

#VisionZero in Canada: What can we learn from Twitter when it comes to road safety initiatives?

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Vision Zero: a (new) paradigm to tackle the burden of traffic injuries

Road Safety: a real public health problem

In Canada (36 million people), per year:

+/- 1800 fatalities

+/- 10000 serious injuries

+/- 160 000 injuries (all type)

Primary cause of death for children 1-17 years old



Neil Arason @neilarason · 27 déc. 2018

#VisionZero in road safety is actually designing a system that works automatically by design to make road user deaths and serious injuries impossible outcomes. This is done through the complete and unfettered adoption of safe systems thinking.

🌐 Traduire le Tweet



Twitter as an indicator for current events

- A microblogging platform (280 characters)
 - 313 million users
 - 500 million tweets per day

Used in transportation research:

- evaluate public transit rider satisfaction
- estimate travel demand (geotagged tweets)
 - learn about bicycle commuting

Research Question and Objectives

How is #VisionZero used on Twitter?

- 1) Whose voices are represented and in what context (i.e. who is influential)?
- 2) What are the main themes represented in the conversation and are they related to Vision Zero principles?
- 3) What is the “sentiment” (positive or negative) of these tweets?

The header features a blue background with various scientific illustrations. On the left, there's a line graph with multiple data series and a chemical structure of a benzene ring. In the center, there's a waveform graph. On the right, there's a contour plot and a diagram of a sample thickness measurement.

Methods

Data collection and Geographic identification of tweets

- Twitter Search API using TAGS v.6.1
 - 1 month of data collection (4 June to 4 July 2018)
 - Query: “#visionzero” OR “vision zero” OR “#zerovision”
- Identification of Canadian tweets by
 - User location (if stated) in Canada
 - Mention of a Canadian place name in tweet
 - Subgroup by cities and provinces

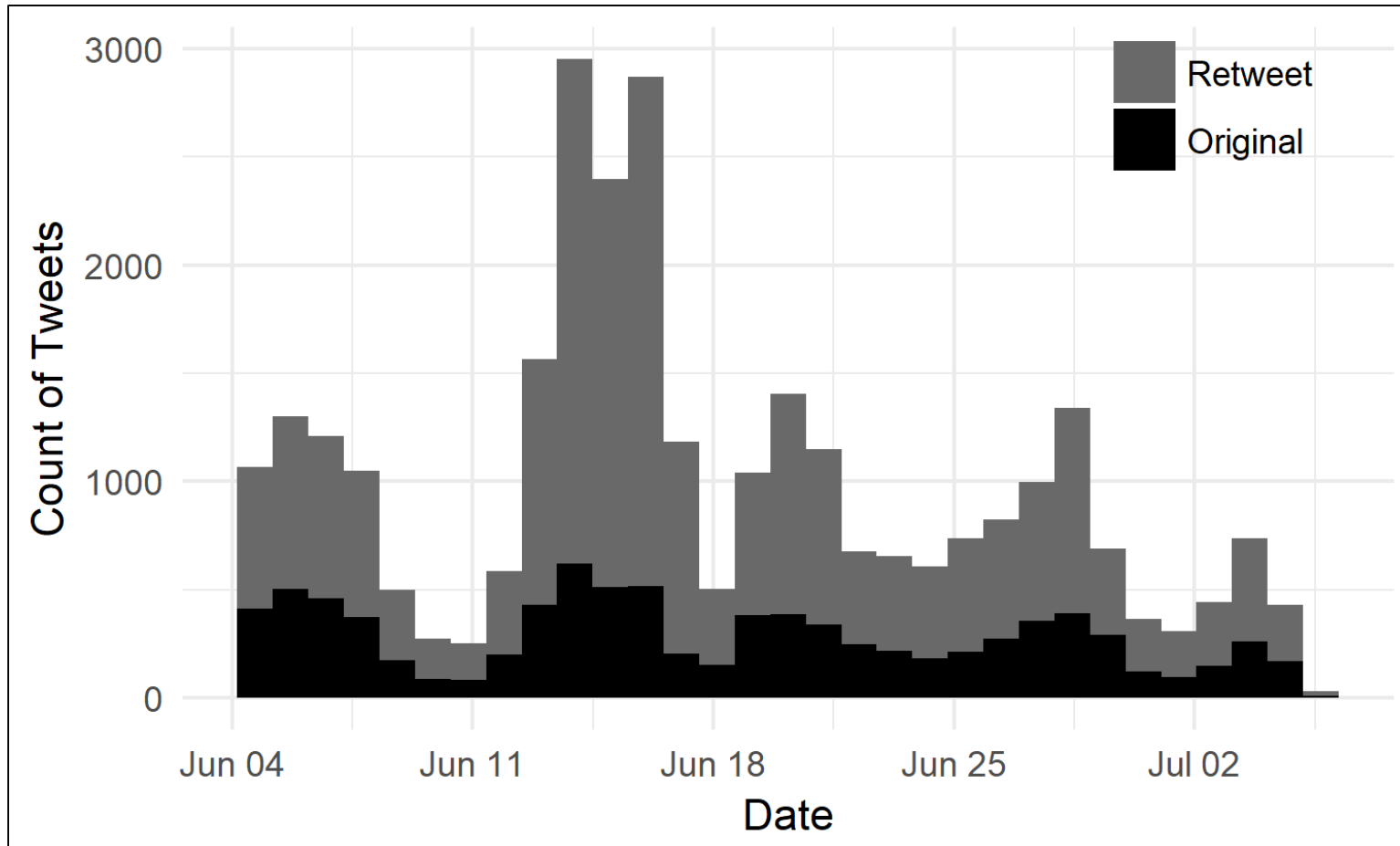
Creation of indicators and analysis

- Network of users
 - R-package *graphTweets* to create graphs
 - Network visualization (including manual labeling)
- Word frequency and association
 - R-package *TidyText* (English only)
- Vision Zero content
 - Keywords for each of the 5 principles
 - Tweet counts
- Sentiment analysis
 - Bing sentiment library (based on online consumer reviews)
 - Most common word and phrase counts

The header features a blue background with various scientific illustrations. On the left, there's a line graph with multiple data series and a chemical structure of a benzene ring. In the center, there's a chemical formula $[Cd] = [Cd^{2+}] = 10 \text{ nmol L}^{-1}$ and a waveform. On the right, there's a contour plot and a graph labeled 'Sample thickness (μm)'.

