

# What does it mean to be Poor? Mapping Poverty in the MENA



Grant # 1352435

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International Affairs  
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# What is Poverty?

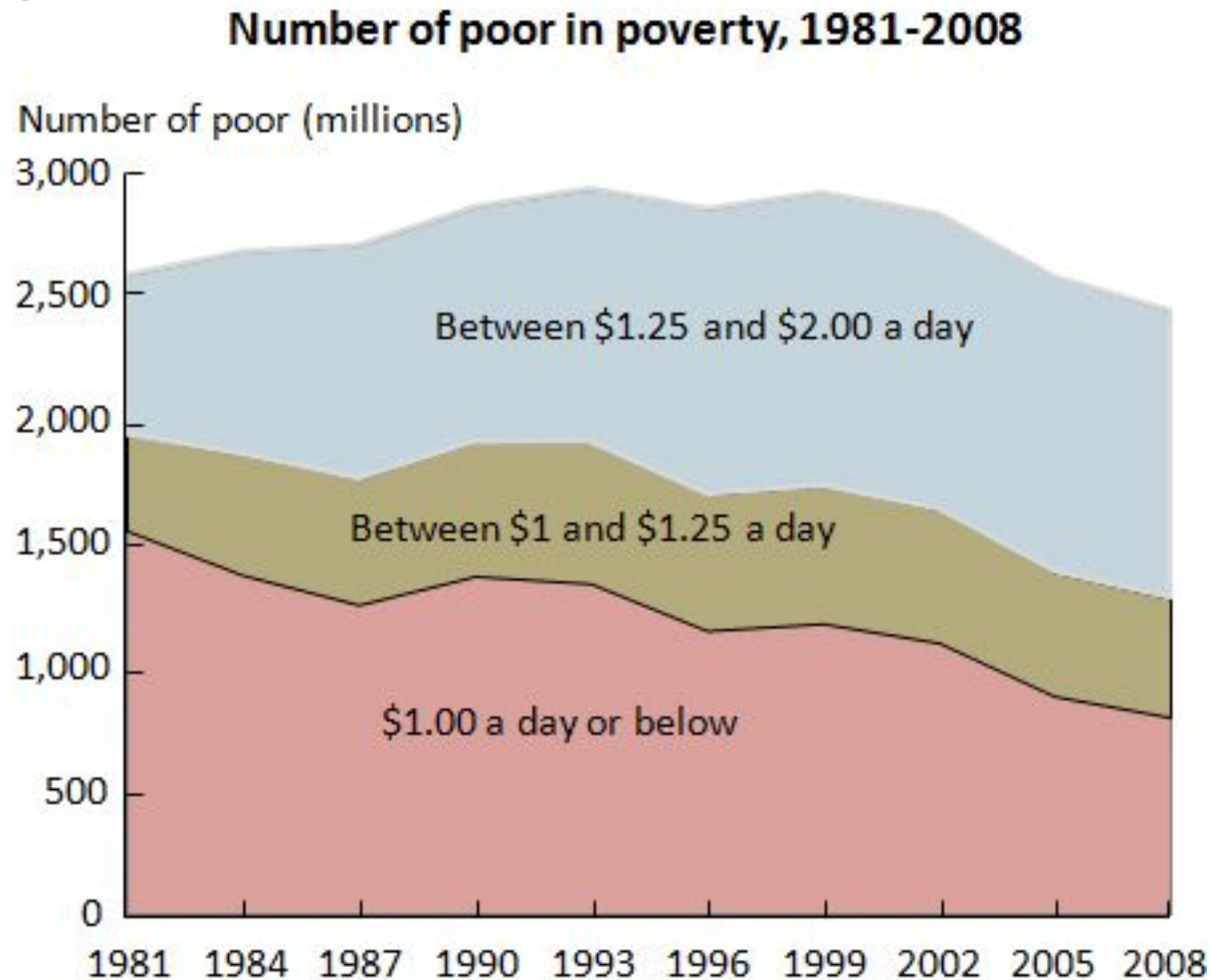
- Absolute
- Relative



- Monetary
- Non-Monetary
- Measured
- Experienced

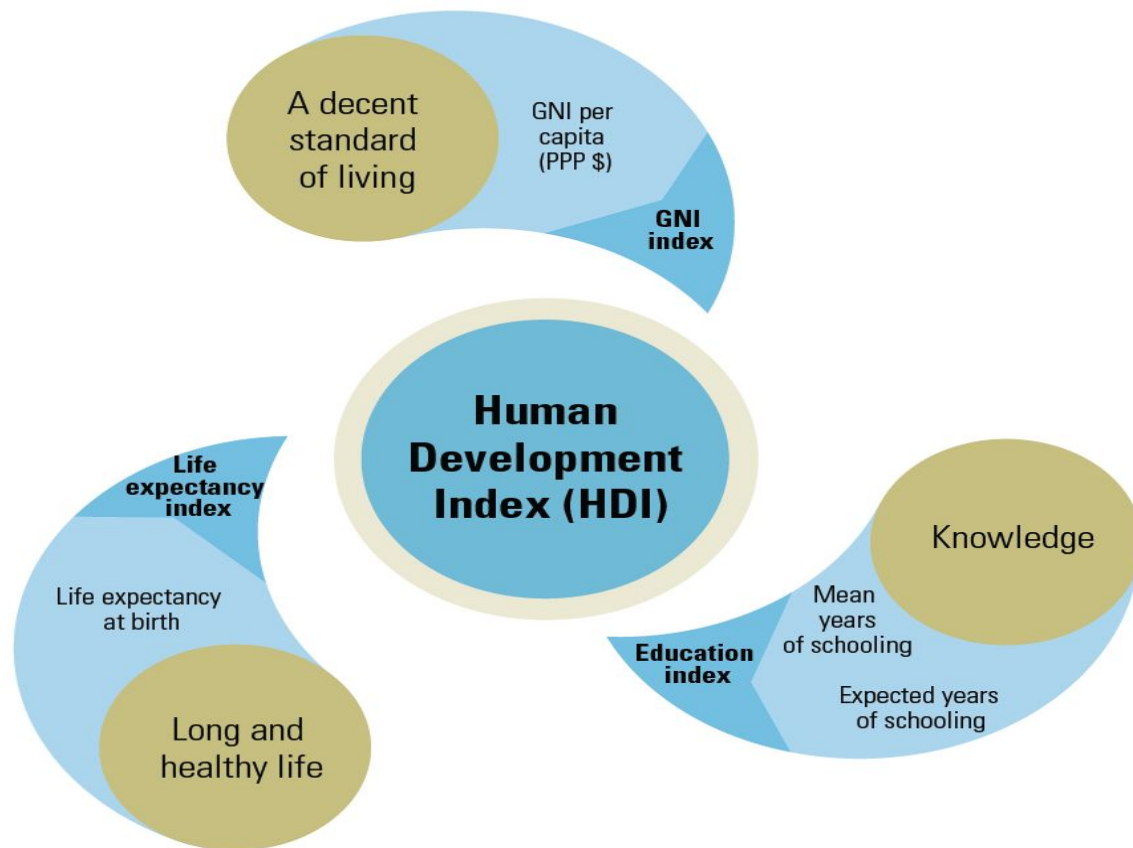
# How do we measure poverty?

- Income



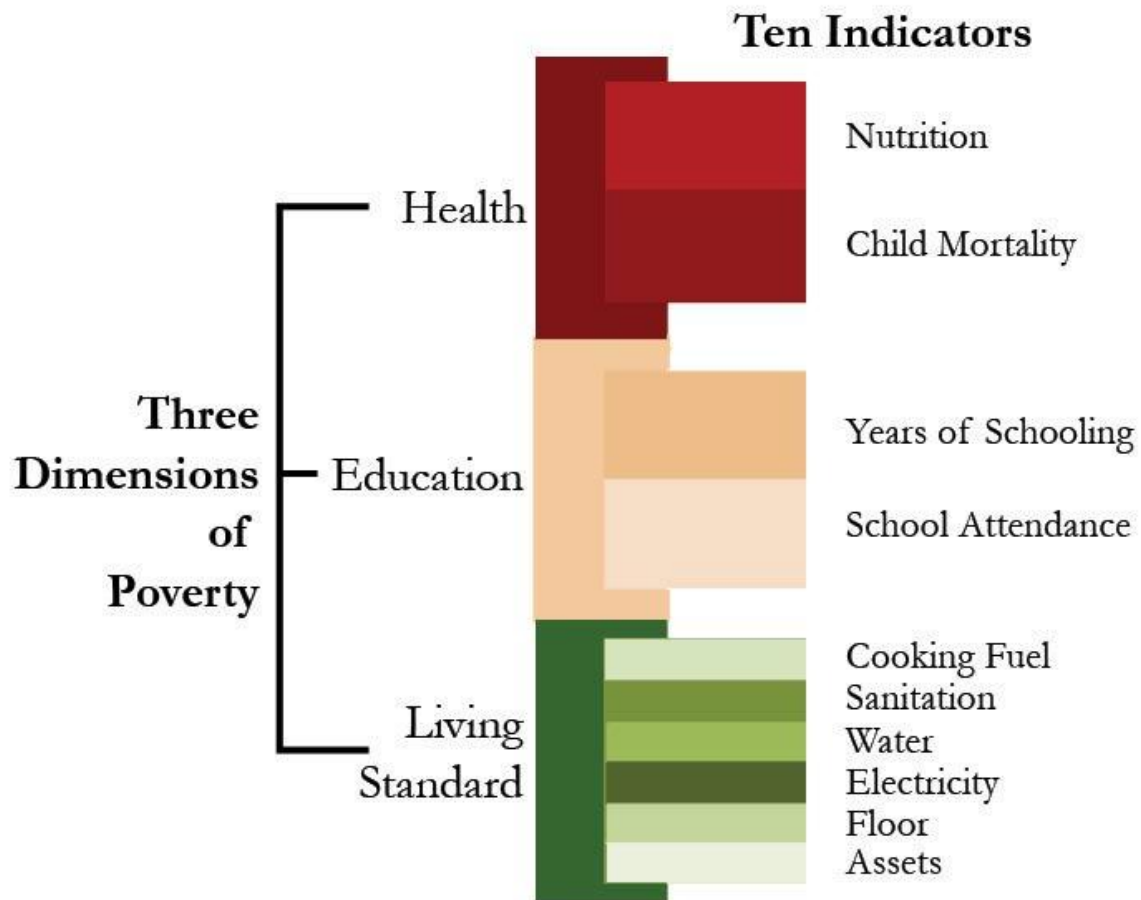
# How do we measure poverty?

