



# FLOWMINDER.ORG

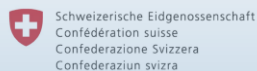
Improving prevention by understanding  
population mobility and displacement  
using mobile operator data

28 March 2022

Linus Bengtsson MD, PhD  
Co-founder, Chair of the Board  
Flowminder Foundation



Some of our supporters:

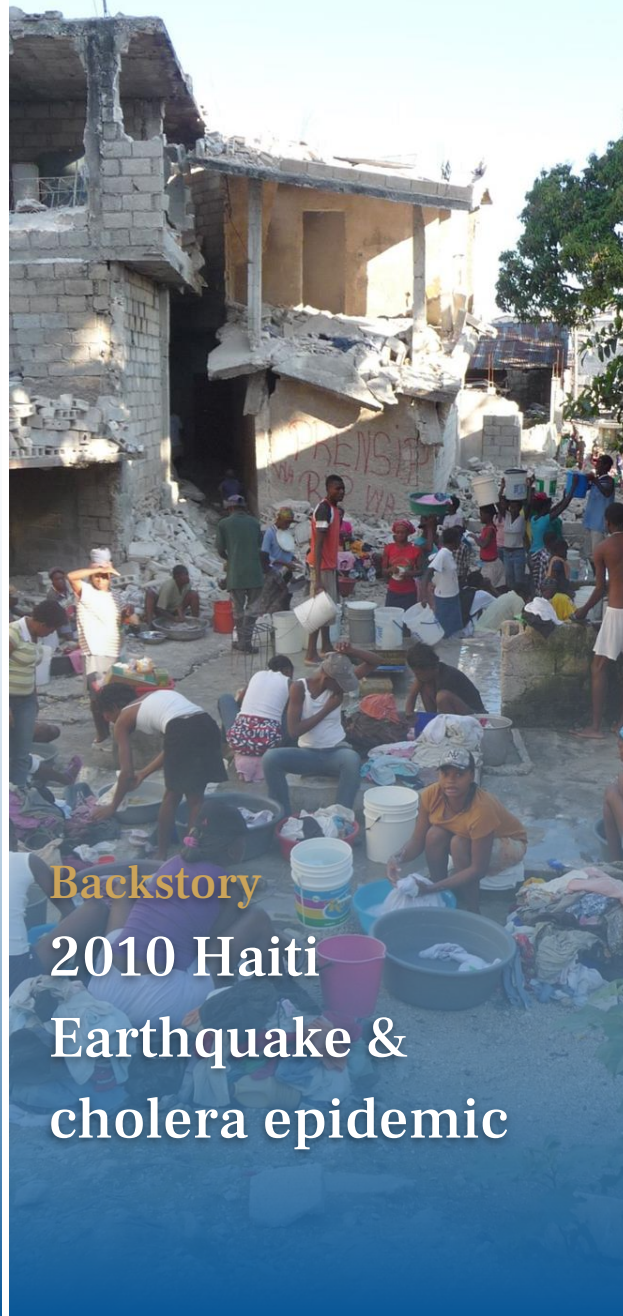


Federal Department of Foreign Affairs FDFA  
State Secretariat STS-FDFA  
Peace and Human Rights