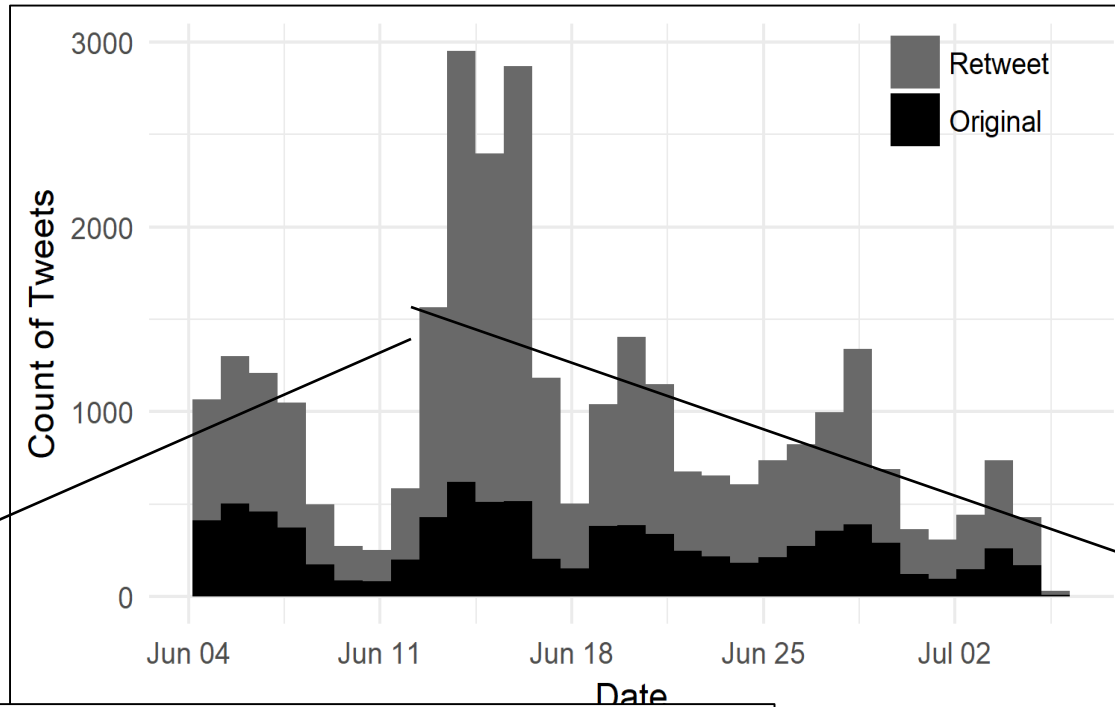
Key findings

Database: many many tweets!



- **30 145 tweets**
- **29% original message**
 - 71% retweets
- **14 306 Canadian tweets**
 - 47% of the total
 - 75% retweets

Database: many many tweets!



Joe Cressy ✓
@joe_cressy

Follow

93 pedestrians & cyclists have been killed on Toronto streets in the last 2 years. Meanwhile, at City Council we have to fight (& often lose) to lower speed limits, install new traffic lights, & build separated bike lanes on main streets. **#VisionZero** - not in Toronto. **#ZeroVision**



