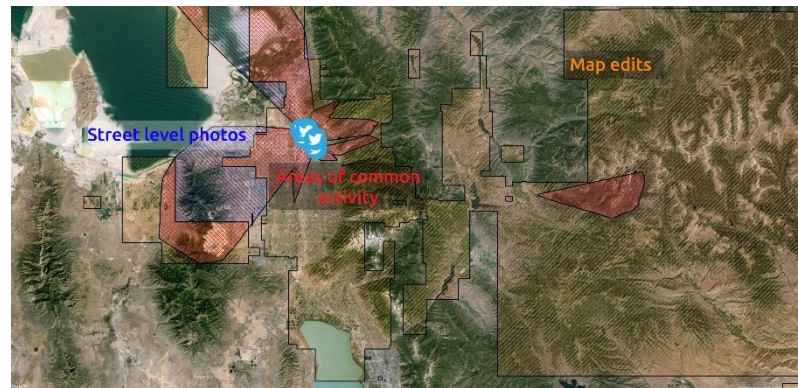


VGI Analysis Research at the University of Florida

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VGI Analysis



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Some research areas

- Explore new VGI and Open Access data sources and evaluate their data quality
- Analyze individual contribution behavior across multiple VGI/social media platforms
- Analyze how different VGI and social media platforms are connected (cross-tagged) at the data level



Cross-Tagging: What is it?

● LizPOI" application

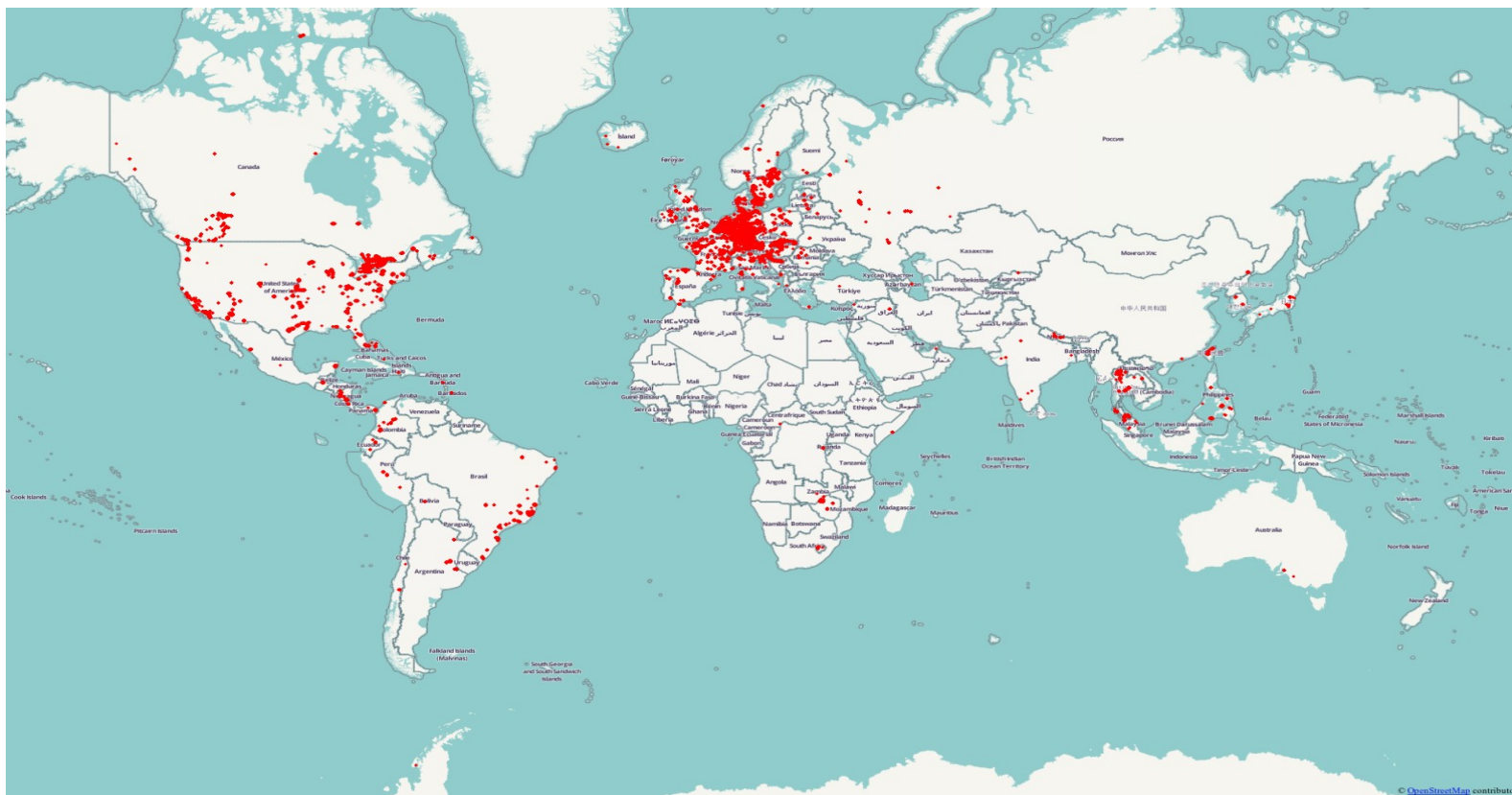
<https://www.flickr.com/photos/12353812@N00/16621311914/>

