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# Indonesia Disaster Knowledge Update - October 2022



## Research Publications about Disaster, Human Mobility, and Human Rights in Indonesia

In October 2022 IDKU edition, CARI! review the landscape of scientific publications on Disaster, Human Mobility, and Human Rights in Indonesia. In this review, we analyze various studies based on the Framework for Integrating Human Rights and Equality (FIRE) developed by the Raoul Wallenberg Institute of Human Rights and Humanitarian Law (RWI), and four types of human mobility.

Framework for Integrating Human Rights and Equality (FIRE)

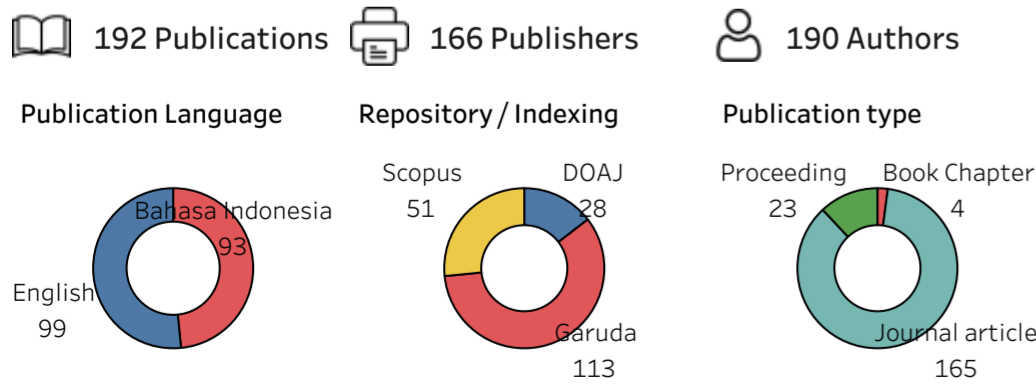


The Framework for Integrating Human Rights and Equality (FIRE) has been piloted in initiatives related to risk assessment and preparedness for response, and its utility has been proven as a tool for research, legal and policy analysis, training, and education. The framework consists of six dimensions, reflected in the model in the figure below, namely (1) **Fundamental rights and equality**, focus on realizing fundamental rights reflected in international standards; (2) **Non-discrimination**, focuses on addressing existing patterns of discrimination and causes of inequality based on identities and socioeconomic characteristics; (3) **Participation and access to information**, focus on promoting meaningful, equal, gender-sensitive and effective participation in policy/decision-making that shape the entitlements; (4) **Governance systems and structures**, focus on developing and/or enhancing three types of systems: law, institutions, and diverse platforms for civil society; (5) **Agency and empowerment**, focus on enhancing the ability of rights-holders, (6) **Social norms and context**, focus on transforming social and gender norms that shape inequalities in rights, entitlements and voices that contribute to vulnerability.

In addition to FIRE, we also use the human mobility framework in analyzing scientific publication data. The forms of human mobility are: i) **Displacement** – the primarily forced movement of persons; ii) **Migration** – the primarily voluntary movement of persons, iii) **Relocation** – process of settling persons or communities to a new location, and iv) **Immobility** - the state of not being able to move.

