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Sent: Sunday, November 09, 2014 at 12:53:45 AM CET
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Cc:
Bcc:
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Priority: Low
Subject: Using Big Data To Fight Pandemics | TechCrunch

If we haven't done it we should introduce Mobile Accord and Metabiota. This is the second article I have seen on this subject.

Metabiota may be able to figure out how to use MA's data to help fight pandemics and with the money we are raising for Metabiota maybe they are interested in making an investment in MA to get the technology to do so?

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Using Big Data To Fight Pandemics

Editor's note: Nuria Oliver is a scientific director at [Telefonica](#) looking at how the use of

big data can help to fight pandemics such as Ebola and bird flu.

Last year, [I gave a talk at WIRED 2013](#) on how anonymous and aggregated mobile phone data can be used to understand and combat the spread of infectious diseases. I described a study that we carried out in my research team a few years ago, where we analyzed aggregated and anonymized mobile data from Mexico during the H1N1 flu outbreak in the spring of 2009.

Thanks to the massive adoption of mobile phones and the power of anonymized and aggregated data, we were able to quantify the impact that the measures taken by the Mexican government had on the mobility of the population and hence on the spread of the disease. We, and similarly researchers at the Karolinska Institute and Harvard University among others, have demonstrated how the analysis of large-scale mobile data can be used to deliver significant benefits to society.

Little did I know that today we would be fighting the worst Ebola outbreak in our history, with already almost 5,000 deaths and over 13,000 infections. Unfortunately, a few months after the outbreak of the pandemic we are only now starting to put into place coordinated efforts towards the analysis of mobile phone network data and what this tells about the spread of Ebola.

People's efforts have understandably been focused elsewhere. This week at the [ITU Plenipotentiary Conference](#) in Busan, the International Telecommunication Union (ITU), the GSMA and the Internet Society (ISOC) announced that they are joining forces in the fight against Ebola. This unity is an essential step forward, but along with the GSMA, United Nations Global Pulse, and a number of other data scientists, I really want to make sure we, and most importantly the African mobile operators, address this opportunity and truly harness the potential of the data available.

Of course mobile data analytics cannot directly assist the heroic work of doctors and nurses who are on the ground, but it could prove extremely helpful when it comes to planning resource allocation or understanding the effectiveness of different mobility containment measures.

Mobility is one of the key factors that contributes to the spread of a human-transmitted infectious disease, such as Ebola. Therefore, understanding and quantifying human mobility in the areas affected by the Ebola virus could make a crucial difference to contain it. And population mobility is precisely one of the characteristics that can be analyzed and predicted using large-scale anonymized mobile data.

In addition, levels of activity of the cell towers over a specific time period could be seen as a

proxy of the amount of people in the geographical area served by that tower. Modeling the changes in the levels of activity in the towers of areas affected by Ebola would provide insights into population changes due to the outbreak.

While this data is far from perfect, it provides valuable information that would otherwise be prohibitively expensive and time consuming to collect.

Understandably, there might be concerns, particularly in West Africa, about the impact on privacy. The good news is that extensive research conducted by a range of academic teams demonstrates that it is possible to both analyze human mobility patterns and preserve privacy. All data is typically anonymized using state-of-the-art encryption algorithms. In addition, data is usually analyzed in a highly secure and protected environment (e.g. the mobile operator premises) by authorized personnel. No analysis is undertaken that would ever identify individuals. In addition, only the resulting aggregated, non-sensitive analyses (e.g. population mobility estimates, aggregate statistics...) would be made available to relevant aid agencies or government agencies.

Technical difficulties should not be a barrier either, as there is a body of work illustrating how to carry out this type of analysis. Moreover, there is a group of highly skilled data scientists — including ourselves — and strong support from organisations, such as the ITU, ISOC, GSMA and United Nations Global Pulse — who are ready and willing to assist African operators in the process, particularly to ensure that all data handling is carried out in an ethical and anonymous manner, always respecting local data privacy laws.

The potential to have positive impact and help save lives is immense. I truly hope that we can quickly find a way to realize this the full potential of big data for social good. It's an opportunity that we cannot afford to miss.

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