Perspectives on the Complex Social Ecosystem of Public Participation in Digital Earth

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Chapter 18

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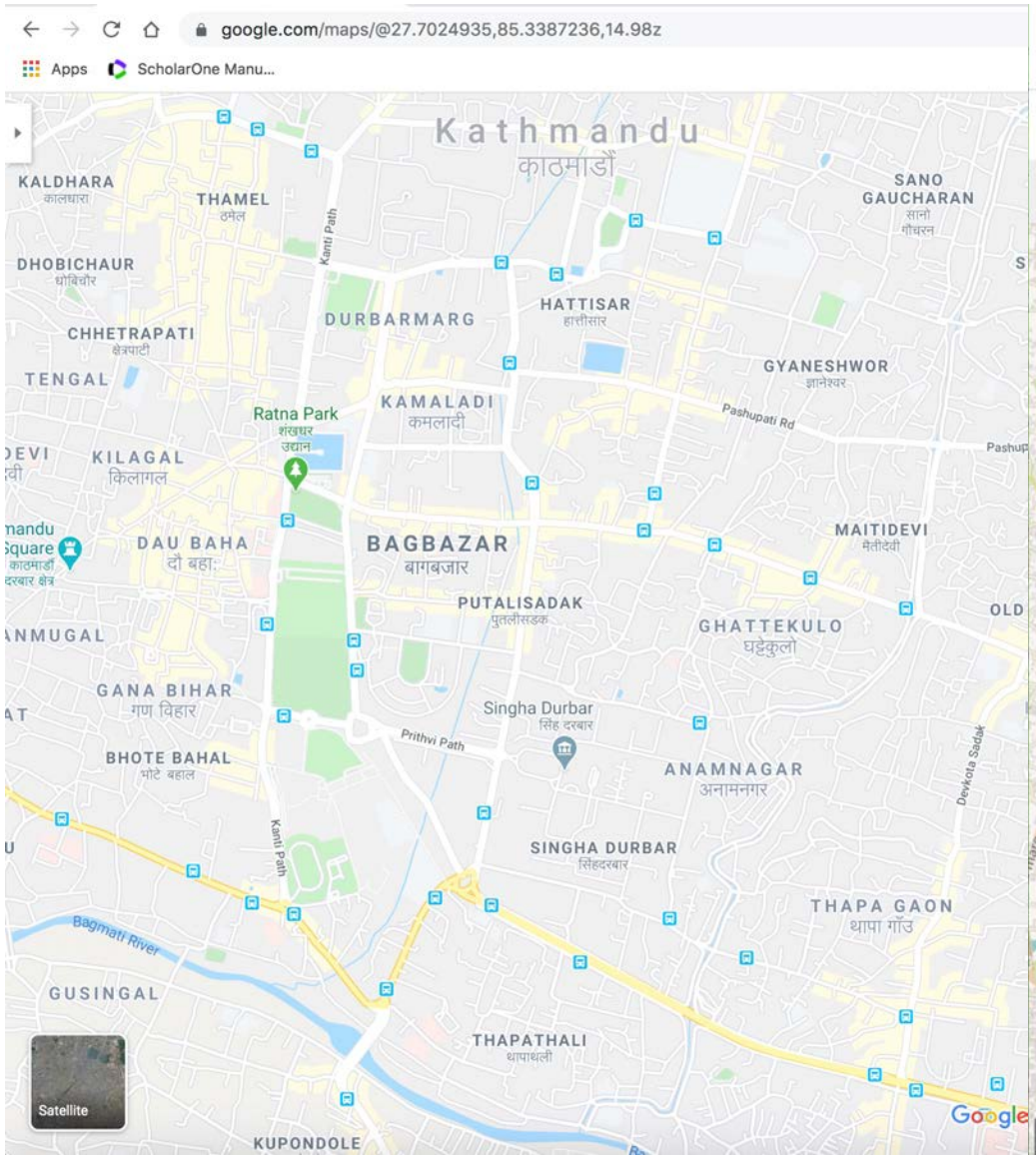
Manual of Digital Earth pp 593–622 | Cite as

