TRB AND NCSITE PRESENT
URBAN STREET SYMPOSIUM 5
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Frequency of Conflicts on Separated Cycle Tracks as a Function of Cross Section Characteristics

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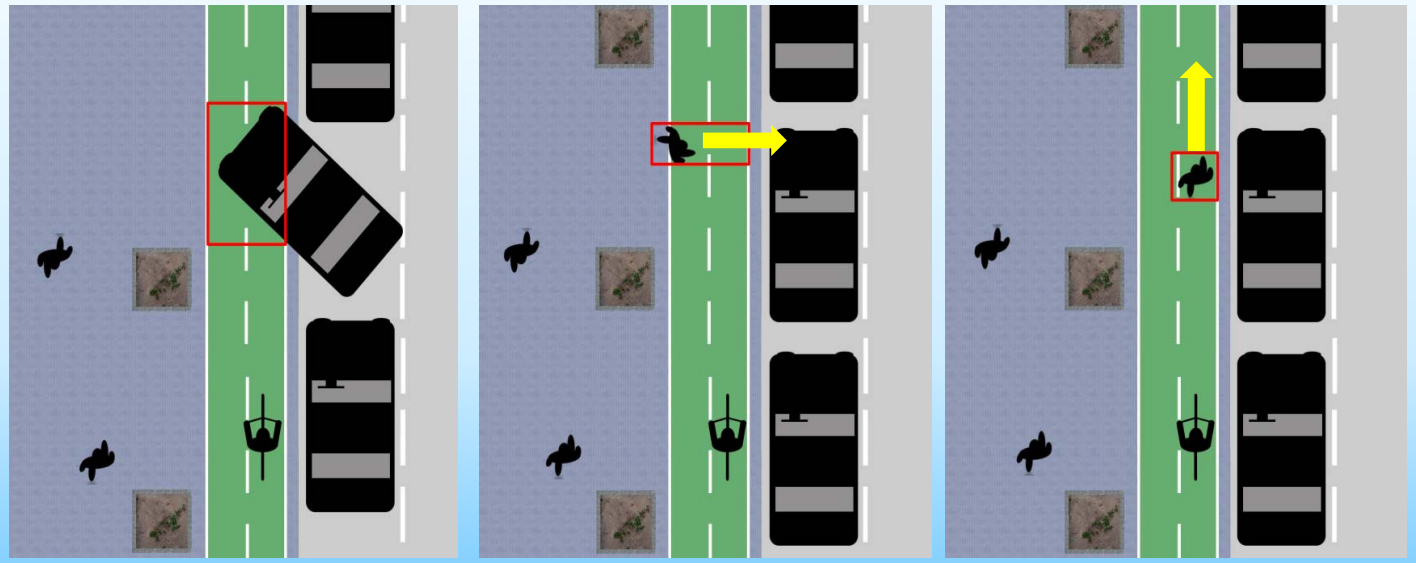
Introduction

- **Separated cycle tracks:**
  - **Exclusive for bicycles, encourage cycling, but**
  - **Interaction with other bicycles, pedestrians, motor vehicles, …**
- **Conflict types:**



static object **crossing** **circulation**

Objectives

- **Observe and analyze conflicts on bidirectional, separated urban cycle tracks:**
  - **Quasi-naturalistic methodology to observe conflicts using objective and subjective variables**
  - **Analysis of conflict characteristics and frequency, with average daily bicycle volume, track width and boundary conditions**
  - **Identify geometric design features that increase the frequency of conflicts on cycle tracks**

