



# Harnessing Big Data for Sustainable Development and Humanitarian Action

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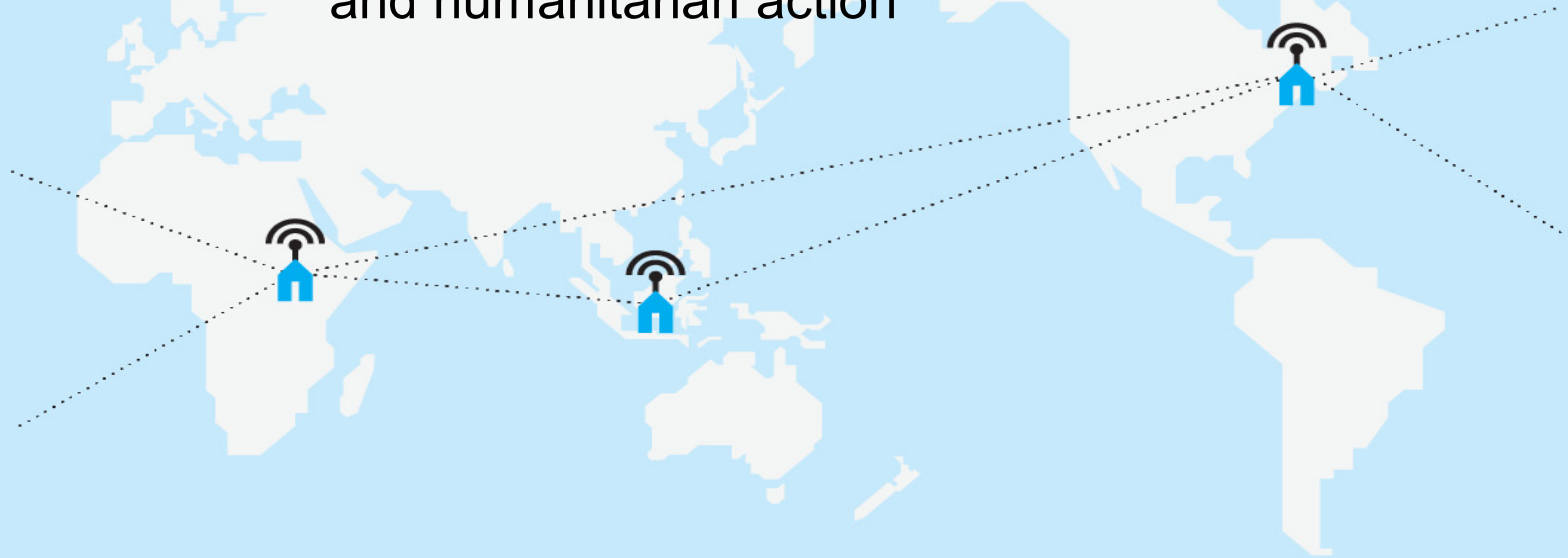
[www.unglobalpulse.org](http://www.unglobalpulse.org)

# UN Global Pulse:

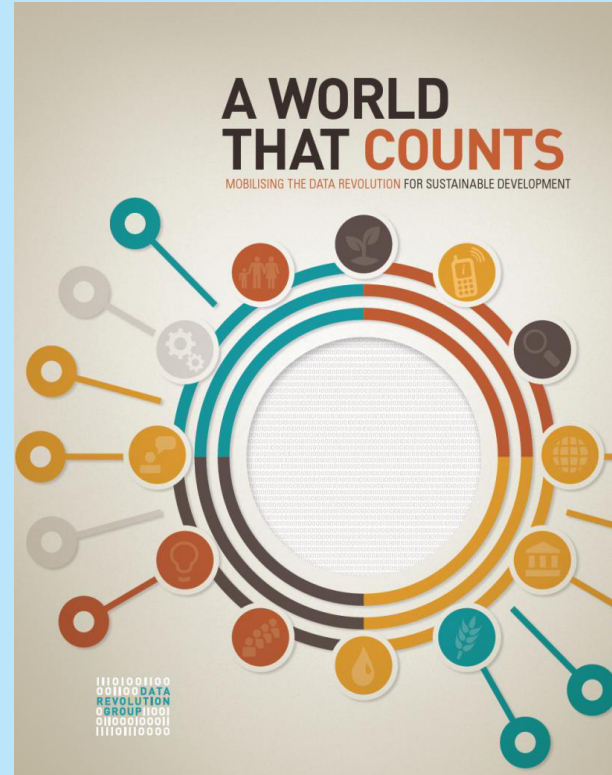
A flagship innovation initiative of the Secretary-General

**Vision:** Big Data used responsibly for the public good

**Mission:** Accelerate discovery, development and adoption of data science innovation for sustainable development and humanitarian action



“We need a data revolution for sustainable development”





