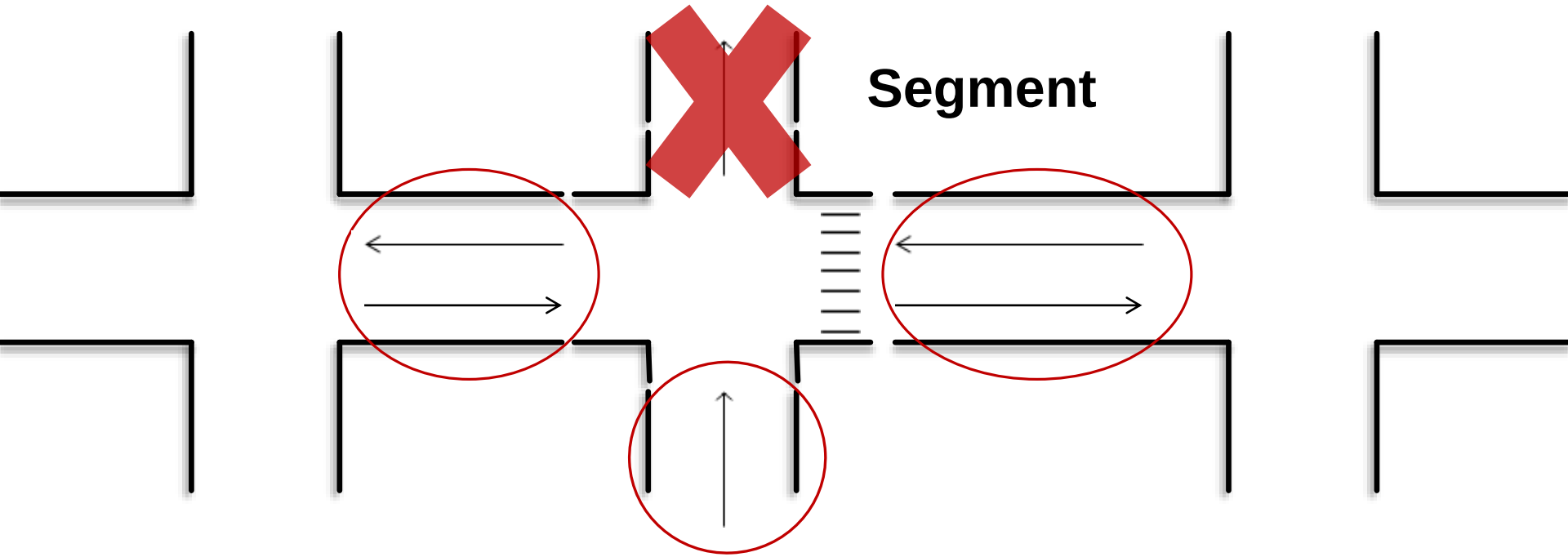
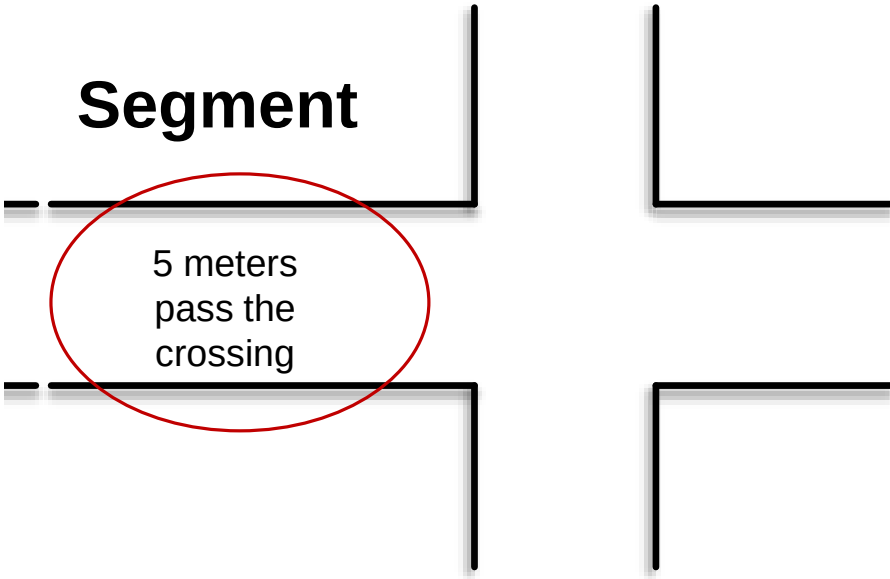