## Our supporters

Non-profit funded  
by & supporting key  
actors

Photo credit: ECHO, Susana Perez Diaz, Flickr



## Backstory

2010 Haiti  
Earthquake &  
cholera epidemic



## Science & Innovation

Solid academic  
research. 50+ peer  
reviewed  
publications

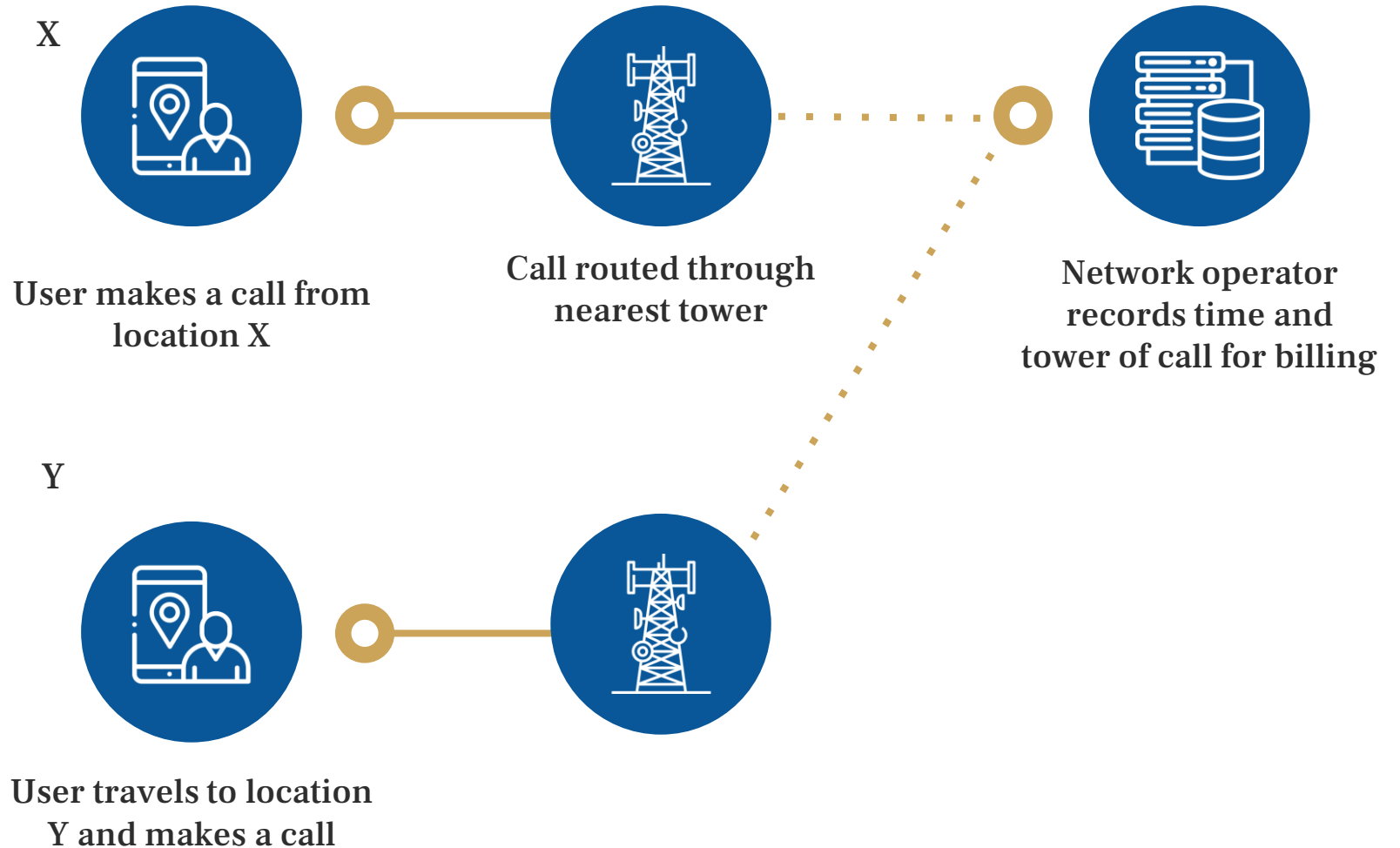
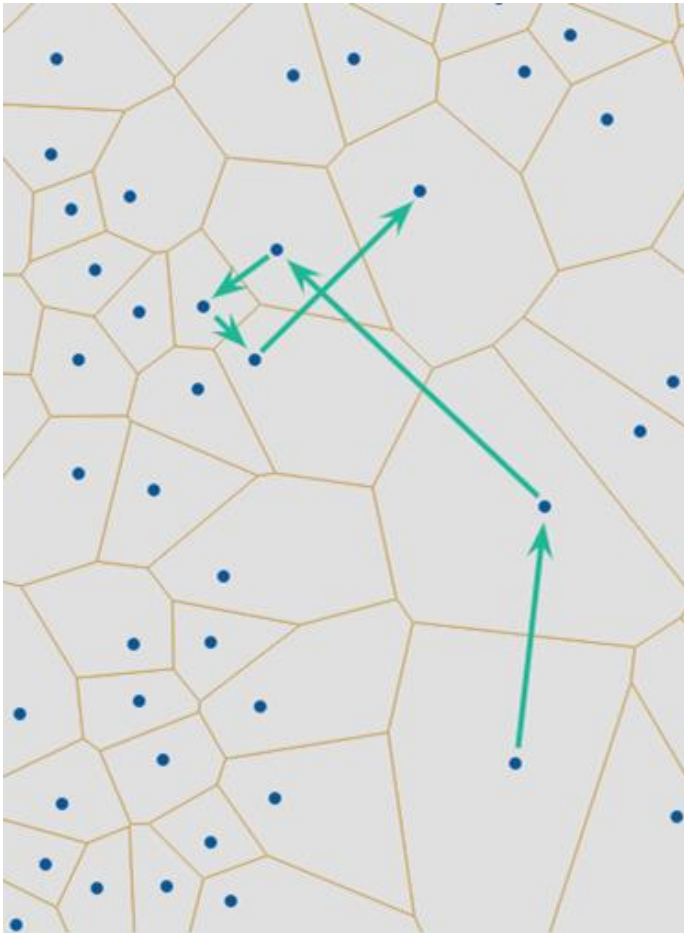


