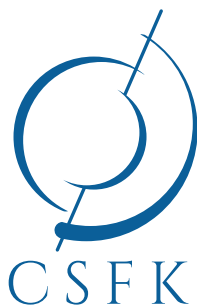


The Demography of Disasters

Dávid Karácsonyi · Andrew Taylor ·
Deanne Bird
Editors

The Demography of Disasters

Impacts for Population and Place



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Foreword

It is my honor to introduce the present book titled *The Demography of Disasters, Impacts for Population and Place* to the reader. While the title suggests a social science inquiry on disasters from the angle of demography, the subtitle of the book clearly reflects that the geographer's perspective is inevitable when analyzing disasters. Geography plays an important role in understanding complex interactions of human–earth systems. Geography also bears the potential to help and coordinate policy-making, addressing the challenges of growing entropy in our technological society. These advantages of geography come from the holistic understanding of the world which enables geographers to see the disaster in a spatial perspective. That perspective is particularly helpful in addressing issues of global climate change.

The climate emergency impacts Australia immensely, as it is facing longer and more intensive bushfire seasons. Nevertheless, climate change recently affects less disaster-prone nations, such as Hungary as well. Landslides, floods, extreme rainfalls along with desertification in certain areas of Hungary constitute a major hazard risk affecting the livelihood of several thousand people. We have experienced over a long period of time the floods of the Tisza river, the second major waterway of Hungary after the Danube. The floods damaged entire villages or even sometimes cities located on the floodplains, altering the regional prospects of Alföld (The Great Hungarian Plain). Engineering design failures and poor technical maintenance often interplay with extreme rainfall, making the casualties even more serious. This was the case in 2010, when the Ajka alumina plant reservoir accident happened, which was the most significant technological disaster in the recent history of Hungary. The disaster caused a red mud spill, killed ten people, injured hundreds, and contaminated significant area with the caustic substance. The Hungarian Academy of Sciences and in particular the Geographical Institute played an important role in investigating these disasters and providing mitigation strategies, which explains our interest in a broader international cooperation of disaster studies.

The volume you have in your hands is the first result deriving from that cooperation between the Geographical Institute of the Research Centre for Astronomy and Earth Sciences (Hungary) and the Northern Institute of Charles Darwin

University. A large international team came together to present this book including scholars from Asia-Pacific, the USA, and the post-Soviet countries providing a broad spectrum of understandings on disasters. The thirteen chapters of the book range from theoretical studies on demography of disasters to discussions of technological accidents such as Chernobyl. The present volume includes two chapters on the 2011 Tohoku earthquake considered the most significant disaster impacting Japan since World War II. Hurricane Katrina in 2005, bush and forest fires in California and in Russia, heat waves in Australia are also discussed in the book, each of which directly can be linked to climate change.

Each author has demonstrated their commitment to this unique and valuable book project for better understanding the disaster–demography interaction. I would like to acknowledge in particular the role Andrew Taylor played in this project. From the very beginning, he invested tremendous energy arranging the academic cooperation between our institutions, securing financial resources and managing the preparation of the manuscripts. I sincerely look forward to the future prospects in the disaster–demography study field in which the present volume will probably be considered as a significant step forward.

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Preface and Acknowledgements

The present book is the result of a collaboration between the Geographical Institute of the Research Centre for Astronomy and Earth Sciences, Hungary, the Northern Institute of Charles Darwin University, Australia, and the Faculty of Life and Environmental Sciences, University of Iceland. The book was first proposed some time ago by fellow editor Andrew Taylor when we discussed demographic issues around disasters following a seminar talk I gave during my first visit to Darwin. Since then Andrew has put a lot of energy and enthusiasm into making this book happen. Along with his contributions as editor and author, he also generously supported the cooperation between our institutions, particularly my visit to Darwin when we reviewed and discussed the chapter manuscripts provided by authors from various backgrounds. In the meantime, Deanne Bird, who is currently commuting between Reykjavík and Melbourne with responsibilities in disaster mitigation, also joined our editorial team and helped us with her experience in the disaster study field and in negotiating with Springer, the publisher of this volume. She also helped to get additional authors on board and with reviewing their submissions.

This book discusses a new and broadening field which links demography and disaster studies. Traditionally, people have viewed disasters as shocks to everyday routines, the result of an unanticipated natural hazard event or as engineering failures and therefore the domain of technological rather than social sciences. Under these paradigms, the links between disasters and demography seem relatively simplistic and unidirectional, with the focus on estimating post-disaster populations, measuring mortality or understanding out-migration impacts. Nevertheless, disasters have the capacity to fundamentally alter population profiles at local and regional levels. Impacts vary according to the type, rapidity, and magnitude of the disaster, but also according to the pre-existing population profile and its relationships to the economy and society. In all cases, the key to understanding impacts and avoiding them in the future is to understand the relationships between disasters and population change, both prior to and after a disaster.

The aim of this book is to provide a comprehensive discussion on the demography of vulnerability and resilience in the face of disasters, the demography of risk from disaster impacts for vulnerable groups. Demographic methods can help in

post-disaster population estimation and in managing and mapping people. In many cases, human migration is a common response to disaster, and hence, there is a link to spatial population dynamics as well. The demography of policy and practice around disaster mitigation is also an important part of the present volume along with profiling future risks and opportunities. The demography of climate change highlights the disaster–demography link in a specific way. In line with the multifarious nature of the disaster–demography nexus, our book takes an interdisciplinary approach, with chapters ranging from geography to gendered understanding of disaster resilience.