- Human Development Index (United Nations)



# How do we measure poverty?

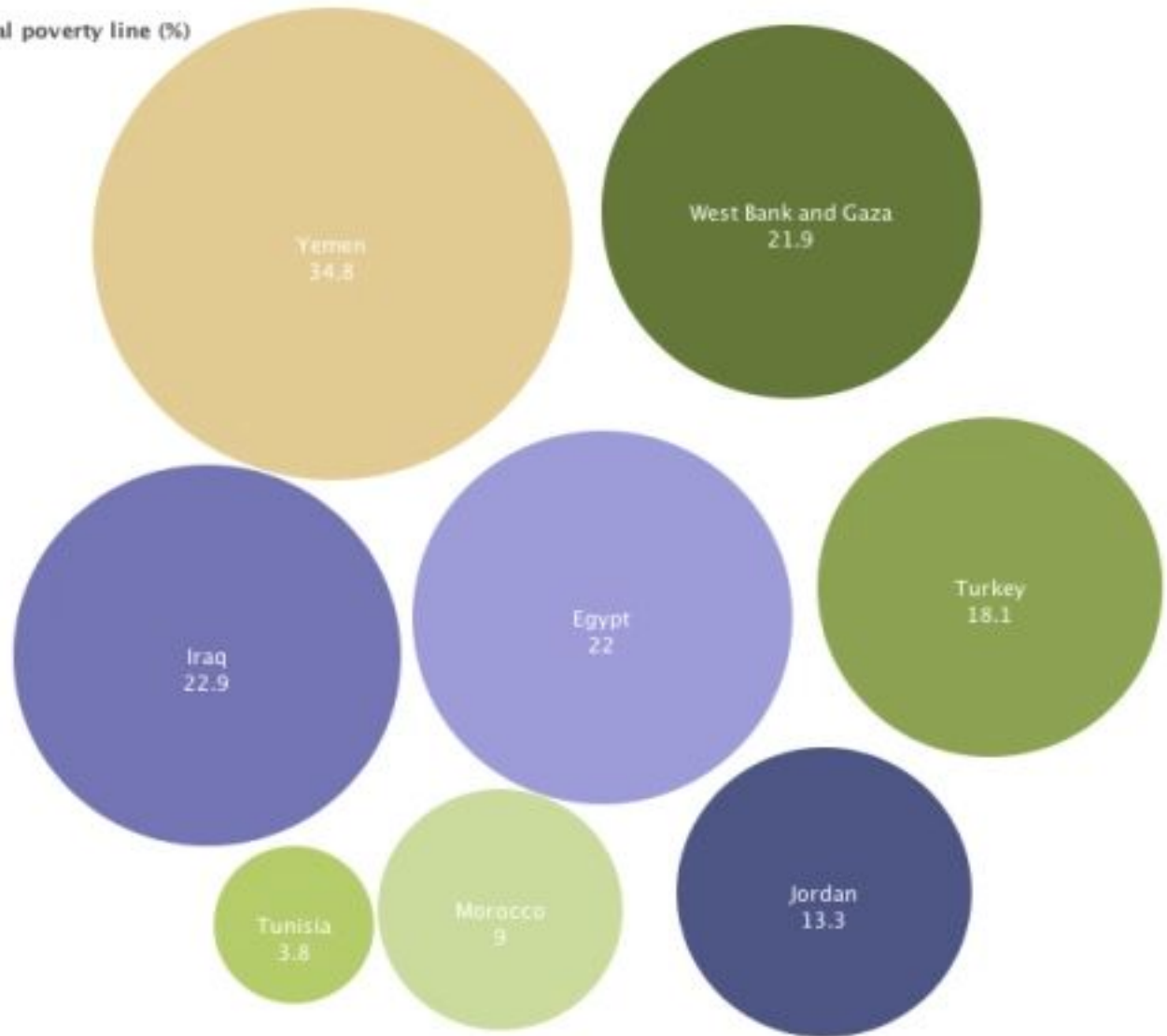
- Multi-dimensional Poverty



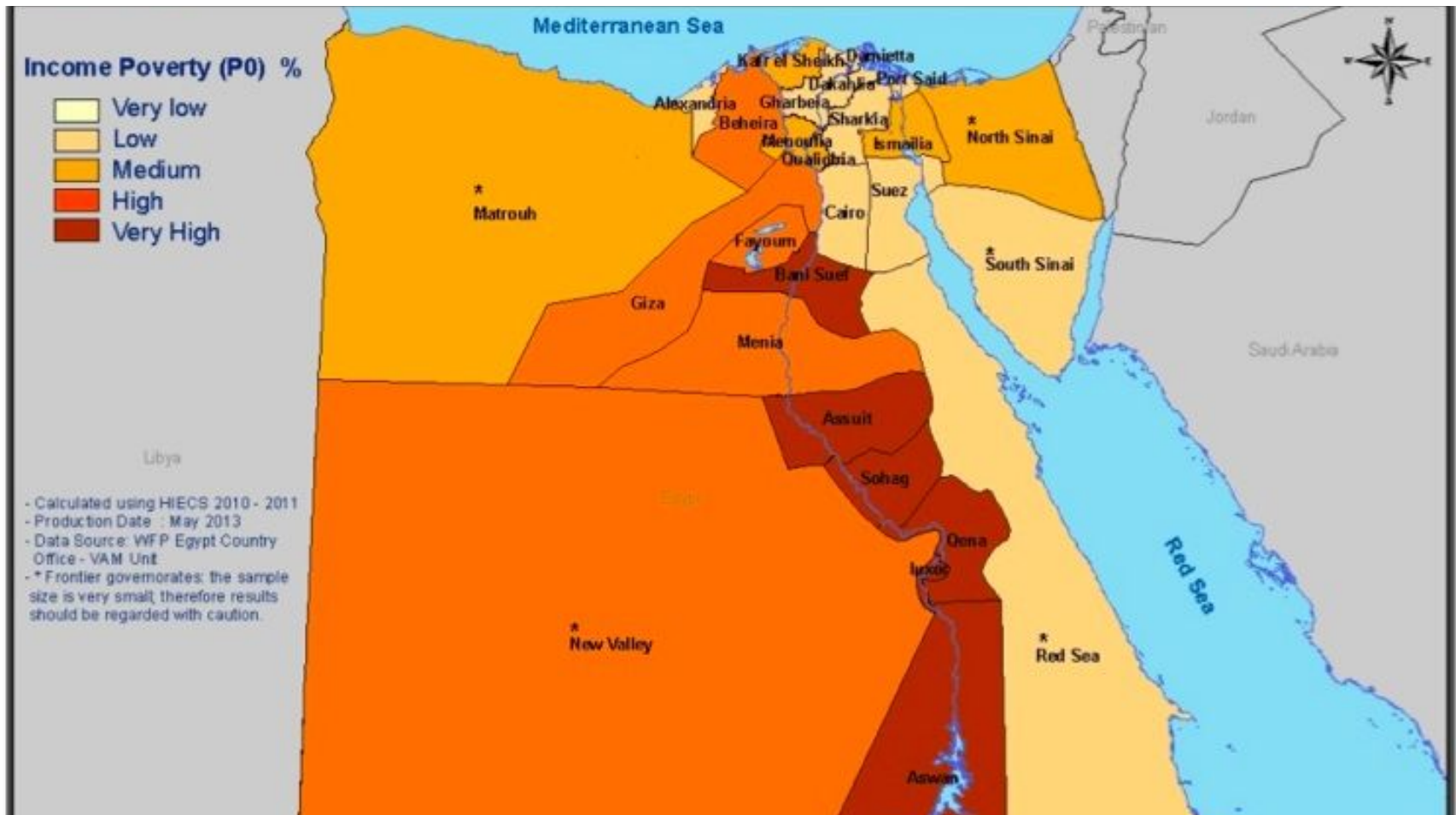
# Poverty Rates in MENA

Population at national poverty line (%)  
Disks colored by

Click to select,  
Ctrl-Click: multiple  
Shift-Click: range

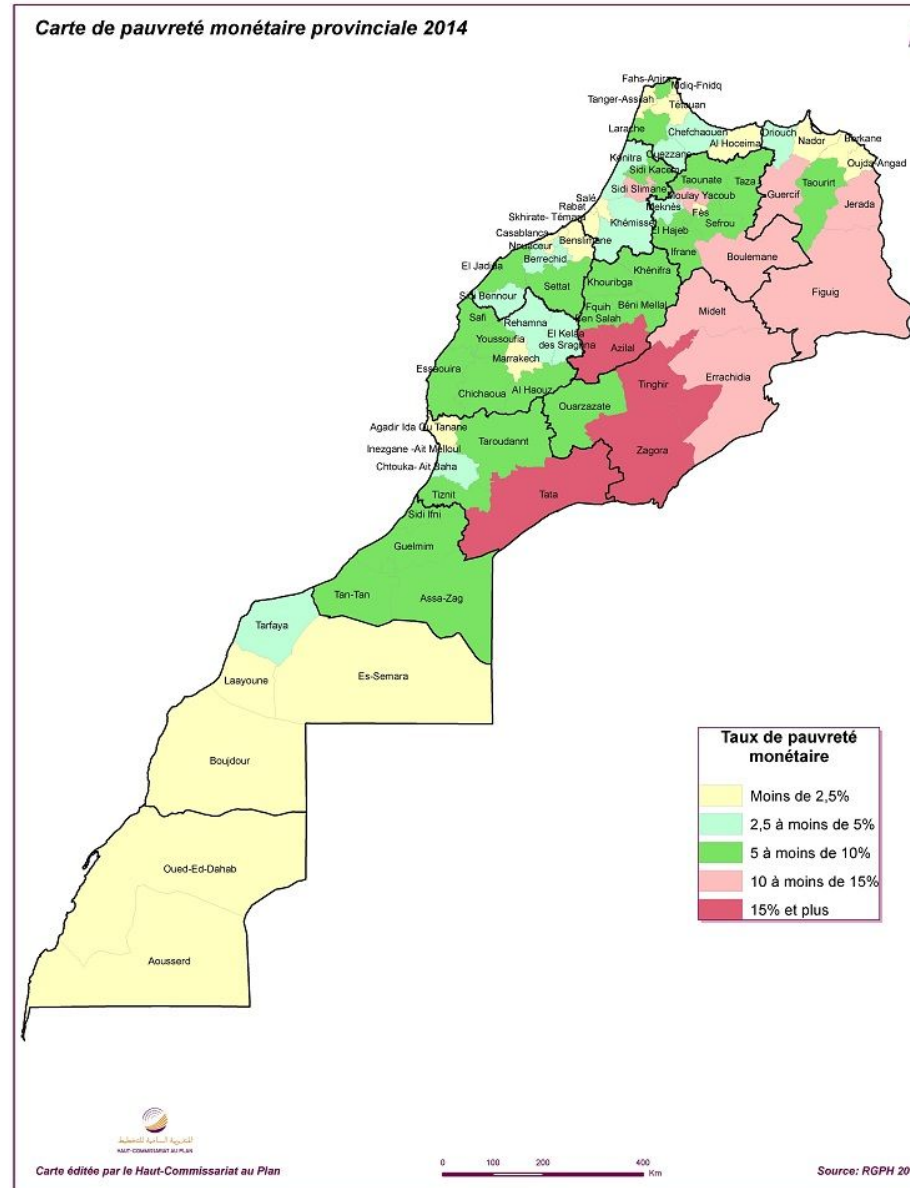


# Spatializing Poverty



# What is Poverty mapping?

- Spatial Distribution of Poverty
- Specific geographical areas as small as villages or hamlets.
- Uses survey data, census data, welfare indicators, GIS data and estimation techniques.





# Applications of Poverty Mapping

- Geographical Targeting
- Conditional Cash Transfers
- Disease Mapping
- Road networks
- Food aid
- Regional Planning
- Why map poverty?
  - Comparability
  - Synthetic panels
  - Visualization
  - Policy implications
  - Poverty determinants
  - Interventions
  - Targeting

