

Exploring the Effects of Pokémon Go Vandalism on OpenStreetMap

Levente Juhász, Hartwig Hochmair, Sen Qiao, Tessio Novack



UNIVERSITÄT
HEIDELBERG
ZUKUNFT
SEIT 1386

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Outline

- Introduction
- Methodology
- Results
- Summary and future work

Outline

- Introduction
 - Pokémon Go (PGO)
 - PGO-related mapping and vandalism in OSM
 - Our goal
- Methodology
- Results
- Summary and future work

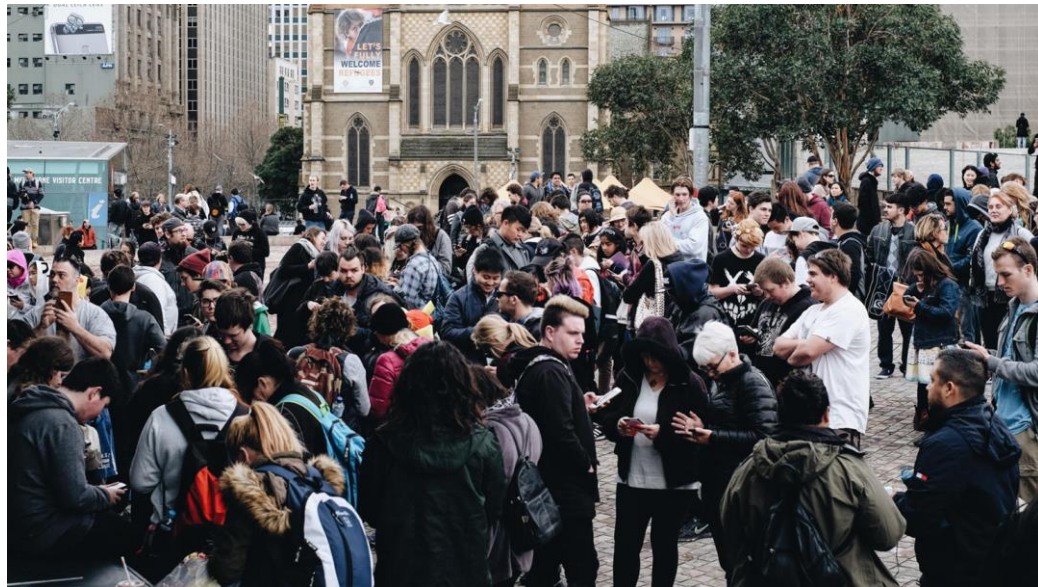
About Pokémon

- PGO is an augmented reality mobile game
- Goal: locate and capture virtual creatures
- Different ways of interacting with other players