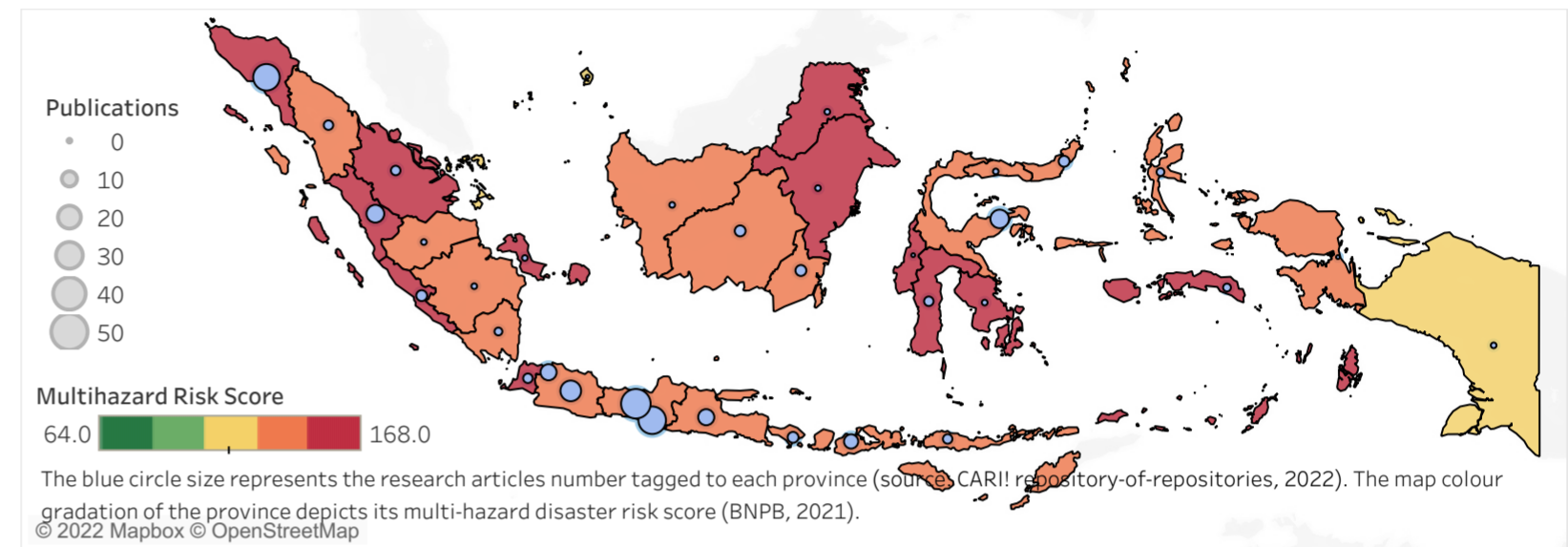
**Reference**  
 1. Scott (2021). "Building Resilience through Inclusive and Climate-Adaptive Disaster Risk Reduction". Raoul Wallenberg Institute. Video: [bit.ly/FIRE-RWI](https://bit.ly/FIRE-RWI).  
 2. UNHCR. "Key Concepts on Climate Change and Disaster Displacement".

### Research Articles Statistics



For analysis purposes, we examined research articles that related to disaster, human mobility, and human rights in Indonesia. The scientific articles we used were obtained from CARI! Knowledge Engine sourced from Scopus, DOAJ, and Portal Garuda repositories. Based on the multi-stage filtration process, we used 30 keywords of related terms about the issues. We selected 192 research articles to be processed in the subsequent analysis.

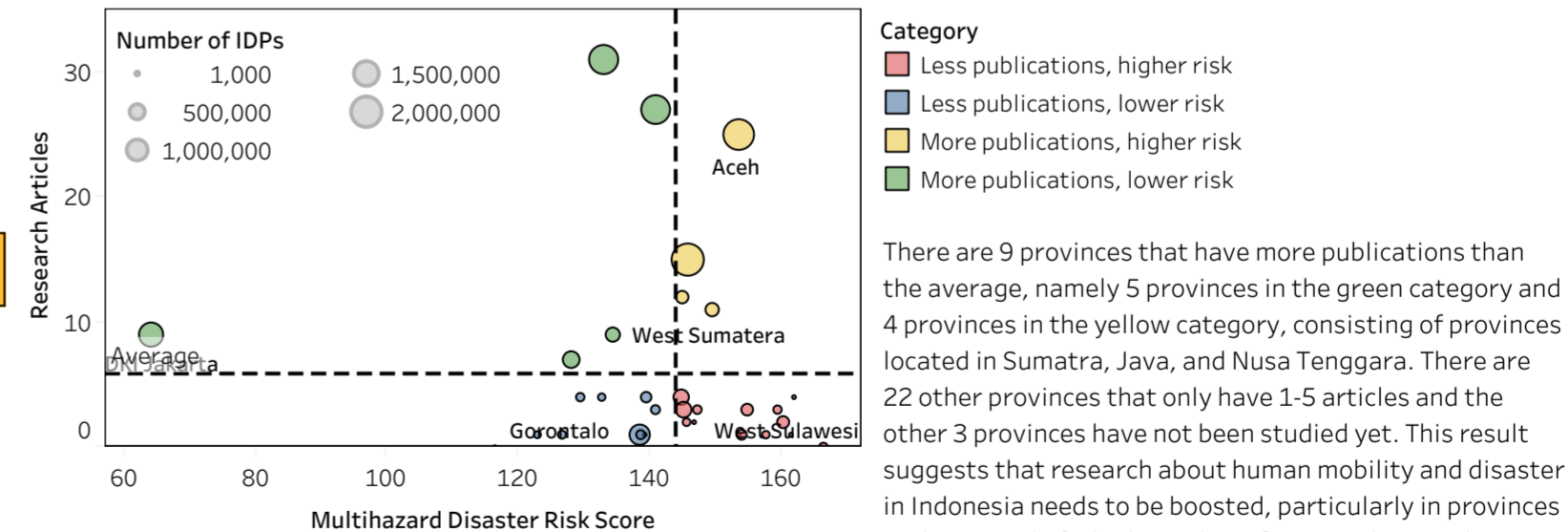
Research Articles Distribution Map



The blue circle size represents the research articles number tagged to each province (source: CARI! repository-of-repositories, 2022). The map colour gradation of the province depicts its multi-hazard disaster risk score (BNPB, 2021). © 2022 Mapbox © OpenStreetMap