## Our team & work

38 staff to enable  
data driven decision  
support for LMICs

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# Call Detail Records (CDR data) can provide near-real time estimates of **population movements** & changes in **population density**





# Flowminder MNO collaborations to date

## Countries where Flowminder has collaboration with MNOs (present and past):

- Curacao (x 2 MNOs)
- Haiti
- Sierra Leone
- Ghana
- DRC (x 2 MNOs)
- Namibia
- Mozambique (x 3 MNOs via INCM)
- Nepal
- Papua New Guinea
- Western African country (in discussion)



# Ensuring privacy and quality

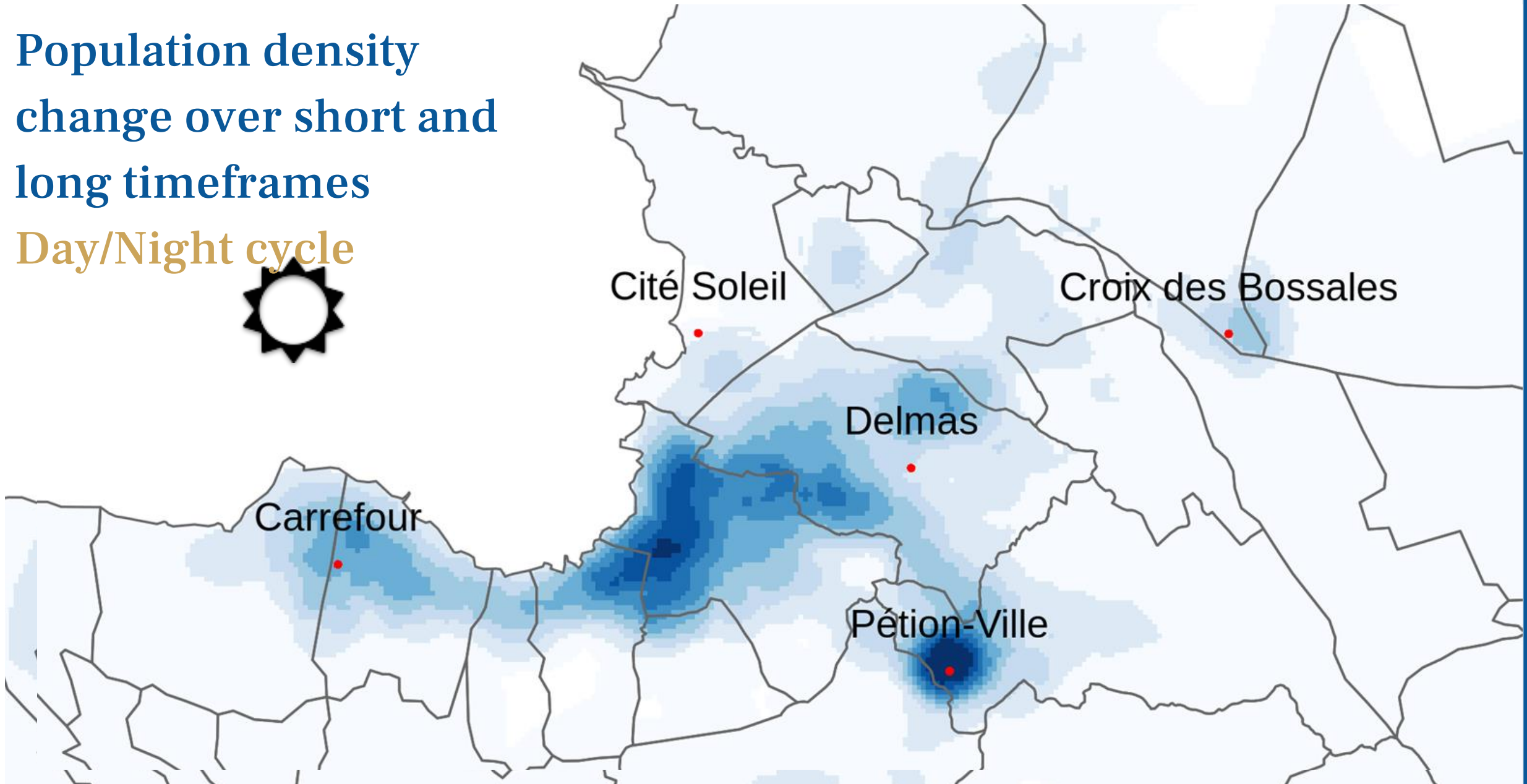
## Key principles

- CDR-derived insights should never permit the identification of individual subscribers
- We move the code to the data, not the data to the code (for any new system let the data stay with the operator)
- GDPR compliance throughout
- Transparency and peer review:
  - Detailed and open method descriptions
  - Open algorithms
  - Publications in in peer reviewed academic journals