Method

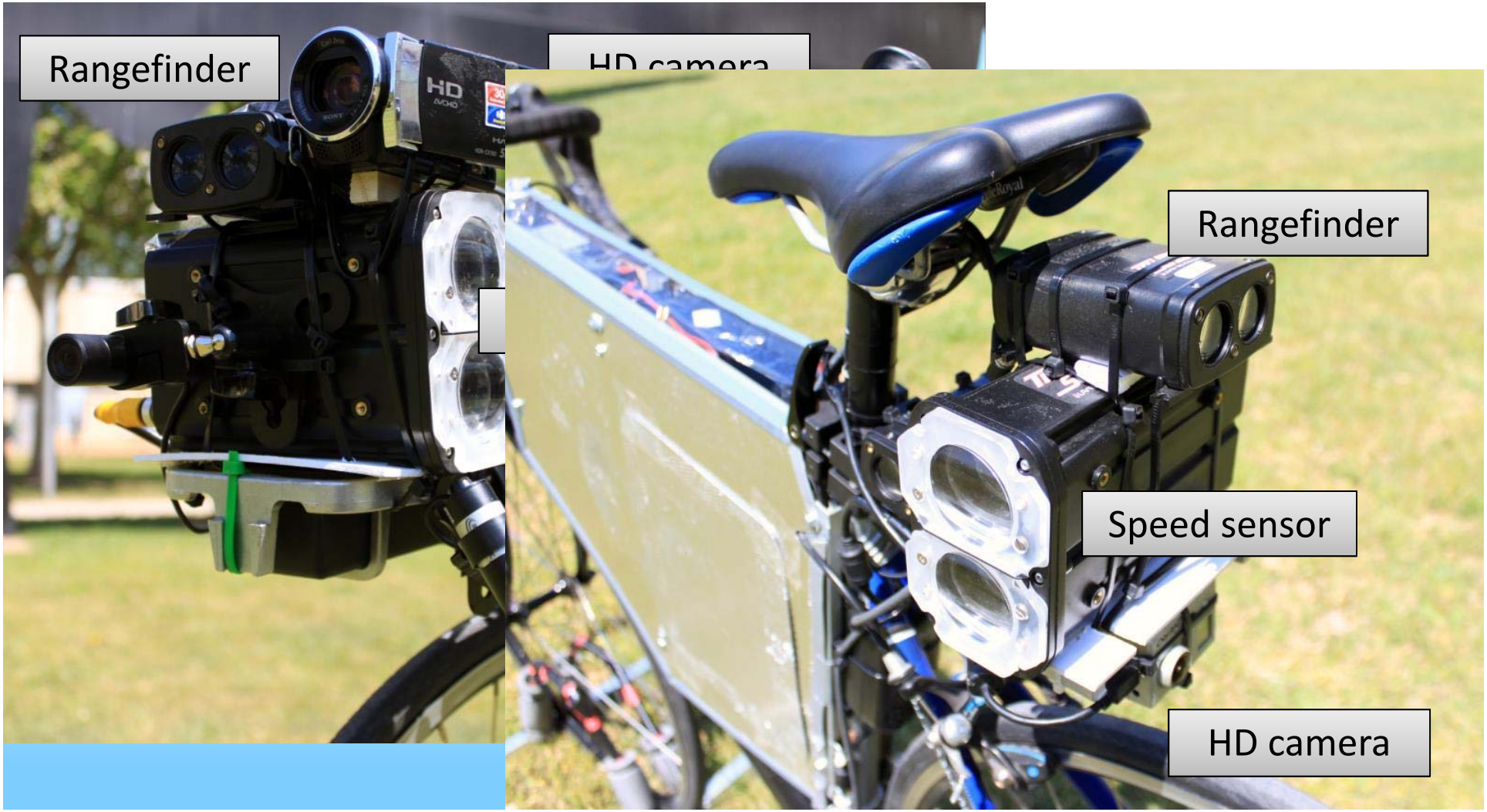
- **Instrumented bicycle**

Ci

Static object

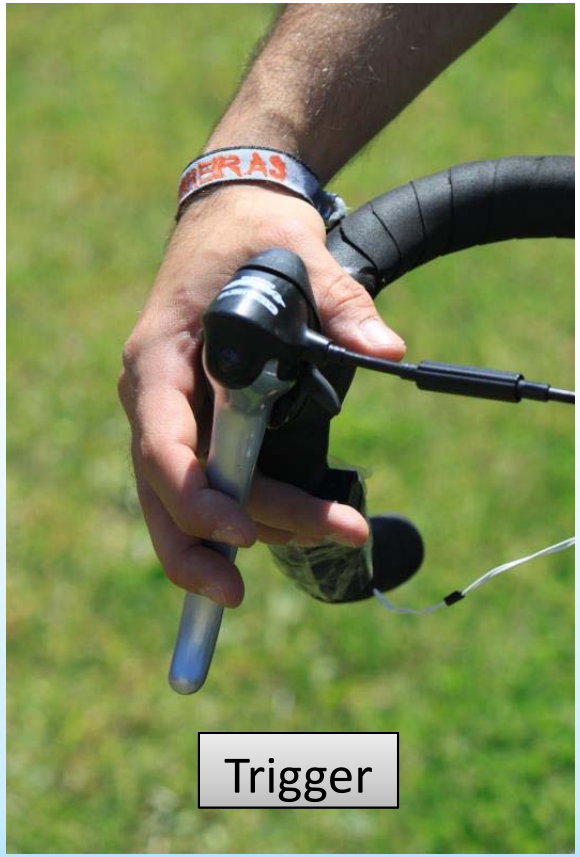
Method

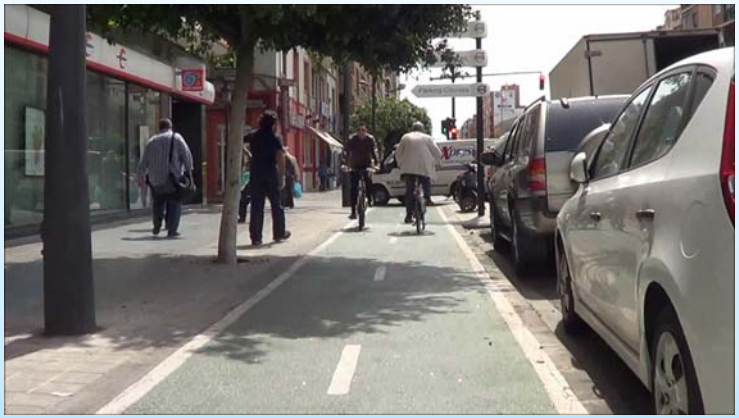