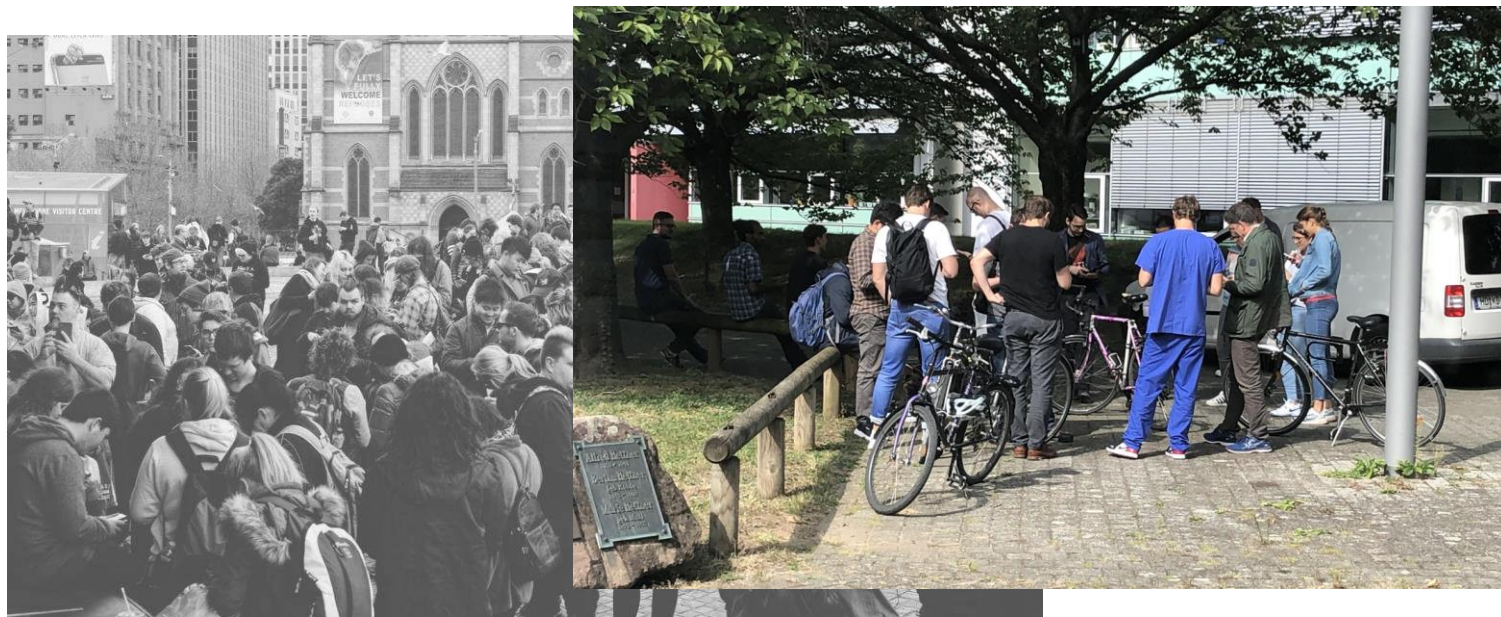
About Pokémon

- PGO has insane popularity!
- 28M users daily (2016), 10M users monthly (2019)



About Pokémon

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About Pokémon

- Outdoor activity is promoted
- Increased foot traffic reflects on local business
- Is inspiring Citizen Science projects

nature
International journal of science

Editorial | Published: 19 July 2016

Gotta name them all: how Pokémon can transform taxonomy

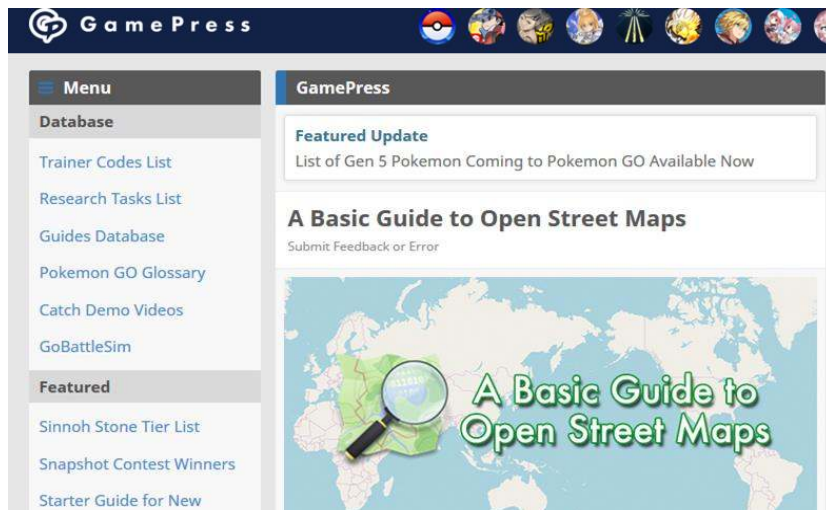
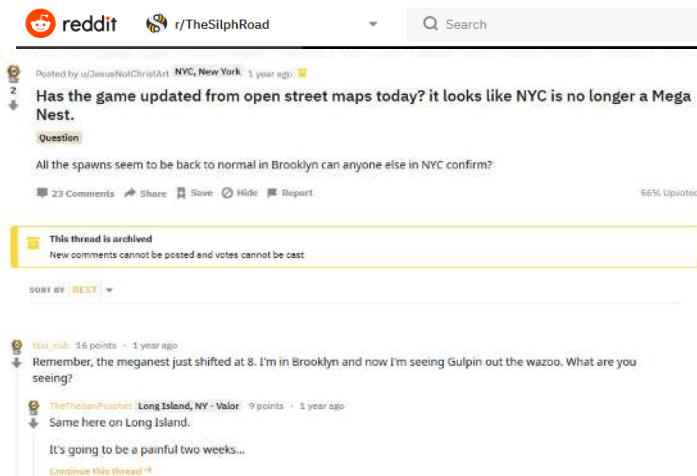
Nature **535**, 323–324 (2016) | [Download Citation](#) ↓
3 Accesses | 2 Citations | 437 Altmetric | [Metrics](#) >>

Scientists are urging Pokémon Go fanatics to keep an eye out for new species.



Pokémon-related mapping

- OSM is the background map from PGO
- OSM data influences “spawn points” within the game
- Players are motivated to map in order to get PGO benefits



Pokémon-related mapping



Main Page
The map
Map Features
Contributors
Help
Blogs
Shop
Donations
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Tools
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Special pages
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Permanent link
Page information
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View source

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Search OpenStreetMap Wiki

Tips for new (Pokemon Go) mappers

Tips for new (Pokemon Go) mappers - Other languages

Purge Help

Bahasa Melayu · English · español ·

Other languages · Translate

We've recently seen a flurry of new map editing activity from "Pokemon Go" players. This page shows some [tips for our new mappers](#) coming from [Pokémon Go](#) published originally on the [OpenStreetMap Blog](#) ^[1]

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- 2 Tips for new mappers coming from Pokemon Go
- 3 References
- 4 See also

Pokemon Go?

