School Environment and Road Traffic Conflicts Involving Child Pedestrians: Preliminary Results

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Outline

Theoretical framework

- Active transportation to school and risk of accident
- Measures of the risk of road accident
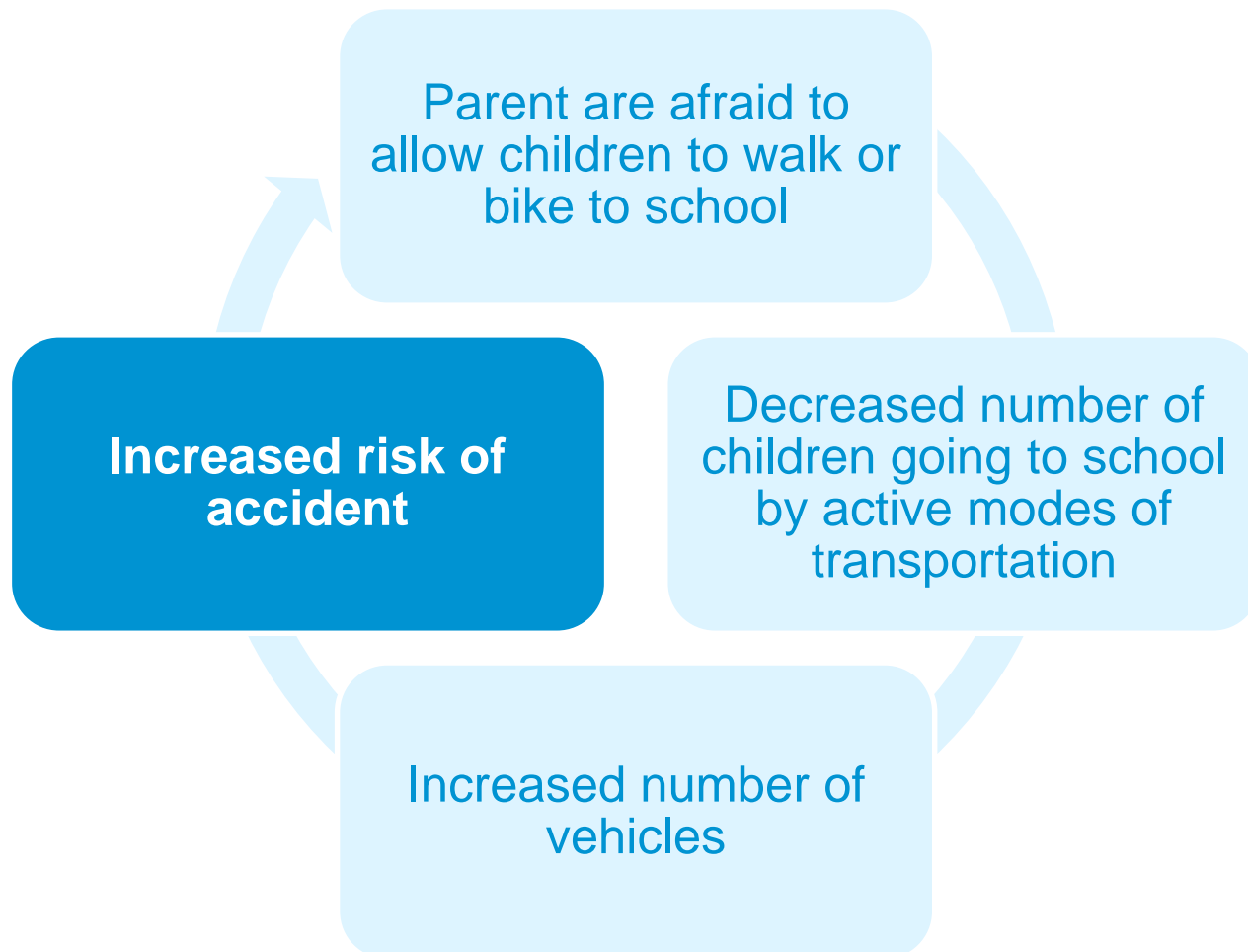- Risk factors for child pedestrians
- Research question