# Population density change over short and long timeframes

Day/Night cycle



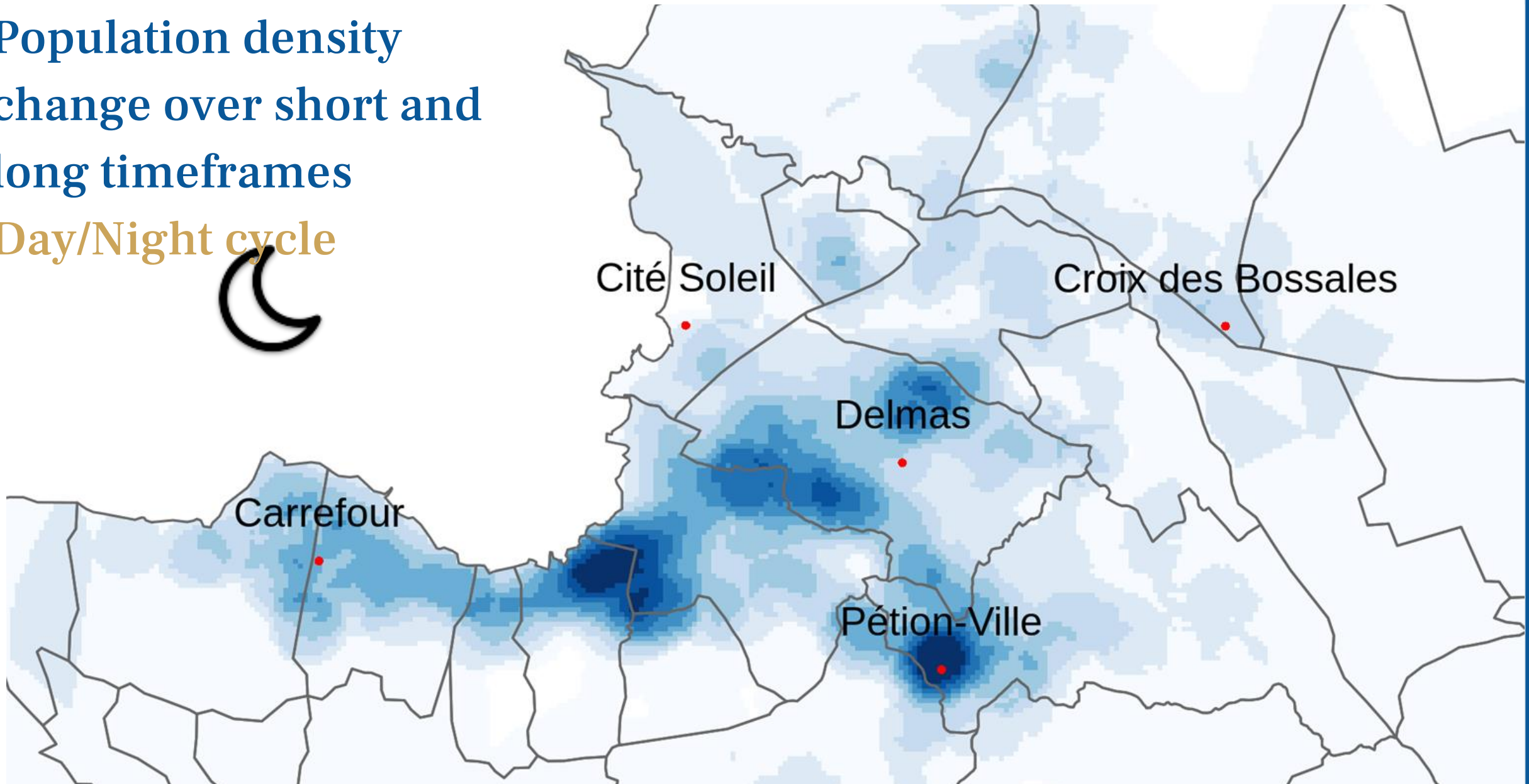
Locations of phone users during the day

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# Population density change over short and long timeframes