This hugely popular mobile game uses OpenStreetMap data to generate the in-game map. However there has also been speculation among some players that OpenStreetMap data is used to influence spawn points. ^[2]

This is interesting for several reasons. We always like to see creative and unexpected uses of our free and open map data, and this certainly fits into that category! (Note: our [open license](#) does require crediting OpenStreetMap)

There is some new interest in editing the map from Pokemon Go players, presumably because the game is found to be bringing in updates when changes are made to OpenStreetMap. It always takes new folks some time to get to know OpenStreetMap, and we hope Pokemon Go players will stick around to contribute some more. We've prepared the above guidelines to help understand some aspects of OpenStreetMap related to the game.

Tips for new mappers coming from Pokemon Go

So, you want to find rare spawns and came to edit OpenStreetMap? Welcome to our community of people passionate about collaboratively building the best map ever!

Some tips for our new mappers coming from Pokemon Go:

Please,

- do improve the map!
- do map things that exist on the ground. The map is used by pedestrians, people with disabilities, cyclists, hikers, canoeists, drivers and others. [Do not add things -such as footways- that do not exist](#)
- do add things you see (i.e. benches, cafes, fire hydrants, bicycle parking spots) or things you know (if your favorite cafe offers free wifi, the type of cuisine of the nearby diner, accessibility, opening hours, official websites, wikipedia links)
- want to add footways? Check what is considered as a footway: [highway=footway](#) tag docs. Want to add other [features](#)? Have a look at map features and [search the wiki](#) ^[2]
- do connect your footways with the road network
- tagging secondary institutions? Use [amenity=school](#). Tagging universities? Use [amenity=university](#)



Pokémon-related vandalism

Fantasy Pokemon mapper vandalism #259

 Closed krishnanammala opened this issue on Jan 2, 2017 · 4 comments

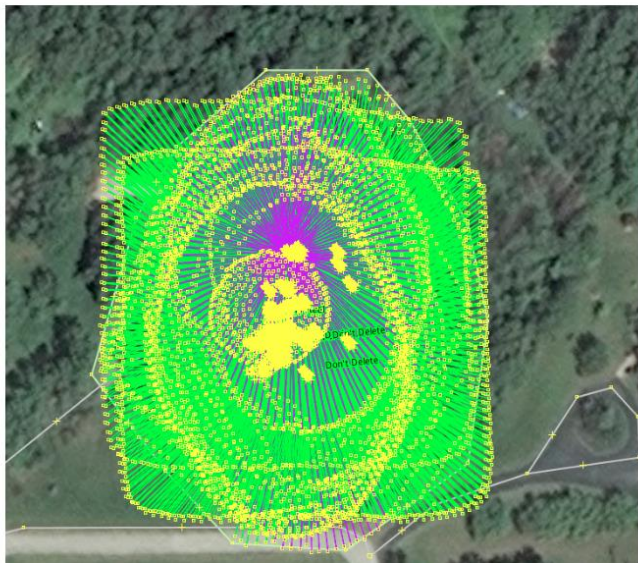


krishnanammala commented on Jan 2, 2017 · edited ▾

Contributor + 😊 ...

We came across a [user](#) who is adding random footways all over the park.

He was a new mapper joined recently in 25th December 2016 having 73 changesets using iD editor. [Here](#) are the list of his changesets.



- Some PGO users tend to vandalize OSM to gain benefits in the game
- Footpaths influences PGO spawns
- Land-use affects Pokémon biome

Vandalism in OSM

- Large user base applications (e.g. Snapchat, ORS) put OSM on the spotlight
- OSM reputation is undermined if vandalism is visible to these wider audiences

How an anti-Semitic slur made its way onto maps across the internet



Vandalism in OSM

- Large user base applications (e.g. Snapchat, ORS) put OSM on the spotlight
- OSM reputation is undermined if vandalism is visible to these wider audiences
- **Vandalism detection methods are needed!**
- According to Linus's law, vandalism will be discovered and corrected, but it is...
- Unlikely that all harmful edits will be detected by the community

Vandalism in OSM - Related works

In the OSM community (wiki):

- Tools for reverting and guidelines for **managing** vandalism
- **Rule-based** approaches for detecting suspicious tags, users, and changesets.

In academic literature:

- Analysis of the motivations behind carto-vandalism [[Coleman et al., 2009](#)]
- Categorization and characterization of carto-vandalism [[Ballatore, 2014](#)]
- Analysis and automatic detection of carto-vandalism [[Neis et al., 2012](#)]

Goal

To undertake first **exploratory analyses** on the **nature** and **life-cycle** of PGO-related harmful edits with an emphasis on the **OSM community's response**.

