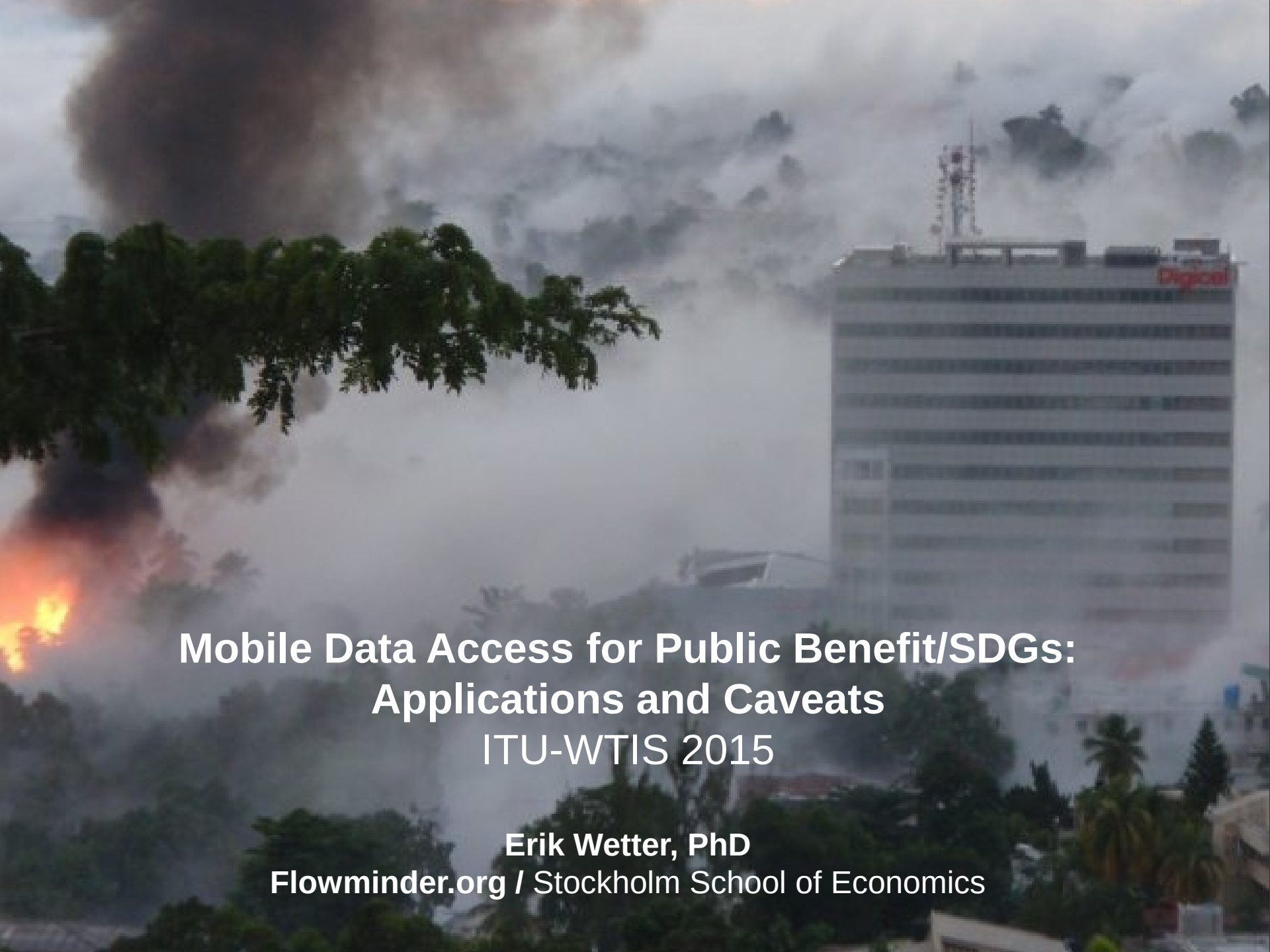

Mobile Data Access for Public Benefit/SDGs: Applications and Caveats

ITU-WTIS 2015

Erik Wetter, PhD
Flowminder.org / Stockholm School of Economics

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Flowminder (NGO): Unique track-record of applied work with mobile operators in support of international & government agencies