Don Kingsbury
@don_kingsbury

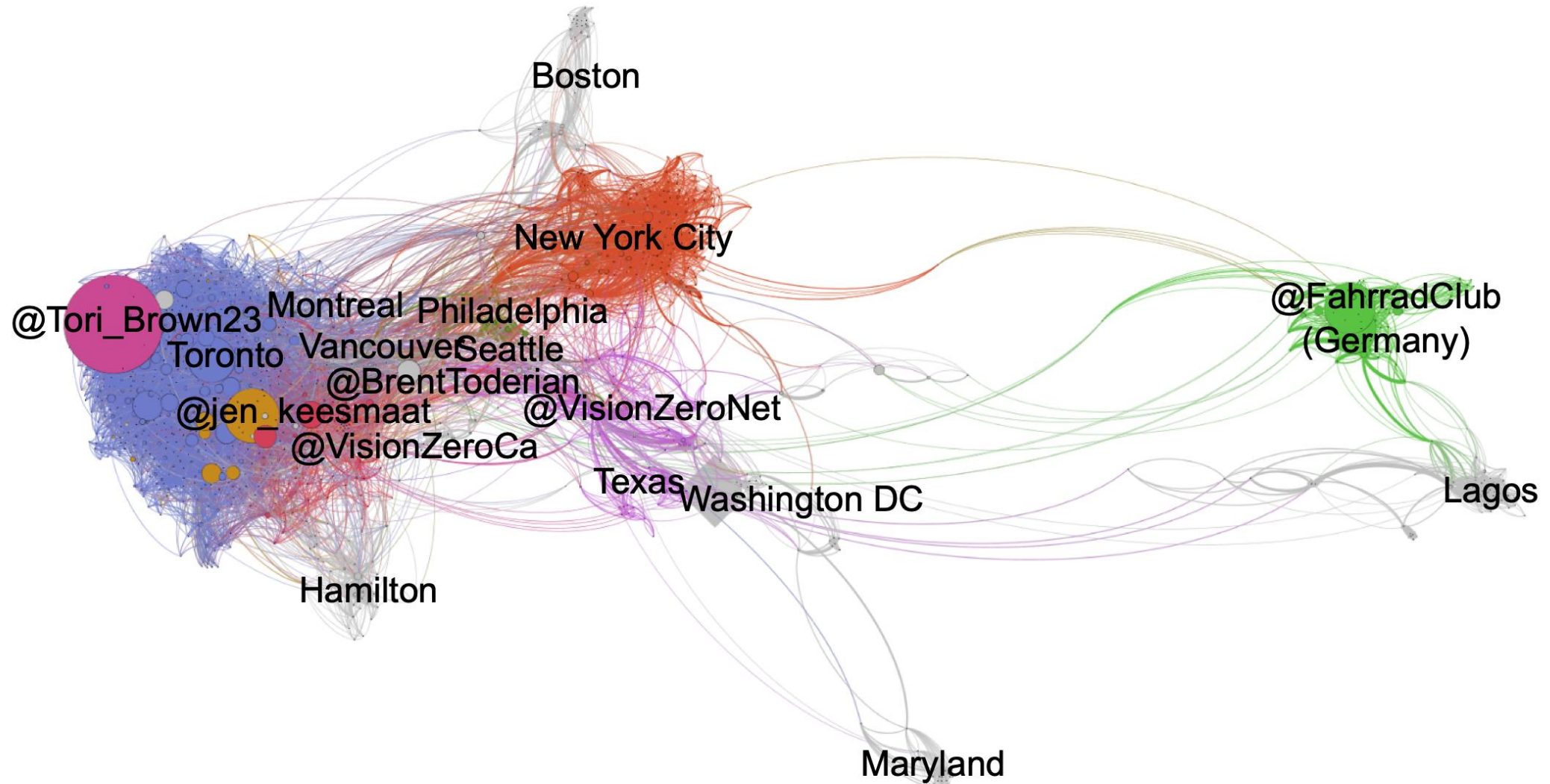
Follow

Mayor Tory announced Vision Zero two years ago Wednesday. 93 pedestrians or cyclists have died on Toronto streets since that date [thestar.com/news/gta/2018/](https://www.thestar.com/news/gta/2018/...) ... via [@torontostar](https://twitter.com/torontostar)

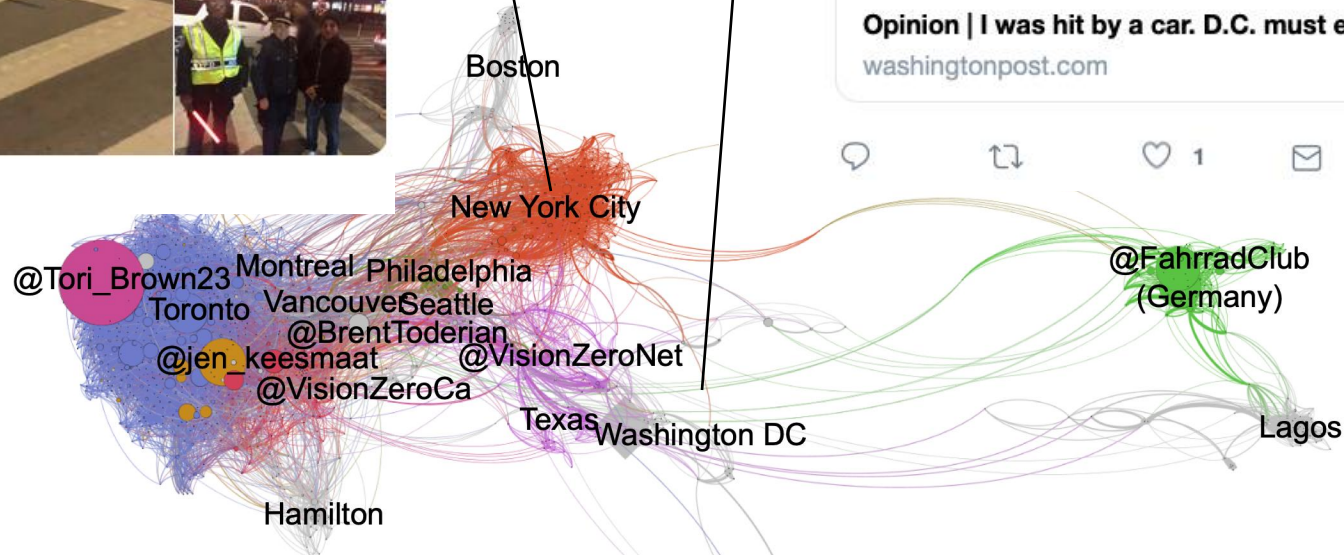


Mayor Tory announced Vision Zero two years ago Wednesday. 93 pedestrians... A cyclist was killed Tuesday in a collision with a flatbed truck. The same day, police announced a cyclist who was hit in May had succumbed to his injuries. [thestar.com](https://www.thestar.com)

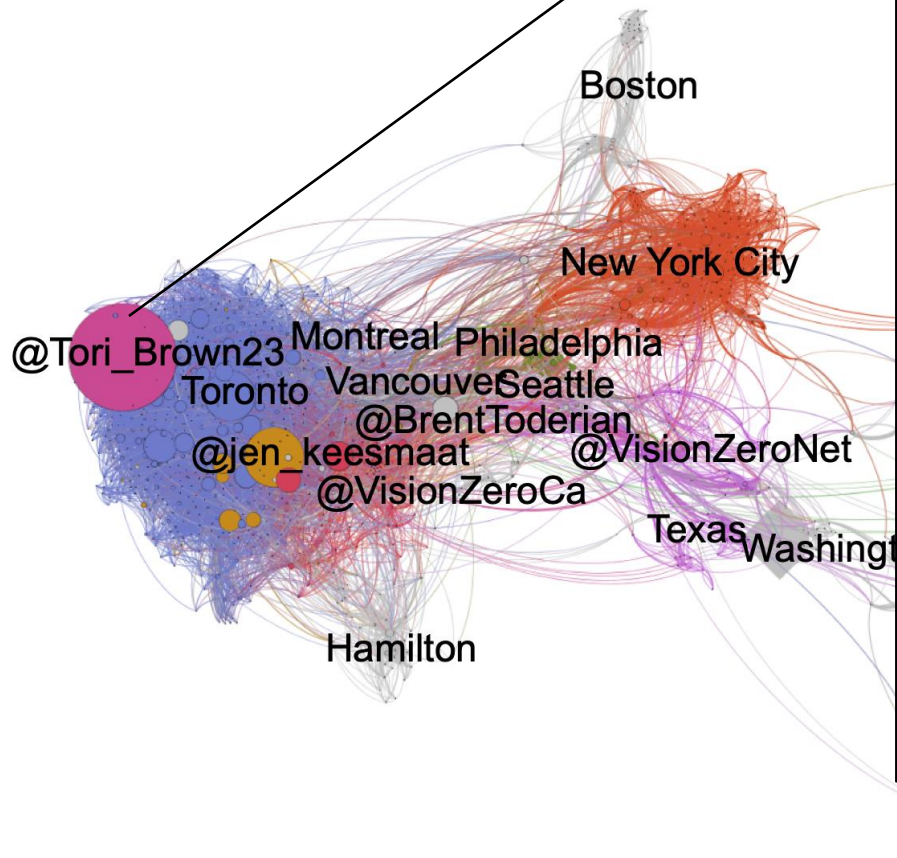
Network of users: who is tweeting from where?