- **Instrumented bicycle**



Method

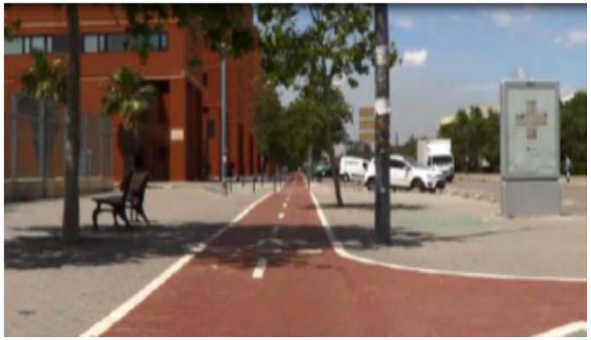
- **Instrumented bicycle**

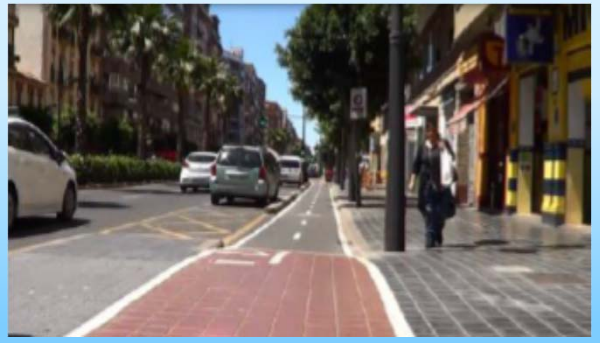
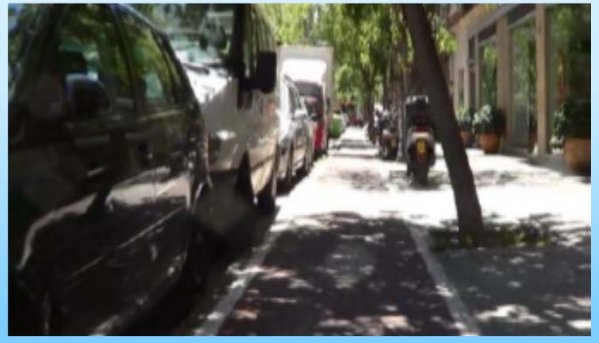