# Urban Poverty

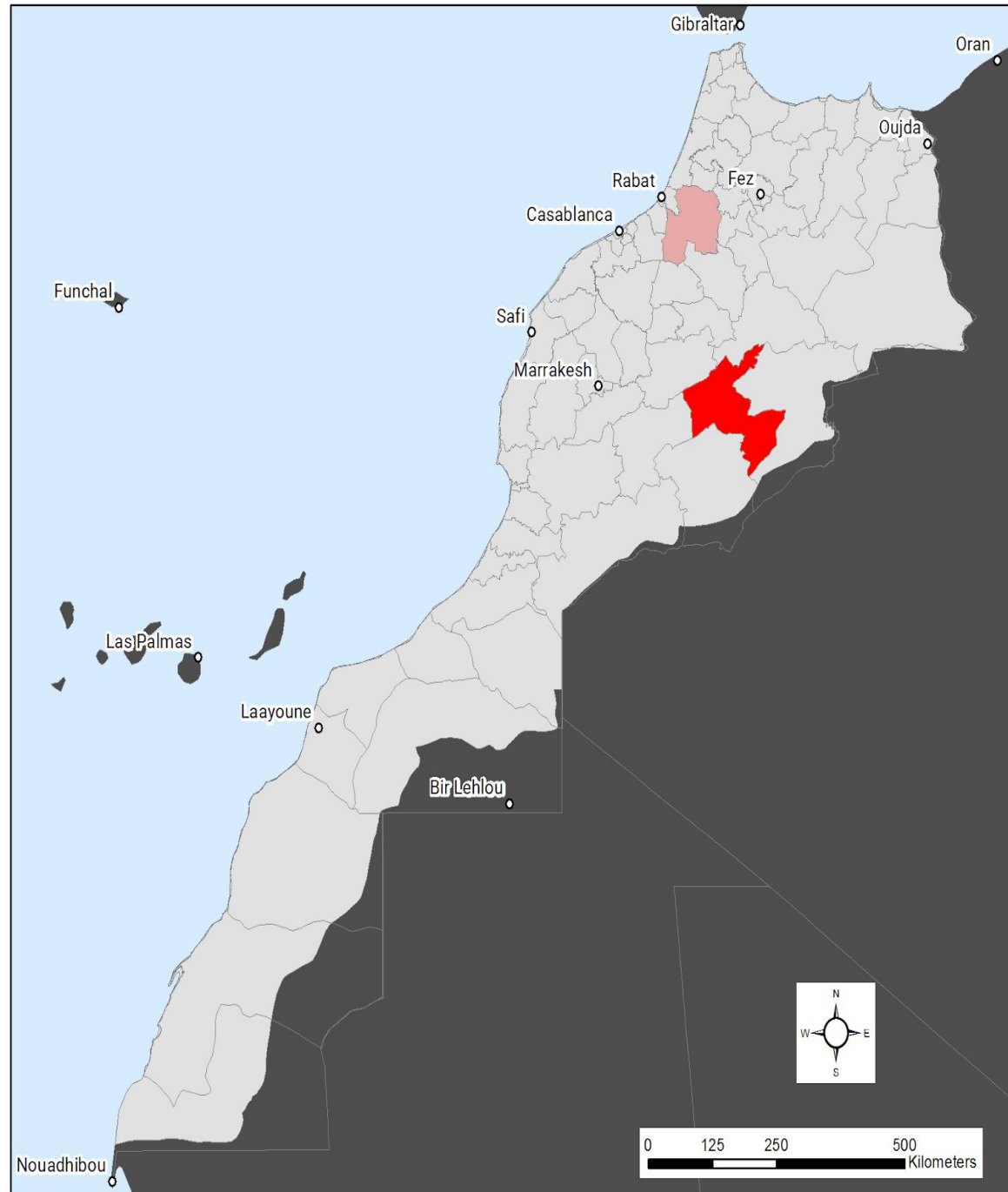


Sidi Moumen, Casablanca May 2013

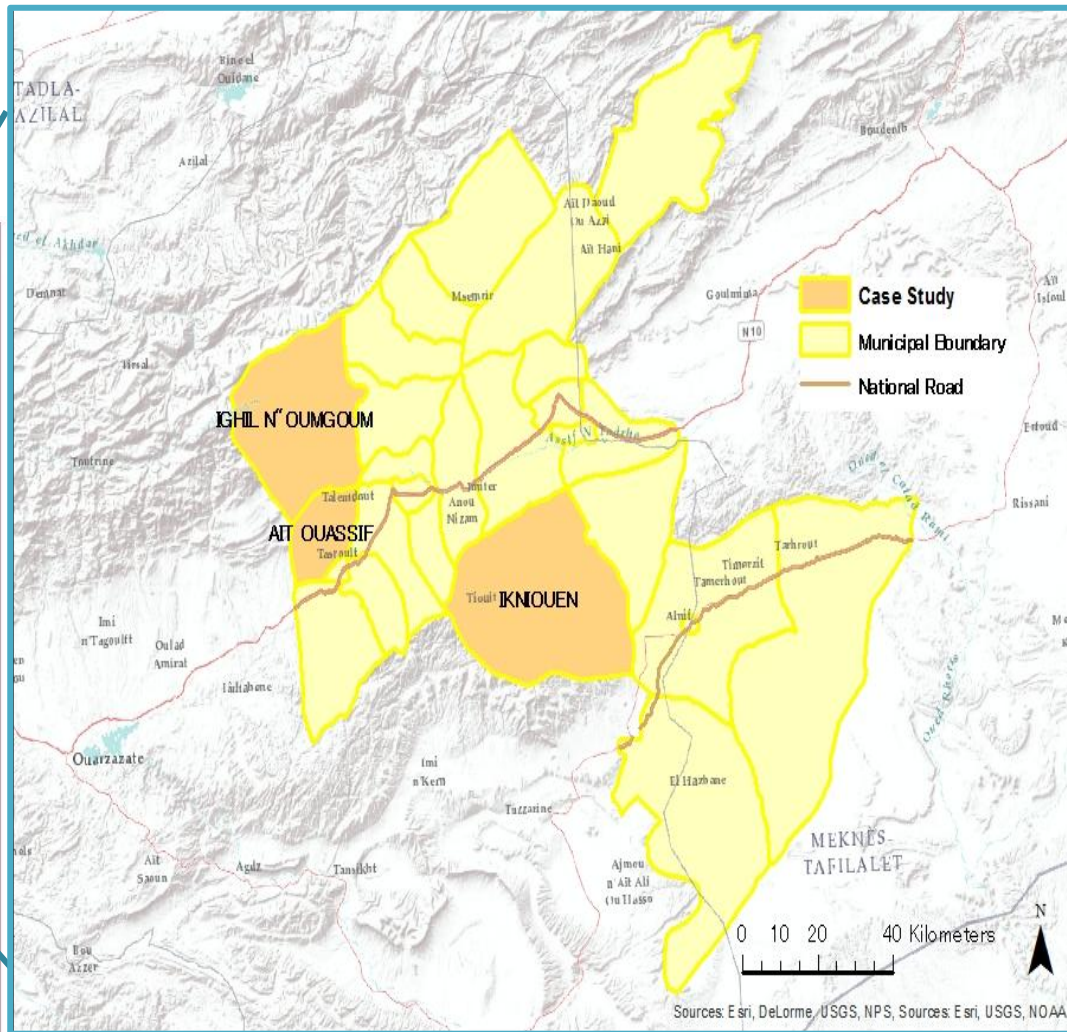
# Rural Poverty



# Study Area

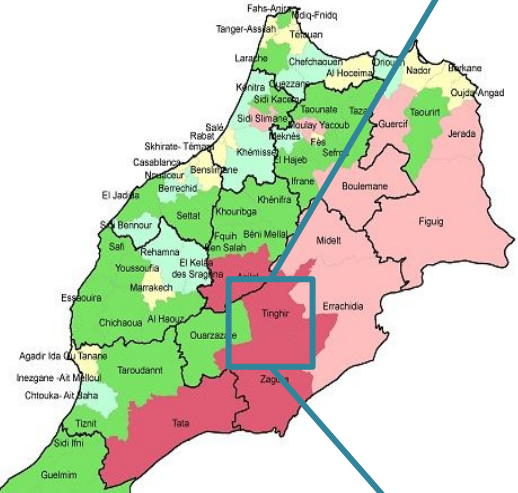


# Moroccan Poverty Map



Region: Drâa-Tafilalet  
 Province: Tinghir  