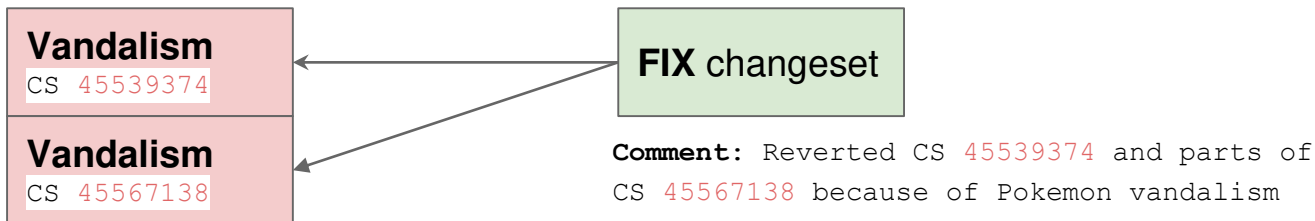
Overview

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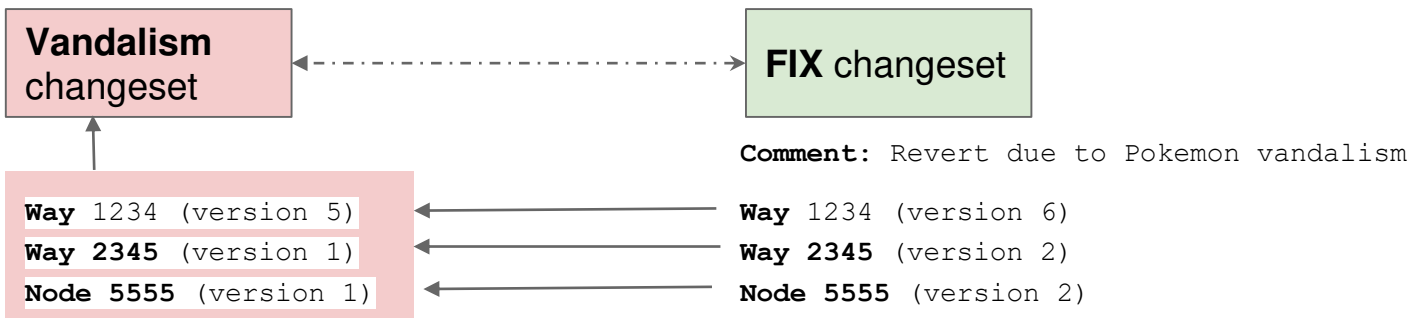
Identification of vandalism

- **Full text search:** (pokemon | pokémon | poké) AND (revert | remove | delete)

- a. **Regular expressions** to extract **vandalism**



- b. **Through feature history**



Our database

- **Changeset data:**
 - Categorized into 'Fix' and 'Vandalism'
 - Metadata, i.e. timestamps, user id, tags, number of changes, etc.
- **Links between 'Fix' - 'Vandalism':**
 - Allows to calculate time difference, identify users, etc.
- **Users' data:**
 - Categorized into 'vandals' and 'fixers'
 - "Age", num. of changesets and edits, etc.
- **Edits' data:**
 - Create, modify, delete
 - What type of feature was edited (JOSM presets)
 - Allows to assess WHAT has changed

Data cleaning

- A few **users** were found to both **vandalize** and **revert** vandalism
 - Remove users if no way of telling which one is correct (i.e. 1 vandalism, 1 fix)

VANDALISM

Search Where is this?

Changeset: 55257414

Added Trade Tower - Pokemon Gym

Closed over 1 year ago by

Tags

changesets_count	90
created_by	iD 2.5.1
host	https://www.openstreetmap.org/edit
imagery_used	Bing aerial imagery

Not a complete beginner

Description confirms
Pokemon content

OpenStreetMap **FIX** History

Search Where is this?

Changeset: 56171633

point trade tower - pokemon gym removed

Closed over 1 year ago by

Tags

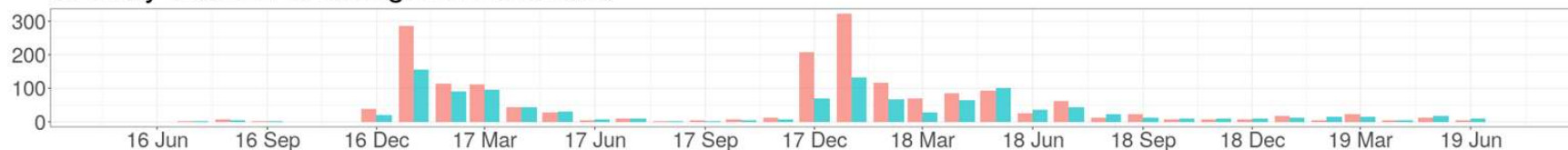
changesets_count	99
created_by	iD 2.6.1
host	https://www.openstreetmap.org/edit
imagery_used	Bing aerial imagery
locale	en-GB

Overview

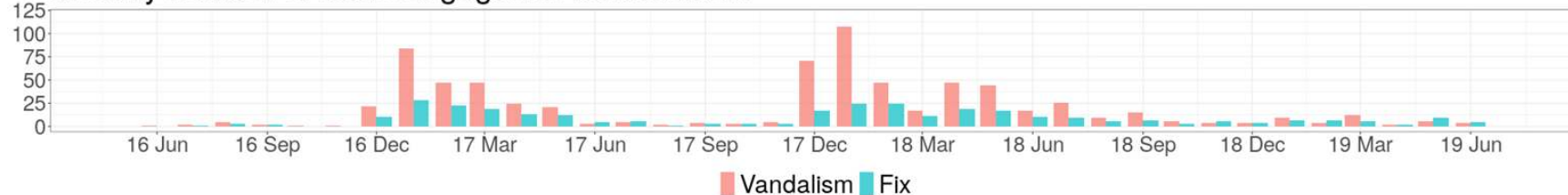
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Results - Cycles of vandalism