As can be seen from the map, research on Disaster, Human Mobility, and Human Rights in Indonesia is still skewed towards several provinces in the country. The provinces with the highest number of studies were Central Java (31 articles), Special Region of Yogyakarta (27 articles), and Aceh (25 articles). Provinces in Sumatra and Java tend to have more publications, while other provinces, especially in the central and eastern regions, have a more limited number of publications. Based on our record, we found that some provinces have no research publications at all, such as West Papua, Kepulauan Riau, and West Sulawesi Provinces. The word cloud shows the cities/regencies that have been researched, its size is proportional to the number of publications. Bandar Semarang City and Palu City topped the rankings with 11 and 10 publications respectively. Meanwhile, other cities/regencies have a similar number of publications, which ranges from 1-6 publications.

Research Articles VS Multihazard Disaster Risk Score by Province



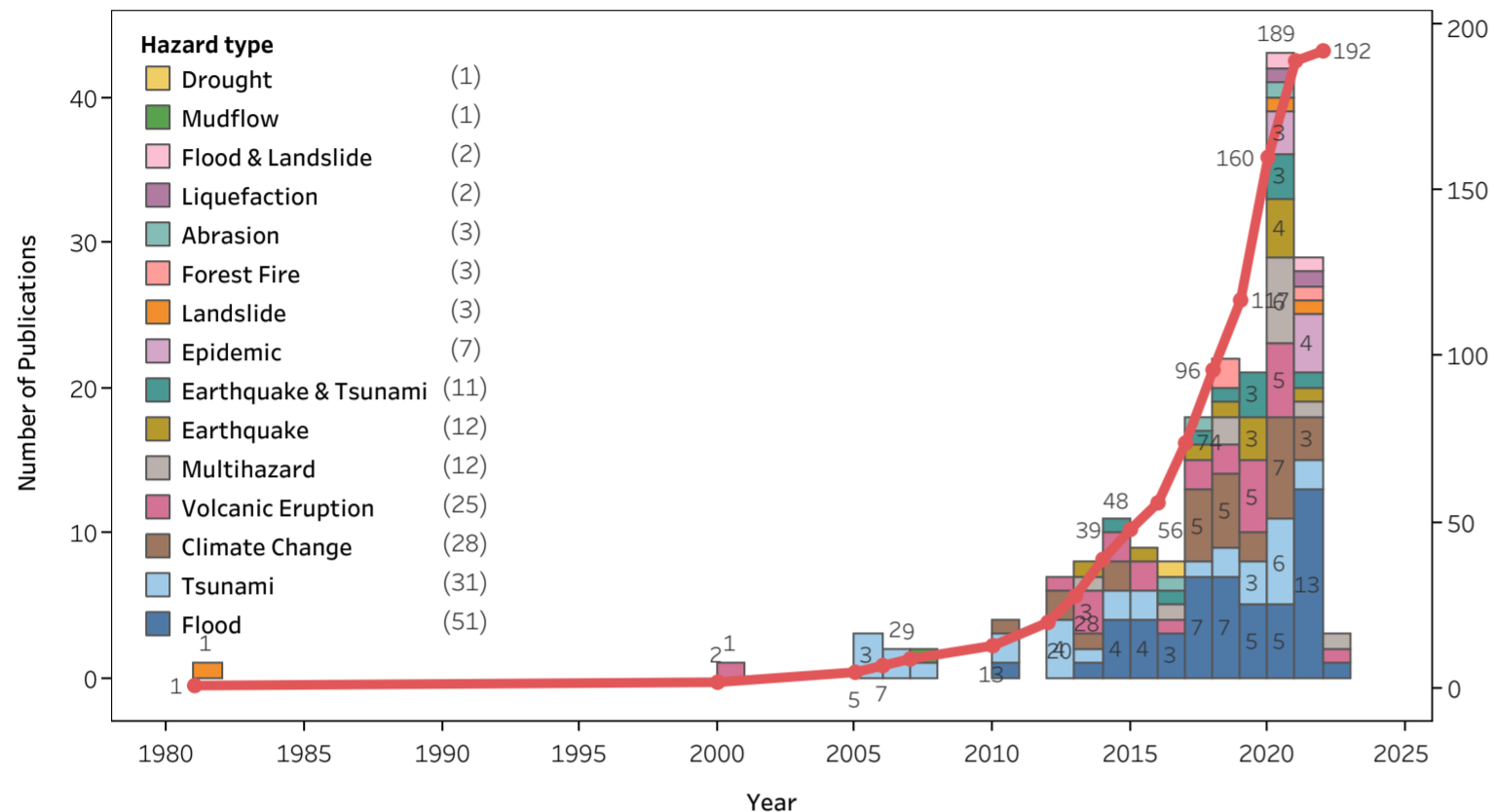
The quadrant plot shows the province's category (represented by different colours) based on the number of research articles and multi-hazard disaster risk score (source: BNPB, 2021). The circle's size depicts the number of IDPs in the province (source: BNPB, 2022).