The screenshot displays the LizMobility Orange application interface. On the left is a legend with categories: 00-TRANSPORTS, 01-Parking, 02-Bus, and 03-Train. Under 01-Parking, 'Parking handicapé' is selected and highlighted with a red box. The main map shows a street view with various parking icons. A red circle highlights a specific disabled parking space on the map. A yellow arrow points from this circle to a photo of a silver car parked in a disabled space. Below the map, a table titled 'Résumé des objets filtrés' displays data for the selected object.

Data	Value
amenity:	"parking_space"
wheelchair:	"no"
parking_space:	"disabled"
parking_space:width:	"2.20"
node:	2117646444 osm

Cross-Tagging between OSM and Mapillary

- Linkage occurs at the feature level or at the changeset level



Location of OSM features or change sets that are cross-tagged to Mapillary

Cross-Tagging between OSM and Mapillary

OpenStreetMap Edit History Export More jlevente

Search Where am I? Go

Node: Emelia (3349860801)

Av des Martyrs, Bangui from Mapillary

Edited about 2 years ago by SK53

Version #1 - Changeset #28840271

Location: 4.4021138, 18.5395296

Tags

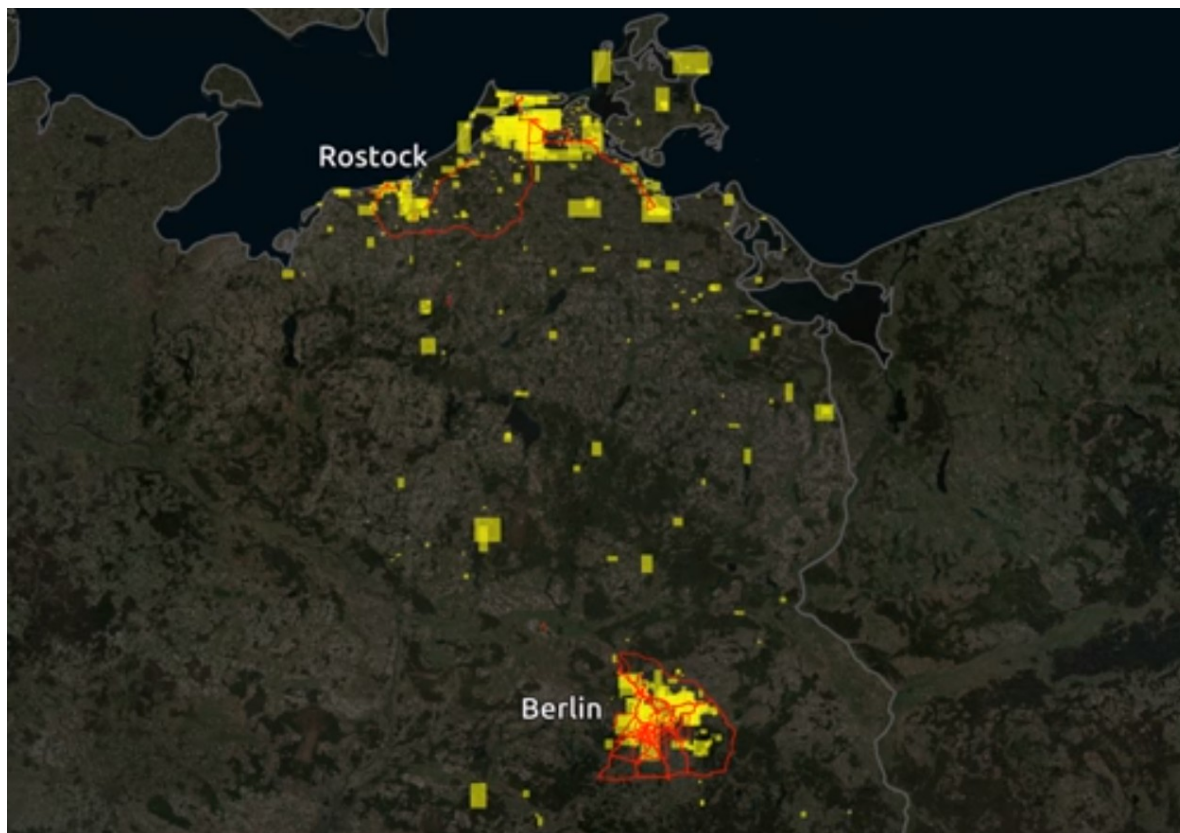
fixme	node
mapillary	Mtr1R9IA21YphP9CfeAoug
name	Emelia
shop	hairdresser
source	Mapillary
survey_date	2014-12-20