Citizen Science in Support of Digital Earth

Maria Antonia Brovelli ✉, Marisa Ponti, Sven Schade & Patricia Solís

Chapter | Open Access | First Online: 20 November 2019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Kanti Path
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हात्तीसार
CHHETRAPATI
छेत्रपाटी
TENGAL
GYANESHWOR
ज्ञानेश्वर
Ratna Park
शंखधर उद्यान
KAMALADI
कमलादी
Pashupati Rd
KILAGAL
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Prithvi Path
BHOTE BAHAL
भोटे बहाल
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अनामनगर
Devkota Sadak
SINGHA DURBAR
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GUSINGAL
THAPATHALI
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KUPONDOLE
Satellite
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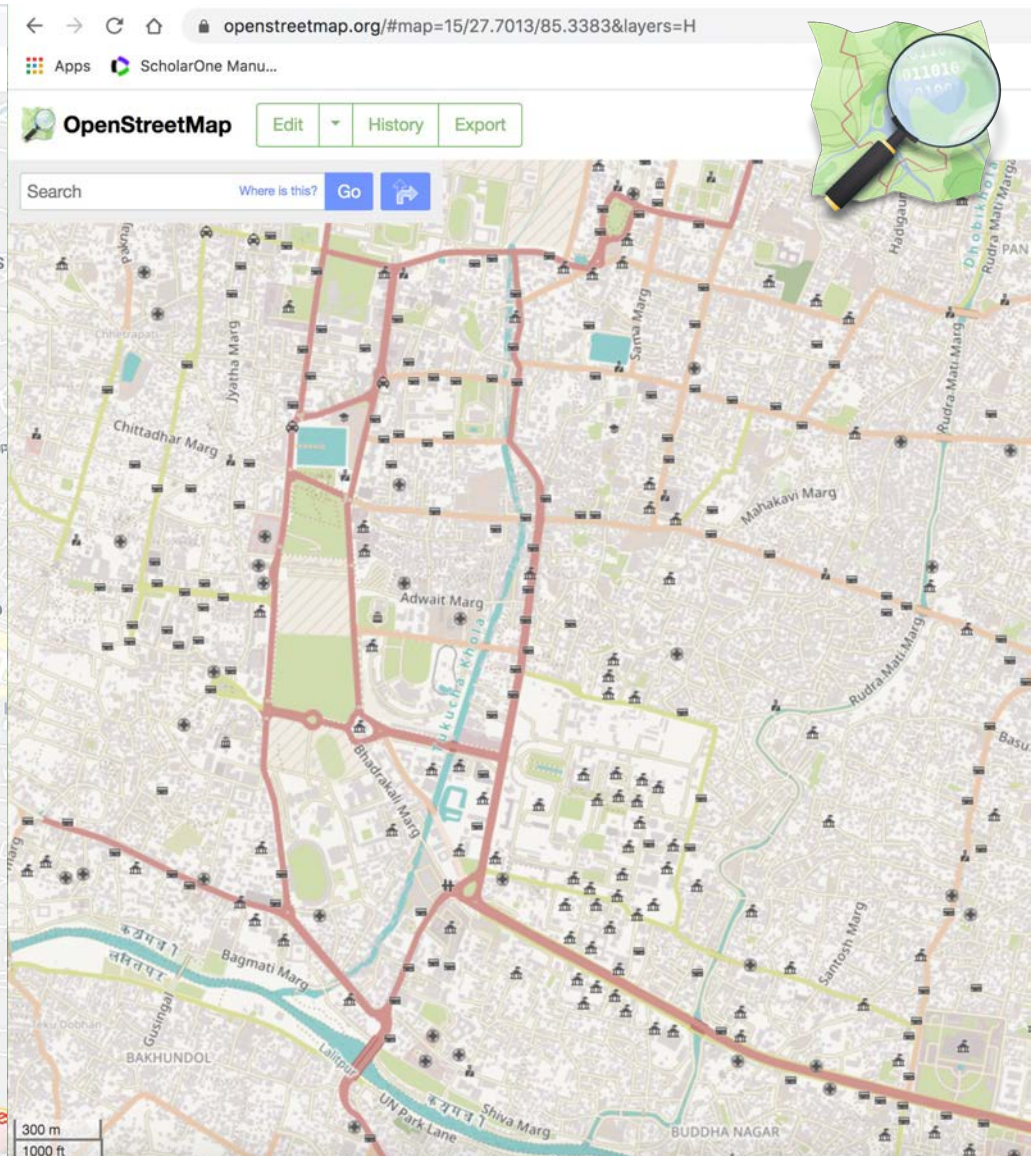
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History
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Search
Where is this?
Go
Chittadhar Marg
Jyatha Marg
Santa Marg
Rudra Mati Marg
Mahakavi Marg
Adwait Marg
Bhadrakali Marg
Bagmati Marg
Gusingal
BAKHUNDOL
Lalitpur
UN Park Lane
Shiva Marg
Santosh Marg
BUDDHA NAGAR
300 m
1000 ft