 Communes: Ighil M'goun, Ait Ouassif & Iknouen

Carte de pauvreté monétaire provinciale 2014



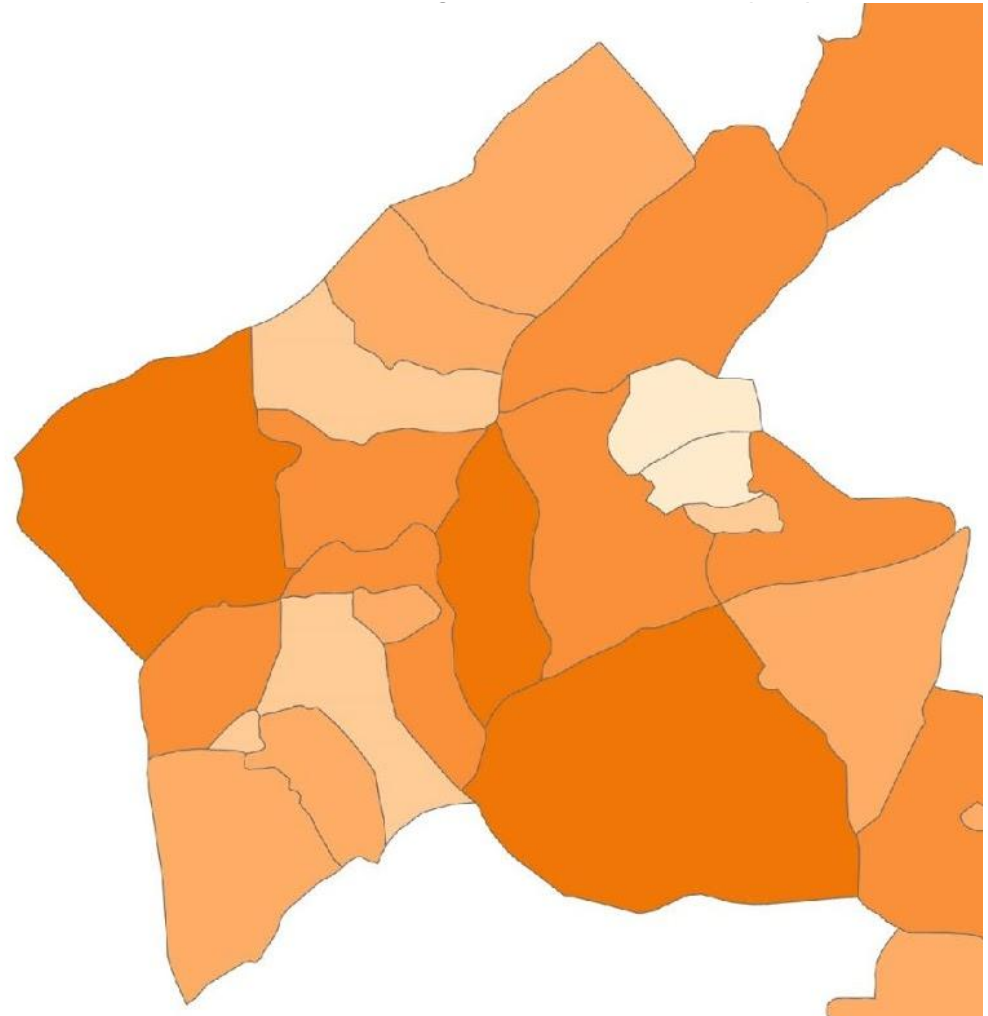
Taux de pauvreté monétaire	
Moins de 2,5%	(Lightest yellow)
2,5 à moins de 5%	(Light green)
5 à moins de 10%	(Medium green)
10 à moins de 15%	(Light red)
15% et plus	(Dark red)