There are 9 provinces that have more publications than the average, namely 5 provinces in the green category and 4 provinces in the yellow category, consisting of provinces located in Sumatra, Java, and Nusa Tenggara. There are 22 other provinces that only have 1-5 articles and the other 3 provinces have not been studied yet. This result suggests that research about human mobility and disaster in Indonesia needs to be boosted, particularly in provinces with a record of a high number of IDPs such as Aceh, West Sumatra, West Java, and Central Sulawesi. Moreover, the other provinces with a higher risk and fewer publications also need to be studied more.

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## Growth of Research Publication



Research on the issues in Indonesia has existed since early 2000, but after that, it declined and it is boosted in 2010 and onwards. The trend shows that the increasing number of research on the issues accelerated after the Tsunami Aceh (2004) and the Merapi Eruption (2010). The types of hazards that are often studied are floods, tsunamis, climate change, and volcanic eruptions. By 2022, research on the issues is declining and is only represented by 3 publications.

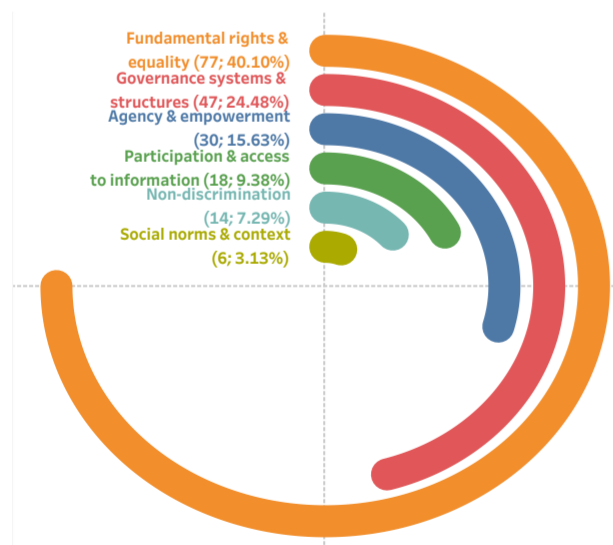
## Top Research Articles

- Nonlinear permanent migration response to climatic variations but minimal response to disasters**  
Pratikshya Bohra-Mishra, Michael Oppenheimer, and Solomon M. Hsiang | Proceedings of the National Academy of Sciences of the United States of America  
Published on July 8, 2014 | Cited by 104 articles
- Lessons learned from the 2010 evacuations at Merapi volcano**  
Mei, E.T.W., Lavigne, F., Picquout, A., de Bézilal, E., Brunstein, D., Grancher, D., Sartohadi, J., Cholik, N., Vidal, C. | Journal of Volcanology and Geothermal Research  
Published on July 1, 2013 | Cited by 67 articles
- Volcanoes in human history: The far-reaching effects of major eruptions**  
Jelle Zeilinga de Boer, Donald Theodore Sanders | Volcanoes in Human History: The Far-Reaching Effects of Major Eruptions  
Published on January 2, 2012 | Cited by 33 articles
- The Human Impact of Volcanoes: A Historical Review of Events 1900-2009 and Systematic Literature Review**  
Shannon Doocy, Amy Daniels, Shayna Dooling, and Yuri Gorokhovich | PLoS Currents  
Published on April 23, 2013 | Cited by 26 articles
- Rising floodwaters: Mapping impacts and perceptions of flooding in Indonesian Borneo**  
Jessie A Wells, Kerrie A Wilson, Nicola K Abram, Malcolm Nunn, David L A Gaveau, Rebecca K Runting, Nina Tarniati, Kerrie L Mengersen, and Erik Meijaard | Environmental Research Letters  
Published on June 20, 2016 | Cited by 19 articles