Network of users: who is tweeting from where?



Network of users: who is tweeting from where?



Tori Brown
@Tori_Brown23

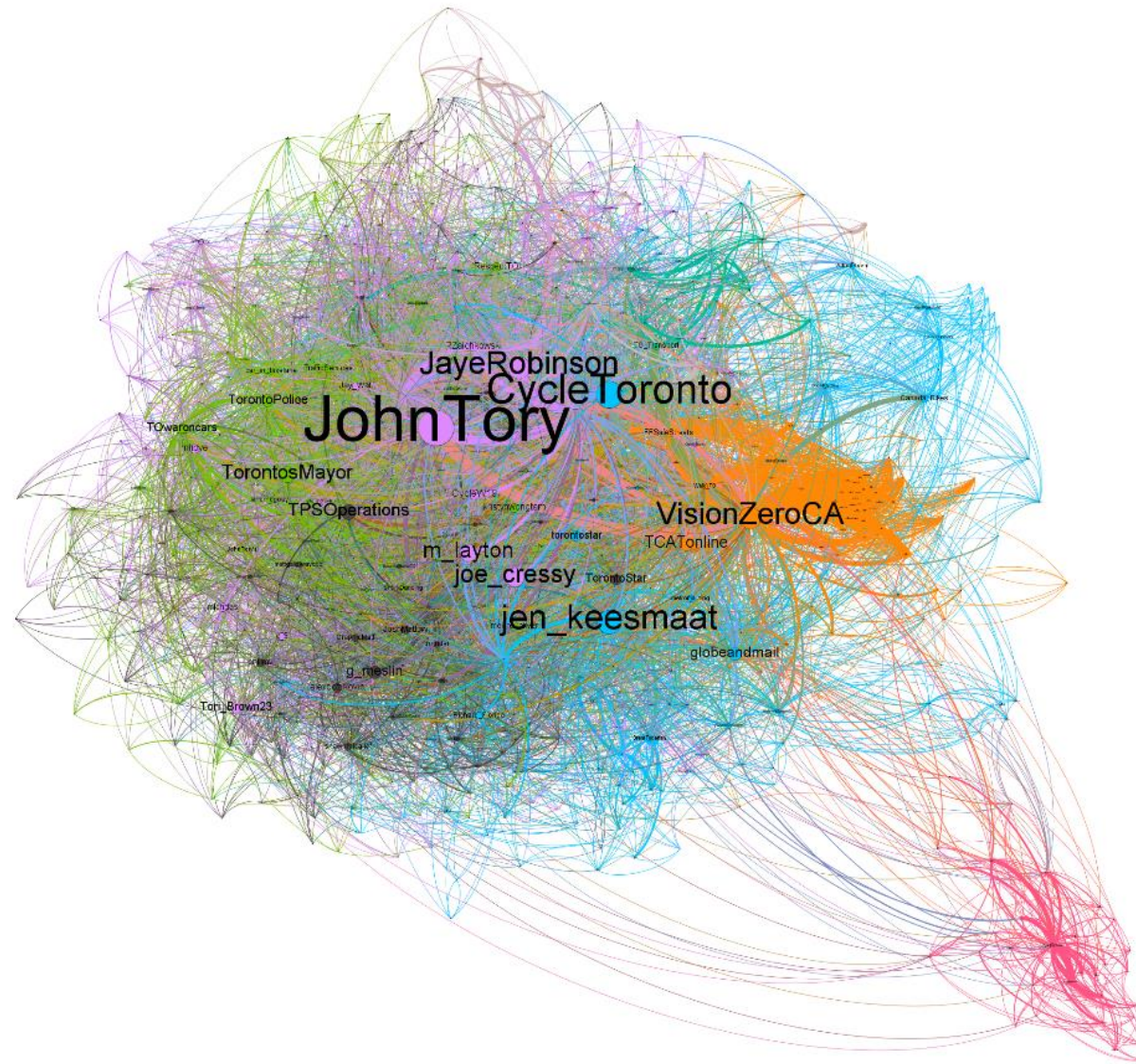
Follow



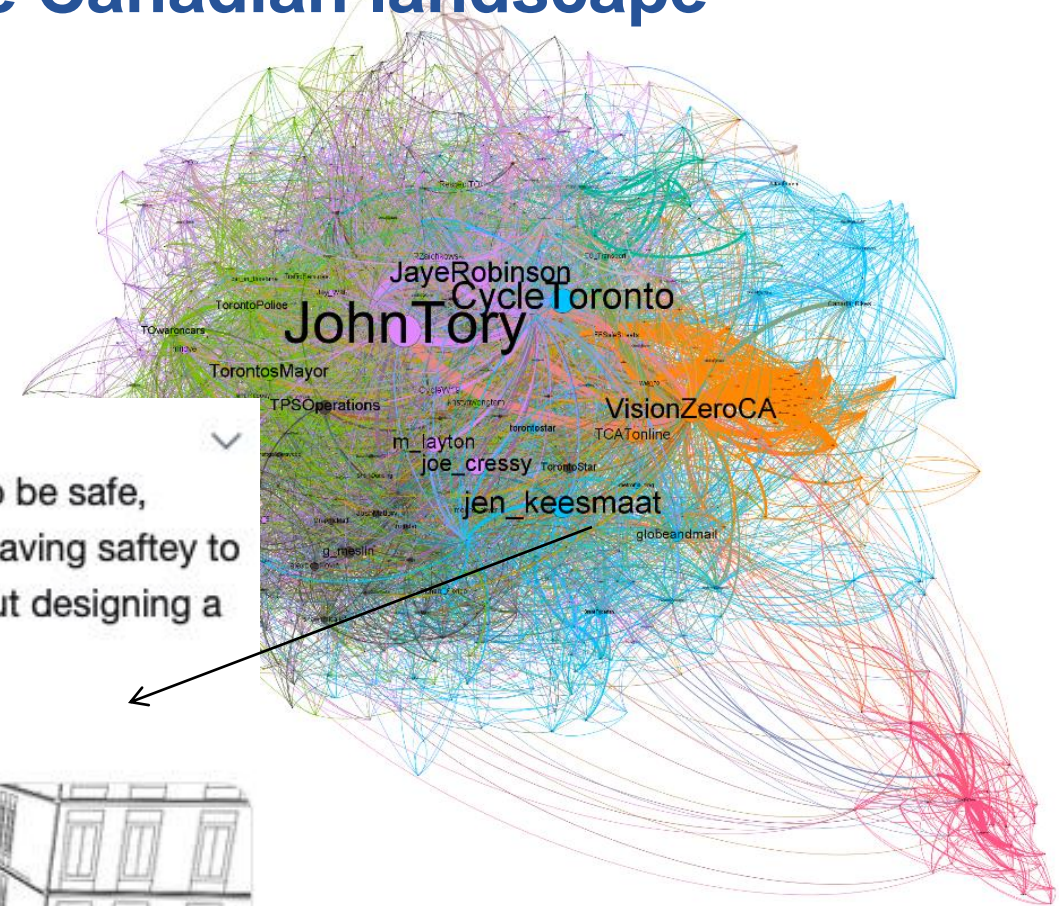
These jerks called my 22yo daughter a “dumb bitch” after she called them out for cutting her off as she cycled along College St Thurs eve. One of them punched her. License plates flipped up, not much police can do to find them. [#VisionZero](#) [#BikeTO](#) [#TOpoli](#)



Network of users: the Canadian landscape



Network of users: the Canadian landscape