Field survey: how the data were collected

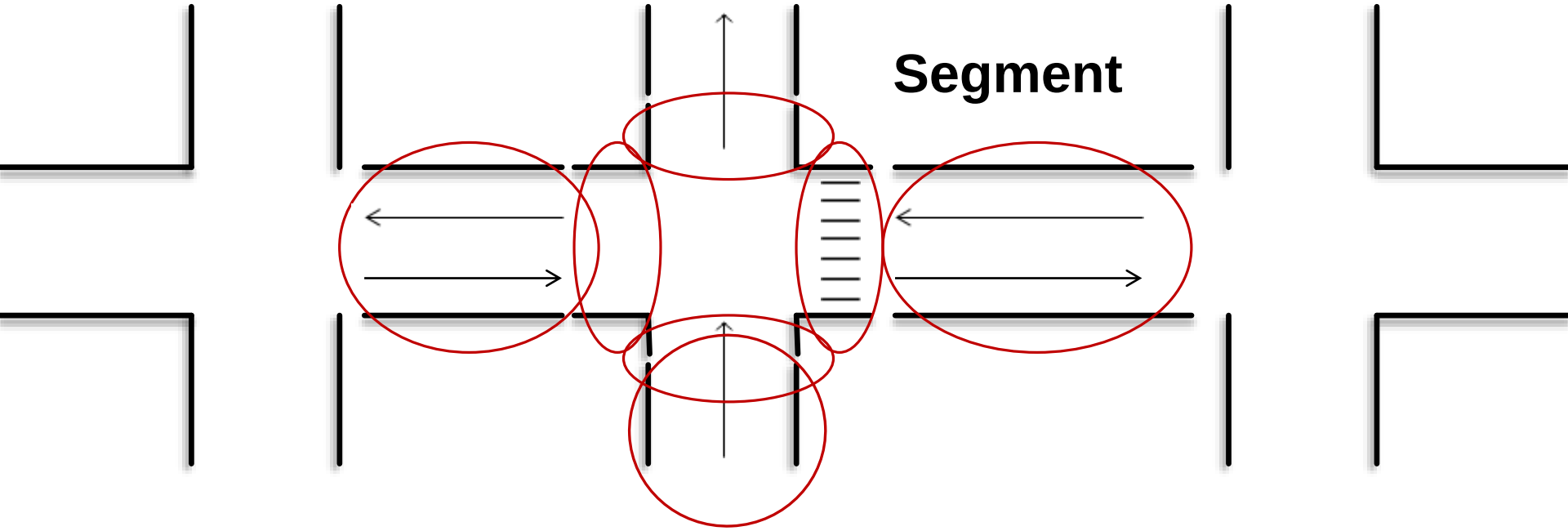
- **Two grids** are used to evaluate intersections:

ÉLÉMENTS À OBSERVER AU TRONÇON	
Facteur	**Variable**
Caractéristiques du tronçon	Sens unique
	Présence de trottoir
Caractéristiques liées à la perception de la vitesse	Présence de bande ou piste cyclable
	Zone de tampon bordé d'arbres (entre trottoir et chaussée)
	Terre-plein végétalisé
	Stationnement sur rue
Mesures d'apaisement de la circulation	Saillie de trottoir
	Dos d'âne
	Bollard

s heading toward the crossing.



Database creation: combine information for both crossing and segment grids for each intersection