# SUSTAINABLE DEVELOPMENT GOALS



**1** NO POVERTY

**2** ZERO HUNGER

**3** GOOD HEALTH AND WELL-BEING

**4** QUALITY EDUCATION

**5** GENDER EQUALITY

**6** CLEAN WATER AND SANITATION

**7** AFFORDABLE AND CLEAN ENERGY

**8** DECENT WORK AND ECONOMIC GROWTH

**9** INDUSTRY, INNOVATION AND INFRASTRUCTURE

**10** REDUCED INEQUALITIES

**11** SUSTAINABLE CITIES AND COMMUNITIES

**12** RESPONSIBLE CONSUMPTION AND PRODUCTION

**13** CLIMATE ACTION

**14** LIFE BELOW WATER

**15** LIFE ON LAND

**16** PEACE, JUSTICE AND STRONG INSTITUTIONS

**17** PARTNERSHIPS FOR THE GOALS

SUSTAINABLE DEVELOPMENT GOALS

# Hypothesis: digital services are sensor networks for human wellbeing

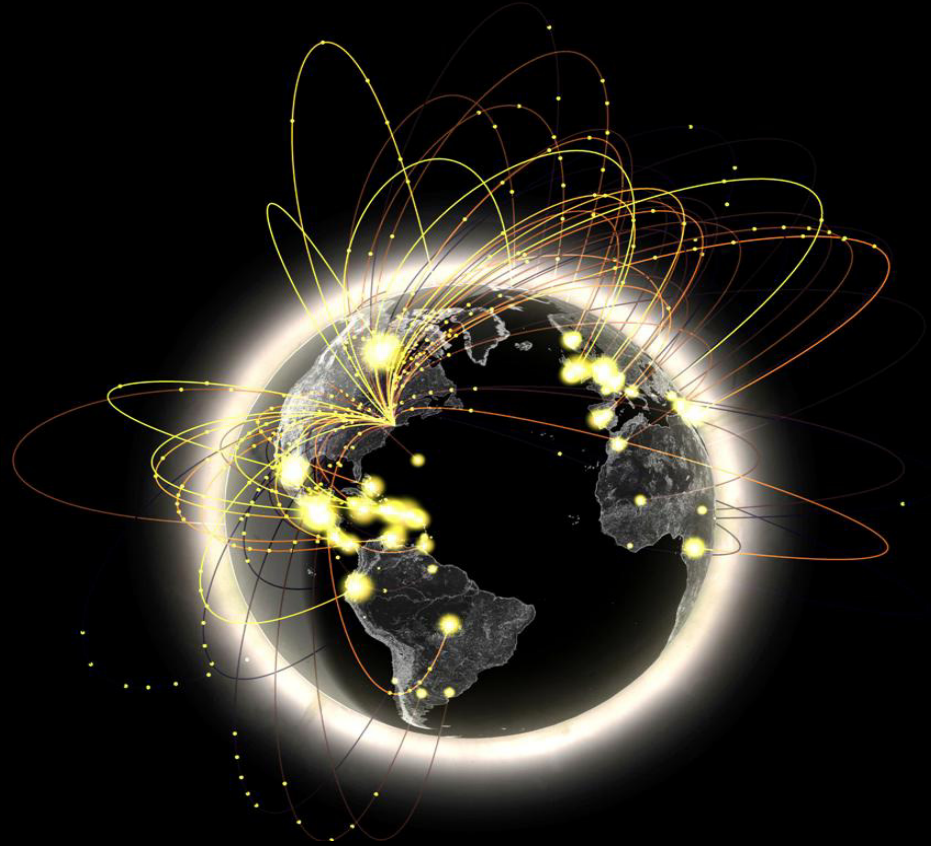


Image credit: Aaron Koblin

24 hours of global phone calls and Internet traffic flowing through New York City

# There are at least three revolutions at stake for the SDGs

1. A Measurement Revolution: insights from big data allow better, faster, less-costly tracking of statistical indicators
2. A Management Revolution: broad adoption of agile, efficient, adaptive processes accelerates the organizational transformation needed to achieve the SDGs.
  1. An Accountability Revolution: open access to insights from big data empower citizens to hold government accountable, because big data is produced directly by communities with no intermediary role of government.







# 2011 Tohoku Earthquake, Japan

# BIG (BEHAVIORAL) DATA

## “What People Say”

Online news

Social media

Retail advertising

Radio & TV

## “What People Do”

Online search

Mobile phone usage

Credit card purchases

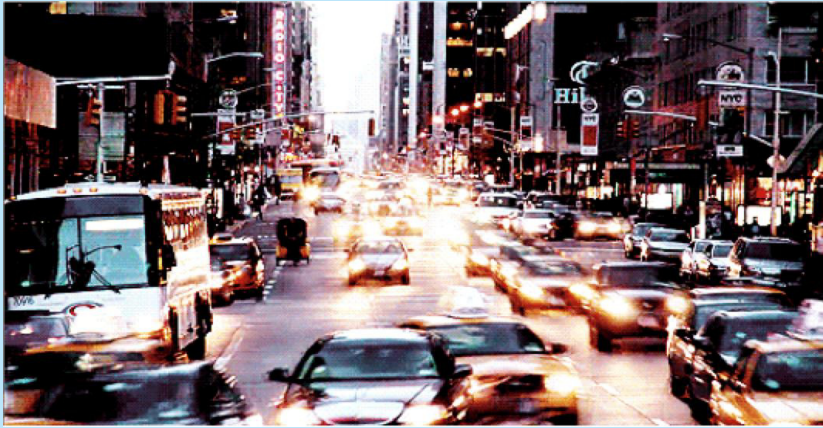
Money transfers

Ecommerce/Retail POS

Postal traffic

Sensors of all sorts...

# Why is big data different?



survey data



big data

It allows continuous, real-time observation of dynamics of human behavior



# OUR PRIVACY & DATA PROTECTION PRINCIPLES

We access, analyze, store, transmit or otherwise use only data that has been obtained by lawful and fair means, including, where appropriate, with the knowledge or consent of the data subject

We do not access data containing personal information on any individual, without the knowledge or proper consent of the data subject

We never access the content of private communications, without the knowledge or proper consent of the data subject

We never attempt to re-identify anonymised data, without the knowledge or proper consent of the data subject

We will only access, analyse, store, transmit or otherwise use data in accordance with the purposes for which the data has been properly and lawfully obtained

We ensure reasonable and appropriate technical and organisational safeguards are in place to prevent unauthorised disclosure or breach of data

We design, carry out, report and document our activities with accuracy and transparency

We employ even stricter standards of care while conducting research among vulnerable populations and persons at risk, children and young people, and any other sensitive data

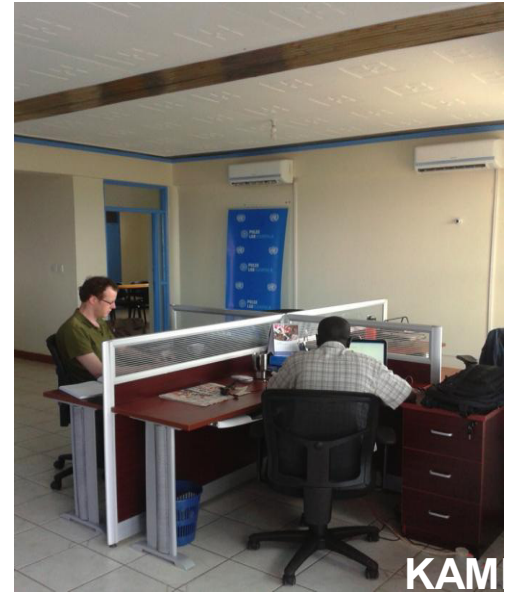
We perform due diligence when selecting data or service provider partners and ensure their activities comply with the United Nations' global mandate

We ensure that our research partners are acting in compliance with relevant law, privacy and data protection standards