Methodology

- Research context
- Data collection

Preliminary results

- Primary data
- Description of pedestrian crossings
- Typology of interactions
- Statisticals associations
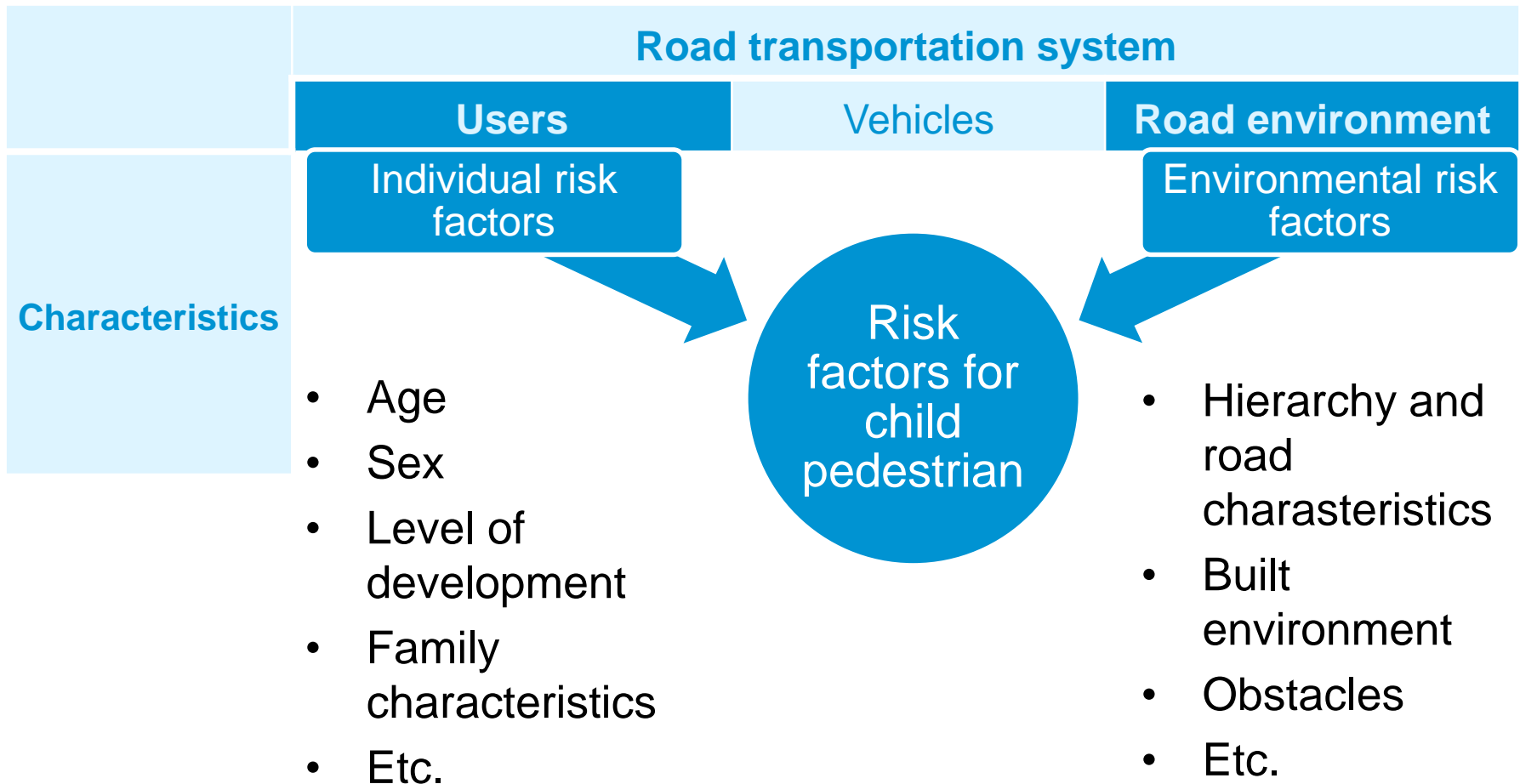
Theoretical Framework