Day/Night cycle

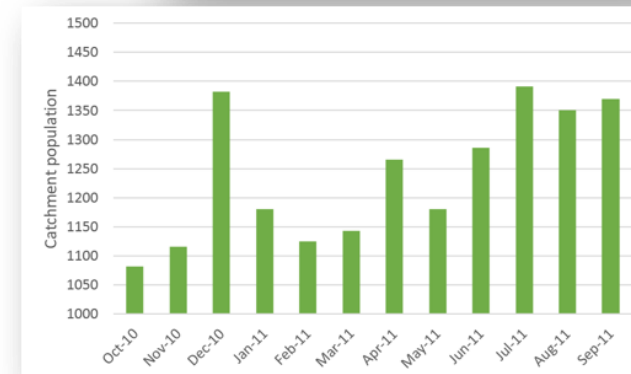
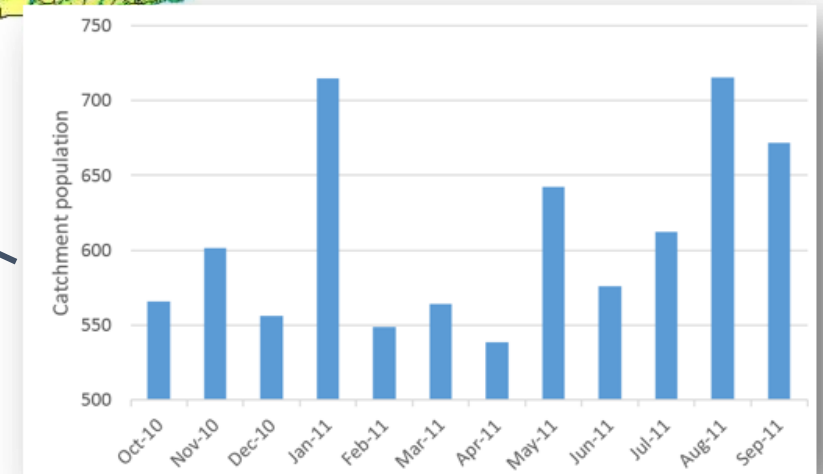