Download XML · View History

Mapillary

Cross-Platform Mapping Behavior

Video: OSM and Mapillary contributions for one individual



<https://www.youtube.com/watch?v=l5e0fkubfLQ>

(Video by Levente Juhász)

Using Mapillary Layer Plugin in JOSM Editor

- Determine likely OSM edits based on Mapillary images that are not tagged => Cross-viewing

The screenshot shows the JOSM Editor interface. On the left, a satellite map view displays a parking lot area with a red circle highlighting a specific location. On the right, the 'Layers' panel shows the 'Mapillary Images' layer selected. Below it, the 'Tags' panel displays a list of tags for the selected image, with 'amenity=parking_entrance' highlighted. A red box highlights the 'Key' and 'Value' columns in the tag list. Below the tag list, a 'Mapillary picture' window shows a street-level view of the same location, with a red circle highlighting a building entrance. The bottom of the window shows navigation controls like 'Jump to blue', 'Previous picture', 'Next picture', and 'Jump to red'.

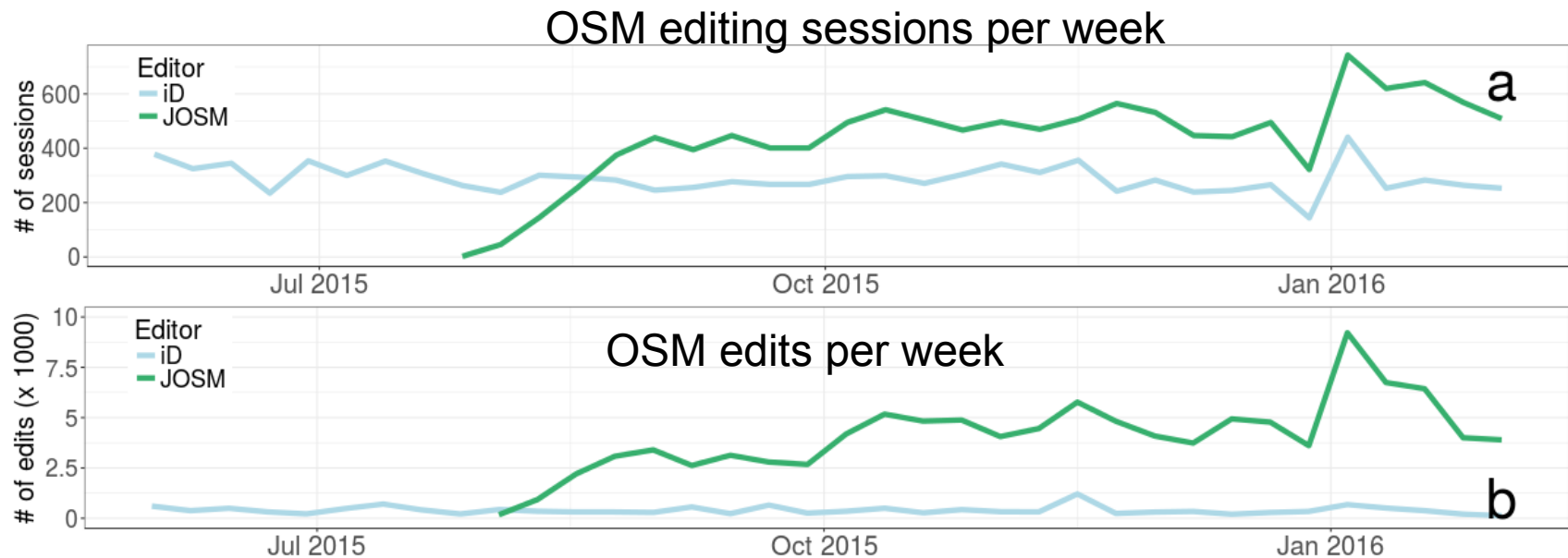
Key	Value
amenity	parking_entrance

<https://vimeo.com/142174923>

(Video by Levente Juhász)