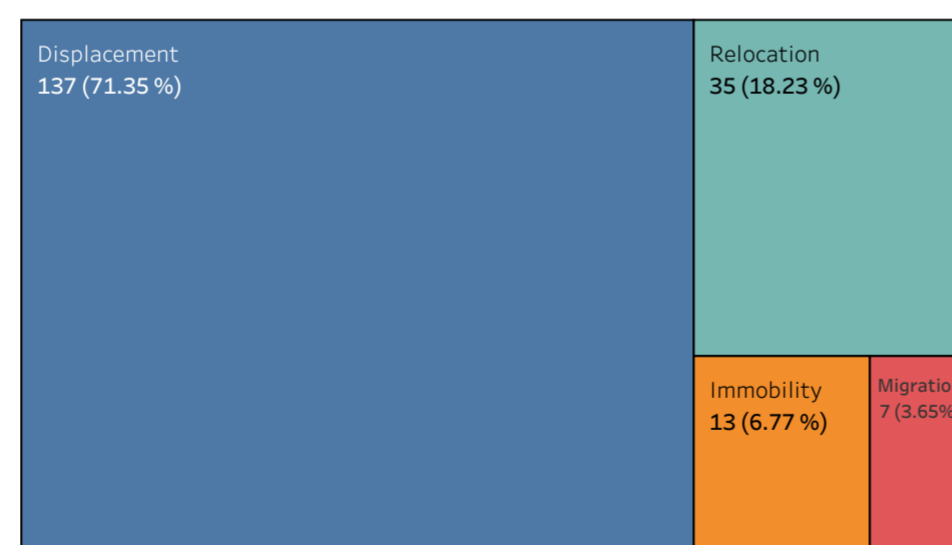
The list above is the top-five research articles on themes related to disaster, human mobility, and human rights in Indonesia, which ranked by the number of citations from 1980 to 2022. The record is sourced from the Scopus directory. The three top research articles are related to volcanic eruption hazards, while the two others are related to hydrometeorological hazards.

## How Researchers Study Human Rights and Human Mobility in Disaster

### FIRE

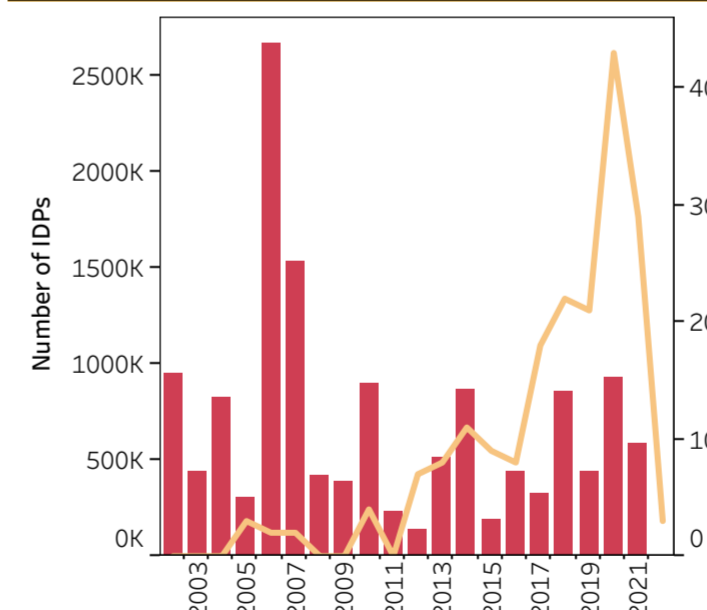


### Human Mobility Typology



Most of the research publications examined the human rights issues on fundamental rights and equality (134 publications), some 23 articles examined the human rights issues on governance systems and structures, and while the other articles on the aspect of participation, empowerment, non-discrimination, and social norm. Concerning the human mobility typology, most of the research publications are related to displacement type (137 publications), and relocation type as many as 35 publications. While the others related to immobility type (13 publications) and migration type (7 publications).

