Human mobility and displacement tracking

The importance of collective efforts to efficiently and ethically collect, analyse and disseminate information on the dynamics of human mobility in crises

Mobility is traditionally understood as the ability to move freely and easily from one place, social class, or job to another. However, mobility can also have an involuntary character, as is often the case in the context of humanitarian crises, when people are forced to seek refuge outside their areas of habitual living. Understanding the patterns of human mobility in crisis – when, why, how and where to people move, and which factors influence their decision-making – is hence a critical component for better preparing for and responding to the needs of affected populations.

The provision of humanitarian assistance is very dependent on trends and patterns of human mobility. Humanitarian actors require information on the location and composition of the affected population in order to deliver services and respond to needs in a timely manner. A number of initiatives have emerged in recent years to undertake assessments of numbers, locations, needs and vulnerabilities of affected populations in the context of humanitarian crises. Beyond UNHCR’s and OCHA’s information management work on refugee and IDP situations respectively, these include the REACH Initiative, the Joint IDP Profiling Service (JIPS), Flowminder, the Internal Displacement Monitoring Center (IDMC), the Assessment Capacities Project (ACAPS), as well as IOM’s Displacement Tracking Matrix (DTM).

When an emergency occurs, the humanitarian community looks to assessments, including the OCHA-led Multi Cluster/Sector Initial Rapid Assessment (MIRA) and follow-up / in-depth assessments undertaken by various actors, as a compass for prioritizing needs, targeting programmes, and evaluating progress over time. A coordinated approach to the assessment of an emergency and to the prioritization of the needs of affected people lays the foundation for a coherent and efficient humanitarian response. Hence OCHA and the above mentioned actors have focused primarily on providing rapid, accurate and actionable data to humanitarian actors and other first responders on the ground. However, an assessment taken on its own offers only a static picture of displacement and needs, a snapshot in time that can rarely do full justice to the complexity and fluidity of the situation. Hence it is critical to work towards gaining a more refined picture of forced mobility and its dynamics.

Thanks to the technological progress of the past decades, tools now exist or can be conceived to capture, process, analyse and share a more fluid picture of what is oftentimes a highly complex situation including a myriad of movements and mobility at different levels and spheres of influence. Better adapting current methods of assessment to make information compatible, operational and actionable, whilst capturing the full complexity of the situation and creating dynamic representations needs to be a key concern if humanitarian responses are to become better targeted and more accountable. The value of the information collected in the past, present and future can go well beyond its immediate applicability if harnessed appropriately. This paper outlines key ideas, thoughts and recommendations for innovative and collaborative uses of human mobility information to improve humanitarian responses, increase accountability and strengthen synergies among involved actors.
World Humanitarian Summit: Human Mobility and Displacement Tracking Paper

### Table 1: Overview of actors

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<tr>
<th><strong>REACH</strong></th>
<th>is a joint initiative of ACTED, IMPACT Initiatives, and UNOSAT. REACH was created in 2010 to facilitate the development of information tools and products that enhance the capacity of aid actors to make evidence-based decisions in emergency, recovery and development contexts. All REACH activities are conducted in support of and within the framework of inter-agency aid coordination mechanisms.</th>
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<td><strong>JIPS</strong></td>
<td>was set up in 2009 as an inter-agency service based in Geneva, to provide technical support to government, humanitarian and development actors seeking to improve their information about internally displaced populations. JIPS focuses on IDPs in protracted situations, but its methodologies can also be applied in urban settings characterized by mixed populations.</td>
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<td><strong>Flowminder</strong></td>
<td>uses anonymized mobile phone network data, household surveys, and remote sensing data to improve planning and operational decision making in a range of areas including disaster response and climate impacts, disease outbreak prevention, and poverty reduction.</td>
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<td><strong>IDMC</strong></td>
<td>monitors and analyses internal displacement caused by conflict, generalised violence, human rights violations and natural hazard-induced disasters. The Global Overview and Global Estimates report are published by IDMC annually and provide data on IDPs in conflict and natural disaster settings, respectively.</td>
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<tr>
<td><strong>ACAPS</strong></td>
<td>is dedicated to improving the assessment of humanitarian needs in complex emergencies and crises. It is a non-profit initiative of a consortium of three NGOs (ACF, NRC and Save the Children) created in December 2009, seeking to support and strengthen humanitarian capacities to carry out better coordinated assessments before, during and after crises.</td>
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<td><strong>DTM</strong></td>
<td>is a set of tools to regularly capture, process and disseminate multi-layered information on the changing locations, vulnerabilities and needs of displaced populations throughout a crisis. The DTM provides baseline information for all humanitarian sectors and key indicators and gaps on the situation of IDPs on a regular basis. It tracks and monitors the locations, movements, numbers and cross sectorial needs of displaced persons in both conflict and natural disaster settings.</td>
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### 1: Dynamic tracking and exploration of linkages