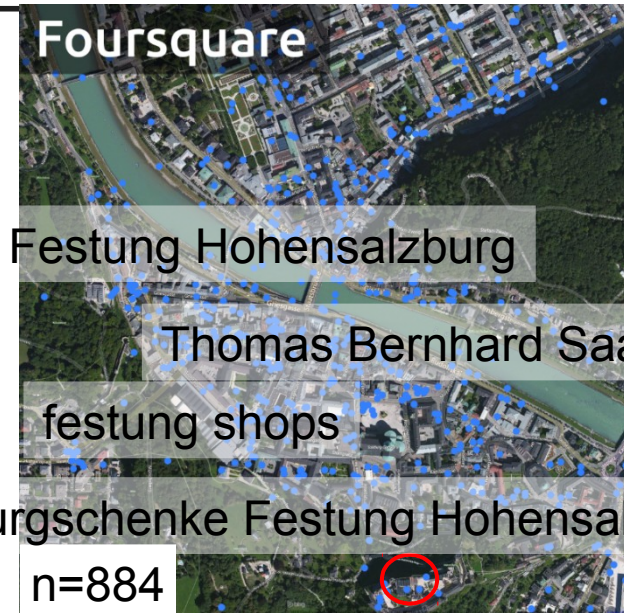
Cross-viewing: Some stats

- Number of sessions and edits per weeks using cross-views between Mapillary and OSM



Data quality of locations in social media/VGI

Foursquare



Yelp



Facebook



Instagram



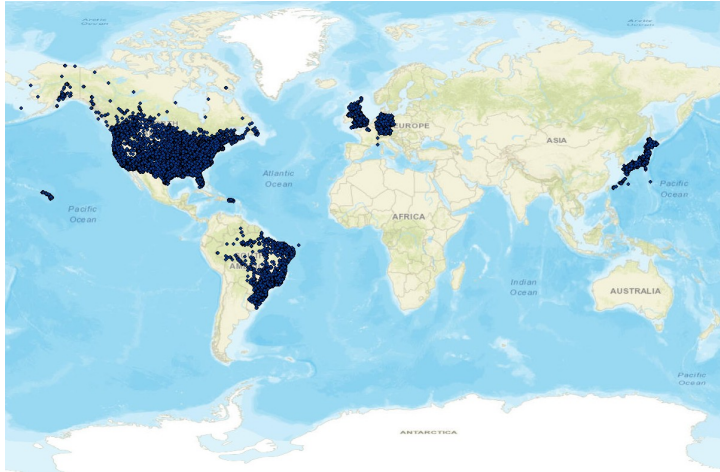
Data quality of locations in social media/VGI



