How Can Data Science Revolutionize Humanitarian Crises?

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As co-editors of the special theme on migration for *Harvard Data Science Review* (*HDSR*), we identified an opportunity to incorporate both an academic and industry exploration of multiple aspects of forced displacement and world migration. Diverse perspectives evaluate migration in its current context, as well as lessons from previous crises, and how both can impact how we address concerns in the future. We recall the highlights of the *HDSR* World Migration and Displacement Symposium in the spring of 2021, and bring in multiple ideas and outcomes from this symposium from leaders and experts on all sides of the working fence: academic, non-governmental organization, and industry. We hope this issue will illuminate some of the enormous struggles, as well as the bright and enduring future, of forced displacement and migration.

In spring 2020, when COVID-19 hit the world like a firestorm, a vulnerable, yet highly resilient group of people were left in dire straits. The most vulnerable among us—migrants, displaced people, and refugees, people that most countries don't claim—did not know what their future would hold. Although many of us were uncertain of the future, the circumstances for those fleeing their homes in such uncertain times faced challenges that are difficult to perceive. In order to discuss the heroic efforts, the unfortunate missteps, and the light at the end of the tunnel, three organizations came together to host the [World Migration and Displacement Symposium on Data, Disinformation and Human Mobility](#), a virtual global event co-organized by United States of America for International Organization for Migration (USA for IOM), United States of America for United Nations High Commissioner for Refugees (USA for UNHCR), and *HDSR* in spring 2021. The goal was simple: to create a partnership between academia, humanitarian actors, and key voices in the data science community to strengthen our mandate to combat the negative rhetoric around human mobility, especially during the COVID-19 pandemic. Additionally, the symposium aimed to build awareness and daylight the importance of data science to support the essential coordination across different actors required to address one of the largest humanitarian crises in the world today. As an extension of the symposium, *HDSR* is publishing this special theme edition to enable further discussion of the work that came out of the symposium.

Let's take a look.

Although the refugee crisis received the global spotlight in 2015 with the image of Alan Kurdi, a 3-year-old who drowned on the shores of the Mediterranean, issues surrounding displacement and migration are not new. As James Purcell reminisces about standing on C street in Washington, DC, having been tasked with salvaging the post-Vietnam refugee crisis, we realize very clearly that migration is not only a 'now' issue but has been a forever one. Without 'orderly migration' and a renewed commitment to the Global Humanitarian Cooperation model, which you will learn about in his article, as well as good faith, equitable, and multilateral action by governments, we are doomed to repeat history over and over. As discussants to [Purcell's piece](#), we hear from three very diverse voices in this advocacy sphere: the data science industry, the data science advocacy industry, and a close ally organization. It makes for a clear present-tense look at a past-tense overview.

After reflecting on what the past can teach practitioners, we highlight a [discussion](#) between IOM Director General António Vitorino and *HDSR* Editor-in-Chief Professor Xiao-Li Meng, who approach the issue of how improved data can be universally applied to the growing list of life-threatening human crises, originally posed by Purcell. Data science has permeated business, but the same cannot be said about global humanitarian issues. What more can we as data scientists do? What do those on the ground facing these humanitarian crises, day in and day out, need from us? Data science is a tool in the toolbox, what more can it do?

Well, we do have one incredible use case for it, applied to the growing refugee response. With 82.4 million forcibly displaced people, we need new approaches to the global refugee crisis. The Hive, the innovation lab at USA for UNHCR, uses data, machine learning, and other emerging technologies to improve lives for refugees in coordination and collaboration with UNHCR. The Hive has worked to apply industry techniques to the nonprofit sector since 2015. [Smith et al.](#) use The Hive as a case study to outline five challenges in successfully leveraging data and emerging technologies in the humanitarian space that tend to be overlooked. Using the Hive's approach to tackling challenges in the refugee space, these insights aim to help guide data innovation efforts at other organizations in the humanitarian space.

Although technology has the potential to improve the lives of people affected by migration, it can also lead to unintended consequences, especially when investigating social media. [Donato et al.](#) empirically examine how specific events and statements by political leaders affect the trends in Twitter conversations about COVID-19 and migration misinformation on the Venezuelan refugee crisis. New findings are offered in the dynamics of false information in non-English Twitter, or more specifically in Spanish-language tweets, where few monitoring systems are in place.

This misinformation, particularly around global migration, can feel pervasive, but [McAuliffe et al.](#) show how we can fight against inaccurate information using new tools and techniques. Specifically, the application of digitalization of migration data analyses through the [World Migration Report](#) has the potential to reach new audiences and expand the impact of long-standing research and evidence on the topic. The dedication of those using such data science techniques for good in combating this misinformation is clear and present.

Lastly, after this deep dive into past displacement and migration issues, modern migration problems, and the use cases of new data science methods and technologies, we want to remind our readers why we are doing all of this in the first place—to take a step back from the details and look at the bigger picture. Tolu Olubunmi, born in Nigeria and raised in America, [brings us on her journey](#) of dogged determination in the face of untenable circumstances culminating in a place at the White House. She is a resonating voice for migrants, displaced people, and refugees all over the world. She reminds us that behind every number is a person, and story—something that can be easily forgotten in the midst of deep data work.

We hope you enjoy reading the nooks and crannies of this special theme as much as we do, and we very much hope you will join us for our second symposium as we continue to ask what more can we do as data scientists

in the ever-growing humanitarian crises that are here and now, and will certainly be here in the future.

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