Source: Moroccan Census Bureau, 2014

# Poverty Targeting

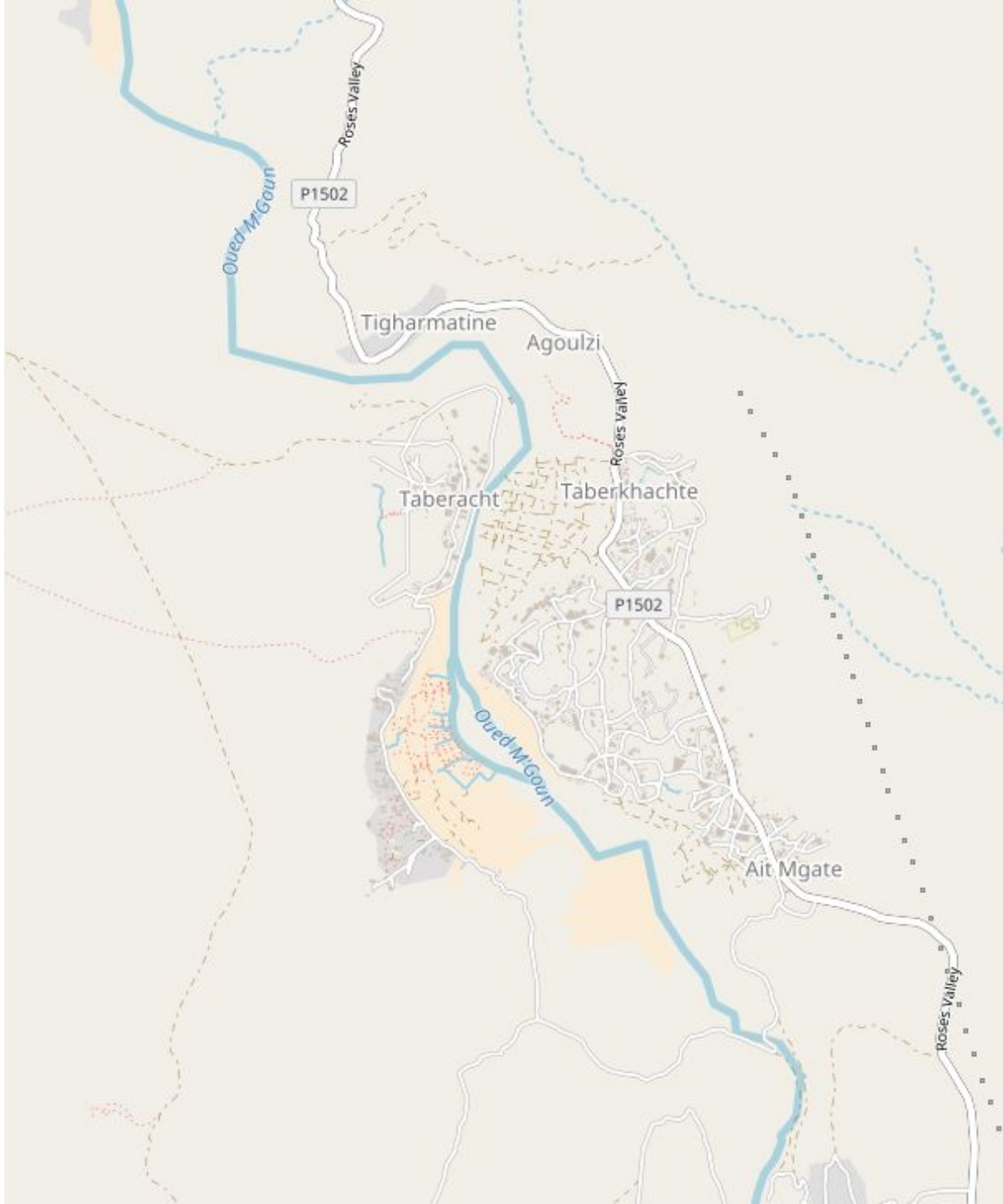


Poverty Rate by Commune  
(2004)



# How does Morocco Measure Poverty?

<b>Province</b>	<b>Commune</b>	<b>Poverty rate (%)</b>	<b>Volume (%)</b>	<b>Severity (%)</b>	<b>Vulnerability rate (%)</b>
Tinghir	Ikniouen	46.6	14.23	5.84	24.6
Tinghir	M'Semrir	41.8	12.39	5	25.9
Tinghir	Ighil N'Oumgoun	37.9	9.39	3.24	30.1
Tinghir	Ait Hani	33.1	8.28	2.91	29.2
Tinghir	H'Ssyia	32.5	9.45	3.76	22.6
Tinghir	Ouaklim	31.8	8.44	3.12	25.7
Tinghir	Ait Ouassif	13.2	2.46	0.69	24.3





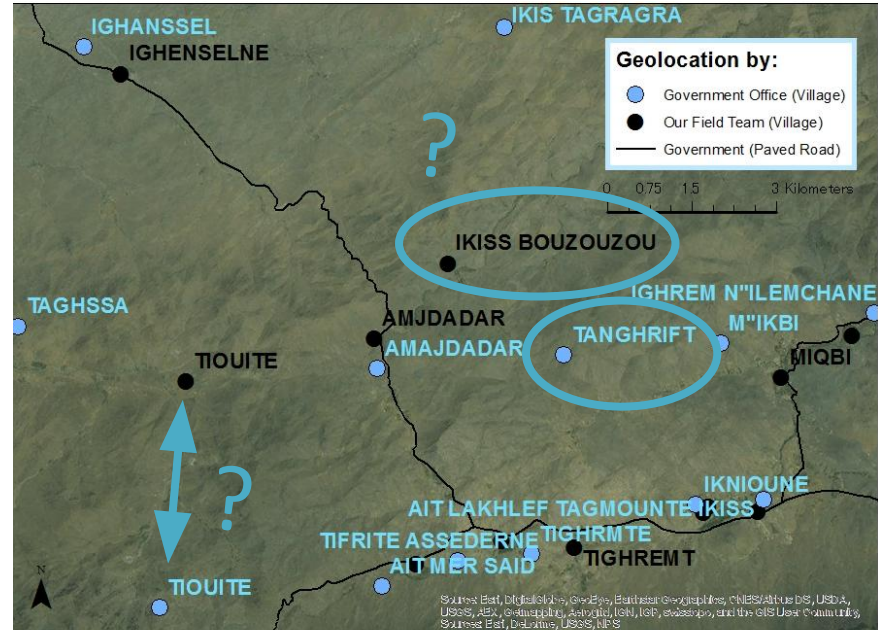
# The Need for Local Knowledge

## Local Data from State:

Unobtainable  
Inaccurate  
Nonexistent

## Unobtainable: Attribute Information

NOM_ecole	Commune	X	Y	Cycle
SS SAGHROU	Ait El Farsi	-5.287773	31.353698	Primaire
S OUAD ICHEM	Ait El Farsi	-5.245371	31.393435	Primaire
SS TOURZA	Ait El Farsi	-5.264577	31.223787	Primaire
SS AGOUDDIME NIKHARTANE	Ait El Farsi	-5.336974	31.341173	Primaire
SS ZAID OUHMAD	Ait Hani	-5.456645	31.774869	Primaire
SS TAMTETOUCHTE	Ait Hani	-5.549035	31.669803	Primaire
SS AL BAYHAKI	Ait Hani	-5.479044	31.816048	Primaire
TABARKHACHTE	Ait Ouassif	-6.15591	31.302067	Primaire
AIT KHIAR	Ait Ouassif	-6.138645	31.267404	Primaire
HDIDA	A11 Ait Ouassif	-6.171804	31.336562	Primaire
TOUZRIKT	Ait Ouassif	-6.175274	31.348899	Primaire
TIGHARMATINE	Ait Ouassif	-6.170421	31.311314	Primaire
AIT HAMOU OUYAHIA	Ait Ouassif	-6.167028	31.288138	Primaire
TIMASTIGUIT	Ait Ouassif	-6.159884	31.37882	Primaire
TAOUARBISTE	Ait Ouassif	-6.168264	31.357387	Primaire
BOUZLAFA	Ait Ouassif	-6.145437	31.273067	Primaire



## Inaccurate: Geolocation

*Yes, but this is only a problem of scale. We are addressing issues at the provincial level, so it doesn't matter that a village is a kilometer or two off.*

Civil servant, meeting, 2016







# What are the most important issues facing the community?



# Participative Mapping in a Moroccan Village



3 Rural Municipalities- Summer 2016

# FieldPapers

We mapped the following themes:

- A Health الصحة
- B Education التعليم
- C Development Projects المشاريع التنموية
- D Boundaries الحدود الجغرافية
- E Physical geography الجغرافيا
- F Unpaved Roads طرق صغيرة