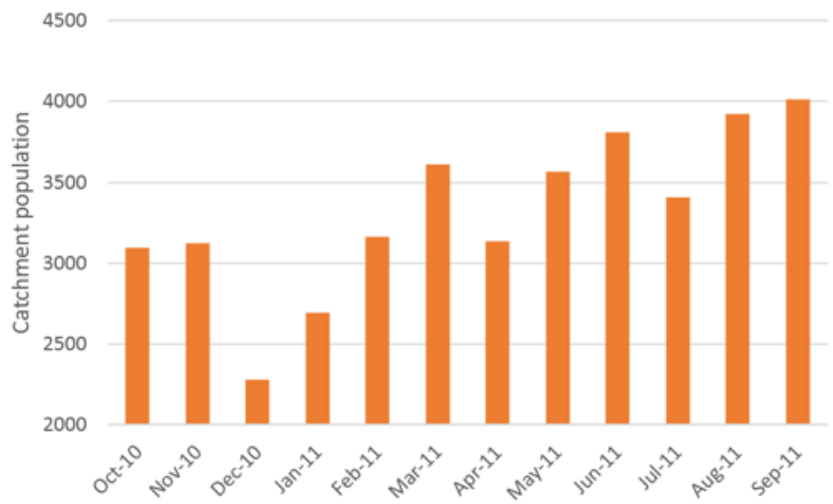
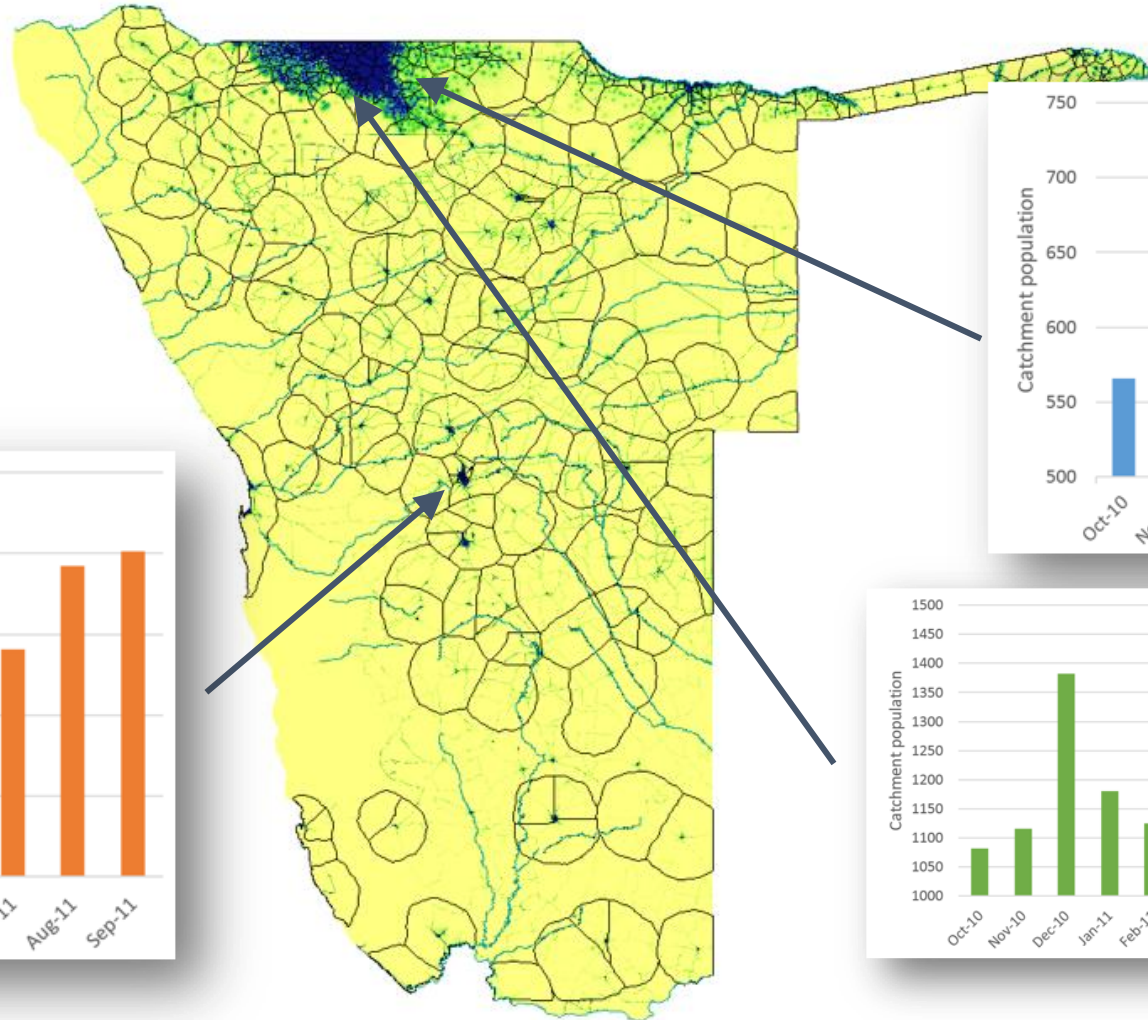
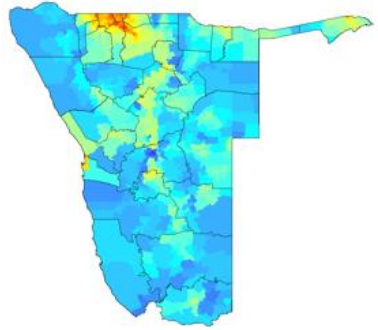