Active transportation to school and road accident risk

Parent are afraid to allow children to walk or bike to school

Decreased number of children going to school by active modes of transportation

Increased number of vehicles

Increased risk of accident

Measures of the road accident risk

- Subjective: risk representation

- Objective:
  - Spatiotemporal history of accidents

  - Traffic conflict techniques (TCT)

  « Interaction between two road-users (or between one road-user and the road environment) that would shortly lead to a collision unless at least one of the road-users involved performed an immediate action » (Muhlrad 1988) ».

Child pedestrian risk factors

Characteristics	Road transportation system		
	Users	Vehicles	**Road environment**
	Individual risk factors		Environmental risk factors

Risk factors for child pedestrian

Individual risk factors

- Age
- Sex
- Level of development
- Family characteristics
- Etc.

Environmental risk factors

- Hierarchy and road charasteristics
- Built environment
- Obstacles
- Etc.

Research Question

To what extent do characteristics of the road environment allow explanation of traffic conflicts involving child pedestrians?
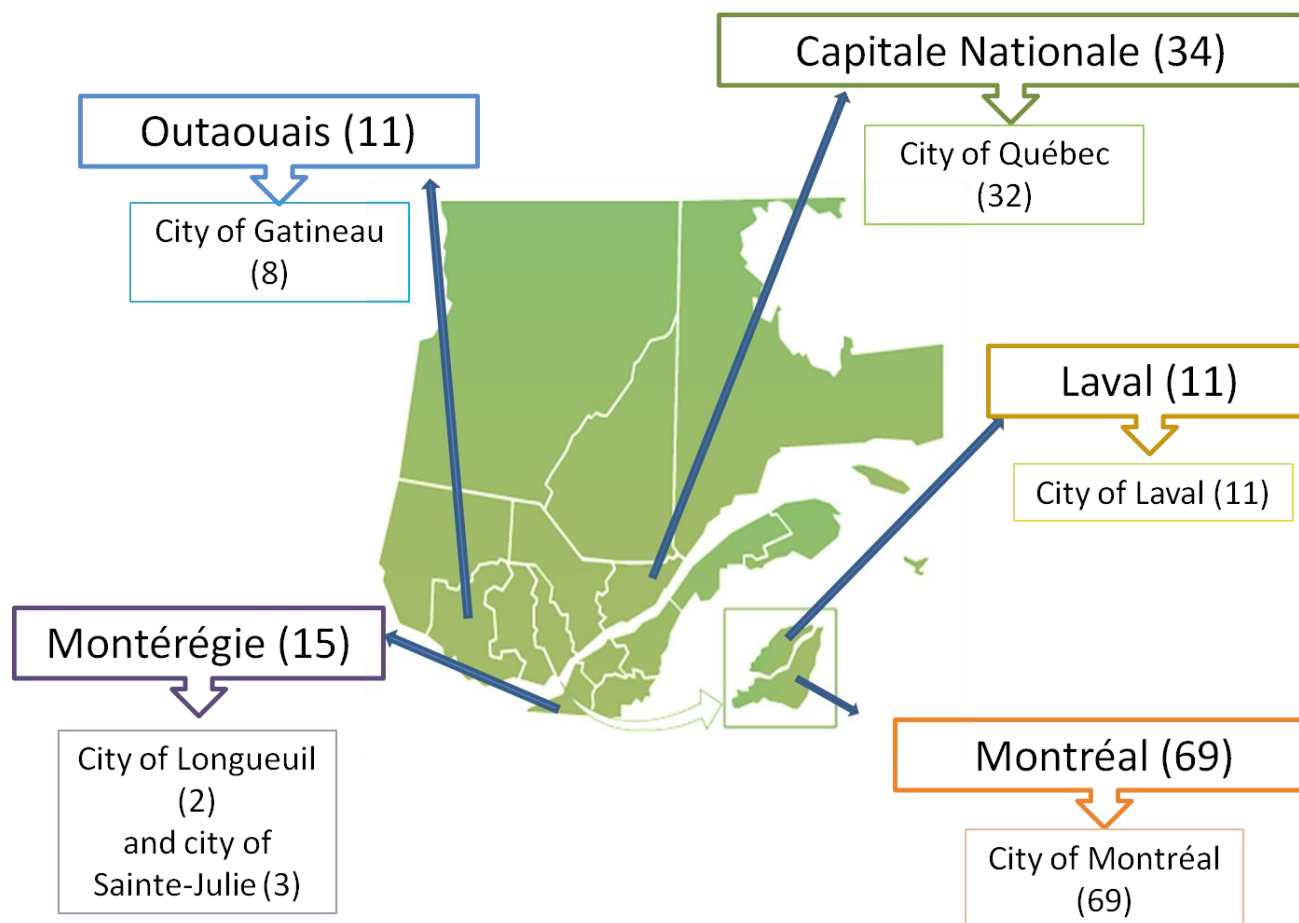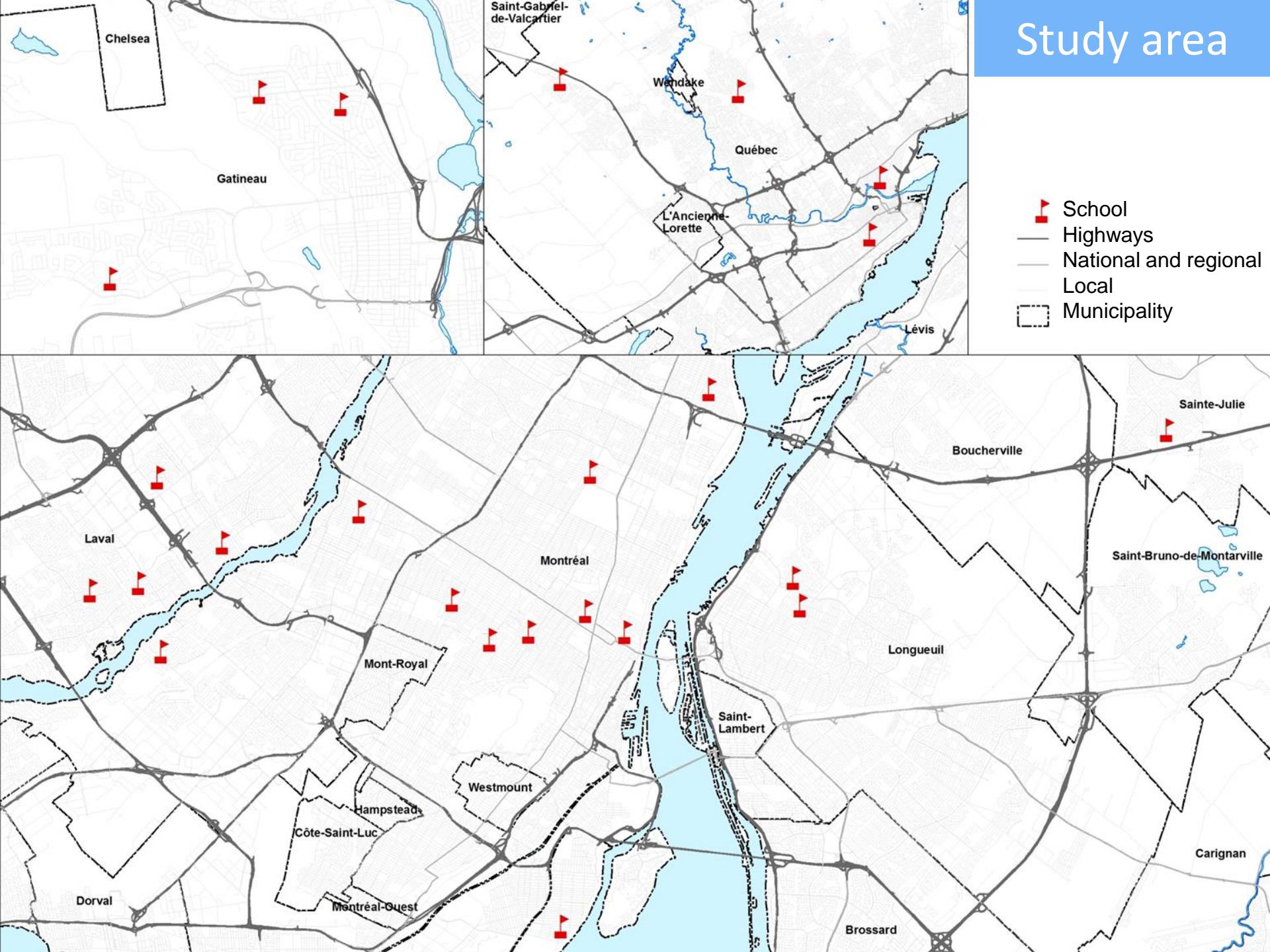
Methodology