Monthly number of changesets identified



Monthly number of users engaged in vandalism/fix

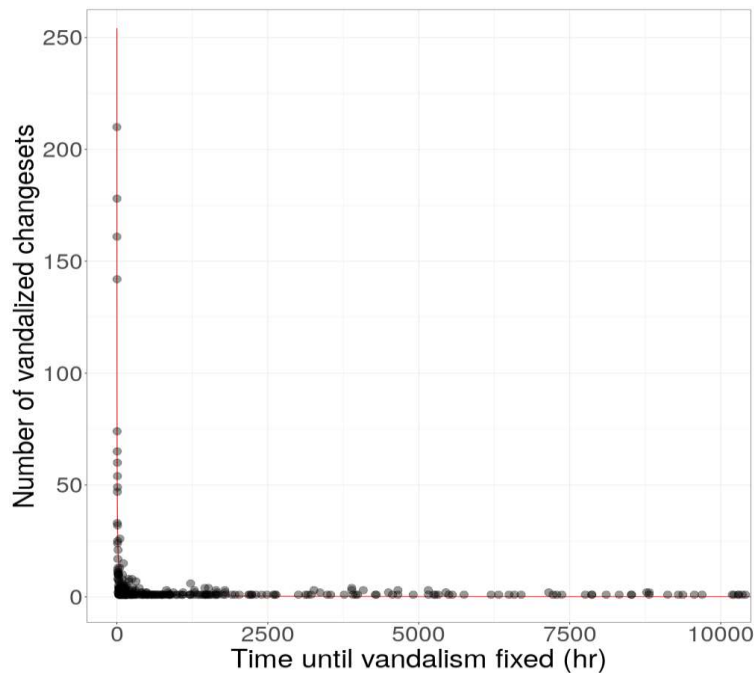


Cumulative number of users engaging in vandalism/fix



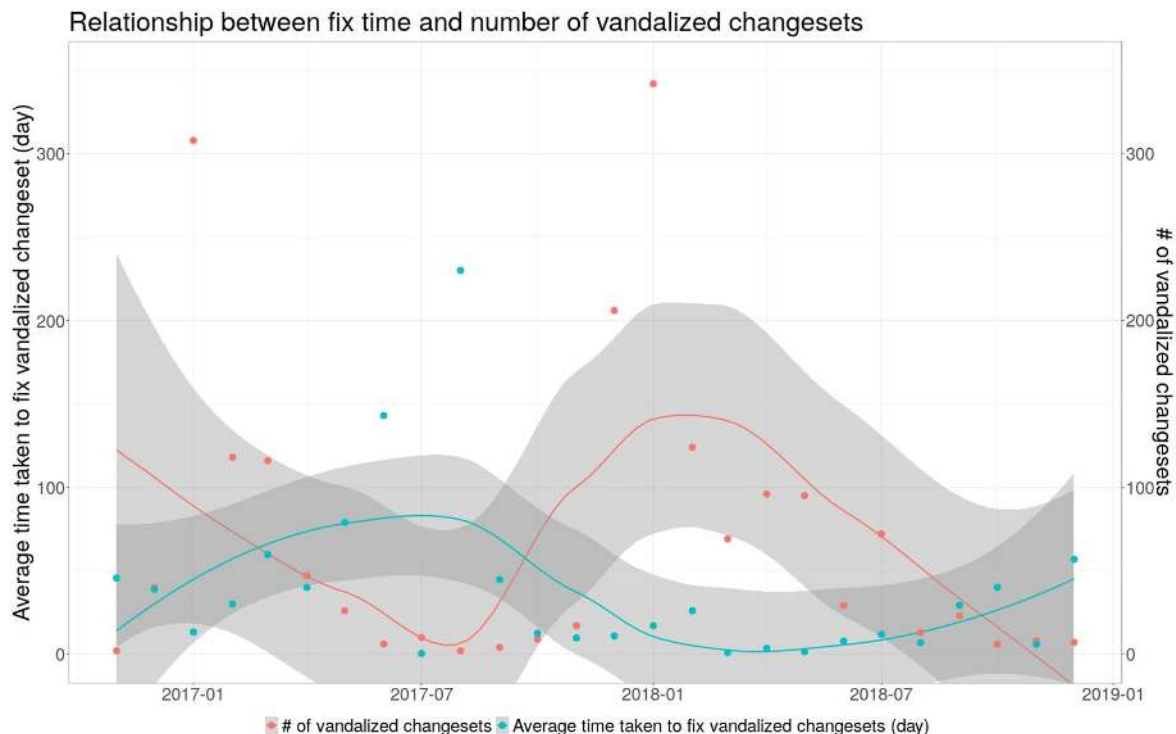
Results - Time to fix vandalism