Locations of phone users at night

Internal

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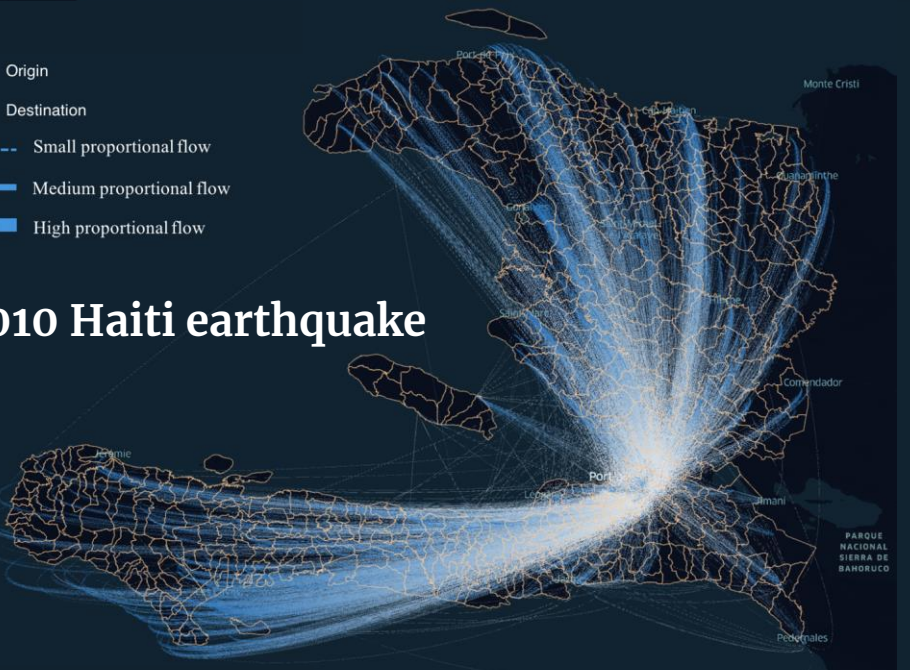
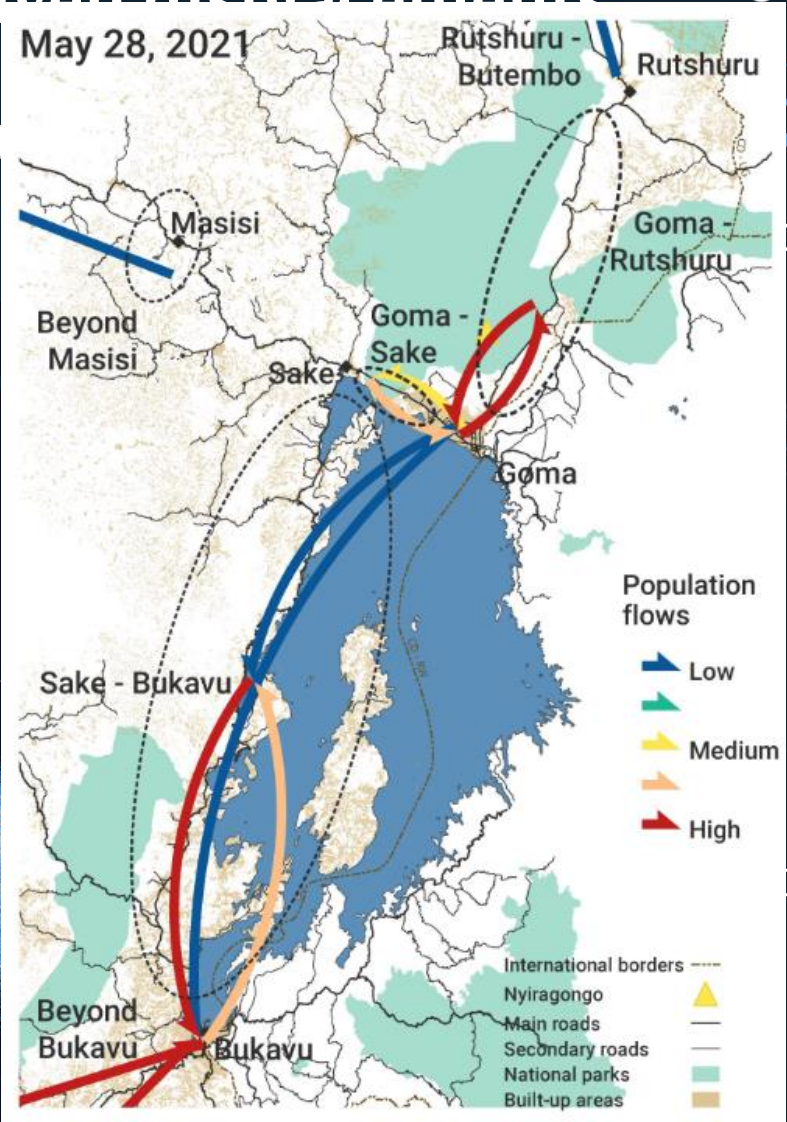
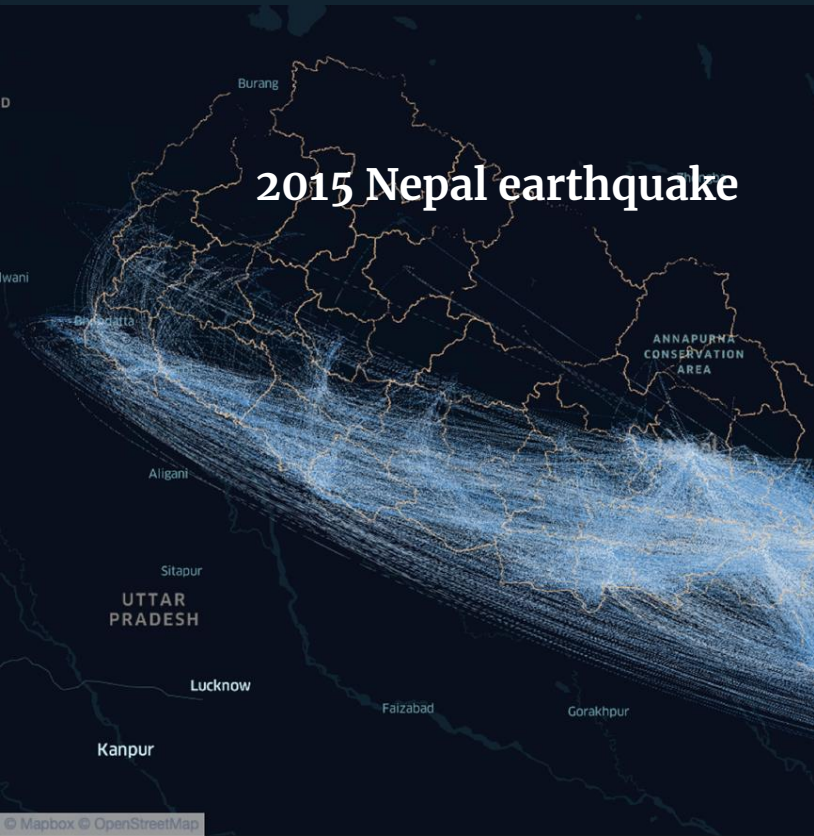
# Change in population for improved incidence estimates