Sample collaborations and donors:

Dialogue partners on privacy and policy

Sample mobile operator collaborations:

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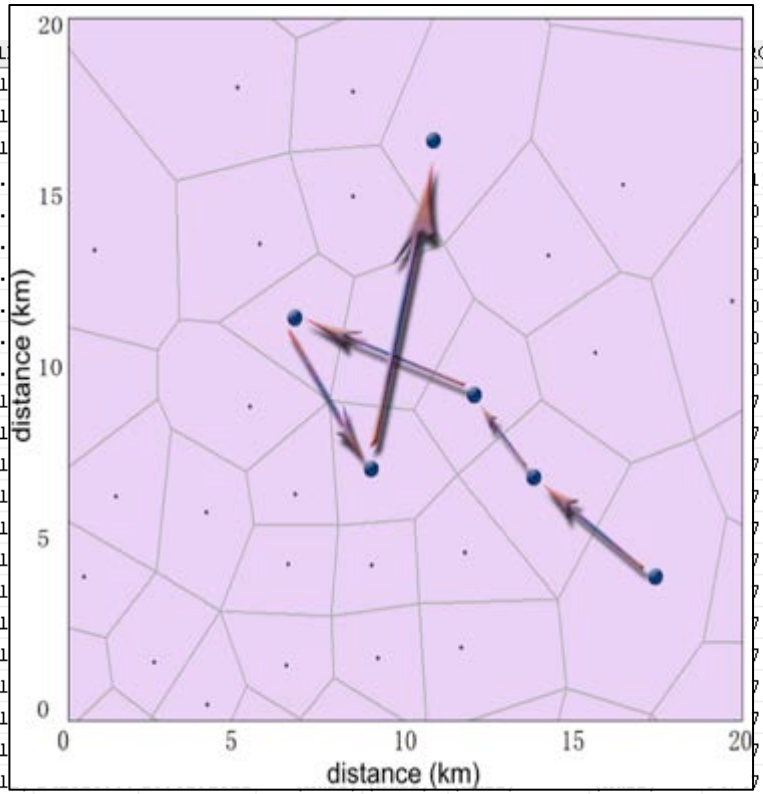
Mobile network data: Call detail records (CDR)