## Number of IDPs and Publications

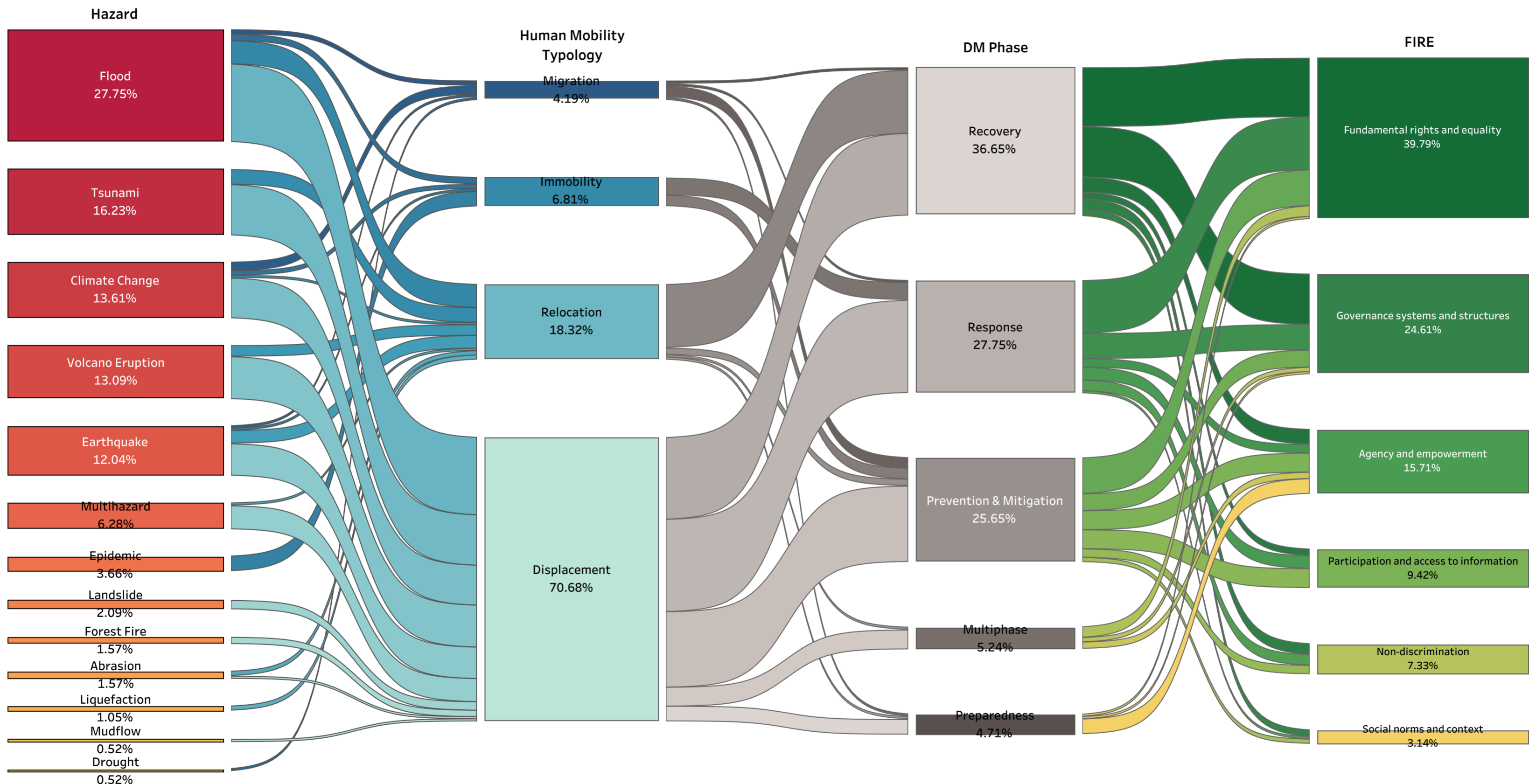


The red bars show the number of IDPs that has a fluctuating trend. However, the chart for the number of IDPs still shows a fairly large number and therefore this needs to be a concern. The orange line shows the trend of research articles related to the topic of disaster, human mobility, and human rights which is increasing every year, this shows a positive thing that researchers are starting to become aware of these issues. Based on the list of keywords used, "pengungsi" and "refugee (it means IDPs)" are the most frequent word found in literatures.

## Top Keywords of Disaster, Human Rights, and Human Mobility



Sankey Diagram of Publications: Hazard to Human Mobility Typology to DM Phase to FIRE



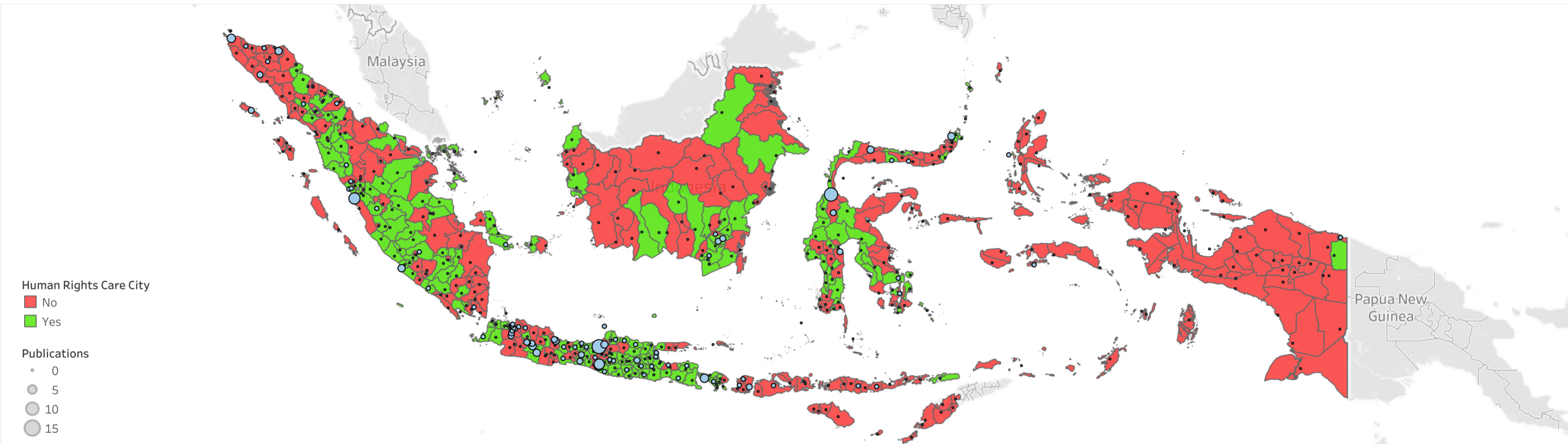
The Sankey diagram is visualized proportionally to the number of publications. The larger size of the box and the wider lines indicate a greater number of publications accounted for them. The Sankey diagram illustrates the distribution of scientific publications and their relations across type of hazards, human mobility typology, disaster management phase, and FIRE.