- Median: 8.5 hrs, Mean: ~19 days, Max: ~2 years
- 2 out of 3 fixed within a day



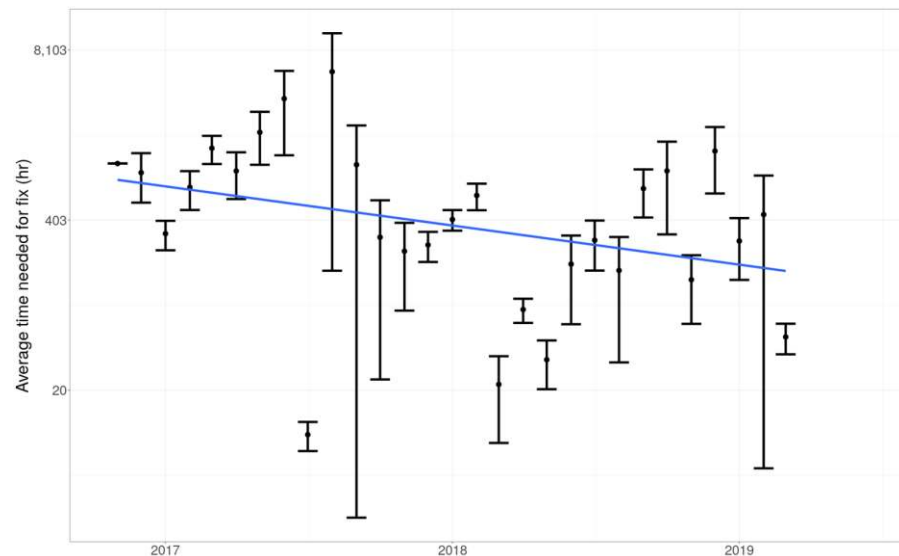
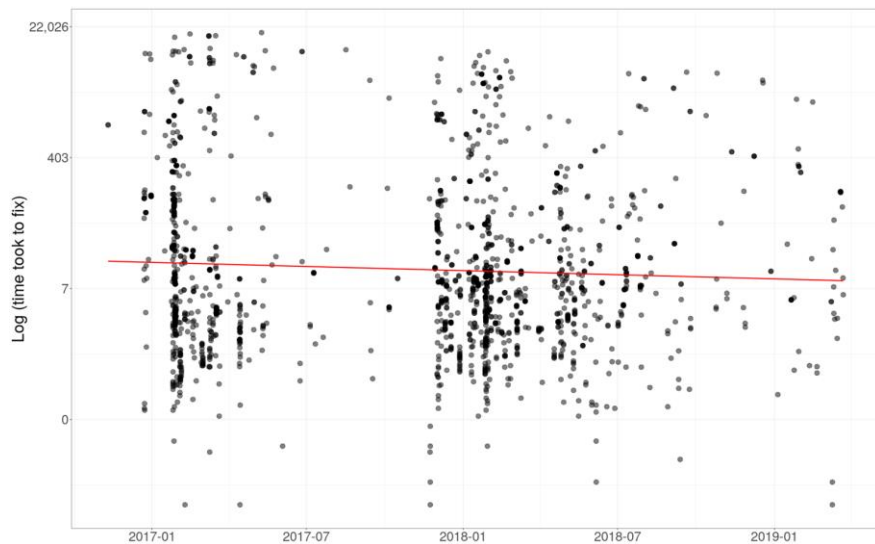
Results - Time to fix vandalism

- Inverse relationship between time taken to fix bad changesets and number of vandalism