# DATA PHILANTHROPY

# A NETWORK OF “PULSE LABS”: A SAFE SPACE FOR BIG DATA INNOVATION

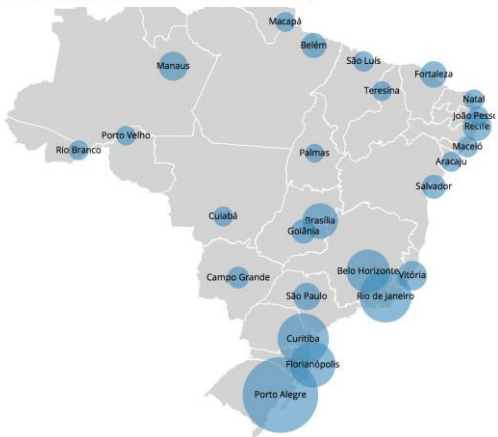
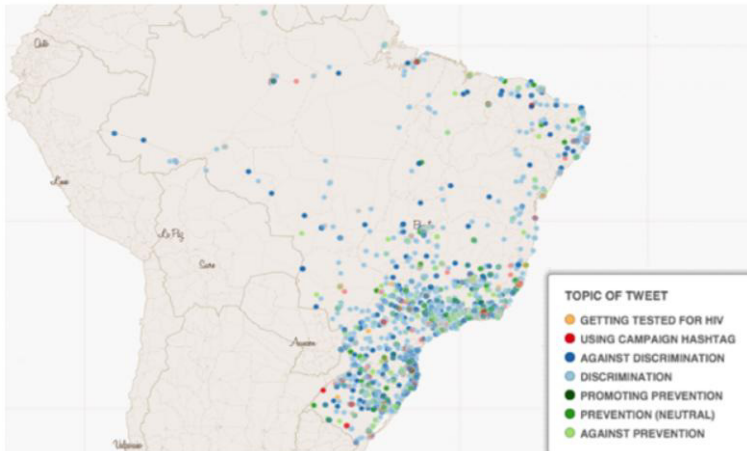


# Applications

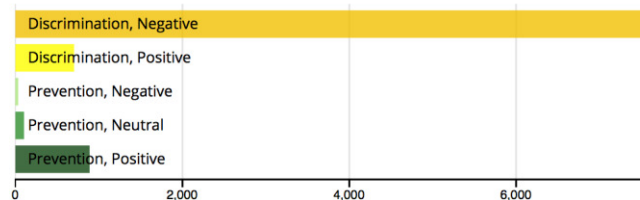




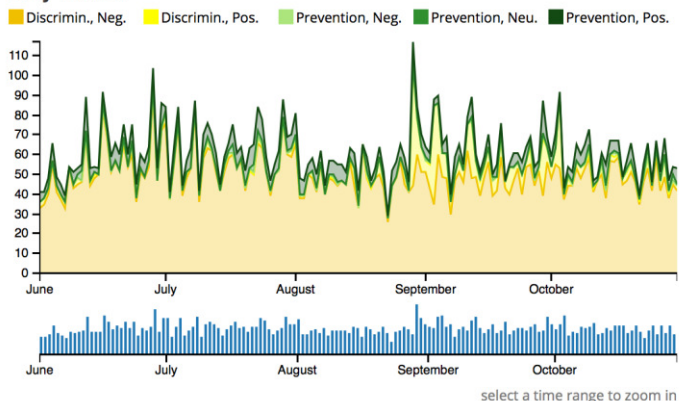
# HIV RISK AWARENESS AT THE WORLD CUP



Category



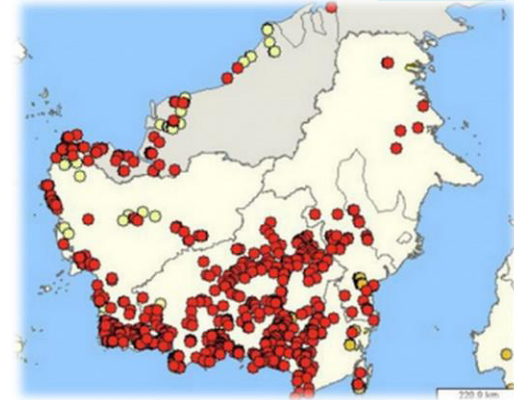
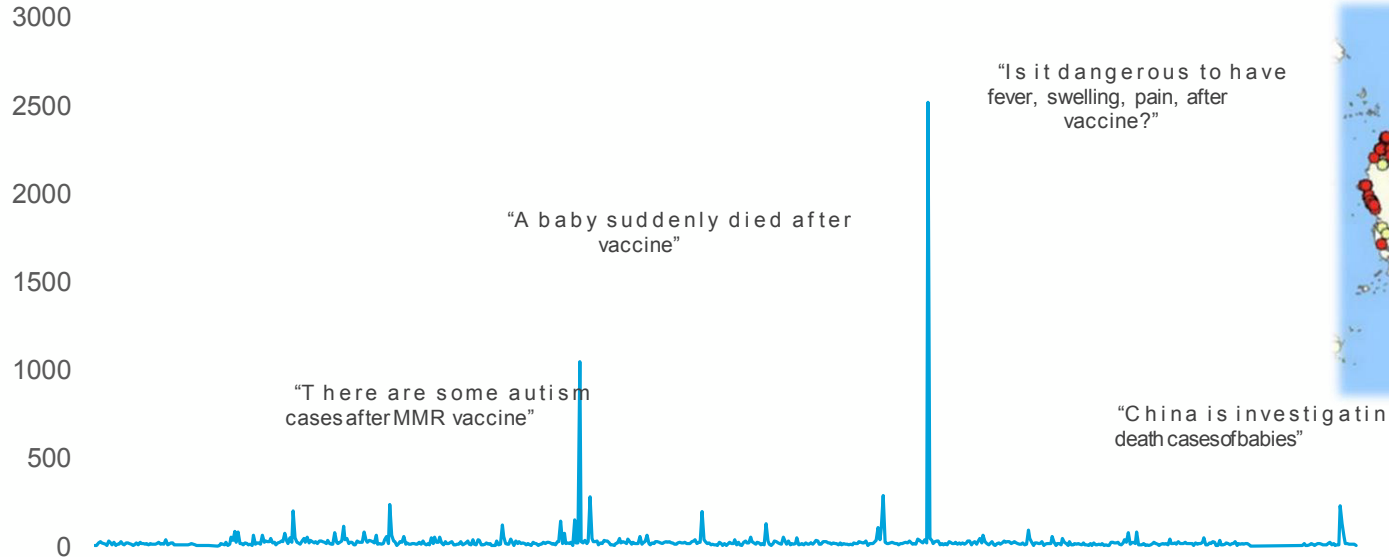
Daily Volume