Method

- **Data collection - 6 cycle tracks in Valencia:**

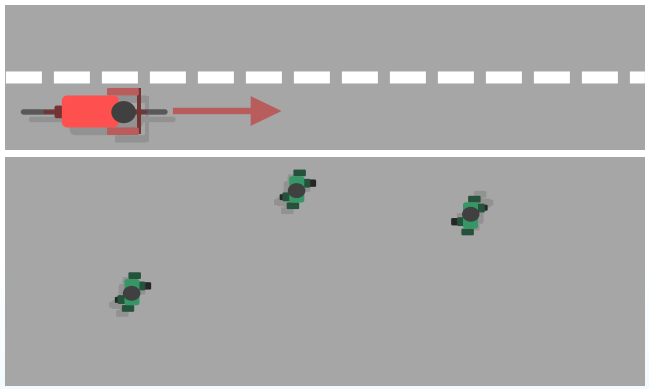




Length
0.72 – 2.94 km

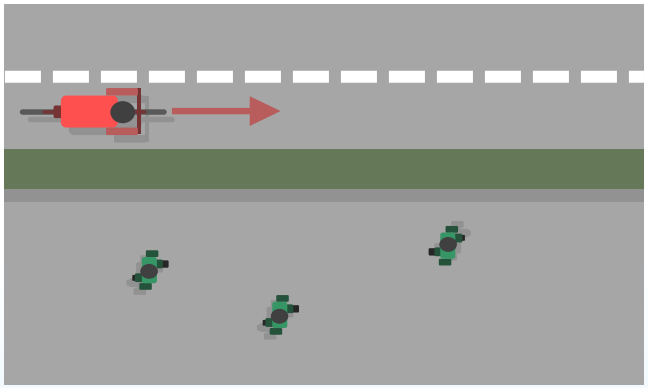
Width
1.50 - 2.15 m

Method

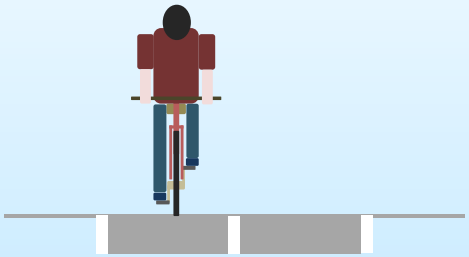
- **Boundary Conditions:**



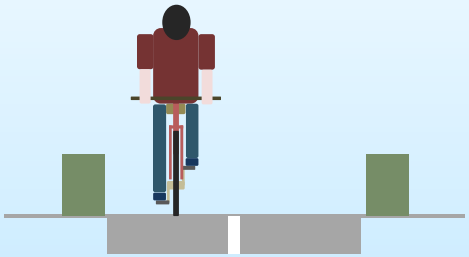
Permeable



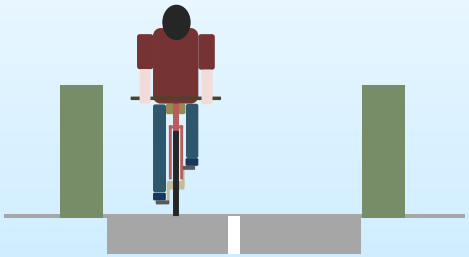
Impermeable



no obstacle



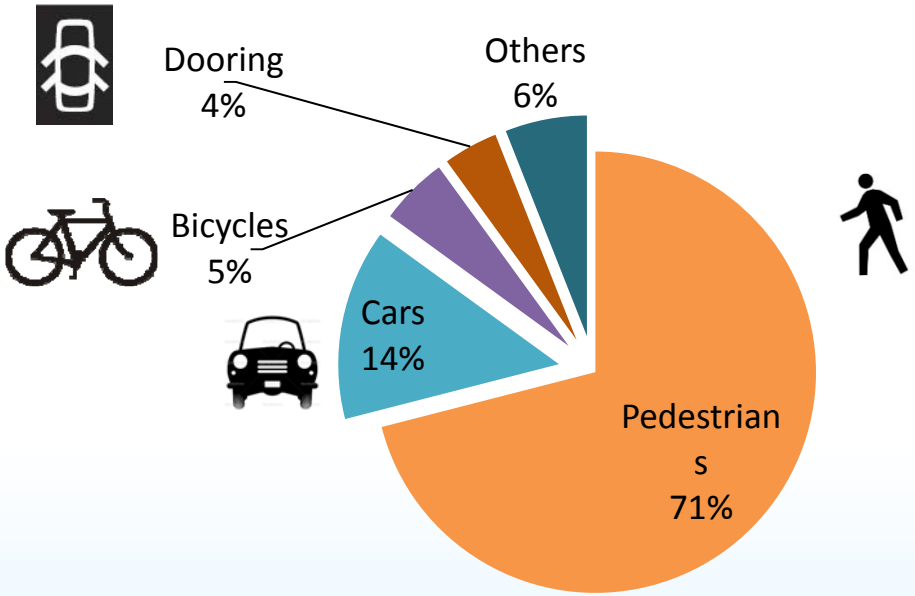
to the wheel height



to the handlebar height

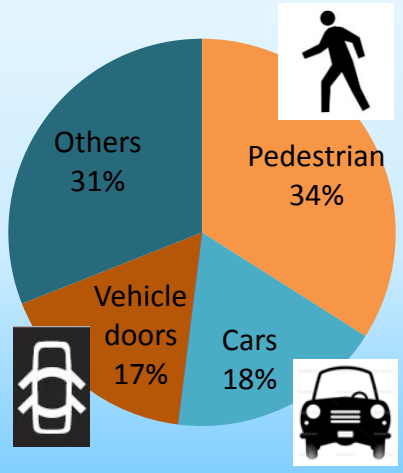
Results

- **Involved users:**

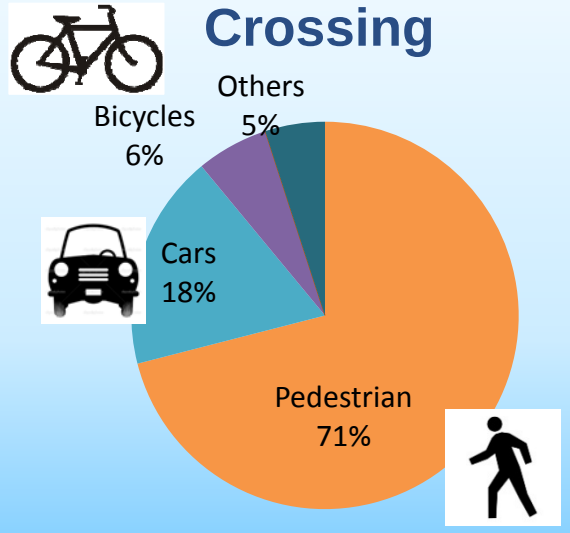


648 conflicts