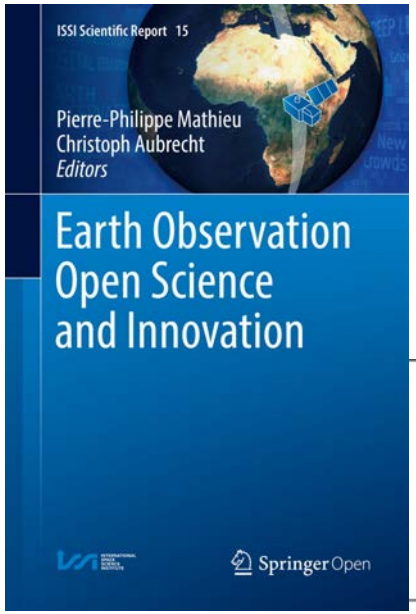
OpenStreetMap

Ecology & Society
A journal of integrative science for resilience and sustainability

Shirk J, et al. (2012) Public participation in scientific research: a framework for deliberate design. **Ecol Soc** 17(2):29–48

ic

Aspects of scientific research/monitoring process:	Contractual Projects	Contributory Projects:	Collaborative Projects:	Co-Created Projects:	Collegial Projects
Choose or define question(s) for study	X			X	X
Gather information and resources	(X)			X	X
Develop explanations (hypotheses)				X	X
Design data collection methodologies			(X)	X	X
Collect samples and/or record data		X	X	X	X
Analyze samples			X	X	X
Analyze data		(X)	X	X	X



Haklay M, Mazumdar S, Wardlaw J (2018) Citizen science for observing and understanding the earth. In: Mathieu P-P, Aubrecht C (eds) Earth observation open science and innovation. **Springer** International Publishing, Cham, p 69–88

Citizen Science

Long-running Citizen Science			Citizen Cyberscience			Community Science		
Ecology & biodiv.	Weather obs.	Archaeo-logy	Volunteer computing	Volunteer thinking	Passive sensing	Particip. sensing	DIY science	Civic science

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OpenStreetMap Community

"community of communities"

Table 18.1 Dimensions of characterizing OpenStreetMap as a community of communities

From: Citizen Science in Support of Digital Earth

Sector-based categories	Modality of engagement	Social-based categories
Nonprofit/civil society • Humanitarian Sector (e.g., International Federation of Red Cross/Red Crescent) • Local nonprofit entities Education/Academic Sector • K-12 teachers • University students/faculty Government/Public Sector • Local municipalities (e.g., World Bank's Open Cities) • State /Regional governance (e.g., Transport planning entities) • National agencies • Multinational (e.g., World Bank's Open Cities) Private Industry/For-Profit or Commercial Sector[a] • Information Technology and Services • Computer/GIS Software (e.g., MapBox, • Internet Companies (including Social Media) • Use-Driven (e.g., Restaurants, Construction, Retail, Health Care)	Data contributors • Local mapping (e.g., Craftmappers) • Local and remote (e.g., YouthMappers) • Remote mapping • Dataset uploading (e.g., road networks) Providers of Map-based Services or Value Added to OSM[b] • General (e.g., Geofabrik, OpenTopoMap) • Functional Providers – *Edit/Compare (e.g., OSMCompare)* – *Live/real-time edits (e.g., Show me the way)* – *Quality Assurance (e.g., Keep Right, Osmose)* – *Export (e.g., Walking Papers, Field Papers)* – *3D Rendering (e.g., OSM Buildings)* – *Routing (e.g., OpenTripPlanner)* – *Interaction (e.g., Wikipedia overlay)* – *Services (e.g., OSMNames, OSM Landuse, OpenFireMap)* • Thematic Providers – *Biking, geocaching, hiking, sport* – *Art, history, archaeology, monuments* – *Public Transport* – *Other* • Educational (e.g., TeachOSM, LearnOSM) Consumers[c] • As Base Maps (e.g., Facebook, Wikipedia, Weather.com, Snapchat) • As Data (e.g., Pokémon Go) • As Media (e.g., films and TV) [d] • Internal systems (e.g., Uber)	**Purpose-driven** (e.g., Humanitarian OpenStreetMap Team) **Identity-focused** (e.g., GeoChicas) **Place-based** (e.g., Tanzania Development Trust)