select a time range to zoom in



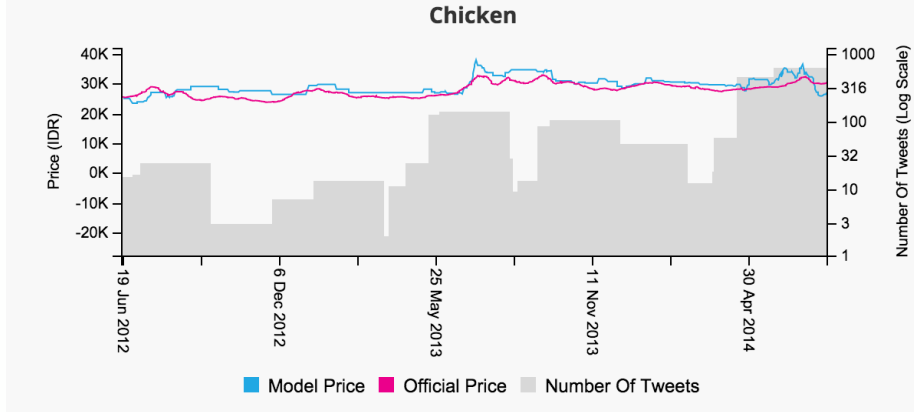
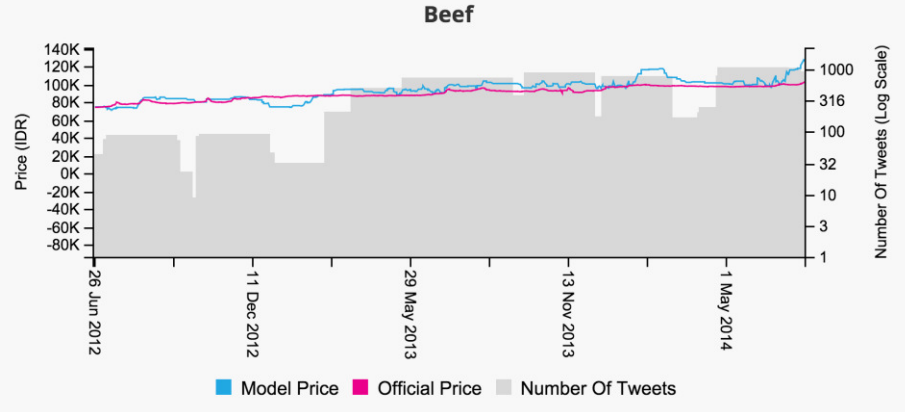
# TRACKING PERCEPTION OF VACCINATION IN INDONESIAN TWITTER



Rank	2012-06-20	2012-10-08	2013-04-28	2013-12-23
1	Autism (213)	Death(1030)	Fever (1498)	Death (224)
2	Death (5)	Fever (14)	Swelling (1494)	Fever (3)
3	Sick (4)	Sick (4)	Pain (1491)	Crying (1)
4	Fever (2)	Crying (3)	Autism (1011)	Autism (1)
5	Crying (1)	Fever (3)	Fever (4)	-

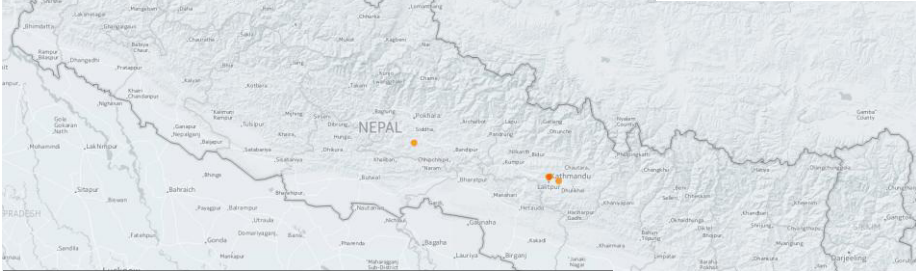
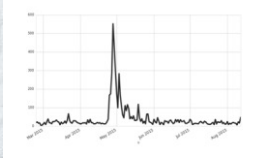