Floods and tsunamis are the two most frequently studied hazards, followed by climate change and volcanic eruption. In almost every type of hazard, the human mobility typology discussed is displacement and relocation. This implies that the topic of human mobility related to displacement and relocation is more researched than other types. Both of the topics are highly linked to the Recovery Phase and Response Phase, this proves that the issue of human mobility is still widely studied in the post-disaster phase although some publications begin to discuss the prevention and mitigation phase. Meanwhile, at the Conceptual level, some publications are immensely related to climate change. This shows that climate change issues have raised awareness of the conceptual research that relates to the topic of human mobility. Based on the distribution of the DM phase to FIRE, the frameworks that are most often studied are fundamental rights and equality and governance systems and structures, but they are still very minimal on non-discrimination and social norms and context. Research needs to be further enhanced not only in the context of fundamental rights and governance but also in non-discrimination and social norms.

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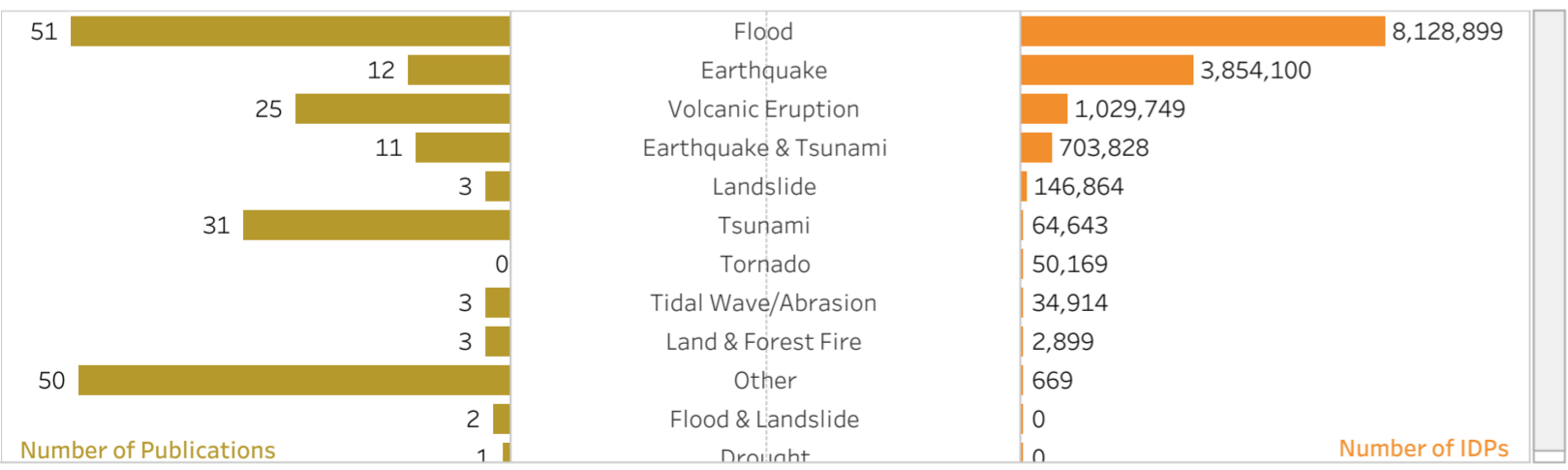
## Human Rights Care City in Indonesia



© 2022 Mapbox © OpenStreetMap The blue circle size represents the research articles number tagged to each regency/city (source: CARI! repository-of-repositories, 2022). The map colour gradation of the regency/city depicts the human rights care city (DJHAM, 2020).