[a]The OSM Wiki lists 80 entities in this category

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Nonprofit/civil society • Humanitarian Sector (e.g., International Federation of Red Cross/Red Crescent) • Local nonprofit entities Education/Academic Sector • K-12 teachers • University students/faculty Government/Public Sector • Local municipalities (e.g., World Bank's Open Cities) • State /Regional governance (e.g., Transport planning entities) • National agencies • Multinational (e.g., World Bank's Open Cities) Private Industry/For-Profit or Commercial Sector[a] • Information Technology and Services • Computer/GIS Software (e.g., MapBox, • Internet Companies (including Social Media) • Use-Driven (e.g., Restaurants, Construction, Retail, Health Care)

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Data Contributors

Providers of Map-based Services or Value Added

Consumers

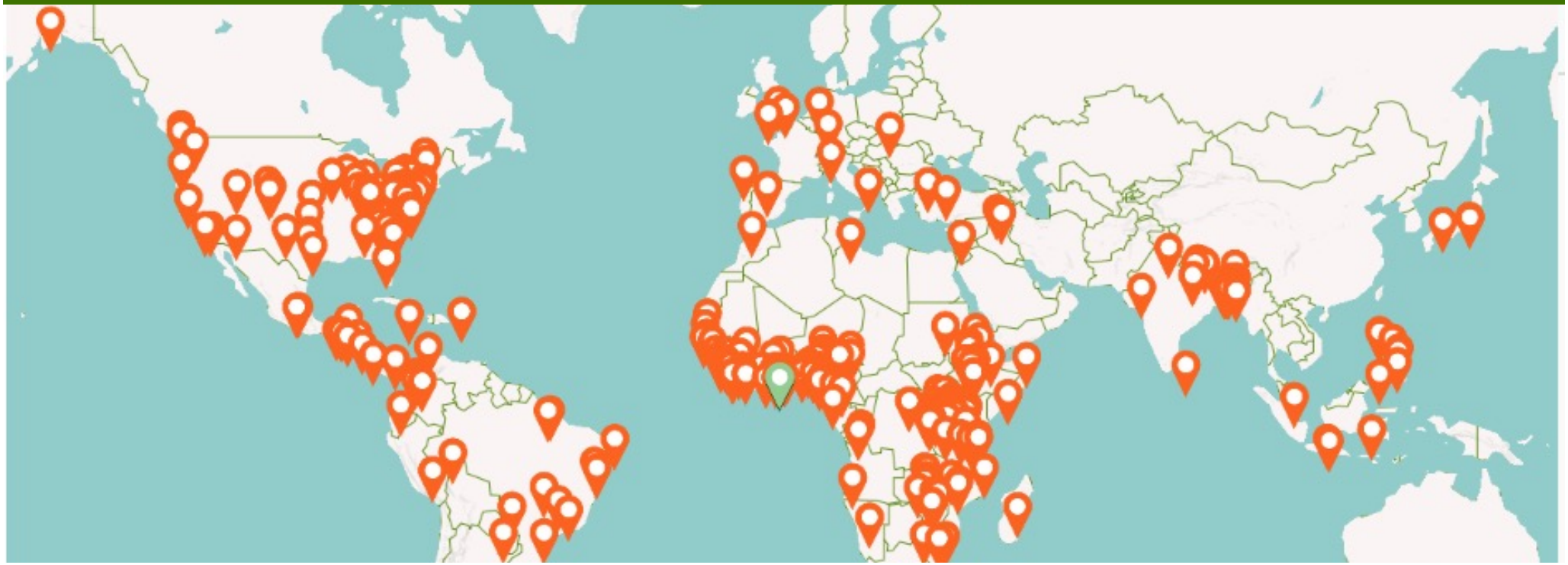
Social-based categories

Purpose-driven
(e.g., Humanitarian OpenStreetMap Team)
Identity-focused
(e.g., GeoChicas)
Place-based
(e.g., Tanzania Development Trust)

youthmappers

Global consortium of student-led faculty-mentored campus-based chapters creating and using open maps for humanitarian and development action

~5,000 students on **345** university campuses in **72** countries



Remote (explicit) and Local (implicit) mapping

Mapping with our communities

Mapping with each other

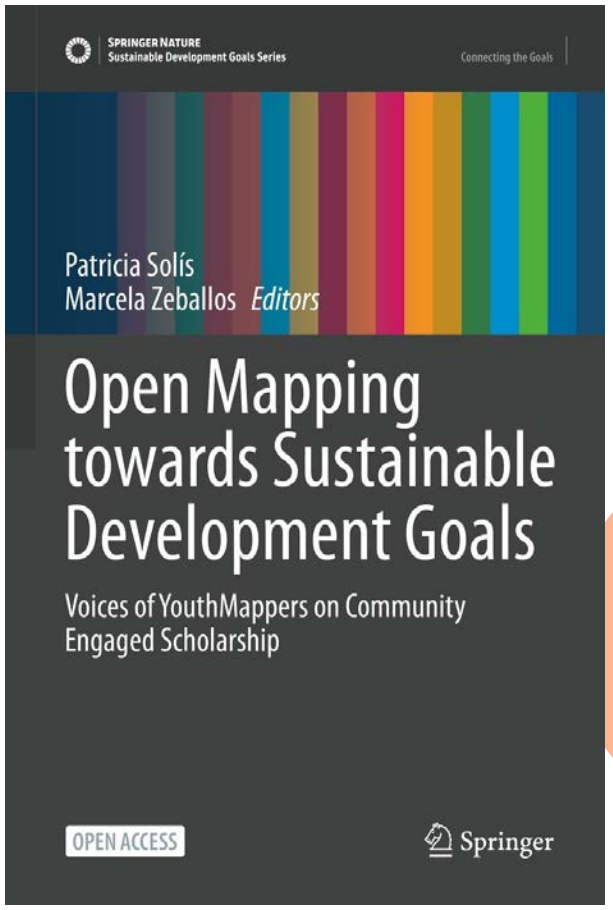
activity.youthmappers.org

we don't
just build
maps.

we build
mappers.

youthmappers

SPRINGER NATURE



youthmappers

Open Mapping towards SDGs: **Voices of YouthMappers on Community Engaged Scholarship**