# REAL-TIME TWITTER FOOD INDEX



COMMODITY	PEARSON CORRELATION COEFFICIENT
Beef	0.87
Chicken	0.81
Onion	0.85

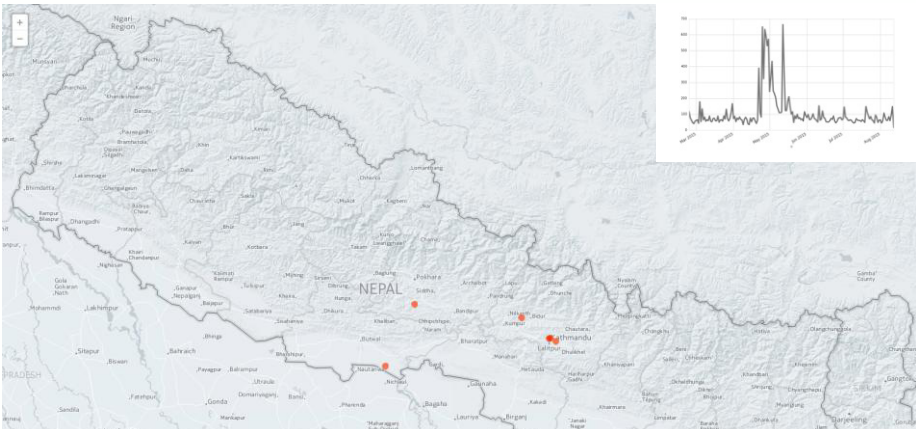
# Nepal Earthquake



WASH peaks during the first week



Shelter peaks over two weeks



Health peaks over two weeks



Rain and landslides peak a month after earthquake



# HUMAN BEHAVIOURS IN FLOODS USING MOBILE PHONE DATA



World Food  
Programme

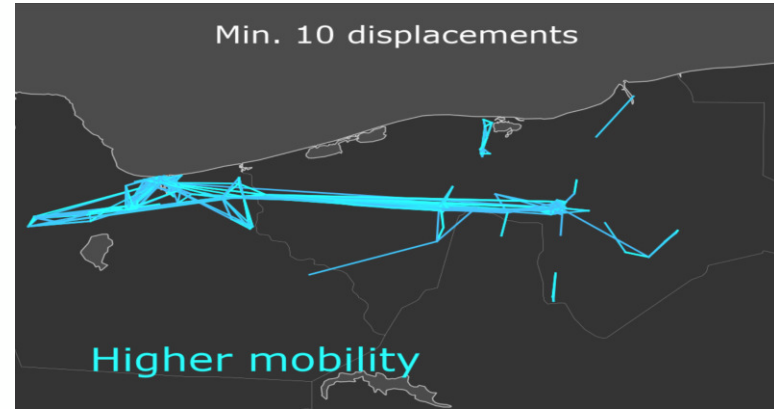


## POPULATION DISPLACEMENT

TYPICAL NIGHT IN TABASCO



NIGHT OF FLOODS:

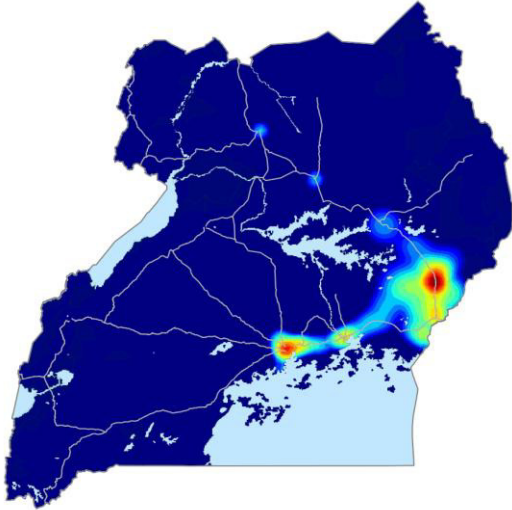




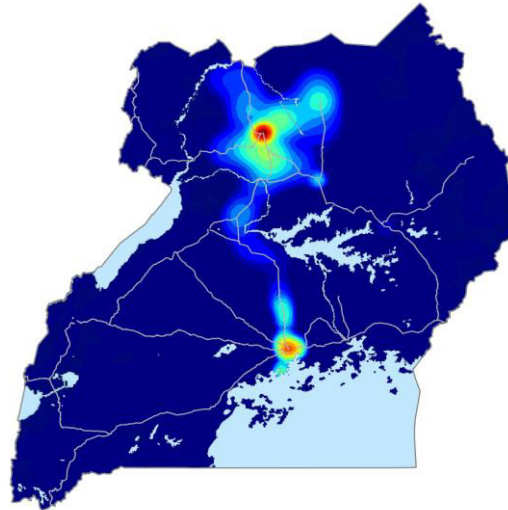
# PREDICTING THE SPREAD OF DISEASE USING MOBILE PHONE DATA



Movement out from Mbale Tue Jan 01

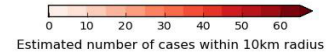
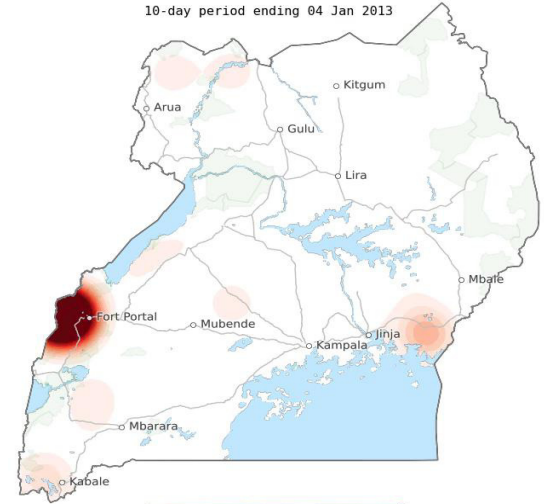