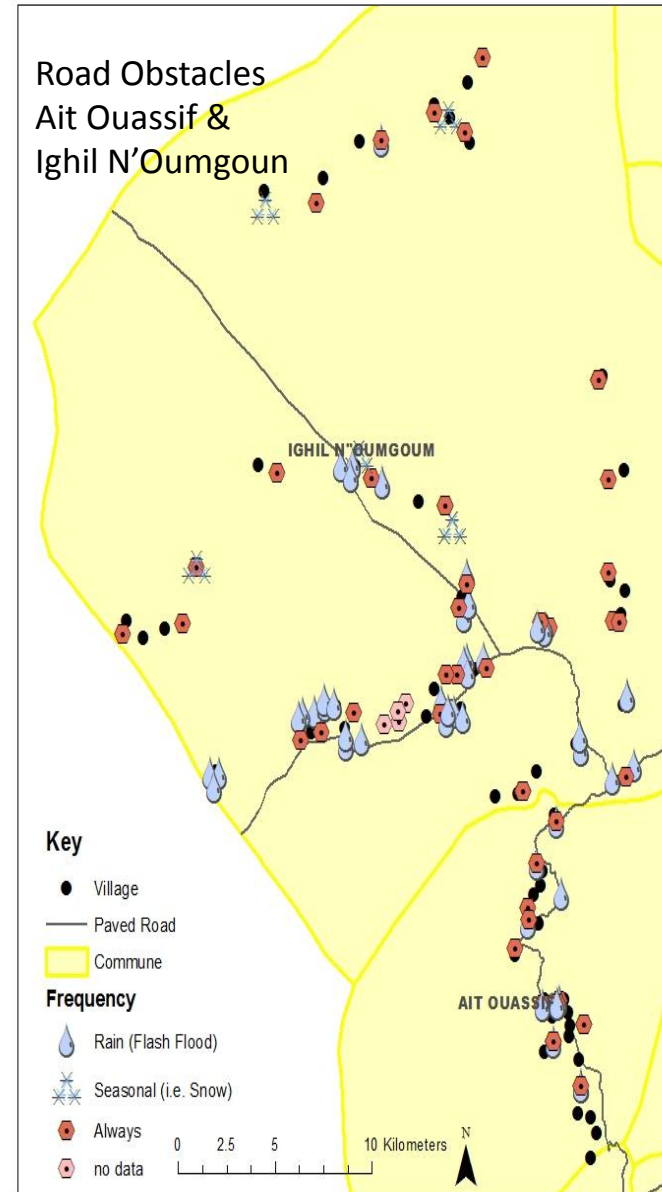
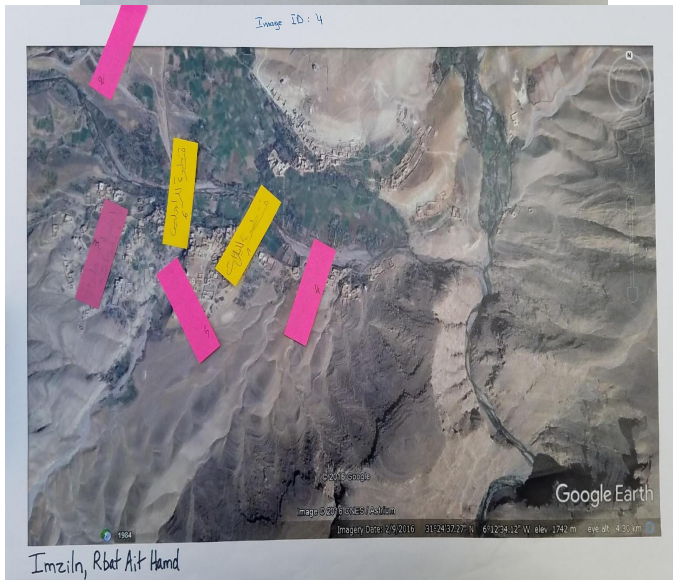
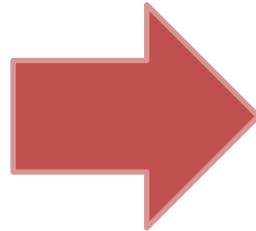
رقم الخريطة / Carte no. \_\_\_\_\_

الرقم / No.	الموضوع / Subject	الشرح / Description	الأسماء / Names	الملاحظات / Notes	معلومات أخرى / Other Information
1	الصحة / Health	مستشفى / Hospital	مستشفى / Hospital	مستشفى / Hospital	مستشفى / Hospital
2	التعليم / Education	مدرسة ابتدائية / Primary School	مدرسة ابتدائية / Primary School	مدرسة ابتدائية / Primary School	مدرسة ابتدائية / Primary School
3	المشاريع التنموية / Development Projects	مشاريع تنموية / Development Projects	مشاريع تنموية / Development Projects	مشاريع تنموية / Development Projects	مشاريع تنموية / Development Projects

# Mapping Obstacles to Accessibility

Image ID: 4 "Imzilin - Rabat Ait Hamed"

الترتيب	الوصف	التأثير	التدابير
1	قنطرة Pont	تؤخر حركة القطار والتجارة العامة في المنطقة المحيطة بها	إصلاح القنطرة أو بناء جسر جديد
2	فيضات	تؤخر حركة القطار والتجارة العامة في المنطقة المحيطة بها	بناء سدود أو حواجز مائية
3	حزام مطر موسمي	تؤخر حركة القطار والتجارة العامة في المنطقة المحيطة بها	بناء حواجز مائية أو سدود
4	فيضات	تؤخر حركة القطار والتجارة العامة في المنطقة المحيطة بها	بناء سدود أو حواجز مائية
5	فيضات	تؤخر حركة القطار والتجارة العامة في المنطقة المحيطة بها	بناء سدود أو حواجز مائية
6	قنطرة	تؤخر حركة القطار والتجارة العامة في المنطقة المحيطة بها	إصلاح القنطرة أو بناء جسر جديد





# Road Obstacle Data Collected

Obstacle	Current Infrastructure	Villages Affected	Frequency	Details	Proposed Solution
Floods	Bridge	Bouzlafa	Rains	Children cannot attend school	Maintenance
Snow	Nothing	Talat Righen, Igrramen, Tighraft, Ouaouchki...	Seasonal	These villages are isolated from the centre commune	Pave the road
Floods	Nothing	Haute Ameskar	Rains	Crop losses	Bridge
Poorly Maintained Road	Gravel	Ait Gmate, Azrou, Taberkhachte	Always	Some households cannot reach services	Maintenance

# Les Obstacles d'Accessibilité aux Services de Base

## Commune Ighil N'Oumgoun Province Tinghir

L'accessibilité géographique des territoires est un outil qui participe aux réflexions territoriales : à la fois sur le diagnostic de l'existant mais aussi pour mesurer l'impact d'actions programmées. C'est aussi un outil couramment utilisé aujourd'hui pour l'évaluation socio-économique des projets d'infrastructures.

La question de la gestion des distances et des difficultés d'accès est depuis plusieurs années une préoccupation importante des responsables de l'aménagement du territoire et du développement rural.



Les villageois d'Ighil N'Oumgoun ont participé à cartographier les obstacles et les infrastructures dans le cadre d'un projet de recherche intitulé : L'Impact de la Cartographie de la Pauvreté sur la Géographie du Développement, dirigé par Dr Mona Atia, Professeure à l'Université George Washington.



Remerciements particuliers:



Source des couches administratives:  
Royaume du Maroc

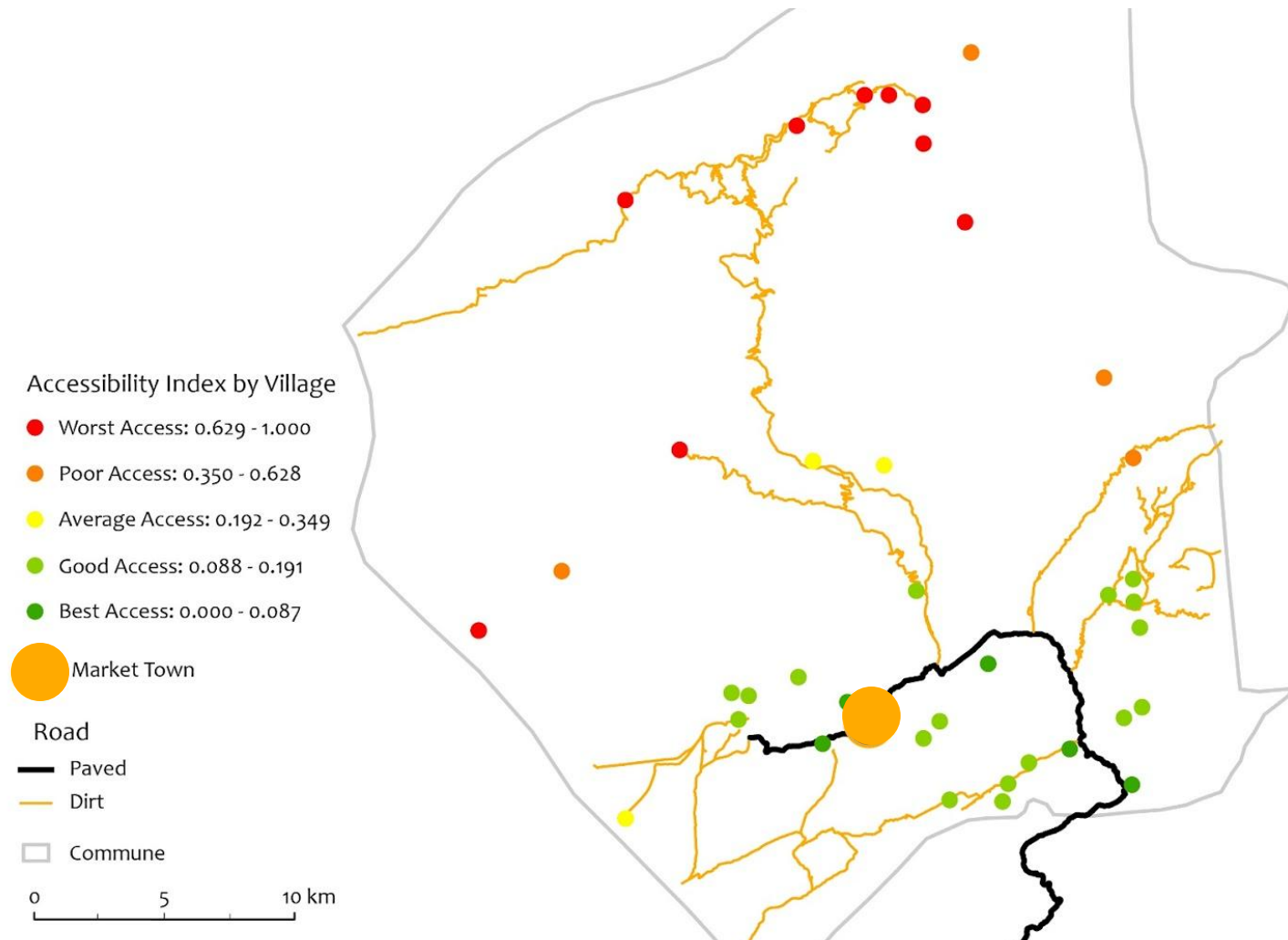
Cartographes:  
M. Said Samli  
Mlle. Grace Doherty

# Factoring in Local Data to Map Accessibility

Spatial data sources for GIS-based accessibility model

Dataset	Source	Date	Feature type
Road	OpenStreetMap	February 2017	line
Village	ONDH	2015	point
Health Center	ONDH	2015	point
School	ONDH	2015	point
Rivers	OpenStreetMap	February 2017	line
Elevation	ASTER GDEM V2	October 2011	raster

# Understanding Rural Poverty




# Mapathon Tracings in DC with HMS


TeachOSM Tasking Manager About en login to OpenStreetMap

## #258 - GW HMS Morocco: Roads of Iknouen (Commune A) (Draft)


[Instructions](#) [Contribute](#) [Activity](#) [Stats](#)

 This project is not published yet.