Google places

Twitter places - worldwide

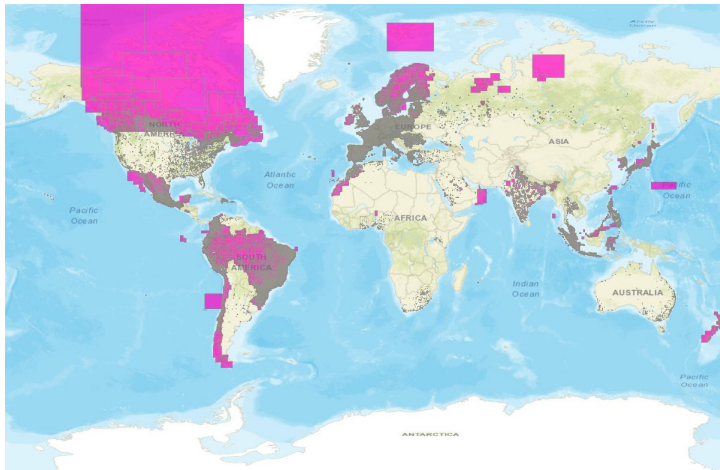
Place type: Points of Interest



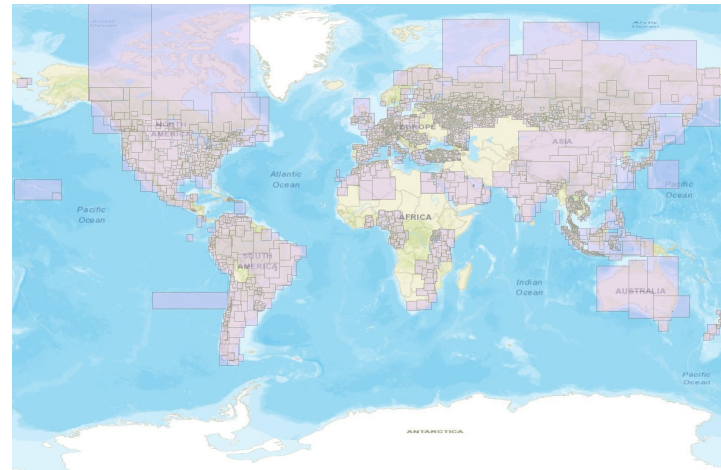
Place type: Neighborhood



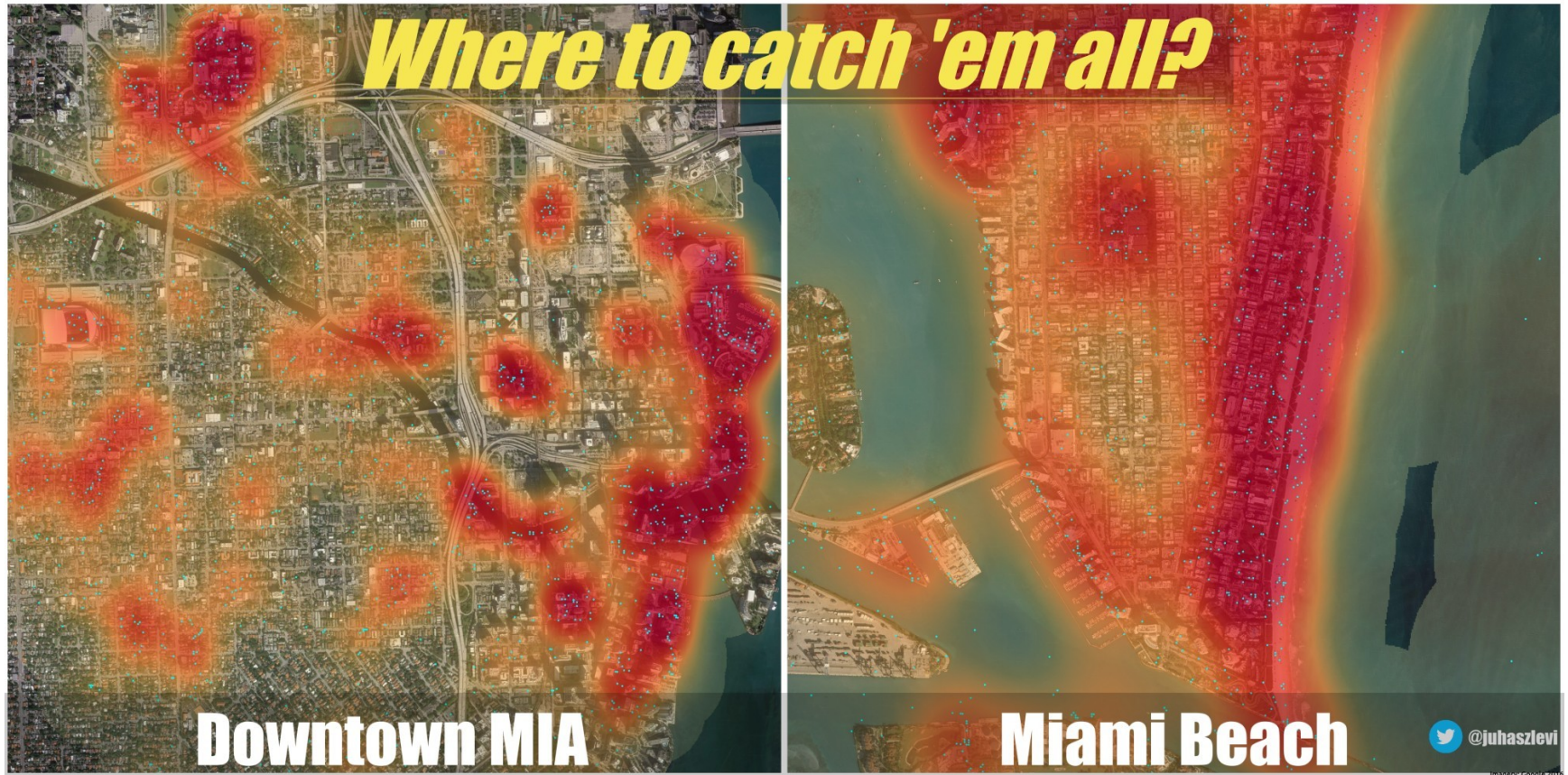
Place type: City



Place type: Admin



Analysis of New VGI sources - Pokémon



Information Spread in Twitter

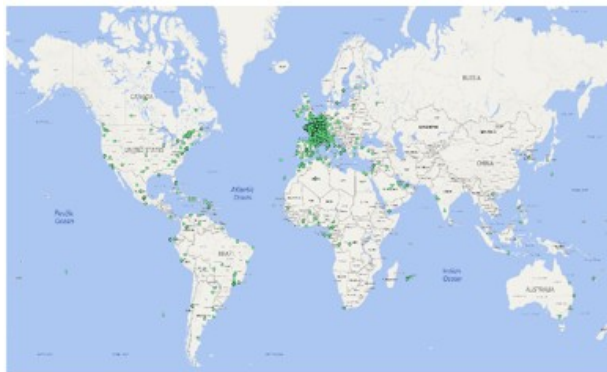
- Spread of news about November 2015 Paris attacks using hashtags in different languages



(a) #AttentatsParis



(c) #ParisAttacks



(b) #fusillade (en: shooting, gunshots)