Jennifer Keesmaat  @jen_keesmaat · 29 déc. 2018

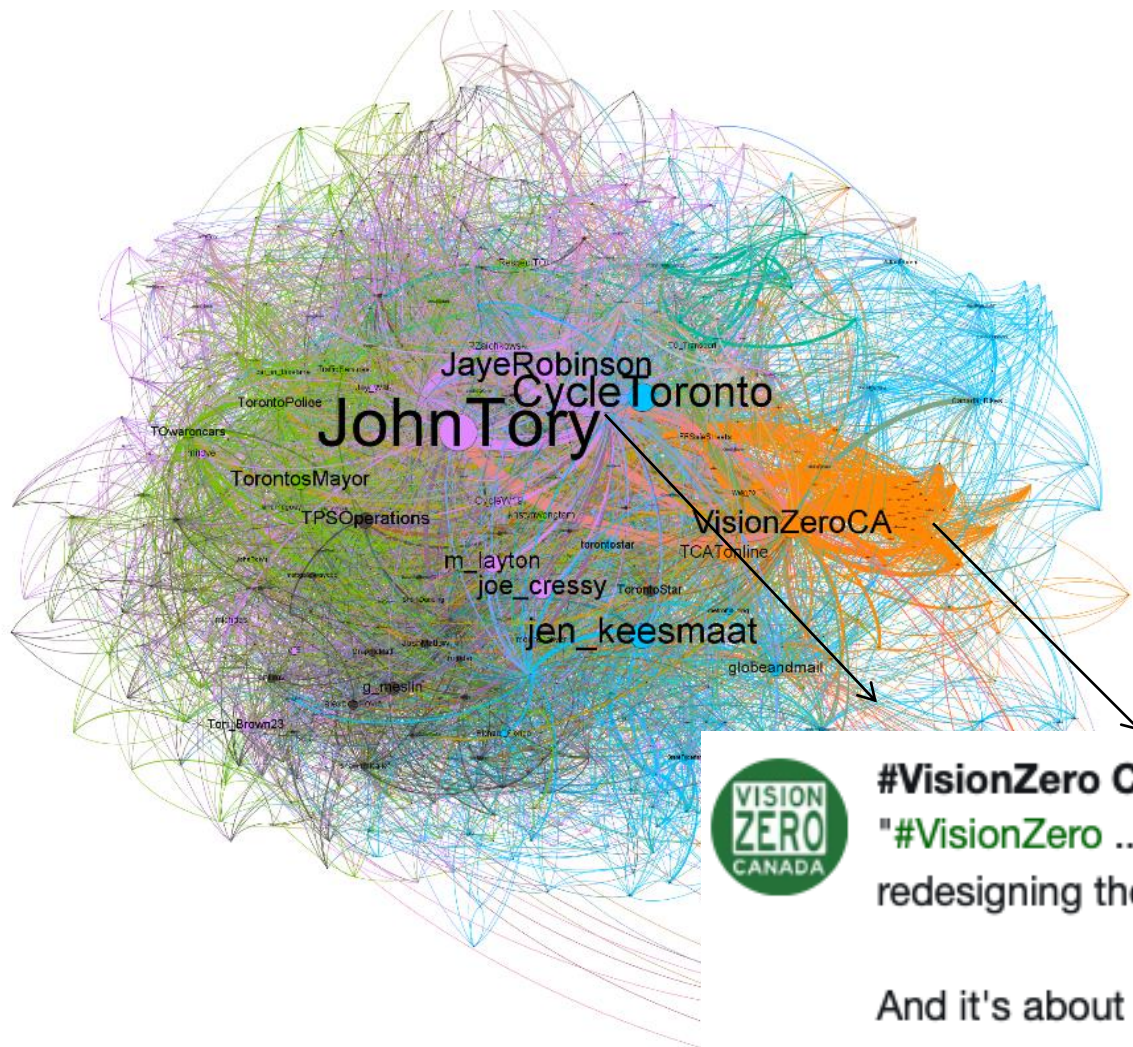
Cities that are safe for everyone, have *literally* been redesigned to be safe, particularly for pedestrians and cyclists. [#VisionZero](#) isn't about leaving safety to good will, or kindness, or behavioural change. [#VisionZero](#) is about designing a safe city. [#RealVisonTO](#) pic @NACTO

 Traduire le Tweet



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Network of users: the Canadian landscape



#VisionZero Canada @VisionZeroCA · 5 janv.