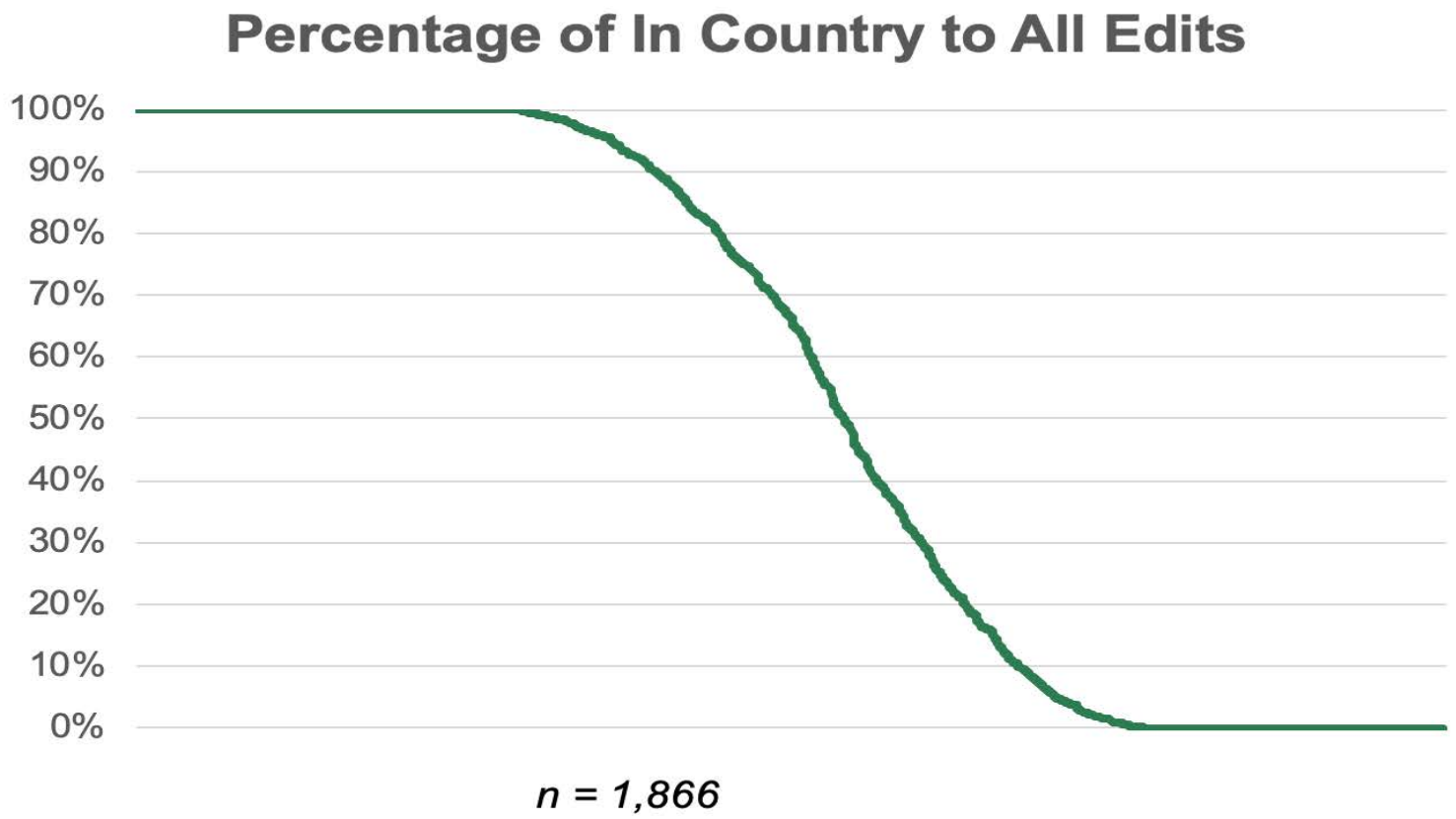
Edited by Patricia Solis and Marcela Zeballos