You are supporting the efforts of a participatory mapping project in a remote province of rural Morocco, led by Dr. Mona Atia. This fall, our team will conduct workshops with local leaders and development actors teaching them how to utilize mapping techniques to communicate their villages' unique needs. Participants might choose to map hospitals or schools or farming lands. They might want to illustrate a lack of primary school teachers or bridges or pharmacies. Your work on this task will be an immense help to our project and to the local communities participating! **Note: This particular task focuses only on roads!**

Entities to Map 

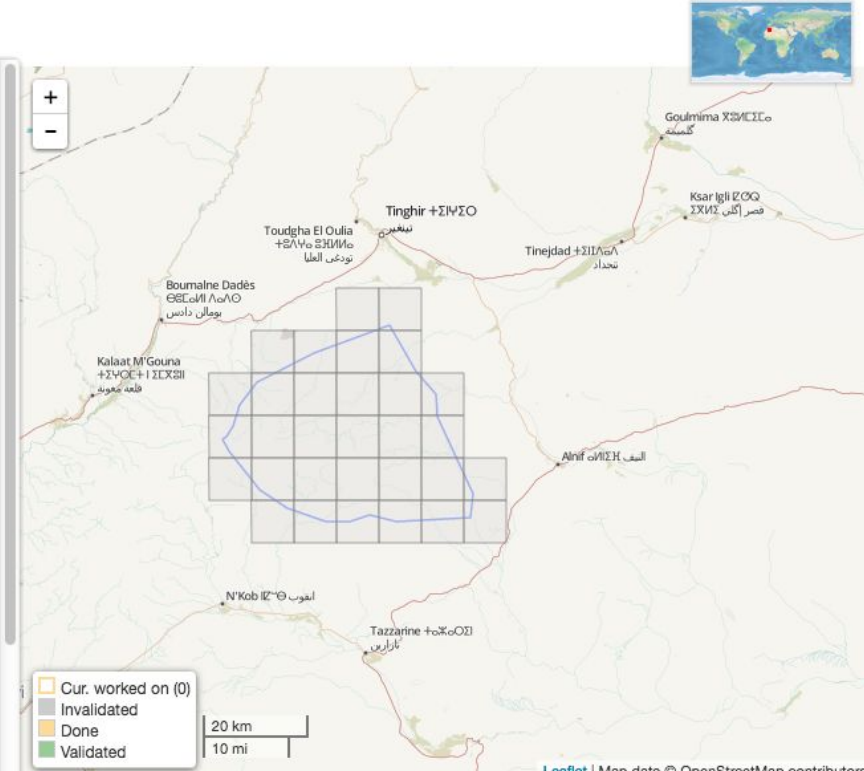
primary roads, secondary roads

Changeset Comment 

#hotosm-task-258 #HMS\_GW #atiamorocco #missingmaps #youthmappers

Rural Morocco's paved road network is well mapped in OSM. These official paved roads act as highways connecting rural towns and large villages. The unpaved dirt roads which connect smaller villages to these areas and to each other are sparsely mapped.

Please focus your tracing on inter-village roads, even if unpaved. This task does not prioritize the tracing of paths within a village cluster, but rather the roads leading out of these areas.



# GW HMS Mapathon





## Sept 16, 2016


We mapped 2,144 buildings, 1,135 km of roads, and 3,722 edits in 9 villages in Morocco

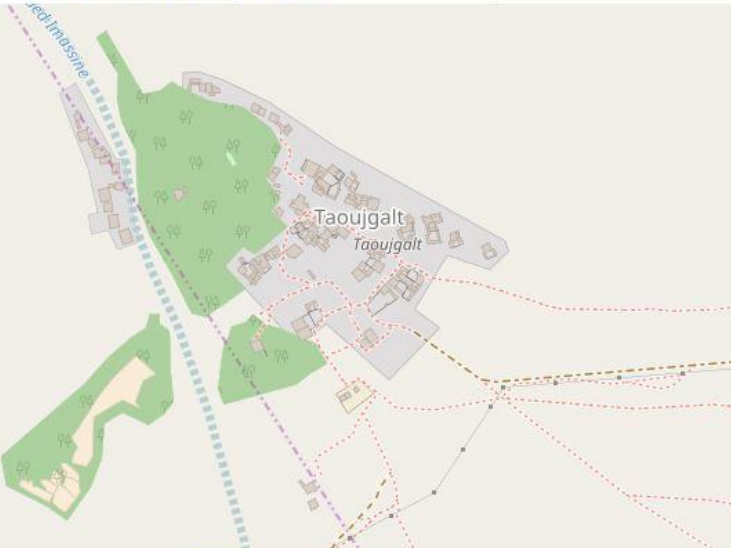


# Why Map?


## Map Compare


Search     Help Overlay:


Choose map type:  

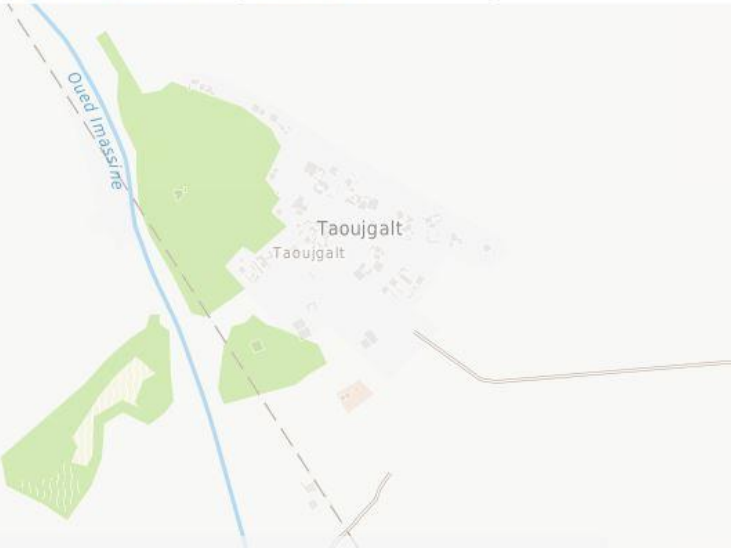


100 m  
500 ft


Choose map type:  

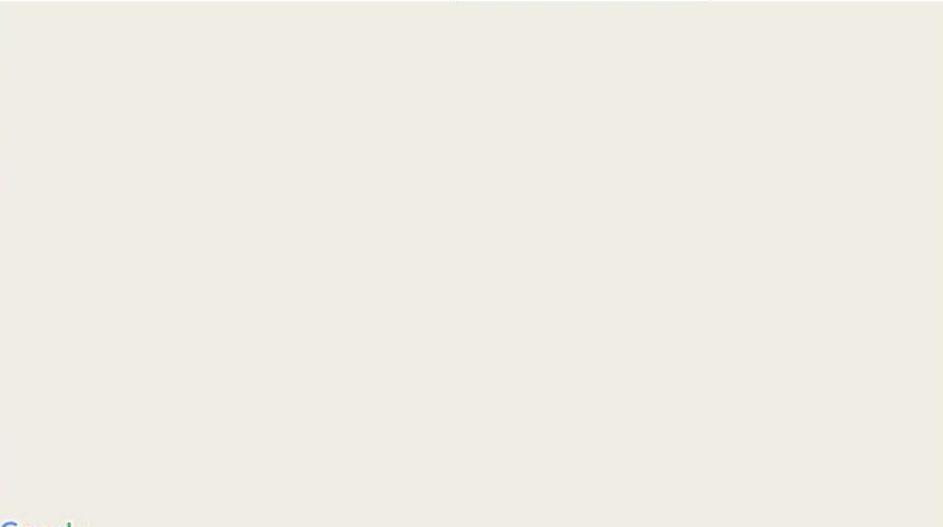


Choose map type:  



Terms of Use


Choose map type:  



# Blank Space vs. Mapped Space


**Map Compare** Search Help Overlay:

Choose map type:  Choose map type:



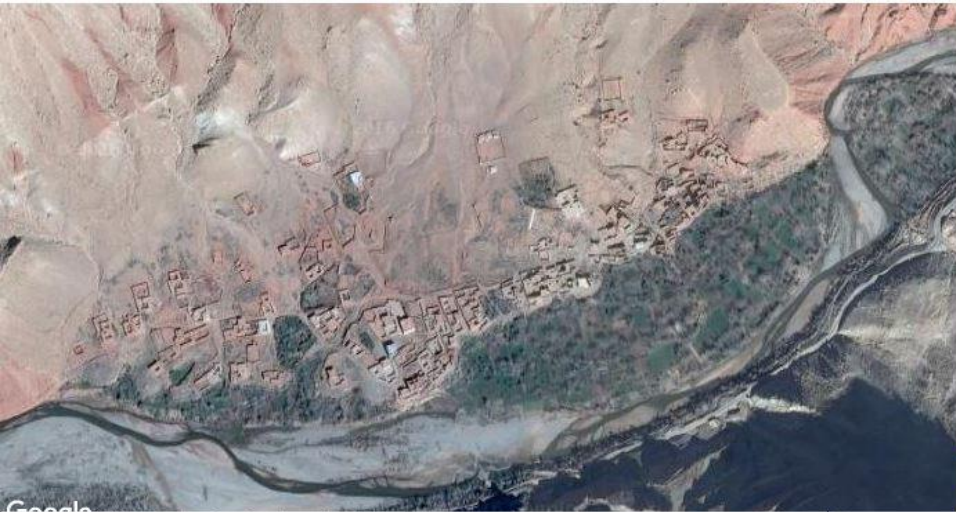
OSM Mapnik map showing a village (Timstiguite) with buildings, roads, and a river (Oued M'Goun). Includes a scale bar (100m/500ft) and a compass.

Choose map type:




Sputnik (OSM) map showing a simplified view of the village and river area.

Choose map type:



Google Satellite map showing a high-resolution aerial view of the village and surrounding terrain.

Imagery ©2016 CNES / Astrium, Cnes/Spot Image, DigitalGlobe



Google Map showing a stylized map view of the village and river area.

Map data ©2016 Google

Report a map error

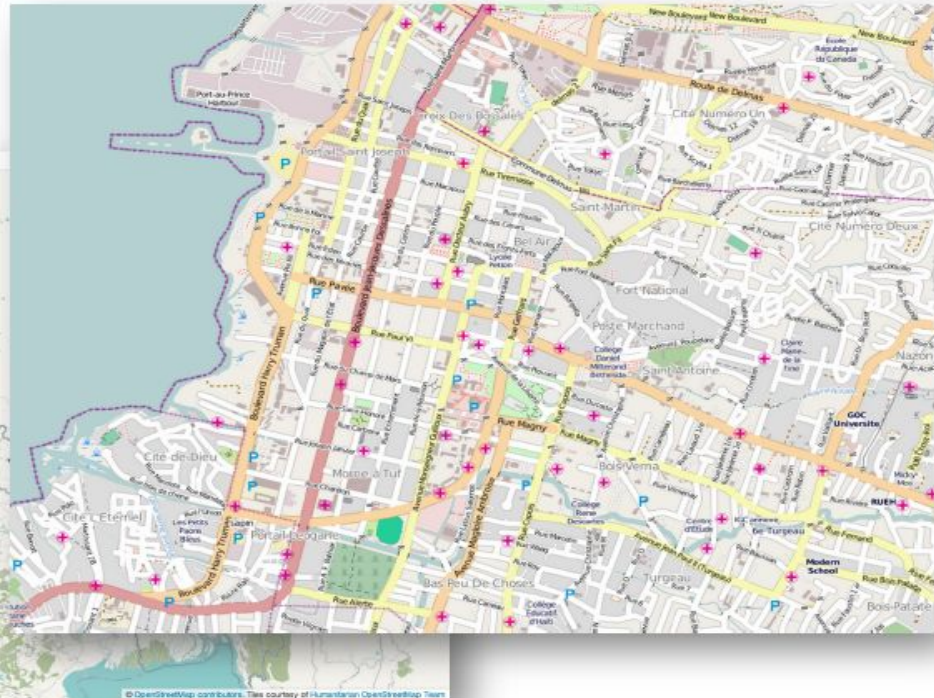
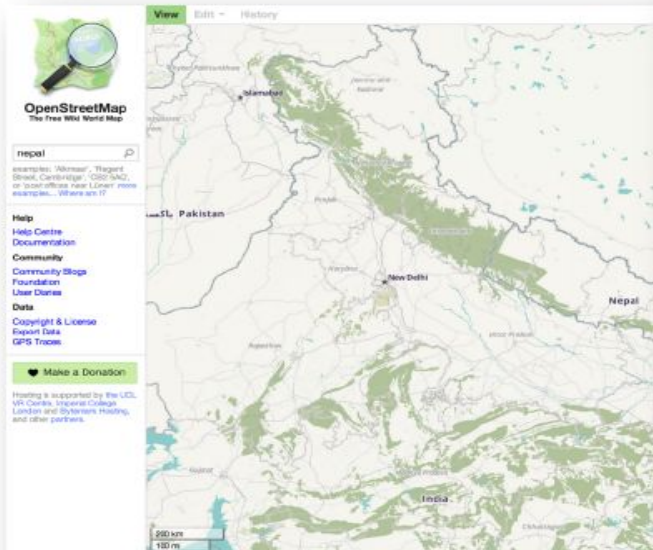


# What is Open Street Map?

## Open Street Map



*"OpenStreetMap is a project aimed squarely at creating and providing free geographic data such as street maps to anyone who wants them."*



<https://youtu.be/Phwrgb16oEM>

# Mapping in the Classroom

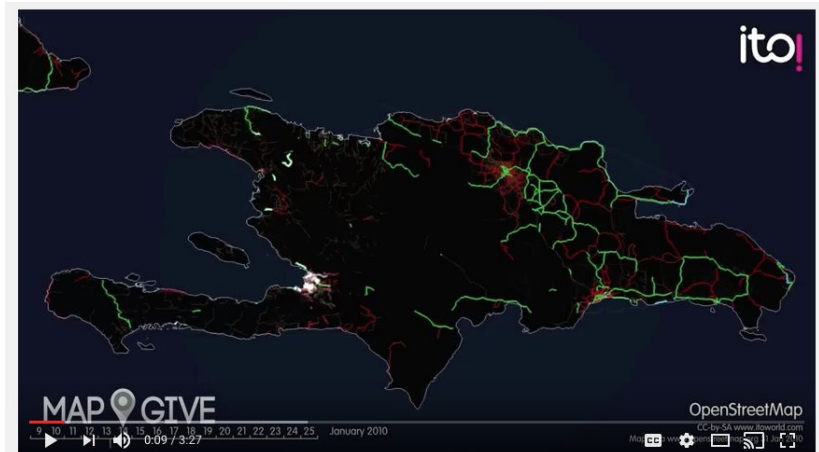
- Applicable to any discipline, open access
- Document, archive and contribute to national and international initiatives
- Teach global citizenship and humanitarianism

Map Give <https://youtu.be/C175zW8-6j8>



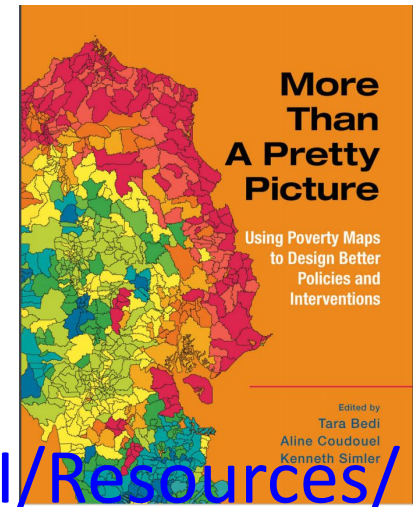
**Putting the World's Vulnerable People on the Map**

Each year, disasters around the world kill nearly 100,000 and affect or displace 200 million people. Many of the places where these disasters occur are literally 'missing' from any map and first responders lack the information to make valuable decisions regarding relief efforts. Missing Maps is an open, collaborative project in which you can help to map areas where humanitarian organisations are trying to meet the needs of vulnerable people.



MapGive: Drawing Our Resources Together

# More Resources



- Poverty Mapping: World Bank
- [http://siteresources.worldbank.org/INTPGI/Resources/342674-1092157888460/poverty\\_mapping.pdf](http://siteresources.worldbank.org/INTPGI/Resources/342674-1092157888460/poverty_mapping.pdf)
- Multi-dimensional Poverty: <http://www.ophi.org.uk/>
- Partnership for Economic Policy  
<https://www.pep-net.org/poverty-maps>
- <http://www.newsweek.com/2017/11/10/slums-missing-maps-map-international-poverty-695381.html>
- Youth Mappers: <http://www.youthmappers.org/>
- TeachOSM: <http://teachosm.org/en/resources/>

# Thank You

Special thanks to the GW Humanitarian Mapping Society, Grace Doherty, Said Samlali, Tyler Overfelt, Youssef Ben Moula, Amna Ben-Yeddar, Sandy Maroun, Nuala Cowan, Alison Kysia, the Institute for Middle East Studies, the National Science Foundation & last but not least, the village participants for making this work possible!!



Questions? Get in touch      [atia@gwu.edu](mailto:atia@gwu.edu)

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