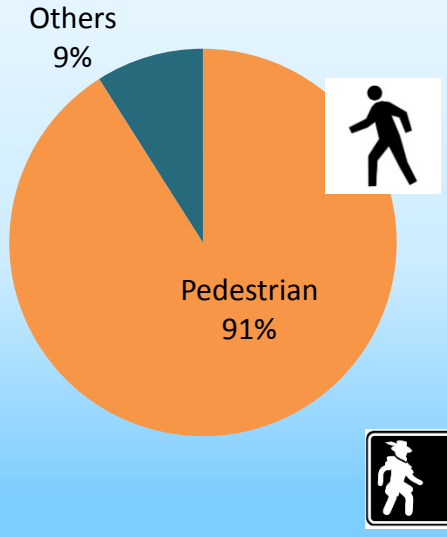
Static object



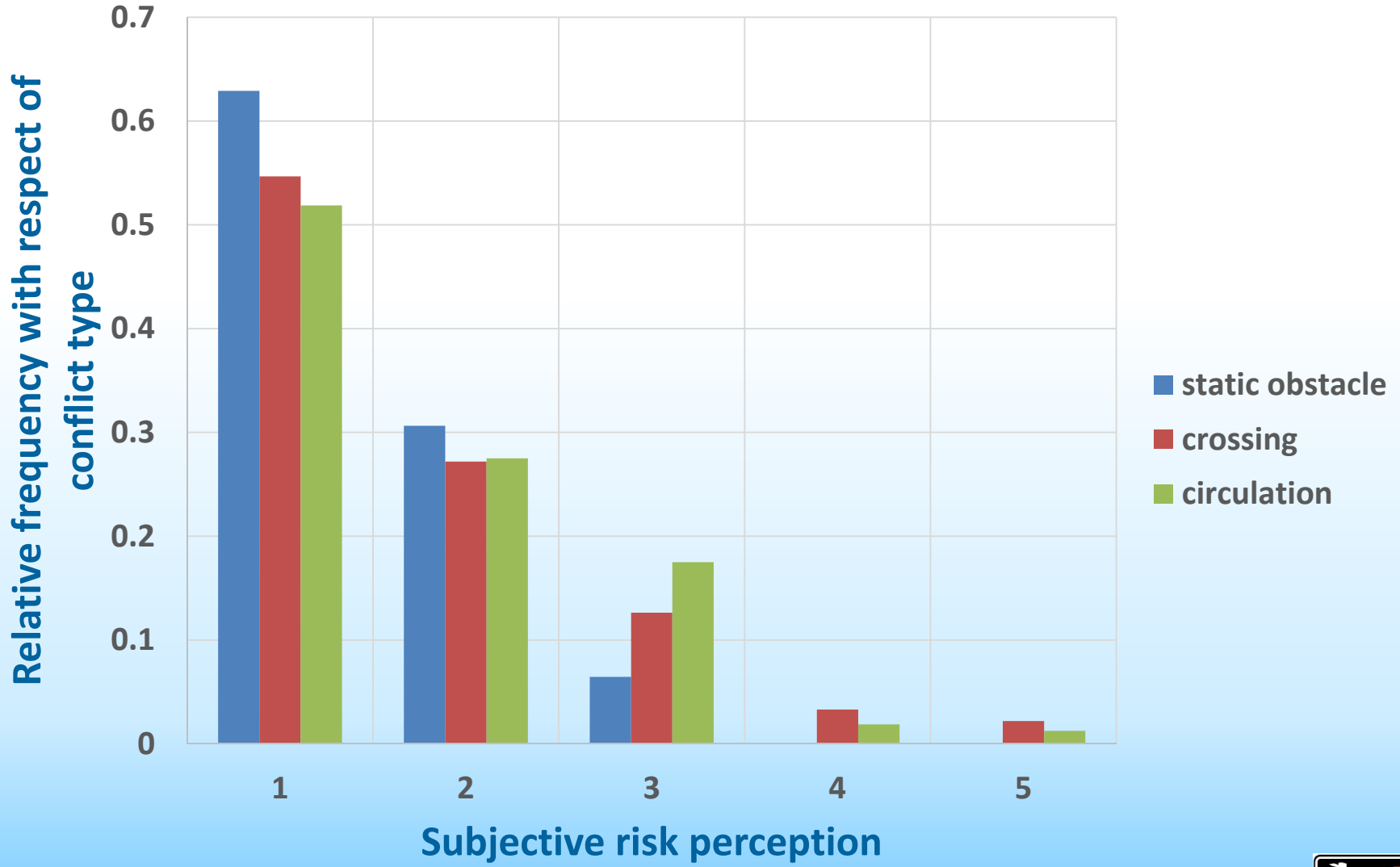
Crossing



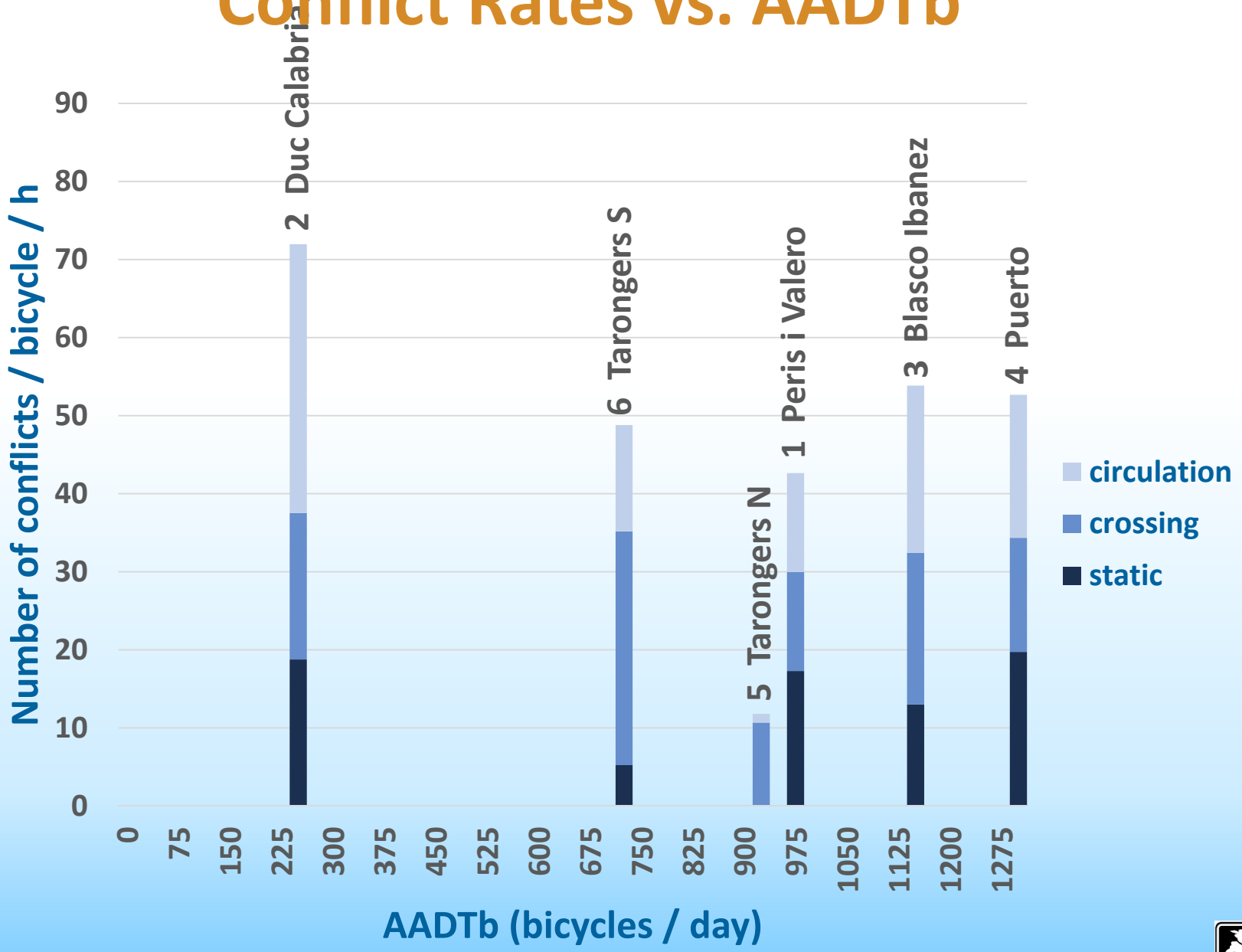
Circulation



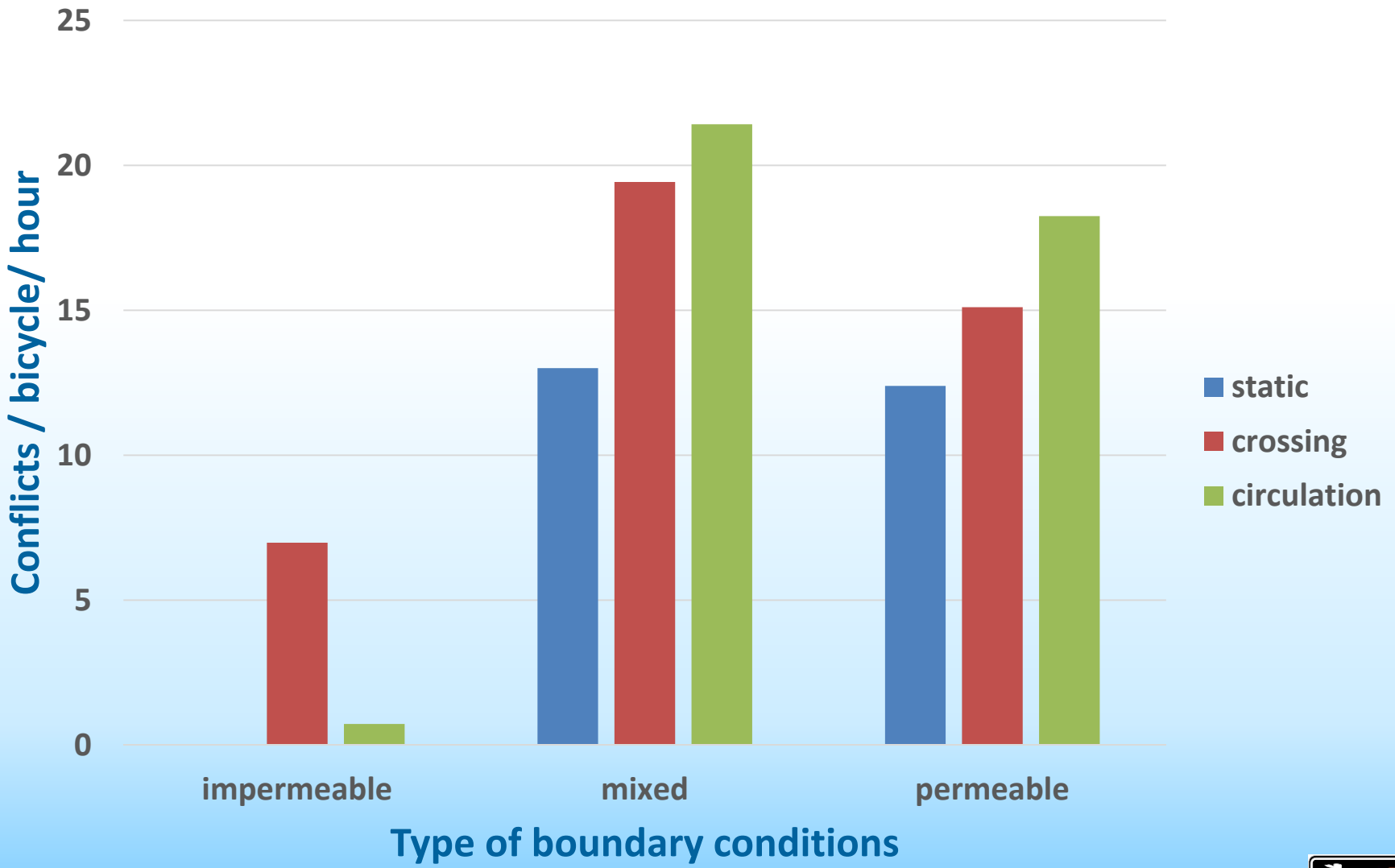
Severity vs. Conflict Type



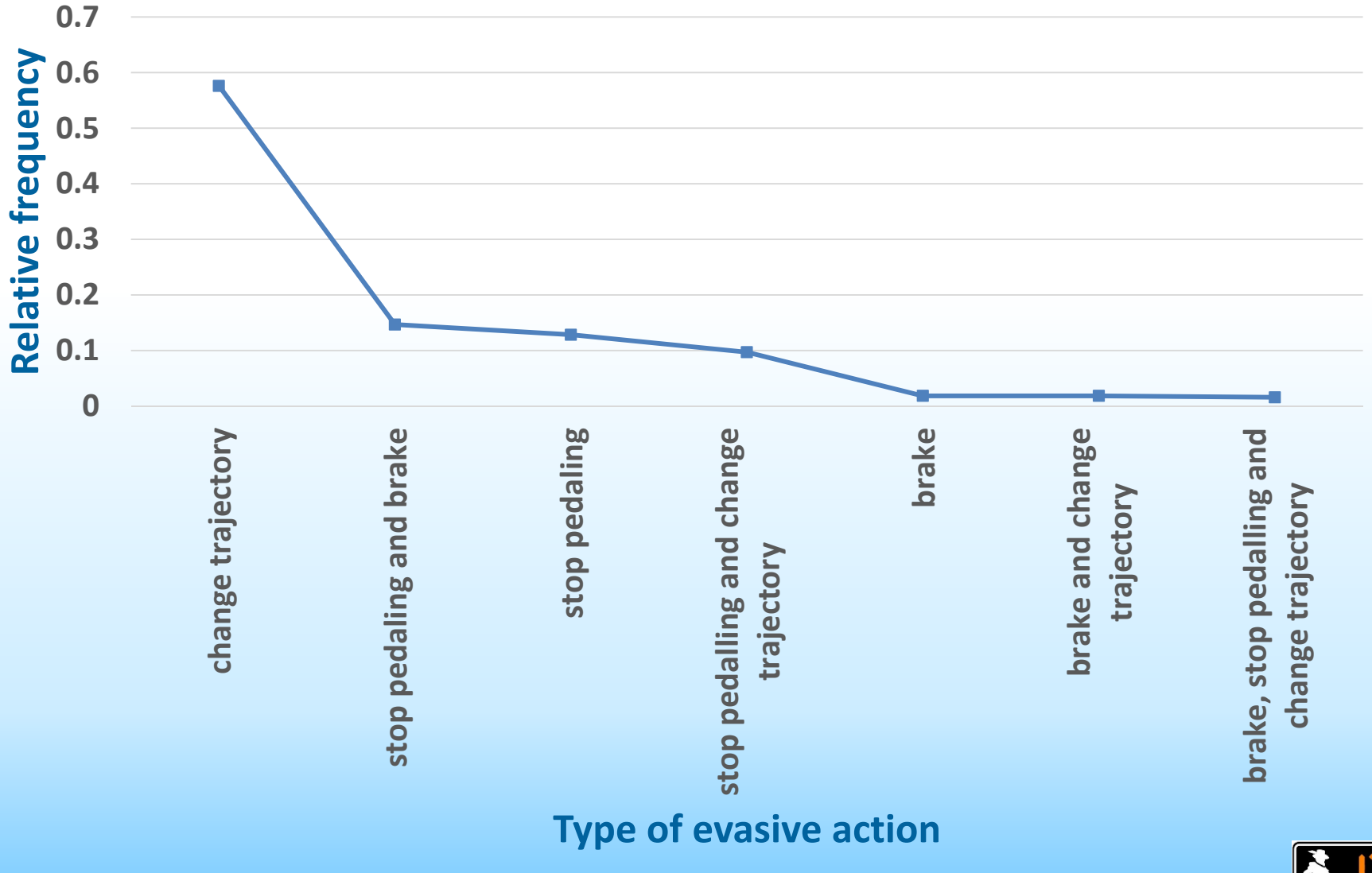
Conflict Rates vs. AADTb



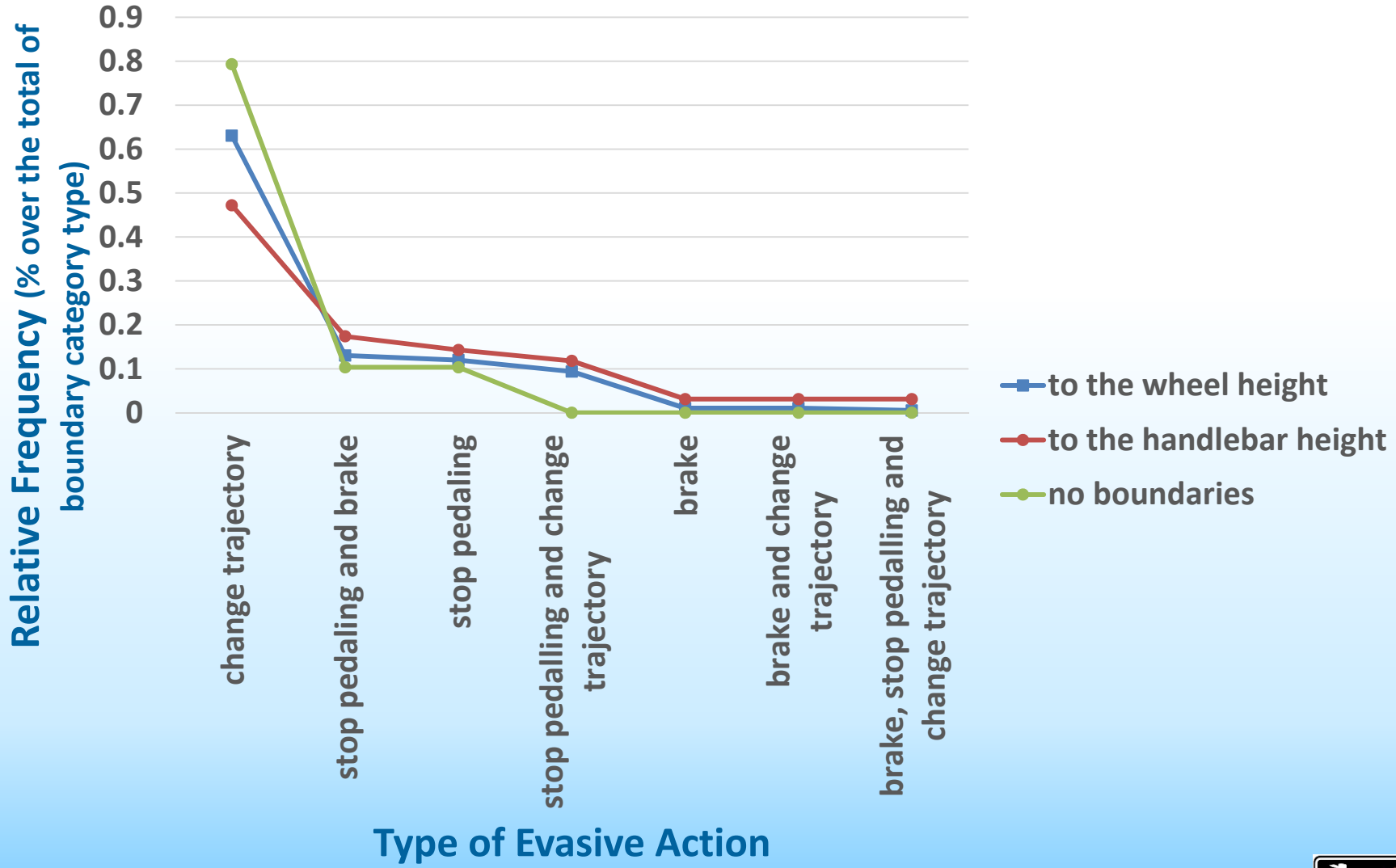
Conflict Rate vs. Permeability



Severity of Meeting vs. Frequency



Severity of Meeting vs. Boundary



Extrapolation of the Number of Conflicts

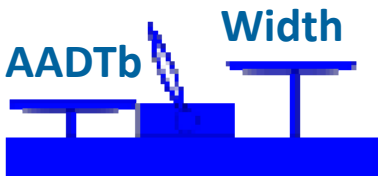
Cycle track	Daily bicycle volume (working days)	Number of conflicts per working day						