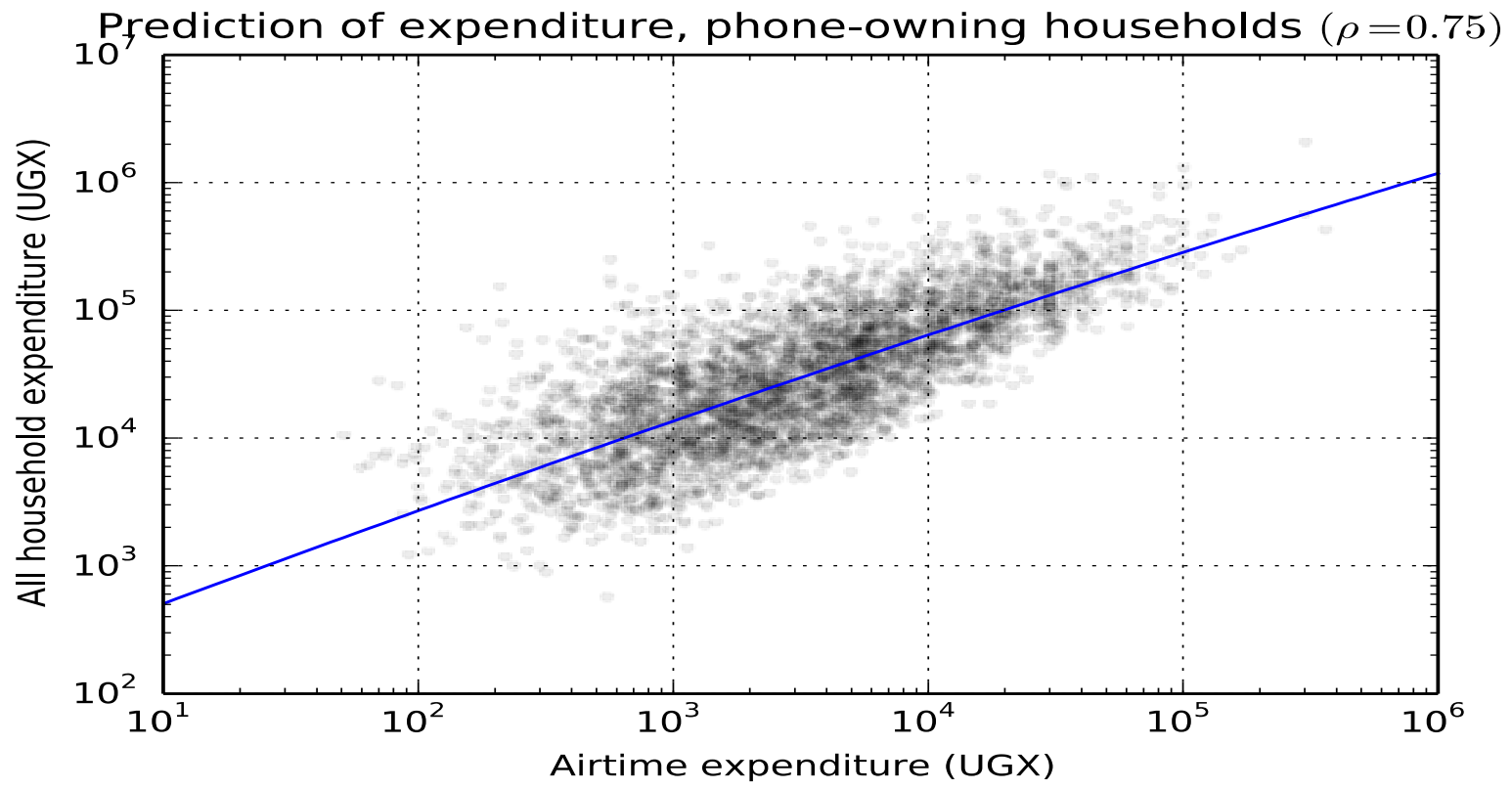
Movement out from Gulu Tue Jan 01



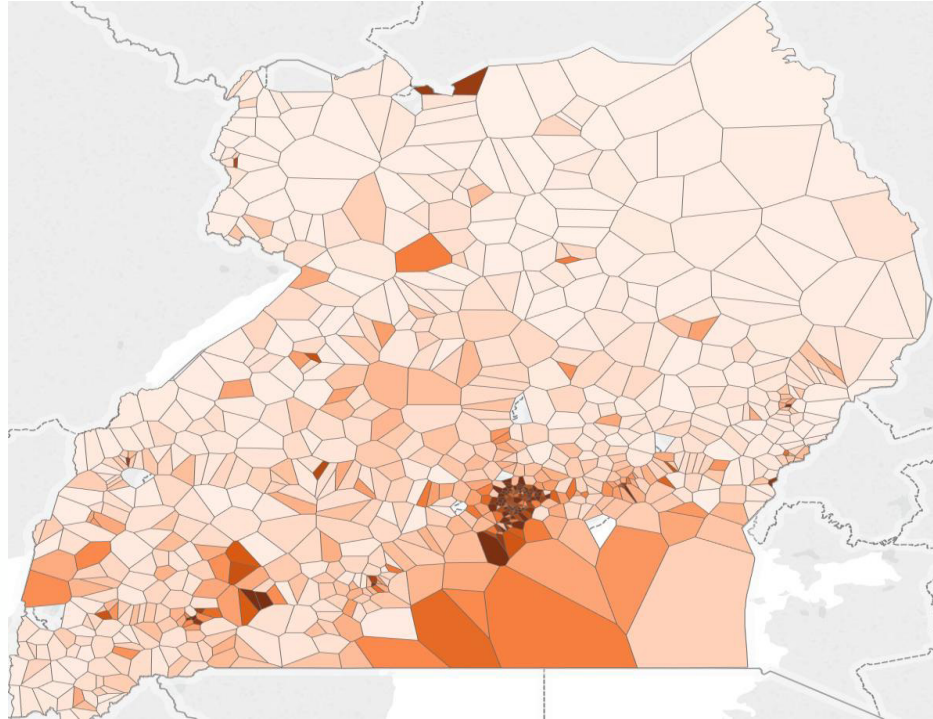
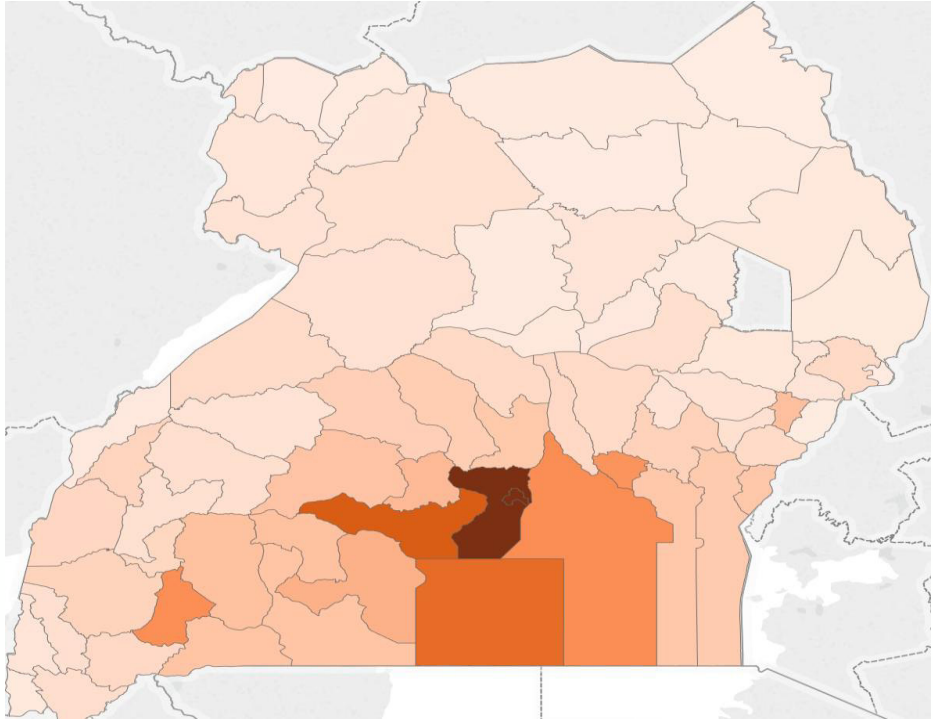
Measles infection hotspots