Example of retained weighted risk factors for preliminary analyses

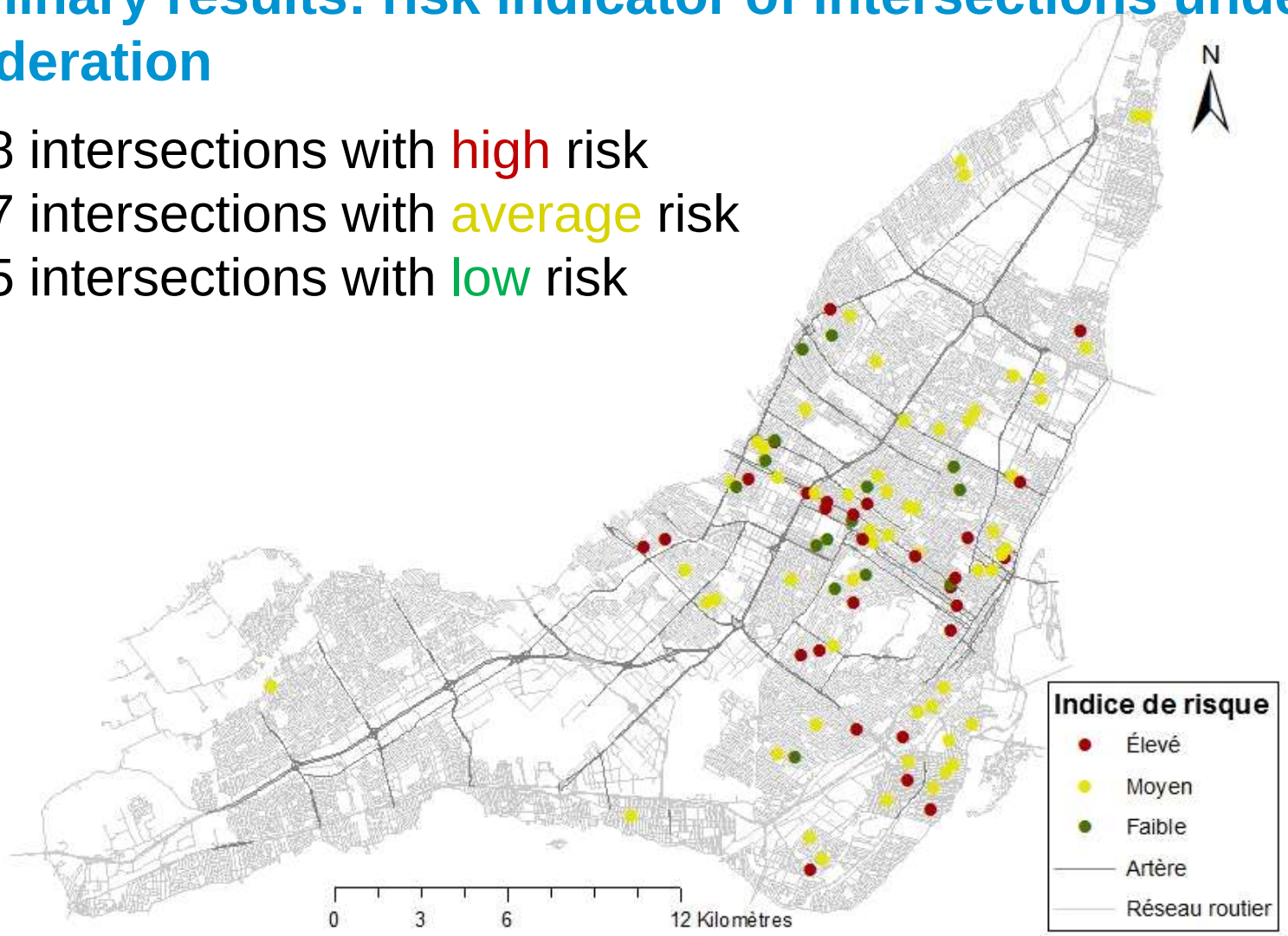
LA TRAVERSE		
Facteur	**Variable**	**Pondération**
Caractéristiques de la traverse	Hiérarchie de la rue lié à la traverse	5 — artère 3 — collectrice 1 — locale
	Largeur de la chaussée	7 — 25 mètres et plus 5 — 15 à 24 mètres 3 — 8 à 14 mètres 1 — moins de 8 mètres
	Signalisation de la traverse en fonction de la hiérarchie des voies	Artère 5 — aucun feu 3 — feu de circulation automobile uniquement 0 — feu de circulation et feu piéton
		Collectrice 3 — aucune signalisation 1 — panneau d'arrêt ou traverse piétonne 0 — feu de circulation et/ou feu piéton
		Locale 1 — aucune signalisation 0 — panneau d'arrêt ou traverse piétonne
	Bouton d'appel sur feu piéton	1 — non 0 — oui
	Présence de ligne d'arrêt sur feux de la circulation	1 — non 0 — oui
	Marquage de la traverse	3 — sans marquage pour une artère 1 — sans marquage pour une collectrice 0 — sans marquage pour une locale 0 — oui

Presentation overview

Preliminary results

Preliminary results: risk indicator of intersections under consideration

- 28 intersections with high risk
- 57 intersections with average risk
- 15 intersections with low risk



Preliminary result : Description of high risk intersections

High risk

- 75% cross an arterial road
- 50% have no one-way segment
- 82% have no traffic calming measures on the crossing
- 82% have traffic lights at all four crossings
- Average width of 15 metres

Intersection des rues Sherbrooke et Girouard

Intersection des rues Christophe-Colomb et Jean-Talon

Preliminary result : Description of low risk intersections

Low risk

- 100% are local roads
- 87% have at least 1 one-way street
- 61% have at least 1 traffic calming measure at a crossing
- No traffic light
- Average width of 9 metres
- 87% have corners with good visibility

Intersection des rues Laurier et Berri

Intersection des rues Drolet et Roy

In conclusion:

- So far, the easy-to-manage evaluation tool created contribute to an objective evaluation of school crossing guard's intersection;
- Accordingly, the risk level calculated can be helpful in the annual revision of intersection localisation;
- For example, school crossing guards at low risk intersections could be transfered to intersections categorized with a higher level of risk
  - At the same time, traffic calming measures or road improvement could be added to the low risk intersections;

- Further analyses are need to test different weight and to compare our results with existing statistics.

THANK YOU! MERCI!

Questions?
Comments?

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