Human mobility constitutes an emergent research field in network sciences dedicated to extracting patterns that govern human movements. Cell phone and GPS data have enabled research into patterns of human mobility to explore the interplay between regular and predictable, as well as random and unforeseeable human dynamics. Such research finds applications in varied areas, including investigating the spread of infectious diseases, transportation engineering and city planning. In the context of humanitarian crises, gaining a comprehensive overview of highly dynamic and fluid human mobility patterns is key to adequately assess and address needs of affected populations.

Different types of movement often occur simultaneously during any one particular point in a crisis. In natural disaster settings, displacement may more frequently follow a cyclical path of ‘initial displacement’ caused by a certain trigger, potentially followed by ‘secondary displacement’ or ‘relocation’, e.g. if a displacement site is closed, and ending with ‘return’ to the area of origin, ‘local integration’ in the area of displacement, or ‘resettlement’ in a new area within the country. Meanwhile in conflict settings, the displacement and human mobility landscape is often more complex and messy.
New displacement is triggered at multiple points in time, with people previously unaffected becoming displaced for the first time, and other groups suffering from secondary/tertiary displacement. In parallel to such new displacements, other groups of affected people may be returning to their areas of origin.

Understanding such mobility patterns is essential because different phases of displacement and mobility go along with different needs. Furthermore, multiple and protracted displacement often results in increasing vulnerabilities and can drive affected people to choose different, sometimes more dangerous, adaptation strategies. Links between internal and cross-border long-distance mobility patterns in the context of crisis have not been thoroughly investigated to date, particularly the correlations between IDP and refugee crises in certain countries and arrivals of migrants from countries that are regularly affected by conflict and natural disasters, via sea and land to places including Europe, Australia, and South East Asia.

2: Ethical data collection and accountable data use

Concepts of accountability need to be revisited. Currently, there is a trend to collect more and more data, without it always being entirely clear how the information collected will find an operational use. Pressure is sometimes exerted from research, operational, coordination and donor communities to provide ever more detailed and exact data, even where from an operational perspective, having the bigger picture and good enough estimates is preferred over spending considerably more time and resources to have very exact information that may still translate into the same signposts for operational action. If data is collected just for the sake of collecting data in the context of humanitarian crises, ethical concerns arise. Accountability to affected populations demands that humanitarian actors strive to collect data responsibly, with a clear purpose in mind, namely to improve and better target assistance.

Bringing together the historical data gathered by different parties could enable new uses, including in big data and predictive analytics. The use of predictive analytics and big data analysis promises new insights to better prepare for, and subsequently respond to, human mobility in crisis. To date, management of large-scale displacement induced by a disaster or natural hazard has been, for the most part, more reactive than proactive. Following the onset of a disaster, data is collected to inform and prompt operational responses. Large amounts of data are typically collected over a period of many years, particularly in countries prone to frequent natural disaster, such as the Philippines. However, this wealth of data remains untouched following the close of an emergency.

Whilst these historical datasets may be messy and incomplete, there is room to leverage it to predict trends, support an early identification of priorities for assistance and better target responses required in the future. For example, using complex analytical models, humanitarian actors can identify critical gaps and needs, as well as correlations between different issue areas and more efficiently communicate with responders that can address these problems. The core of predictive analytics relies on capturing relationships between explanatory variables and the predicted variables from past occurrences, and exploiting them to better understand increases in risk factors. The overall purpose of building a model to
predict increase in risk factors is to be able to improve the preparedness of hazard-prone countries to natural disasters and to strengthen operational responses in terms of resource planning and implementing mitigation measures.