	A_NU...	B_NU...	CELL_ID	LOCATION	TIER3_NAME	MAIN_GROUP	CALL...						PRODUCT
423	20923...	23214...	(null)	Norge	SMS i Norge	SMS	(nul						0
424	20923...	23214...	(null)	Norge	SMS i Norge	SMS	(nul						0
425	20923...	23214...	(null)	Norge	SMS i Norge	SMS	(nul						0
426	24115...	46230...	242012040141314	Utland	NR - Utgående tale	Tale	35526.						1)
427	46240...	30623...	242011170104261	Norge	Til fastnett	Tale	12164.						0
428	46240...	24002...	242012070143948	Norge	Til operatører hos Netcom	Tale	12164.						0
429	46240...	30598...	242012070143948	Norge	Til fastnett	Tale	12164.						0
430	46240...	24063...	242012070143948	Norge	Til operatører hos Netcom	Tale	12164.						0
431	46240...	24002...	24		hos Netcom	Tale	12164.						0
432	46240...	11168...	242			Tale	12164.						0
433	48311...	45754...			i Telenors Nett	Tale	(nul						7
434	48311...	(null)	(null)	Norge	Internett	Internett	(nul						7
435	48311...	(null)	(null)	Norge	Internett	Internett	(nul						7
436	48311...	(null)	(null)	Norge	Internett	Internett	(nul						7
437	48311...	(null)	(null)	Norge	Internett	Internett	(nul						7
438	48311...	(null)	(null)	Norge	Internett	Internett	(nul						7
439	48311...	(null)	(null)				(nul						7
440	48311...	(null)	(null)				(nul						7
441	48311...	(null)	(null)				(nul						7
442	48311...	(null)	(null)	Norge	Internett	Internett	(nul						7
443	48311...	(null)	(null)	Norge	Internett	Internett	(nul						7
444	48311...	(null)	(null)	Norge	Internett	Internett	(nul						7
445	45047...	49639...	(null)	Norge	SMS i Norge	SMS	(nul						7
446	22637...	(null)	(null)	Utland	GPRS i utlandet			2.2011	341	(null)	(null)	T3-VOT	(null)
447	46835...	23959...	242012080150195	Norge	NR - Utgående SMS			2.2011	(null)	(null)	(null)	Z-MO	(null)
448	23170...	(null)	242011450118026	Utland	NR - Inngående tale/data/fax			2.2011	(null)	(null)	(null)	Z-MTC	(null)
449	23698...	(null)	242011560112573	Utland	NR - Inngående tale/data/fax			2.2011	(null)	(null)	(null)	Z-MTC	(null)
450	29651...	(null)	(null)	Norge	NR Pakkedata	Internett	(null)	242059...	14.02.2011	28754	(null)	(null)	T3-VOT	(null)
451	48376...	23959...	(null)	Norge	NR - Inngående SMS	SMS	35536...	242059...	15.02.2011	(null)	(null)	(null)	T3-TA2...	(null)
1792	23825...	36243...	0	Norge	Til fastnett	Tale	(null)	(null)	15.02.2011	(null)	(null)	(null)	F-FAST...	04008
1793	23825...	45754...	0	Norge	Viderekobling i Telenors Nett	Tale	(null)	(null)	15.02.2011	(null)	(null)	(null)	M-MOBI...	04008
1794	130055	45558...	(null)	Norge			(null)	(null)	15.02.2011	(null)	(null)	(null)	(null)	02092
1795	47589...	45850...	(null)	Norge			(null)	242013...	14.02.2011	(null)	(nu			4140
1796	47589...	24063...	(null)	Norge	SMS i Norge	SMS	(null)	242013...	14.02.2011	(null)	(nu			4140
1797	47589...	24063...	(null)	Norge	SMS i Norge	SMS	(null)	242013...	14.02.2011	(null)	(null)	(null)	(null)	04140
1798	47589...	49864...	(null)	Norge	SMS i Norge	SMS	(null)	242013...	15.02.2011	(null)	(null)	(null)	(null)	04140



(A) number – caller: anonymized

(B) number – receiving party: anonymized

Type: call, SMS, data, etc

Cell_ID: location

Data volume

Flowminder team pioneered CDR analyses for infectious disease: 2008- malaria (Zanzibar, Kenya, Namibia), 2010 cholera (Haiti), 2015 dengue (Pakistan)

MIT Technology Review

NEWS & ANALYSIS | FEATURES | VIEWS | MULTIMEDIA | DISCUSSIONS | TOPICS | POPULAR: REAL-TIME TRANSLATOR | AUTOMATION

COMMUNICATIONS NEWS

How Cell-Phone Data Could Slow the Spread of Malaria

Location data suggests a better way to fight a disease that kills a million people a year.

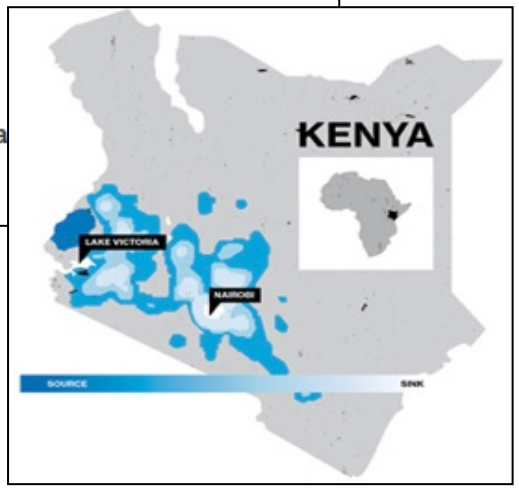
Science

AAAS

REPORT

Quantifying the Impact of Human Mobility on Malaria

Amy Wesolowski[1,2], Nathan Eagle[3,4], Andrew J. Tatem[5,6,7], David L. Smith[6,8], Abdisala
Robert W. Snow[9,10], Caroline O. Buckee[4,11,*]