# Monitoring disaster-driven displacements

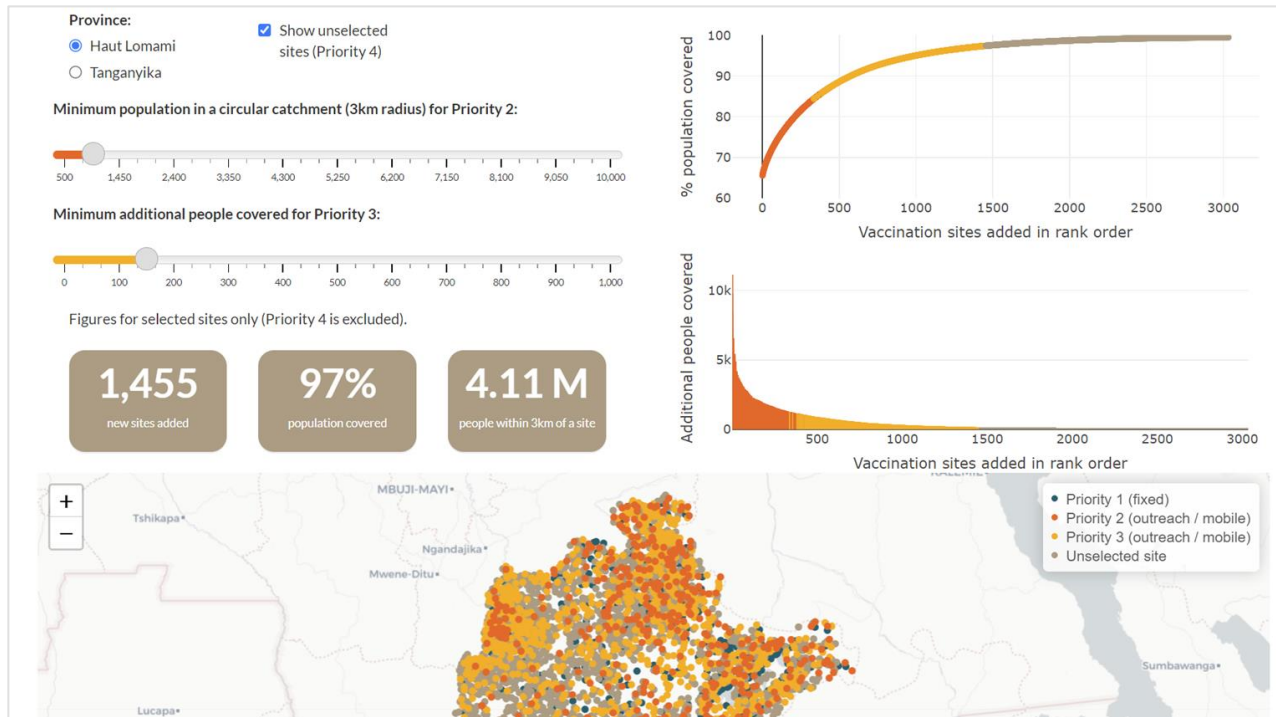
Computing the number, origin and destination during a crisis



Goma, DRC, volcano eruption  
2021

# Decision-support to resource allocation:

## Optimising the number and location of proximity services



*“Where to place additional services to cover the largest number of people? Where are the underserved areas? Where to prioritise?”*

*“How many facilities are needed to cover 100% of the population within 3km of a facility? Or 5km? Or 1 hour?”*

*“How many people can be covered in 3 km by an additional 1000 facilities?”*

- Framework allows decision-makers to evaluate different scenarios, determine coverage targets and plan service implementation and expansion.
- Dashboard at: <http://drc.optimisation.flowminder.org/>





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Contact us at:

Linus Bengtsson MD, PhD  
Flowminder Foundation

*[linus.bengtsson@flowminder.org](mailto:linus.bengtsson@flowminder.org)*