"#VisionZero ... sets out to eliminate deaths & serious injuries on our streets by redesigning them for people, moving at human speeds."

And it's about time #Toronto tried it say @CycleToronto advocates.

READ >> nowtoronto.com/news/year-in-r... #BuildtheVisionTO #TOpoli #walkTO #bikeTO

Members of the Toronto Police will be out supporting the #SlowDownToronto Road Safety Campaign. Speeding, distracted driving, how and where we park vehicles are things that drivers control. All contribute to collisions and congestion. Do your part! ^bm #VisionZero



André Picard @picardonhealth · 13 juin 2018

With 21 dead cyclists and pedestrians dead in 23 weeks, Toronto's road safety program, #VisionZero, is a failure: @globeandmail editorial

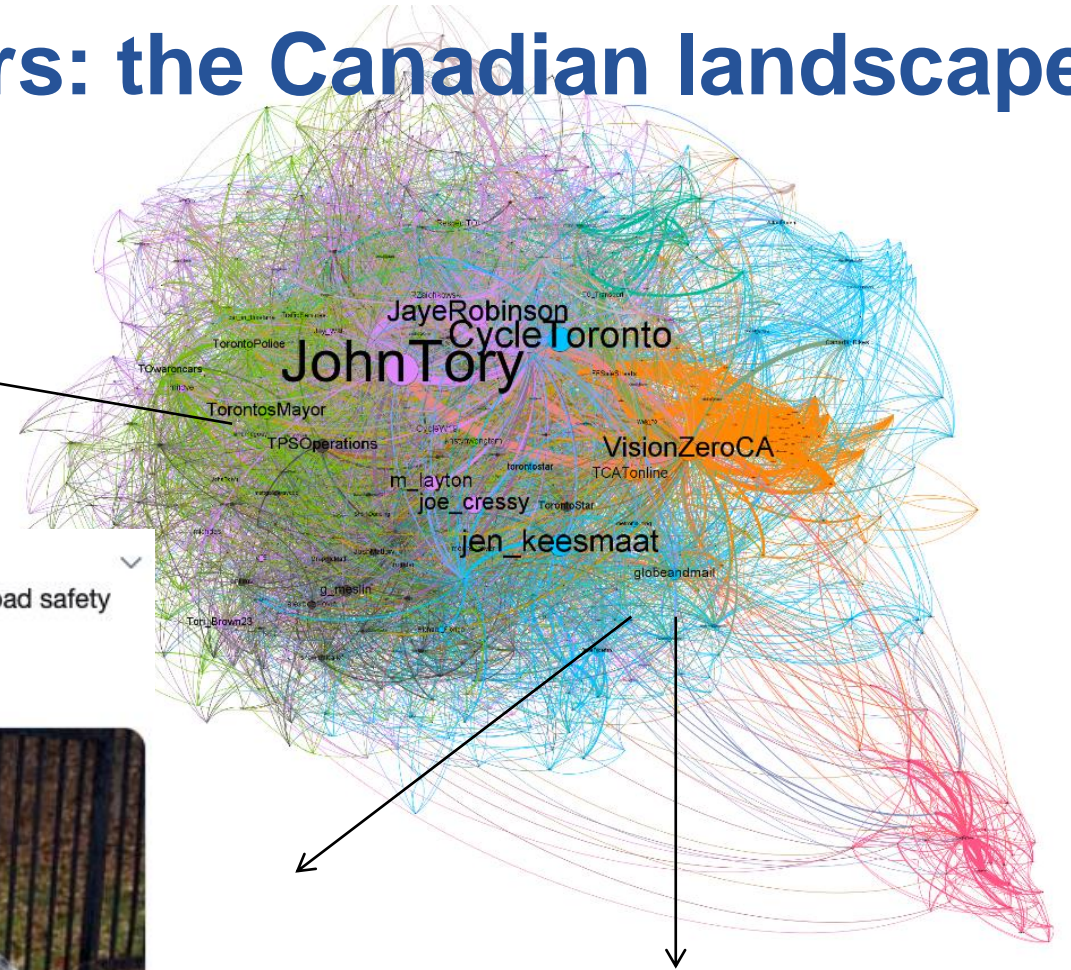
Traduire le Tweet



Globe editorial: Toronto's road safety program, Vision Zero, is a failure
theglobeandmail.com

5 107 127

Network of users: the Canadian landscape



Oliver Moore @moore_oliver · 1 janv.