HARVARD

Safaricom

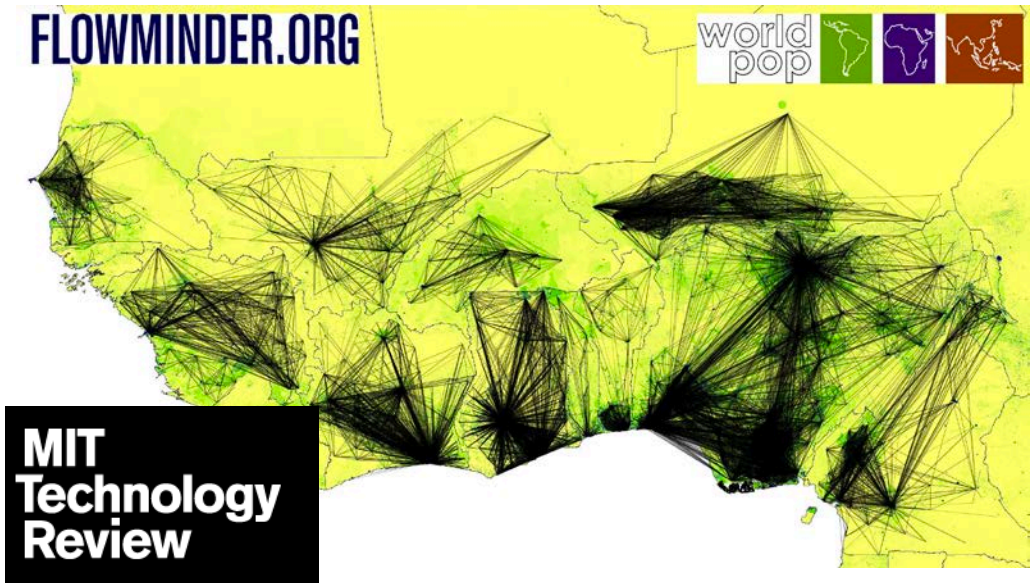
ZANTEL

First CDR analyses/method development for Ebola (Aug 2014)

27 août 2014

ALLÔ DOCTEUR – Suivre les téléphones portables pour prévoir la diffusion du virus Ebola

Le Monde



MIT Technology Review

Cell-Phone Data Might Help Predict Ebola's Spread

Mobility data from an African mobile-phone carrier could help researchers recommend where to focus health-care efforts.

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First project (MDEEP) on CDR and climate impacts: 2013 Bangladesh cyclone Mahasen

ICCCAD
International Centre for Climate Change and Development
at
Independent University, Bangladesh
in partnership with BCAS and IIED

