iCity Project

Pedestrian Intersection Safety Index

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Urban Informatics for Transportation Operations, Planning and Decision-Making

To Understand Pedestrian Safety…

- Understand the **“where”**; predict the likelihood of accidents occurrences

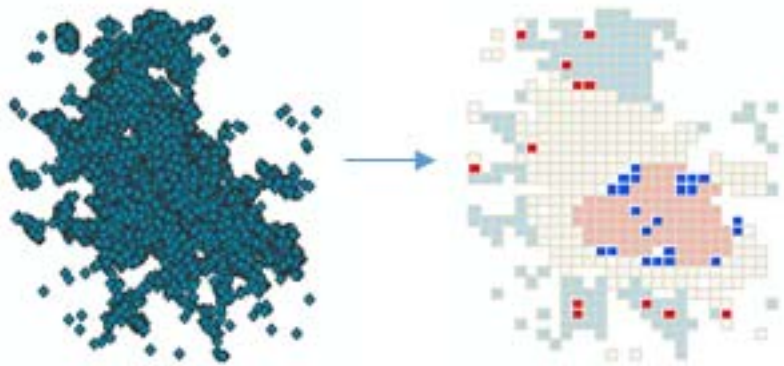
- Identify areas that requires improvements
  - Streets that **separates** pedestrians, cyclists, vehicle, **slowing traffic down**
  - Cities that supports such redesign have the most success

GIS Spatial Analysis – Clustering & Outliers

- Identifying **ALL** intersections with a safety score is possible, but it's time consuming

$$I_i = \frac{x_i - \bar{X}}{S_i^2} \sum_{j=1, j \neq i}^{n} w_{i,j}(x_j - \bar{X})$$

- GIS Spatial Analysis using **Clustering & Outliers** can help locate within the Cities' boundary of statistically significant areas that are prone to pedestrians collisions



- Local Moran's *I* statistic of spatial associations

Pedestrian Safety Intersection Index

- The **safety intersection index** is derived from a research by the U.S. Department of Transportation

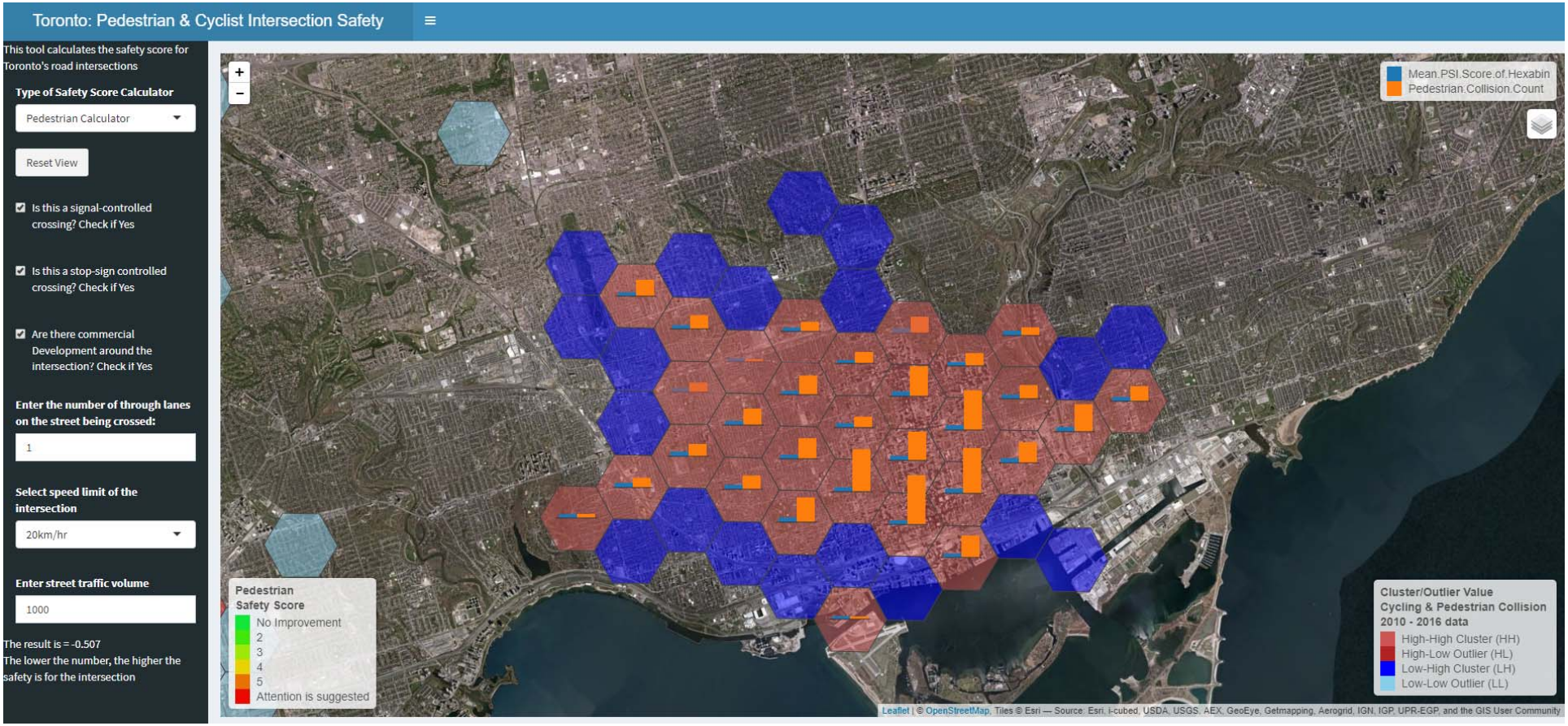
- Uses a **variety of variables** to determine whether the intersection **requires attention or not**
  - AADT, number of Through lanes, street infrastructure presence etc.

Pedestrian Safety Intersection Index

Pedestrians Safety Index

Ped ISI = 2.372—1.867**SIGNAL**—1.807**STOP** + 0.335**THRULNS** + 0.018**SPEED** + 0.006(**MAINADT*SIGNAL)** + 0.238**COMM**		
Ped ISI	*Safety Index Value (pedestrian)*	
SIGNAL	Signal-controlled crossing	0=no 1=yes
STOP	Stop-sign controlled crossing	0=no 1=yes
THURLNS	Number of through lanes on street being crossed (both direction	1,2,3….
SPEED	85th percentile speed of street being crossed	Speed in miles per hour
MAINADT	Main street traffic volume	AADT in thousands
COMM	Predominant land use on surrounding area is commercial development	0=not predominantly commercial area 1=predominantly commercial area

Pedestrian Safety Intersection Index



Pedestrian Safety Intersection Index

- **The index provides a value range between 1 to 6**
  - 1-2: Lowest Priority
  - 3-4: Medium Priority
  - 5-6: High Priority

- Overall, the Safety Intersection Index provides a good idea of which intersections **require attention**

Q&A