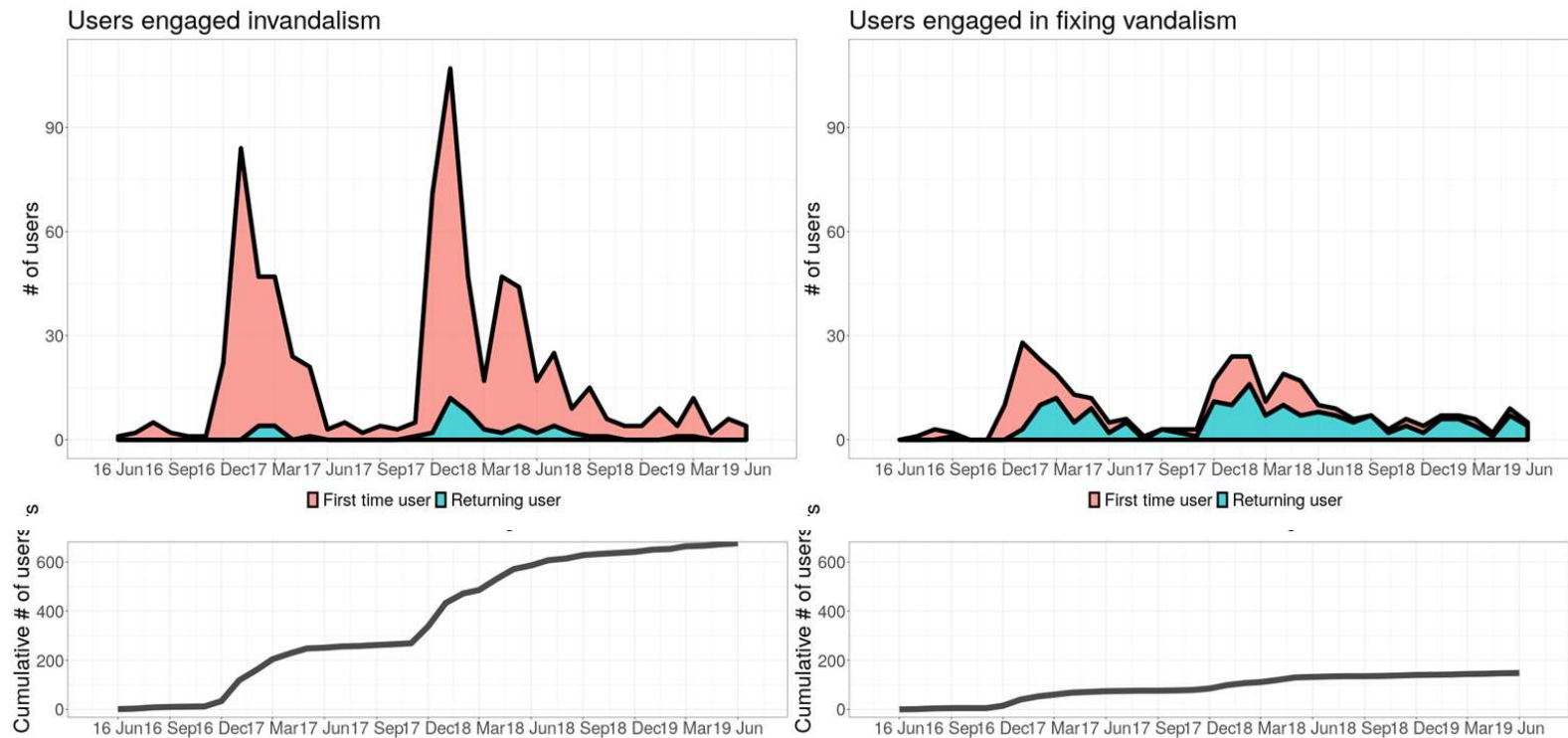


Results - Time to fix vandalism

- Community gets faster on discovering and fixing vandalism on average

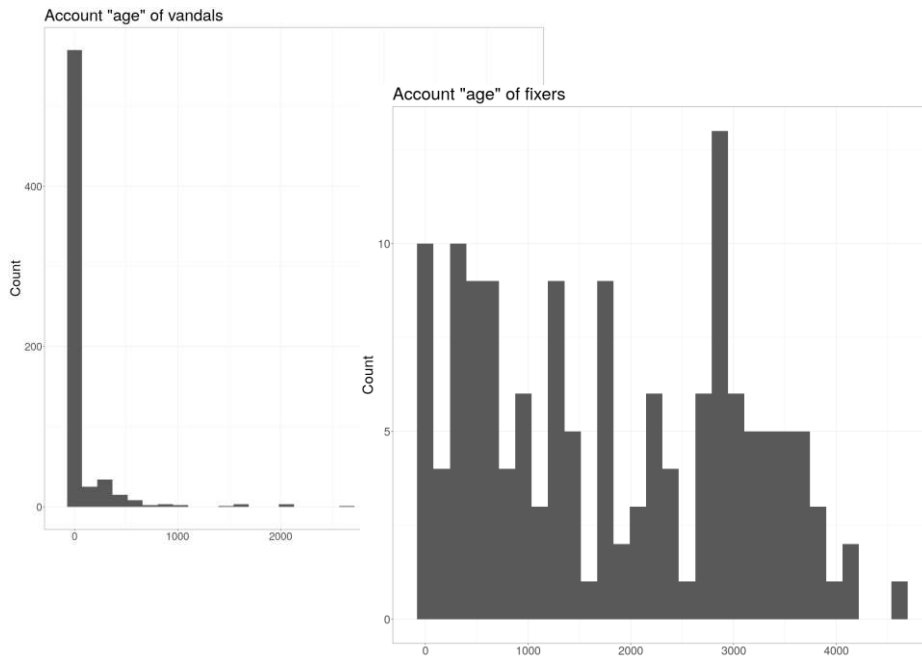


Results - User group analysis



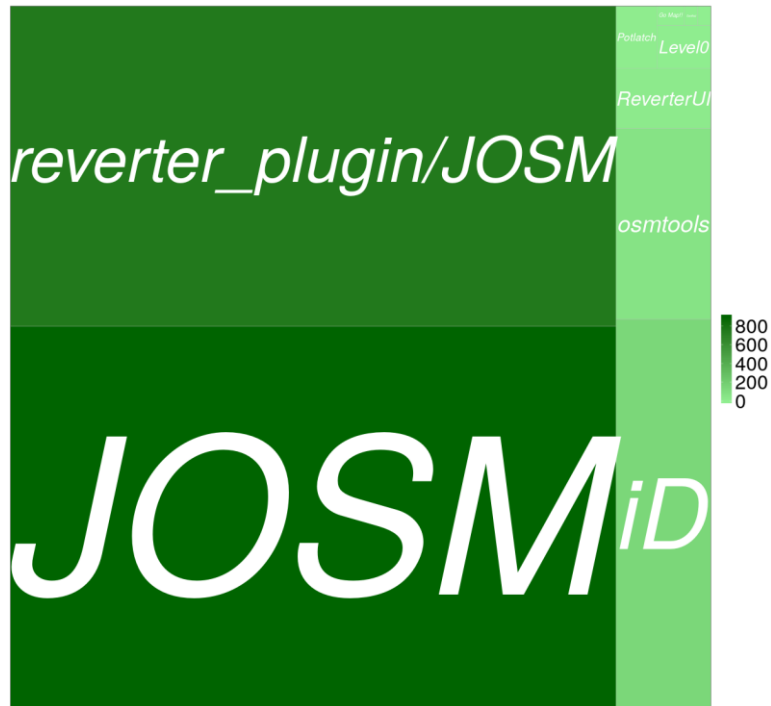
Results - User group analysis

Type	# of users	Median “age”
Fixer	148	4.8 years
Vandal	676	35 minutes



Results - Editor software used

Software used to fix vandalism



Software used in vandalism



Results - Transforming users

- **45%** of vandalism changesets commented on (**12%** with conversation)
- “Vandals” contacted via comment: **166**
- Responded: **46**

Discussion

Comment from [code elusive](#) 12 months ago

Hi there :) Please do not mark pokemon gyms on OpenStreetMap. Names of features (roads, etc) should be their name only. See https://wiki.osm.org/wiki/Names#Name_is_the_name_only You might be also interested in reading out tips for Pokemon GO mappers: <https://blog.openstreetmap.org/2016/12/30/tips-pokemon-go/> and <https://blog.openstreetmap.org/2018/04/01/tips-pokemon-go-2/> Thank you and happy mapping!

Comment from [grouper](#) about 2 years ago

Hey - welcome to OSM! I've got a hunch that meadow was for pokemon. Am I right? - please only map real stuff - if it matches up for pokemon fine, otherwise keep it out of OSM.

Comment from [Jpw03](#) about 2 years ago

It am using it for that, but the area really does have a ton of small flowers, is that not a meadow? I could just be mistaken on what is considered a meadow. Either way sorry if I marked it incorrectly, wasn't my intention at all!

Comment from [grouper](#) about 2 years ago

OK, no problem - thanks for responding so quickly. There's a lot of fake pokemon mapping going on in OSM these days, so some of us old timers are a little sensitive about it and most people don't respond back. So thanks for being conscientious. Here's a link to the meadow tag - <http://wiki.openstreetmap.org/wiki/Tag:landuse%3Dmeadow>