10-day period ending 04 Jan 2013





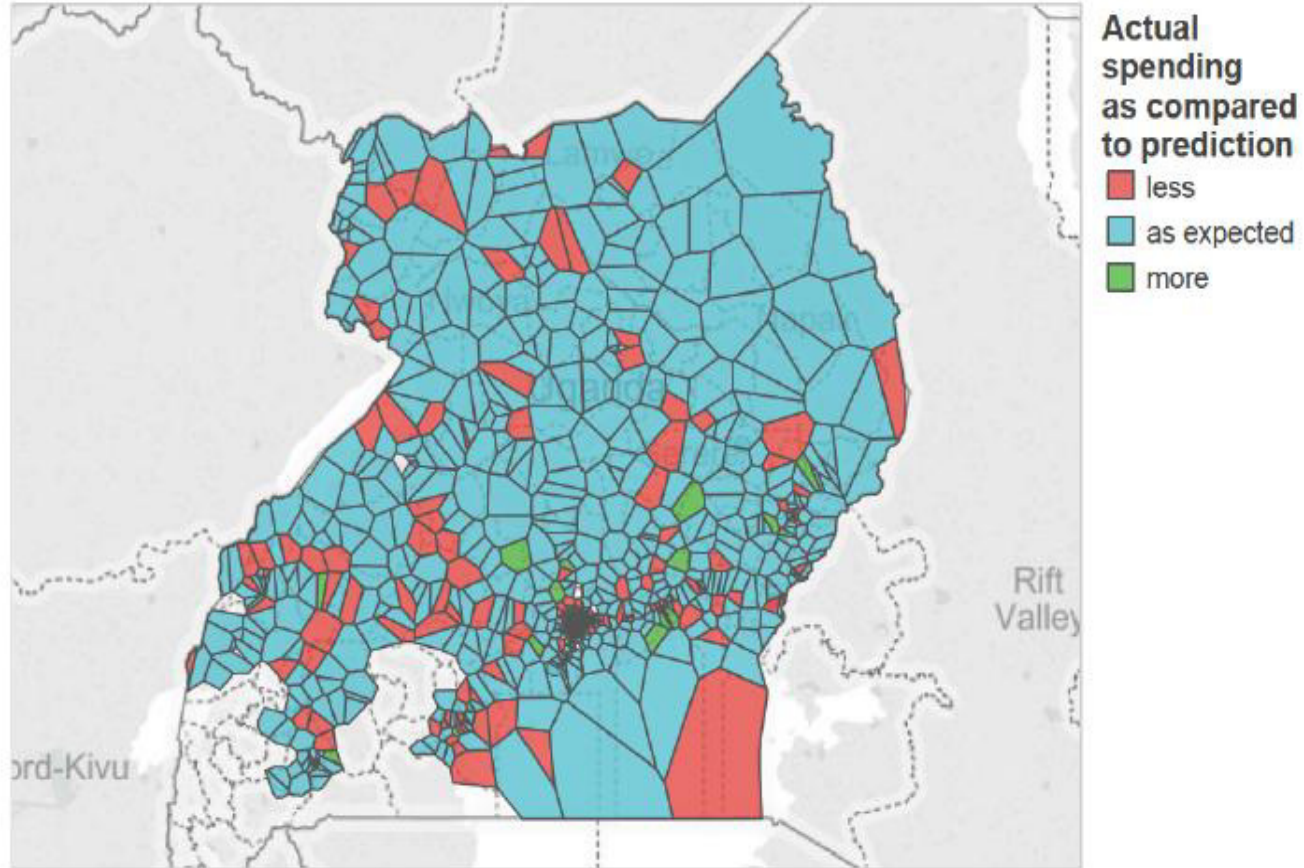
1 NO POVERTY



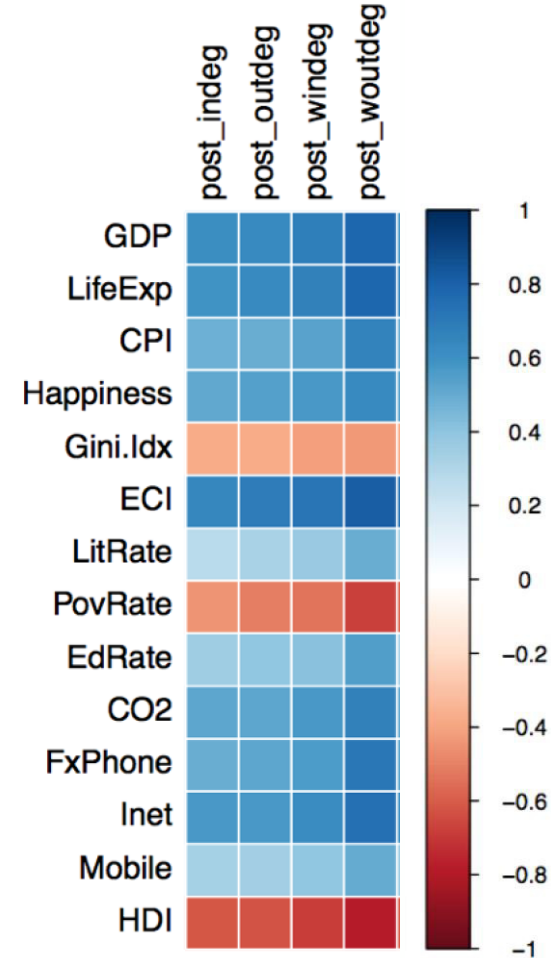
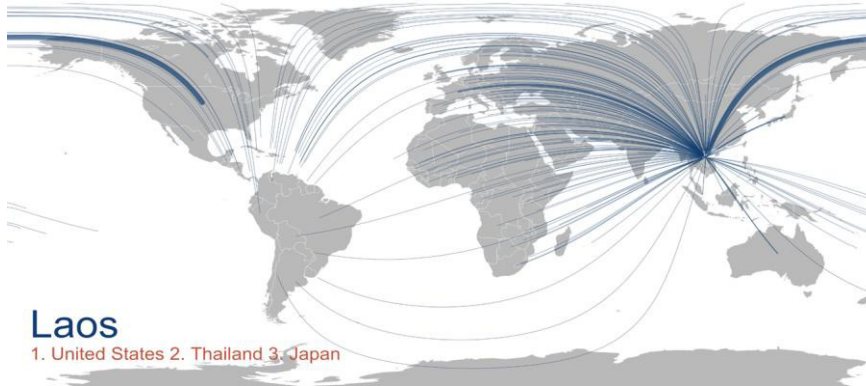