New year in Toronto feels a lot like the old year. #visionzero

Toronto Police OPS @TPSOperations

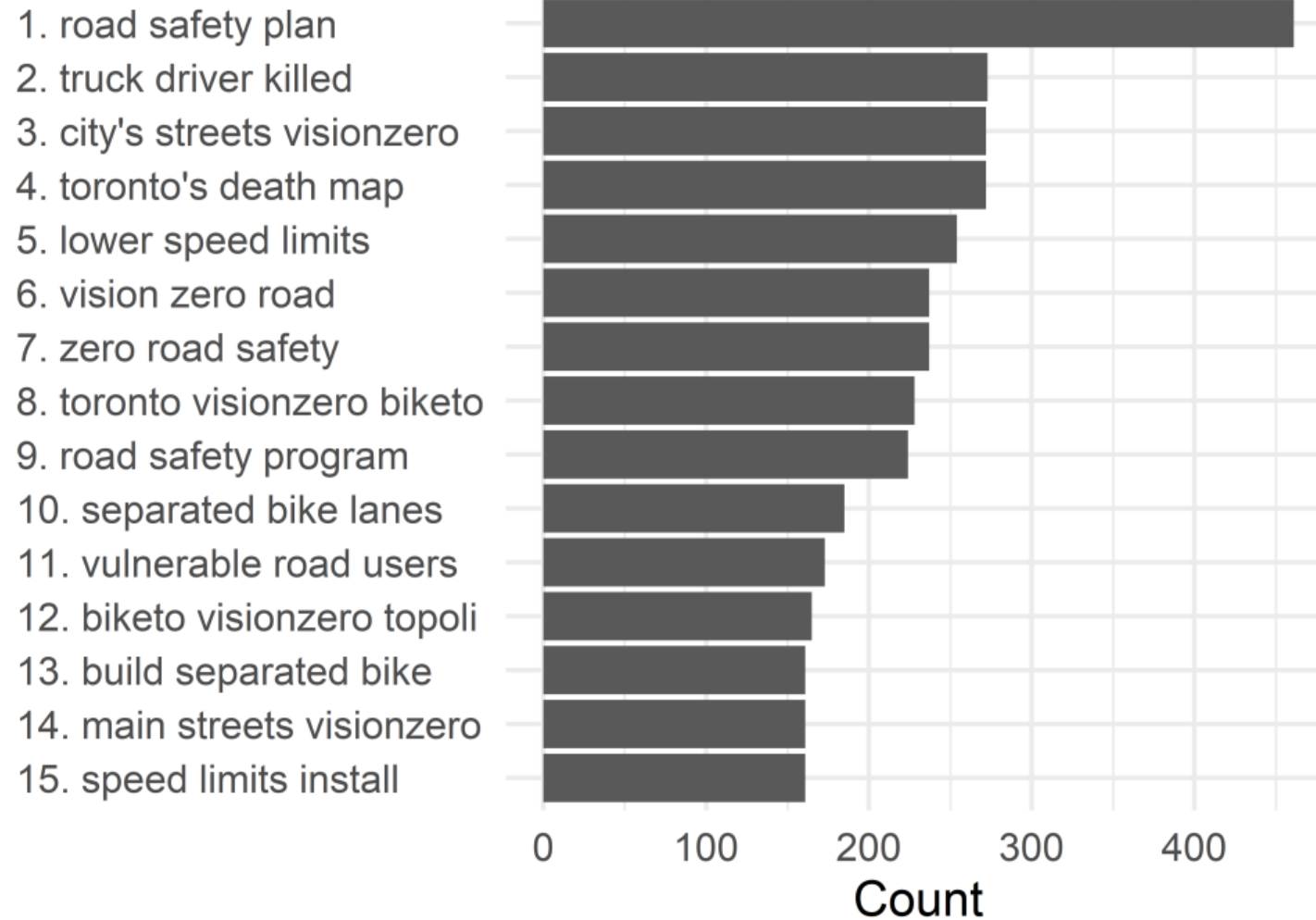
COLLISION

ST Clair Av + Dufferin St

4:38 am

-Pedestrian struck...