Discussion

Comment from [naoliv](#) about 3 years ago

Is this <https://www.openstreetmap.org/node/4401863894> a real place or it's related with the Pokemon Go game only?

Comment from [AkuAnakTimur](#) about 3 years ago

I guess it's a Pokestop according to this blog post, "Masjid Lebuah Acheh Pokestop" <http://www.mygadgets.my/play-pokemongo-penang/>

Comment from [naoliv](#) about 3 years ago

Can you fix it, AkuAnakTimur, please?

Comment from [AkuAnakTimur](#) about 3 years ago

Done! I deleted the node "pokemon" 4401863894, please see <https://www.openstreetmap.org/changeset/42306611>

Comment from [naoliv](#) about 3 years ago

Thanks!

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Summary

- OSM community seems to get better at discovering and fixing vandalism
- “Vandalism” is not sustained by the same users
- Fixes are sustained by a small and dedicated community
- Communication is helpful in turning potential “vandals” constructive mappers
- Patterns revealed may be used to create detection systems

Future work

- Look into changesets to see what features were changed
- Extract and explore more metrics, i.e. about...
 - Users (“age”, trust, connections, prior experience)
 - Edits (what, how many, how?)
 - Behavior (editor software, language, geography)
- Formalize a binary classifier to detect Pokemon related vandalism in real time
- Extend findings to more general cases of vandalism.

Questions? Suggestions?



ljuhasz@fiu.edu

 @juhaszlevi

hhhochmair@ufl.edu

 @ufgeomatics

novack@uni-heidelberg.de

 @tessio_novack

Pokémon-related mapping



OpenStreetMap Blog

“Niantic is in the process of adjusting their algorithms so that areas with good map edits get more spawn points, while areas where players try to game the system get penalised”