French



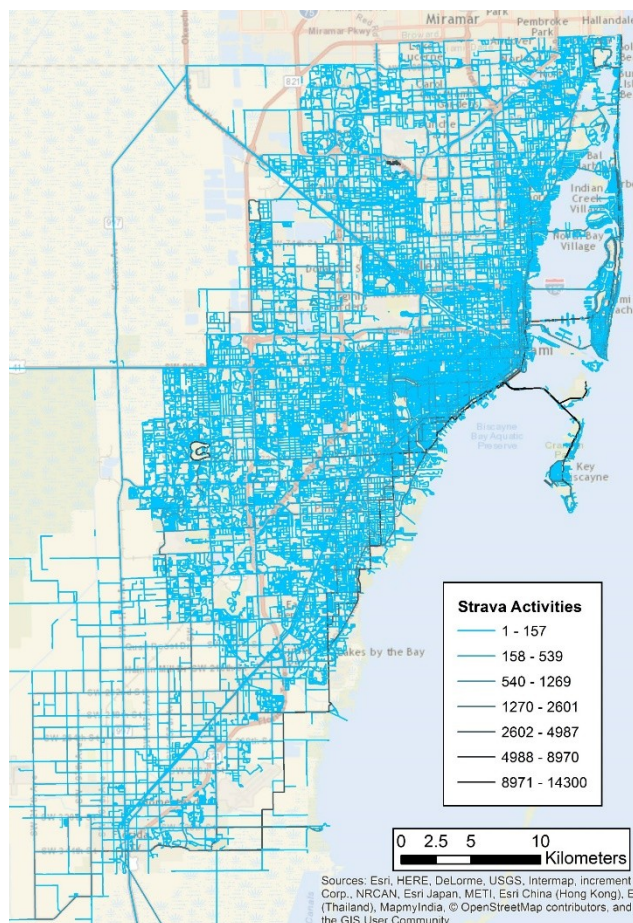
(d) #PrayForParis

English

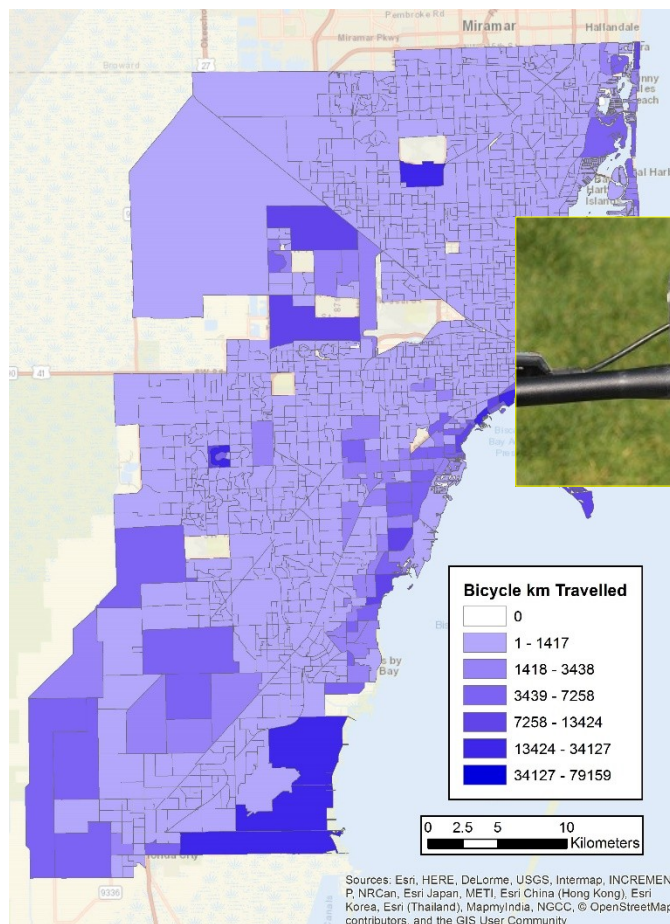
- Developed also spatio-temporal regression model for global spread

VGI and Transportation - Cycling

- Analysis of crowd-sourced GPS bicycle tracking data (Strava)



Trip counts between January and May 2015 for Miami-Dade County, Florida



bicycle kilometers travelled (BKT) for census block groups

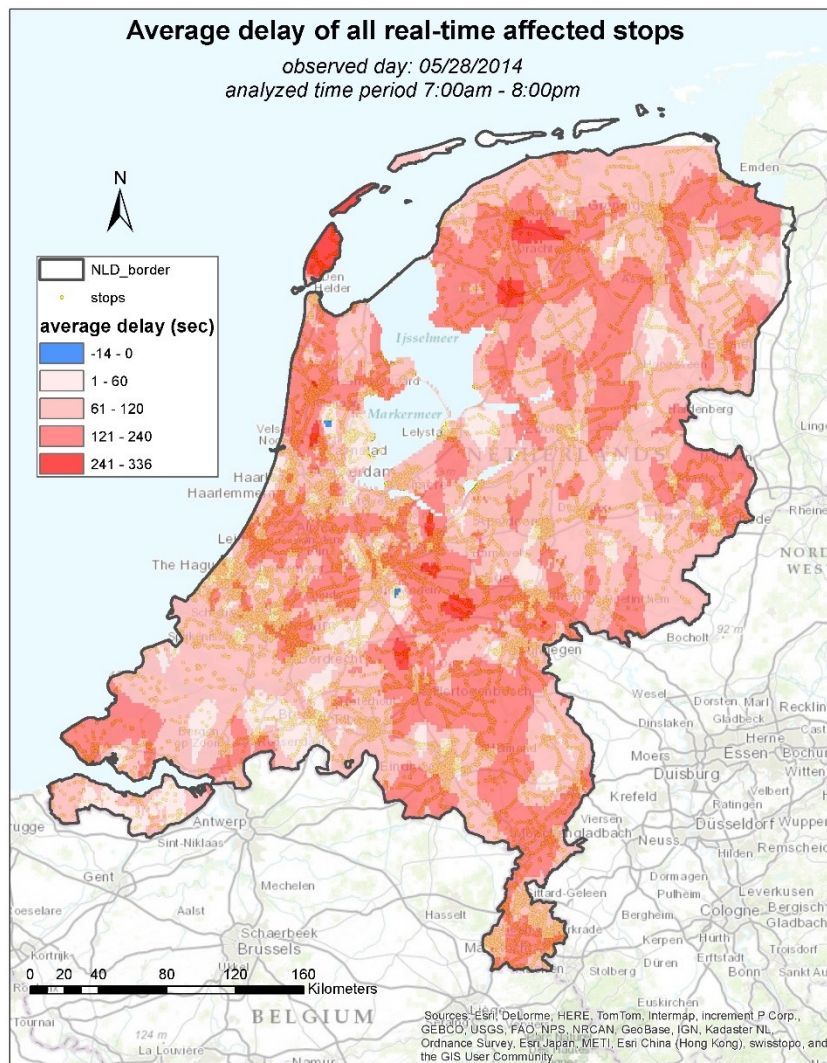
VGI and Transportation

- Predicting ridership per census tract; examine differences between work/leisure and weekday/weekend