68 co-authors

25 countries

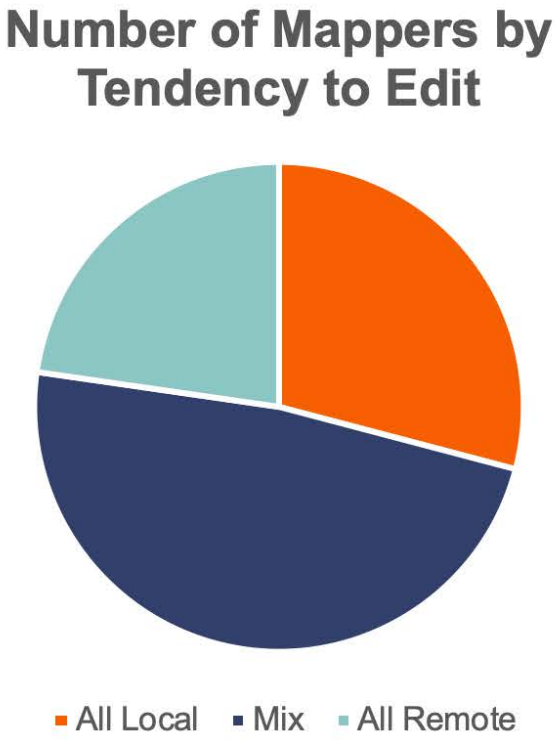
MYTH

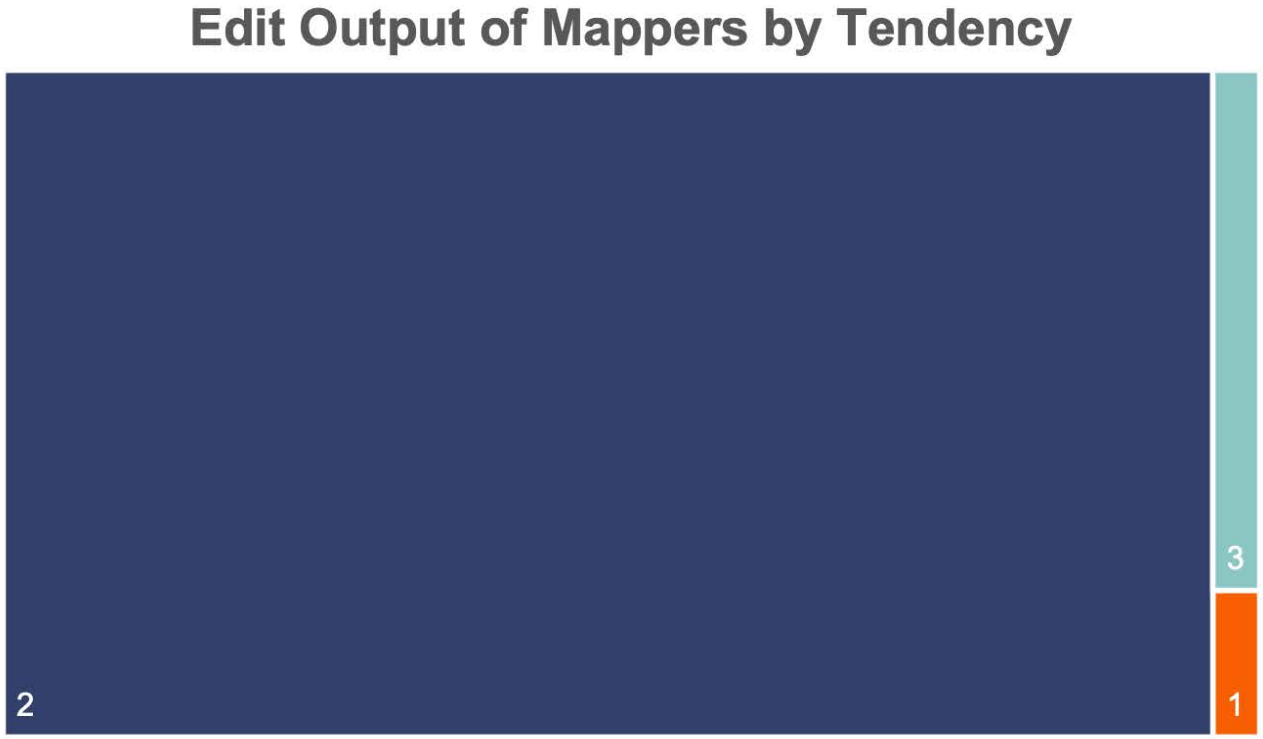
Participating youth only map remotely



MYTH

Everyone in a community maps the same way





MYTH

Participants in a community map the same features

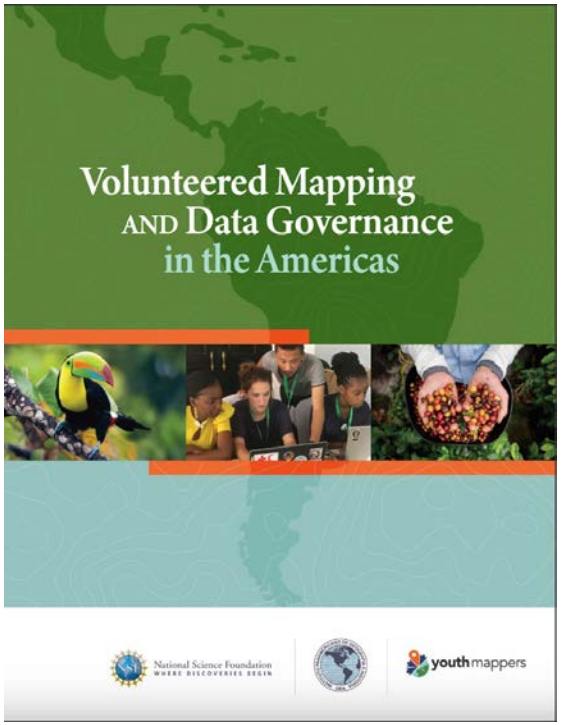
Percent of Edits that are In-Country relative to total Edits, by gender category, by feature

	Female	Male	Outliers*	All Gender Known	*Difference (M-F)*	Total YouthMappers OSM Username Dataset
N	*n=200*	*n=297*	*n=8*	*n=505*		*n=766*
Buildings	65.64%	52.55%	67.18%	55.13%	*-13.09%*	**60.40%**
Highways	44.90%	58.05%	61.26%	54.76%	*13.15%*	**56.60%**
Amenities	92.00%	91.06%	92.64%	91.23%	*-0.94%*	**94.90%**
All Features	**69.62%**	**54.03%**	**67.95%**	**57.56%**	***-15.59%***	**61.90%**

** z-score above 3.0, effectively edits >250K*

MYTH

Student mapping is not good for anything beyond the classroom



MYTH

Students are a fleeting community

Association for Computing Machinery

Revisiting Engagement in Humanitarian Mapping: An Updated Analysis of Contributor Retention in OpenStreetMap

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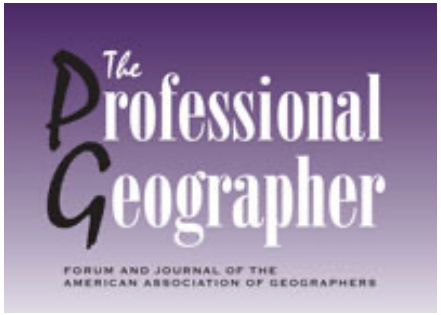
ABSTRACT

This study revisits findings of the 2016 paper by Dittus et al. that considered trends in contributor retention in humanitarian mapping projects organized using the OpenStreetMap (OSM) platform. In addition to revisiting many of the same metrics used for the 2017-2020 time period, our research takes on a broader scope by evaluating a wider cohort of recruits, as opposed to specific projects evaluated by the original paper. As a result, our findings offer an