« Environnement scolaire sécuritaire et analyse des interventions municipales » (ESSAIM) project

Capitale Nationale (34)
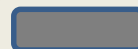
City of Québec (32)

Outaouais (11)

City of Gatineau (8)

Laval (11)

City of Laval (11)

Montérégie (15)

City of Longueuil (2) and city of Sainte-Julie (3)

Montréal (69)

City of Montréal (69)

School
Highways
National and regional
Local
Municipality

Rue Jean-Talon Est

Avenue Henri Julien

Avenue de Gaspé

Rue Jules-Verne

Rue De Castelnau
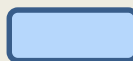
Road network

Direction of traffic

Sainte-Cécile School

Crossing subject to behavioral observations (ESSAIM)

Crossing subject to road environment observations

Section subject to compliance with the road environment

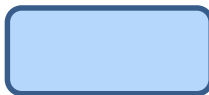# Preliminary Results

Primary data

24 schools

153 crossings subject to behavioral observations (ESSAIM);

- 113 observations with interaction between a child and one or more vehicles

113 crossings subject to road environment observations

113 sections subject to road environment Observations (not in preliminary results)

Description of Crossings

- 77% may be affected by traffic from 3 to 4 segments

- 35% are directly associated with a one-way

- 61% have 2 lanes of car traffic

- 26% do not have a curbside parking ban within 5 meters of the crossing

Types of Interactions seen in the field

	Interaction without any possible conflict	Possible conflict and respect	Possible conflict and non-respect
#	27	52	34
Example	Both road user at the corner, both going straight.	Both user at the corner, Driver let pedestrian first, then turn right.	Both user at the corner, Driver turn right before pedestrian can cross. Pedestrian cross at red light.

Statistical associations (Khi-square and ANOVA)

- No correlation with interactions types:
  - Parking restriction
  - Number of lanes on direct section
  - Number of associated road sections
  - Presence of curb extension

- Correlation with interactions types:
  - Presence of one-way:
    - 71% of possible conflict with respect, happens in two-way street
    - 76 % of possible conflict with non-respect happens in two-way
  - Presence of Zebra crossing mark:
    - 92% of interaction without any possible conflict happens in a crossing without Zebra mark
    - 77% of interaction "possible conflict and non-respect" happens in a zebra crossing
  - Road width: the wider is the road, the more there's "worst" conflict