## 2a| Expenditure difference to prediction (on the selected day)

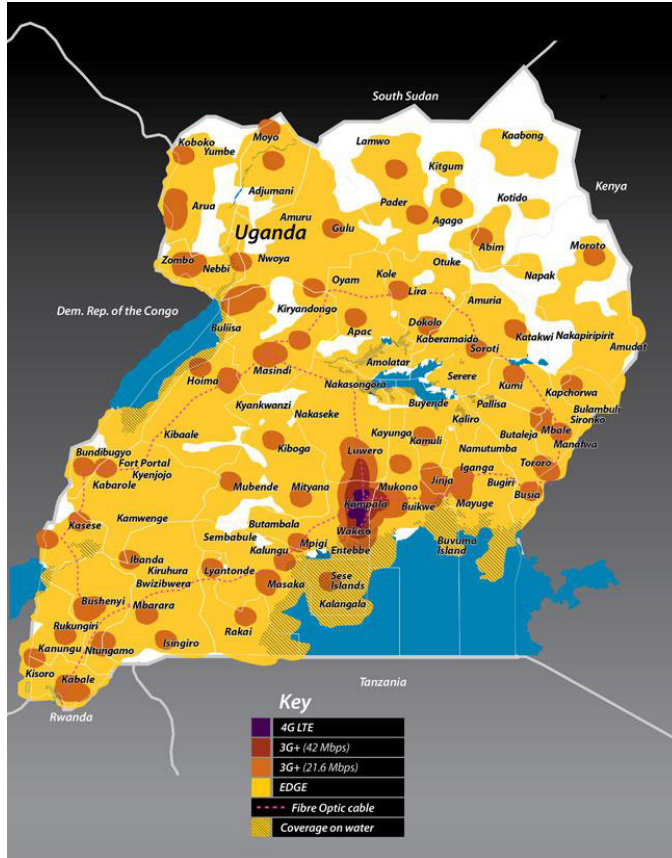


# ECONOMIC INDICATORS HIDDEN IN BIG POSTAL DATA



# Real-Time Rural Talk Radio Analytics

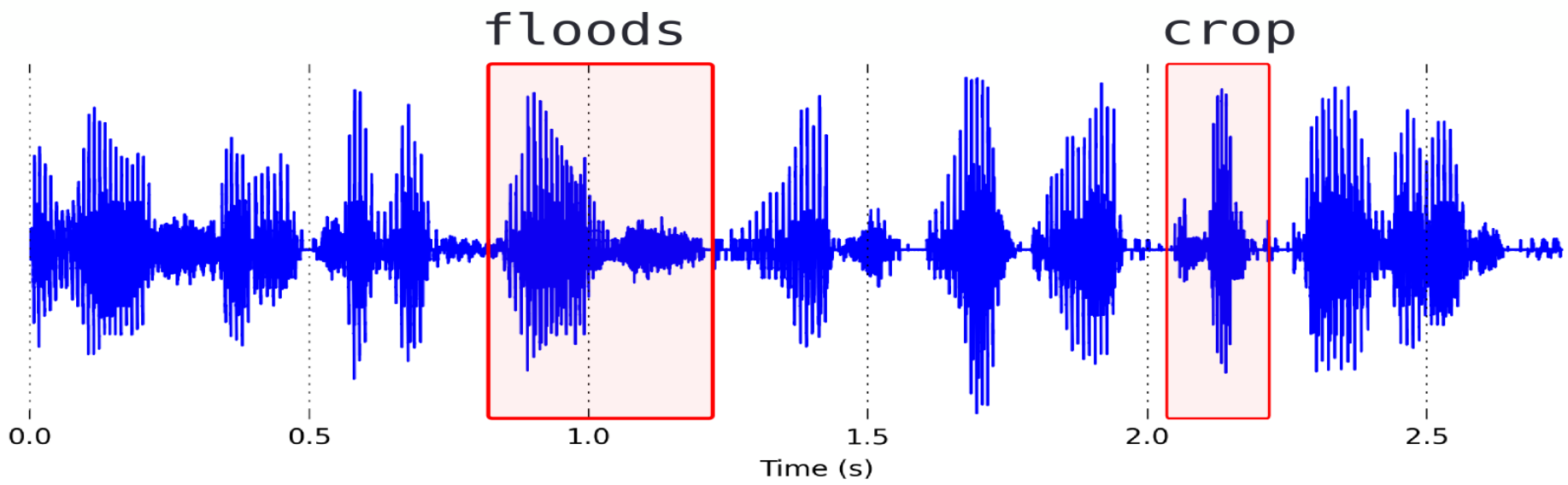
All 200 FM transmitters are in areas with mobile phone/EDGE reception, and most have 3G+ coverage.



Recording Ugandan talk radio on 50 stations 24x7 in English, Luganda and Acholi.



"hailstorm triggered floods which washed away crop gardens"





# Kampala, Uganda

Wednesday 10:00 AM

Partly Cloudy



23 °F | °C

Precipitation: 10%

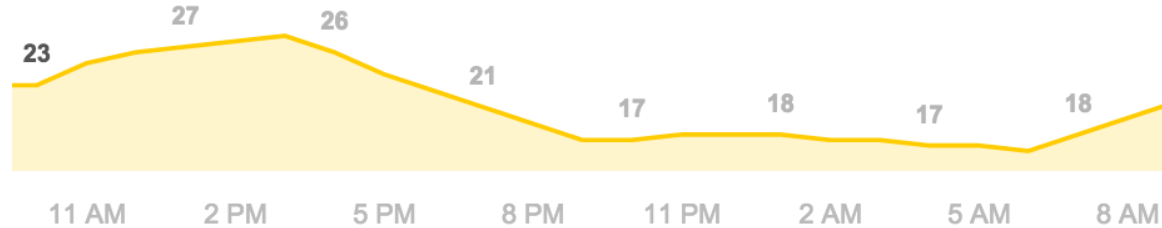
Humidity: 78%









Wind: 10 km/h

Temperature

Precipitation

Wind



Day	Icon	High/Low (°C)
Wed		28° 16°
Thu		27° 17°
Fri		24° 17°
Sat		25° 15°
Sun		27° 16°
Mon		27° 16°
Tue		26° 16°
Wed		26° 18°

THANK YOU!

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