		All conflicts	Non-compliant crossing		Non-compliant circulation		Non-compliant static object	
			All	Severe	All	Severe	All	Severe
1 - Peris i Valero	1093	3155	595	33	611	19	833	0
2 - Duc Calabria	280	585	115	6	217	7	118	0
3 - Blasco Ibañez	1296	10827	2256	124	2551	80	1549	0
4 – Puerto	1447	8238	1624	89	2087	65	2248	0
5 - Tarongers N	1113	1487	554	30	59	2	0	0
6 - Tarongers S	849	2532	1186	65	553	17	212	0
All locations		26824	6330	347	6078	190	4960	0

Total number of conflicts at working days = **7 million conflict/y** (140,000 as severe)

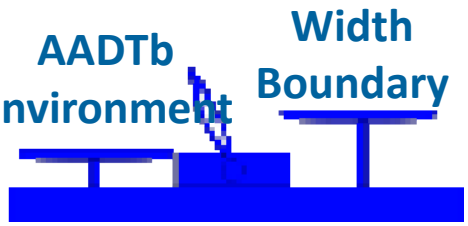
Density of conflicts at working days = **650,000 conflict/km/y** (13,000 severe - 2%)

Conclusions

- **Diverse types of conflicts on separated cycle tracks in Valencia city have been analyzed using quasi naturalistic observations**
- **Identification of safe and risky geometric design features (1/2):**
  - **Design of cycle tracks focused mainly on the width**
  - **However, it should take into account boundary conditions as well:**
    - Fences or bushes reduce the invasion of other users
    - But, if they are placed close to the edge of the cycle track they can increase the severity of meeting maneuvers



Conclusions



- **Identification of safe and risky geometric design features (2/2):**
  - **Both continuous physical barriers and buffer areas to the ground level at the borders seem to be positive to increase safety**
  - **Environment of the cycle track is an additional factor, to establish adequate boundary conditions, as the separation from other users would only be required when their presence is significant**
  - **If these design requirements are not fulfilled, the conversion from separated tracks to mixed use infrastructure might be considered**

Thanks for your Attention

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