In the discussions of accountability to affected populations, a key concern should be the development of mechanisms and standard operating procedures between actors to more quickly address needs identified in human mobility tracking exercises, and actually use all the data the humanitarian community is able to produce. More clear paths should be defined in order to promote quick adjustments to programming, based on information available, and enable more complex feedback mechanisms. Furthermore, the humanitarian community is still learning how to handle the large quantity of information now frequently gathered, so that actionable information can be immediately referred to those in a position to respond. Programmatic adjustments based on latest information on displacement, risk indicators and incidents are necessary to ensure an efficient and accountable response, and information should be captured to systematically assess if and when data collection translates into such amendments.

There is also a need to explore the ethical use of data when applied to big data. Producing algorithms may not break any of the traditional data privacy regulations, but may result in harm for people. Different actors, such as OCHA, WEF, Leiden University, Harvard Humanitarian Initiative (HHI), and PopTech are working on projects related to risk vectors and models of harm related to data collection in humanitarian contexts. The initiative from HHI and PopTech is intended to produce case studies that may in turn be used to develop a best practice document on ethical data collection and use, guiding the development of principles governing the safe, ethical and effective use of information technologies during humanitarian emergencies.

How information is collected and how the use of technology can pose opportunities as well as threats is an area that remains to be further explored. Data protection guidelines will need to be adapted in line with new technologies and methods. Ethical considerations will need to stay at the forefront of human mobility tracking discussions and principles to be followed will need to be agreed.

3: Fostering synergies among different actors

Clusters and agencies utilize specialized information management mechanisms, and too often there is a lack of connectivity of the information collected from multiple sources. It remains to be better explained how fragmented analysis can contribute to a bigger picture at the same time as promoting more agile adjustments to programming. It is key to explore how actors involved in data collection in humanitarian crises can contribute together to a better understanding of mobility, needs and operational adjustments.

There is vast experience within the humanitarian sector related to data collection exercises, which creates enormous potential for bringing together various actors involved and investigate how a better picture of human mobility in crisis can be jointly created. National authorities and local civil society
actors ought to be involved alongside international organizations. Risks, threats and ethical considerations should be at the core of these actors’ debates and encourage them to foster greater interconnectivity of information.

Drawing on and combining existing expertise, accountable algorithms, risk modelling and a mobility index could be created. To build a better understanding of existing patterns and flows, of risk, and of layers of forced and regular mobility allows to analyse how these different spheres interact and influence each other. Such data analysis should be designed to provide operational value and at the same time inform policy recommendations, thus making a valuable contribution to the improvement of processes and standards. The “do’s” and “don’ts” in humanitarian assistance and human mobility tracking could be captured through standards agreed between multiple actors, following processes, frameworks and tools common to generate agreement on Sphere standards, or a comparable platform.

Working in closer coordination will also enable “data gaps” to be identified and closed. The analysis made six months after Typhoon Haiyan, for example, indicated that data was available just for a small percentage of people displaced, concentrated in a certain area. Approaches for increased coverage need to be based on quick understanding of what is being covered by whom, and where the gaps are, so multiple actors can jointly produce a better picture of displacement.

Only through concerted efforts and joint analysis can humanitarian actors capture the full complexity of displacement situations, and ensure ethical and accountable collection, use and dissemination of data. A debate on the areas highlighted in the recommendations below promises to foster greater efficiency, effectiveness and accountability to affected populations by harnessing the full potential of data.

RECOMMENDATIONS

1. Look beyond static needs assessments to explore human mobility dynamics within and across borders.
2. Seek to better understand vulnerabilities and adaptation strategies, including through big data analysis.
3. Foster ethical data collection procedures and develop mechanisms to ensure accountable data use.
4. Jointly produce a picture of mobility and foster synergies among actors.