Words frequency: Most frequent trigrams

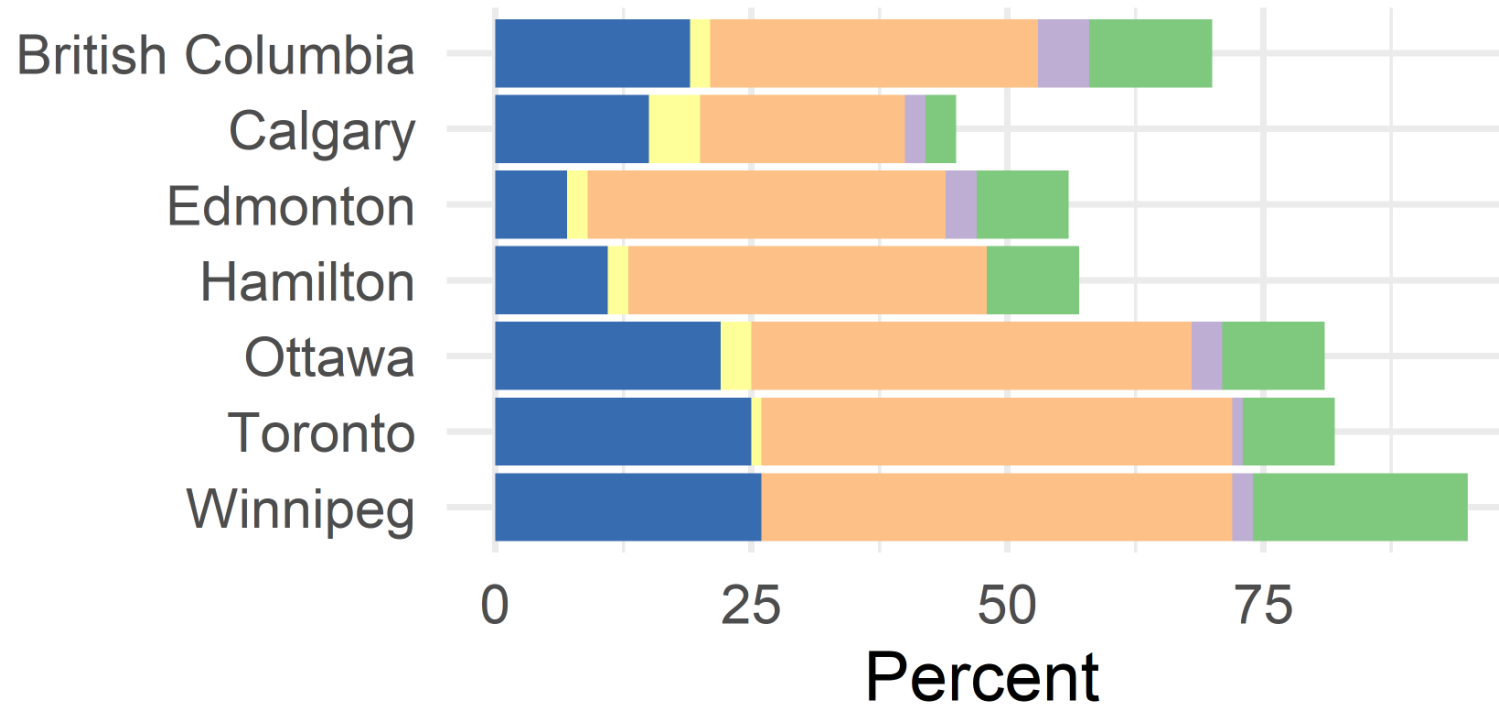


Vision Zero Principles and keywords

Principles	Related Keywords
1. Road traffic collisions are preventable and no loss of life is acceptable , which is why we should target zero deaths on roads	Preventable, target Loss of life, death
2. Humans make mistakes , the road system should be forgiving	Mistakes Forgiving
3. Responsibility should be shared by all actors to make the system safe: from decision-makers and designers to road users	Shared responsibility Stakeholders: city, police, engineers Road users: drivers, pedestrians, cyclists
4. Above individual behaviors and accident-prone locations, there is a need for a system approach in road safety	System approach
5. Speed is the fundamental factor in crash severity	Speed Severity Injuries

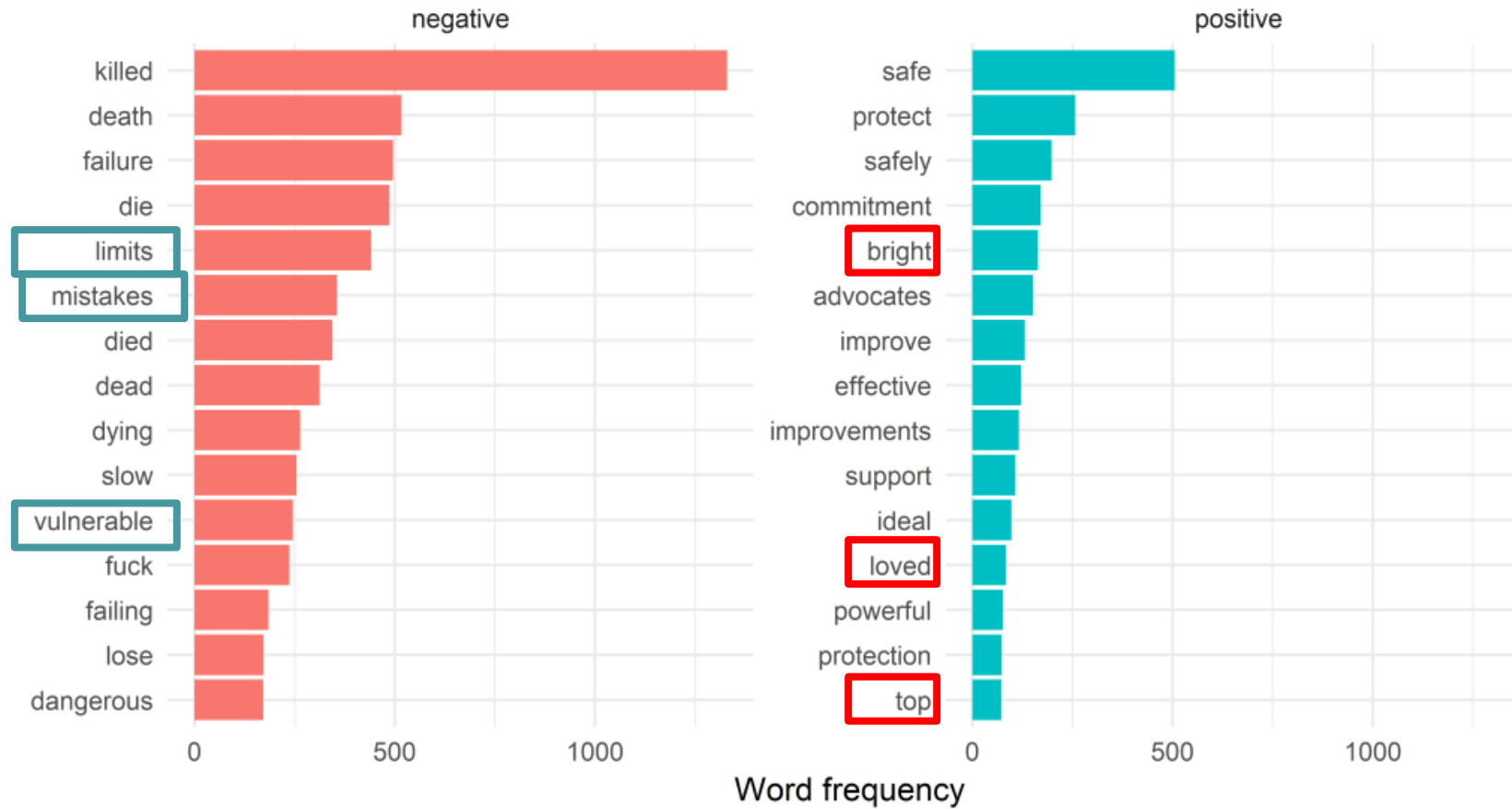
Words frequency and association: what about the Vision Zero principles in Canada?

Principle 1 2 3 4 5



- 1: preventable
- 2: design for mistakes
- 3: shared responsibility
- 4: system approach
- 5: speed is an issue

Sentiment analysis: when positive terms become negative...



Takeaways

Twitter and road safety strategy: a double-edged sword?

- The most popular tweet is not always the most relevant one.
- “Striking events” (such as crashes and deaths, mostly bikes and peds) are taking a lot of the Twitter space.
- Negative comments from random citizens while officials are not present.
- Only a few people drive the conversation, while Vision Zero needs a population-wide approval to move forward.
- Professionals (planners, engineers, public health officials) and leaders (mayors, city councillors, MPs, etc.) might benefit from such a platform (i.e. media presence).

Thanks! QUESTIONS?
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