grameenphone

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telenor group

UNITED NATIONS UNIVERSITY
UNU-EHS
Institute for Environment and Human Security

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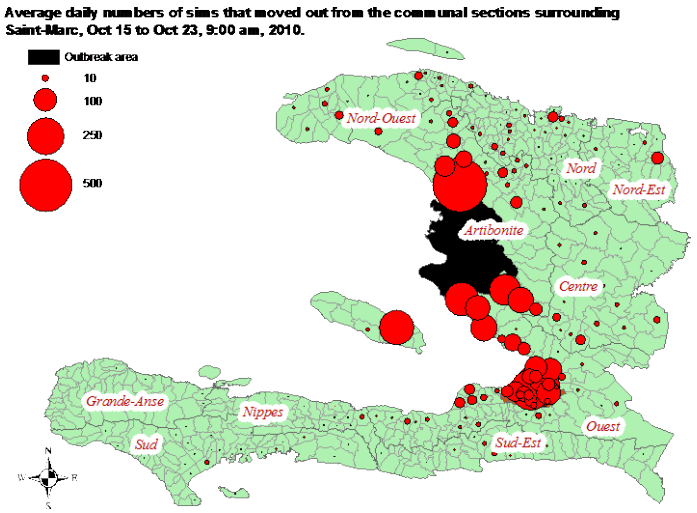
Pioneered de-identified CDR for disaster response: 2010 Haiti earthquake & cholera outbreak

Digicel



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Nepal 2015 earthquake: data access and analyses within 14 days

FLOWMINDER.ORG

Ncell

Nepal Population Estimates as of 27th May 2015

Pre-earthquake population	Population outflow (above normal)	Population inflow (above normal)
2.8m	+340,000 (200,000 ~ 480,000)	-150,000 (-90,000 ~ -210,000)

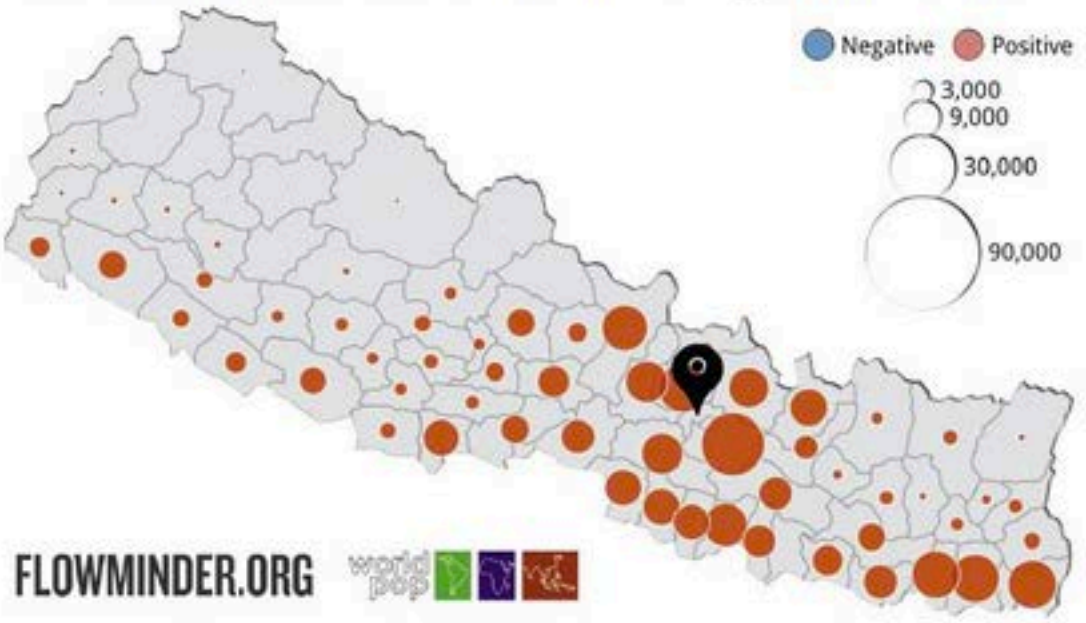
2. Kathmandu Valley

Kathmandu Valley is here defined as the districts Kathmandu, Bhaktapur and Lalitpur. Kathmandu Valley. Kathmandu Valley is home to 2.8m people under normal conditions [1].

Key findings:

- An estimated 340,000 people more than normal had left Kathmandu Valley - comparing 23rd-27th May with 20th-24th April (ratio to the population 12%).
- An estimated 150,000 persons less than normal had come into Kathmandu Valley during the same period (ratio to the population -5.3%).
- People leaving Kathmandu Valley went to a large number of areas, notably the populous areas in the south and the Central and West Development Regions.