contributed to by people around the world. Its goals and scope are similar to Wikipedia, in that it seeks to create a decentralized method to update a body of knowledge, that can then be used freely by anyone else in the world. It was founded in 2004 in the UK, but has grown into a massive worldwide project with over 1 million unique user accounts who have collectively contributed billions of changes and updates to the global map. These changes can range from marking existing roads and houses, to updating

MYTH

It doesn't matter why people map



Exploring the Impact of Contextual Information on Student Performance and Interest in Open Humanitarian Mapping

Patricia Solís & Patricia R. DeLucia

To cite this article: Patricia Solís & Patricia R. DeLucia (2019) Exploring the Impact of Contextual Information on Student Performance and Interest in Open Humanitarian Mapping, The Professional Geographer, 71:3, 523-535, DOI: 10.1080/00330124.2018.1559655

Some Take-aways

- More study needed on cultural and organizational aspects of spatial data production and use in OSM specifically and Digital Earth more broadly
- Example of OpenStreetMap and YouthMappers as a community of communities (Solís 2016; Brovelli et al. 2019) helps us to recognize the diversity and complexity of social ecosystems in a people-centered approach
- Citizen Science generates a public good in many ways enabling an invested community as integral part of Digital Earth

Life is a team sport.

…and so is open mapping.

Thank You!

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GEOGRAPHER

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ASU Knowledge Exchange for Resilience
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