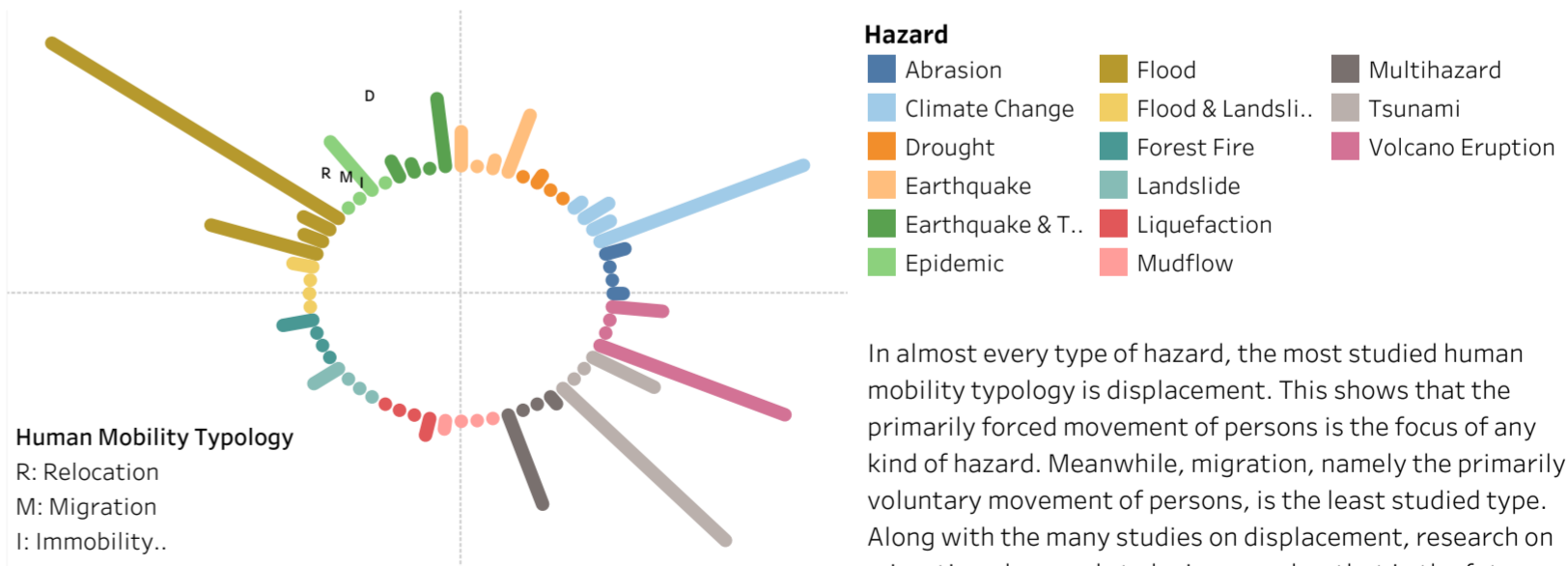
The Human Rights Care City Award was awarded by the Directorate General of Human Rights, Ministry of Law and Human Rights of the Republic of Indonesia. Seen from the map, regencies/cities concerned with human rights are mostly found on the islands of Java and Sumatra, but very few in Nusa Tenggara and Papua. In some areas, regencies/cities that already have publications are also human rights care regencies/cities. This should be serious note that the increase in the number of scientific publications in each regency/city is very likely to make the regency/city become a human rights care regency/city. The impact of scientific publications really needs to be followed up sustainably so that on the other hand it can also encourage the fulfillment of human rights, especially those related to disasters.

### Number of IDPs by Hazards



Based on data from BNPB, floods, earthquakes, and volcanic eruptions are the top 3 disasters with the highest number of IDPs in the last 20 years (2002-2022). The number of IDPs can also be used as a benchmark for the impact of a disaster, which in this case is included the affected victims. Under the high number of IDPs, flooding is the most studied disaster (51 publications). Meanwhile, earthquakes, landslides, and tornadoes need to get more attention in research, seen from the high number of IDPs but the publication is still minimal.

### Human Mobility Typology and Hazard



On the graph, the human mobility typology read from left to right is Relocation, Migration, Immobility, and Displacement, in each color group (which represents t..

In almost every type of hazard, the most studied human mobility typology is displacement. This shows that the primarily forced movement of persons is the focus of any kind of hazard. Meanwhile, migration, namely the primarily voluntary movement of persons, is the least studied type. Along with the many studies on displacement, research on migration also needs to be improved so that in the future there will be more types of human mobility that are carried out voluntarily rather than forced.