Above normal flows from Kathmandu Valley to other districts



[1] www.worldpop.org

Above normal flows from Kathmandu Valley to other districts (comparing 23rd-27th May and 20th-24th April).

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NEPALI Times

HOME REGULAR COLUMNS ARCHIVE M

29 May - 5 June 2015 #760

Nation

Where are we?

Ncell partners with Flowminder to track movement of Nepalis post-earthquake

Ayesha Shakya

Nearly 400,000 people left the Valley in six days after quake: Study

The Himalayan TIMES

More than 390,000 people left Kathmandu Valley after the devastating earthquake of April 25. This is what a study report pre-

during period shifted to lar
number of areas, notably the po
ulous areas in the southern, ce
tral and western development r

In Sindhupalchowk, the most affected district, an estimated 15,000 people (which is more than the normal inflow) had arrived at the district in the review period. Travel to Kathmandu went down drastically and out of the people leaving the district, many went to Kavrepalanchowk, with lesser number also going to Sarlahi, Siraha, Jhapa and Nuwakot.

An estimated 41,000 individuals went to Gorkha, the epicentre of April 25 earthquake, during the review period. Meanwhile, an

aSonera said that Ncell was providing customer macro data to the Flowminder that processes the data to better understand population displacement and mobility patterns pre- and post-quake. Nepal has 23 million mobile phone subscribers out of a population of 27 million people and Ncell claims to have 46 per cent market share.

Earlier, Flowminder, which pioneered analysis of mobile network data to support responses to natural disasters and epidemics, had used the same technique

Landslides and Displacement Situation Update

27 August 2015

Nepal Earthquake Assessment Unit

roblem
e relief

This report is an update of the 'Landslide and displacement update' of 27 July 2015. The main objective of this note is to provide an overview of the current situation and limitations of the available data.

Overview

2.33 million people not living in original house — REACH/Shelter Cluster Assessment 17/05/2015

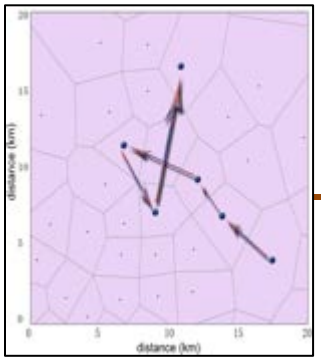
59,500 people in 104 sites >20 HH — CCCM DTM 21/07/2015

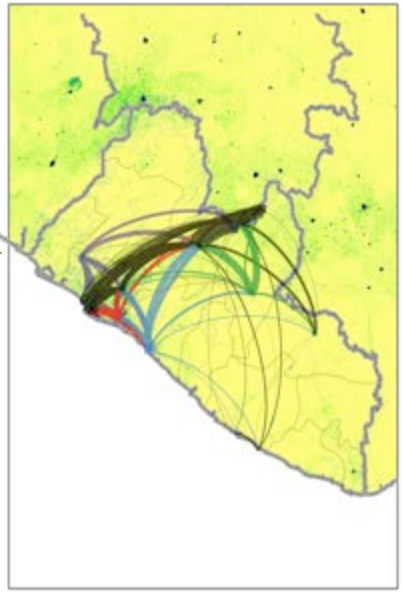
Almost **80,000** people relocated due to landslide risks — Media sources 17/08/2015

or

acaps MapAction OCHA Office of the United Nations Resident and Humanitarian Coordinator UKaid FLOWMINDER.ORG

Flowminder access model: supporting MNOs to provide statistics





Operators Call Detail Records' (CDRs) including low-resolution location data (nearest tower location) anonymized on separate server hosted by operator.

Flowminder researchers conduct analyses under operator supervision, de-identified raw data always behind operator firewall

Non-sensitive aggregated mobility estimates are exported,

Mobile operator firewall

Raw **data never leaves mobile operator custody**
to avoid privacy, security & commercial concerns -
Only **exporting aggregate statistics and indicators.**