		BKT Non-Commute (M1)		BKT Commute (M2)	
		<i>Nonspatial</i>	<i>Spatial</i>	<i>Nonspatial</i>	<i>Spatial</i>
Sociodemographic variables	Sociodemographic variables				
	Population	-0.150*	-0.144*	-3.817E-02**	-2.374E-02*
	Median household income	4.988E-03**	-5.918E-04	1.257E-03***	1.751E-04
	Percent Afr. American	-6.595**	-2.517	-1.663***	-0.751*
	Percent male	-2.650E+01***	-2.403E+01***	-3.737**	-3.449**
Location specific variables	Location specific variables				
	Bicycle park	3.823E+03*	4.201E+03**	-1.064E+02	5.441E+01
	Bay bridge	3.052E+03***	2.358E+03***	7.157E+02***	5.169E+02***
	Distance to bay or ocean	-9.371E-02***	-4.831E-02***	-1.853E-02***	-9.598E-03***
	Jobs	-7.880E-04	-5.344E-03	2.662E-03	1.257E-03
Network measures	Network measures				
	Maximum polygon area	-4.014E-07	3.665E-06	-1.393E-06	-1.278E-06
	Max. betweenness centrality	3.792E-07	-6.220E-08	8.227E-08	-9.431E-09
	Nr. of controlled intersections	-2.195E+01	-3.372E+01	5.378	3.249
	Local road length	8.400E-02***	6.119E-02***	1.716E-02***	1.157E-02***
	Local road length w. bike lane	1.891***	1.238***	0.293***	0.202***
	Collector rd. len. w. bike lane	-5.597E-02	-7.661E-02	5.677E-02	3.853E-02
	Coll. rd. len. w. paved shoulder	1.263**	0.763*	0.232**	0.144*
	Coll. rd. len. w. sharrows	0.580	0.858**	0.239***	0.249***
	Arterial road length	-0.115	-0.105	2.077E-03	-3.956E-03
	Arterial rd. len. w. sharrows	1.696	-0.465	0.622**	2.074E-02
	Walk/bike-only trail length	0.257***	0.240***	2.693E-02*	2.642E-02*
	Spatial filter	-	0.796***	-	0.787***
	Constant	1.541E+03**	1.711E+03***	2.545E+02**	2.841E+02***
	Number of observations	1535	1535	1535	1535
	Residuals Moran's I	0.1555***	0.0033	0.189***	0.0073
	Residuals Moran's I (p-value)	< 1E-15	0.383	< 1E-15	0.275
	R ²	0.289	0.462	0.314	0.504
	Adjusted R ²	0.280	0.455	0.306	0.498

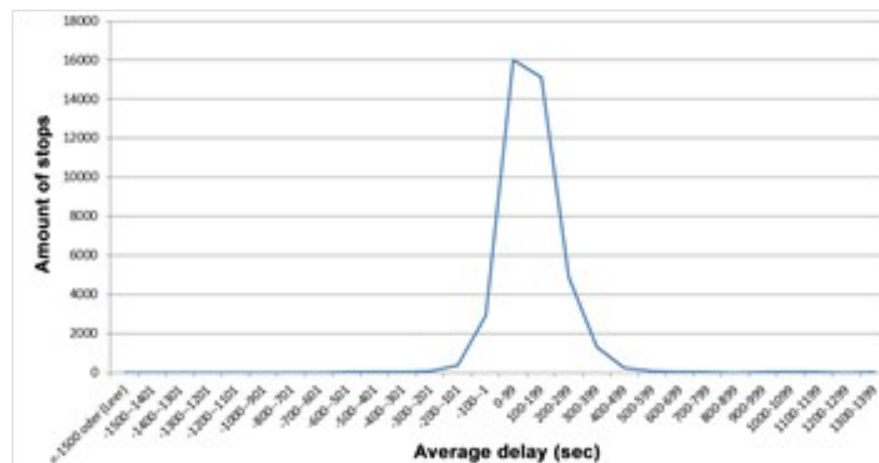
Note: *** p<0.001, ** p<0.01, * p<0.05

Evaluate Open Access Real-time bus delays



Comparing routes obtained from

- 1) static GTFS time tables and
- 2) those using bus delay information from OVapi in GTFS-realtime data format



Route Examples