The *Demography of Disasters* seeks to advance both practical and theoretical insights into our understanding of the role of demography in planning for and mitigating impacts from disasters in developed nations. We hope that the book will provide policy-makers, disaster recovery experts, planners, and academics in the field with a wide range of examples demonstrating the importance of the interplay between demography and disasters in regions and spatially. This book will be of interest to social scientists across a range of fields. The book is also helpful for policy-makers, planners, practitioners of disaster management, and environmental agencies who are interested in a demographer's perspective on disaster. Academics and students in areas such as demography, disaster management, climate change, social policy, and human studies are also the targeted audience.

Most of the contributors to this book have come from academia, spanning a broad range of countries, including but not limited to Japan, Germany, USA, Sweden, Ukraine, and Russia. It has at times been a difficult task to coordinate such a broad and diverse team with different perspectives and scientific backgrounds. It is the editors' hope that through this book project, the team of authors will become part of an academic community which will in the future further contribute to our understanding of the disaster–demography nexus.

The editors have taken the view that human geography is closely related to the disaster–demography nexus, and hence, we have made extensive use of maps, the most common communication language of geographical science. Special attention has been paid to presenting a uniform cartographic design and layout throughout the book which I hope will make this volume more visually appealing to the reader.

I would like to acknowledge here the tremendous help given by Shelly (Shell) Worthington who assisted us tirelessly in proofreading and editing all the chapter manuscripts. Special thanks also go to Ferenc Probáld, Professor Emeritus of Eötvös Loránd University (Budapest, Hungary), my former Ph.D. supervisor, who was always ready to check and comment on my work. Also many thanks to Kang-tsung (Karl) Chang for his rigorous but helpful review comments, along with all the other reviewers of each chapter including Tony Barnes, Sigurd Dyrting, Kat Haynes, Richie Howitt, Anita Maertens, Jane Mullet, and Jan Salmon. This project would not have been possible without the support of Károly Kocsis, Director of the Geographical Institute in Budapest, and László Kiss, General Director of the Research Centre for Astronomy and Earth Sciences who also arranged funding from the Hungarian Academy of Sciences to cover some of the costs related to the present volume. Thanks also go to the Japan Society for the Promotion of Science

(JSPS) for the one year I spent at the International Research Institute of Disaster Science at Tohoku University in Japan which helped me greatly in gaining a better understanding of disaster science as a distinguished academic field.

I hope you enjoy reading this book on the various perspectives of the disaster–demography nexus. There are inevitably more approaches than what we were able to include in the following chapters some of which raise more questions than answers. However, I believe the collaborations featured in this project will push further the discussion on the demography of disasters.

Darwin, Australia
January 2020

Dávid Karácsonyi

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About the Editors

Dávid Karácsonyi has been working at the Geographical Institute of Hungarian Academy of Sciences (Budapest) since 2009 where he is currently a research fellow. He is a geographer, specialized on human and regional geography. Dávid is interested in the geography of peripheral and rural areas and has conducted his research in Ukraine and Belarus, studying rural spaces and their populations. Recently, he has spent two and half years in East Asia first at the International Research Institute of Disaster Science, Tohoku University, Japan, where he compared the impacts of disasters like Chernobyl and Fukushima on regional population trends, than at the Department of Geography, National Taiwan University. Currently, he is also a research associate at the Northern Institute of Charles Darwin University.

Andrew Taylor Northern Institute, Charles Darwin University, Darwin, Australia. Andrew researches the causes and consequences of population change for the Northern Territory of Australia and northern regions more broadly. He undertakes both quantitative and qualitative researches to understand impacts from policy, economic, and structural changes for communities. In his Ph.D., he investigated policy and theoretical implications from changing migration practices for Indigenous Territorians. Prior to academia, Andrew worked for a decade with the Australian Bureau of Statistics.

Deanne Bird is Research Specialist at the Faculty of Life and Environmental Sciences, University of Iceland. She specializes in evaluating societal resilience and vulnerability in relation to emergency preparedness, response, and recovery. Deanne has collaborated on a variety of projects with community groups and government and non-government organizations and is Associate of Monash University Disaster Resilience Initiative, Monash University. Deanne also works as Senior Advisor—Engagement for the Victorian Department of Health and Human

Services within the Latrobe Health Innovation Zone. As Senior Advisor, Deanne is responsible for local project leadership, coordination, monitoring, and reporting relating to specific actions arising from the 2014 Hazelwood Mine Fire. Through her position at the University of Iceland, and as an editor of *Demography of Disasters*, Deanne is supported by the Nordic Centre of Excellence for Resilience and Societal Security—NORDESS, which is funded under the Nordic Societal Security Programme.

Contributors

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Jessica L. Barnes PLA, ASLA, graduated from the Disaster Resilience Leadership Academy at Tulane University in New Orleans in 2018. She is now the founder and principal at Third Coast Collaborative, a US-based landscape architecture firm dedicated to promoting community resilience and inclusive access to public spaces through design.

Doris A. Carson is an economic and human geographer interested in the socioeconomic development of communities in sparsely populated, rural, and remote areas. She completed her Ph.D. in 2011 at James Cook University in Australia, looking at the dynamics of regional tourism innovation systems in remote resource peripheries. Doris also holds a Master degree in tourism and leisure management from the IMC Krems University of Applied Sciences in Austria. Doris moved to Umeå in northern Sweden in 2014 to work on tourism and lifestyle-related mobilities in the Arctic and their impacts on innovation capacity in small rural communities. She is now a researcher and lecturer at the Department of Geography and Economic History at Umeå University, specializing in tourism, lifestyle mobilities and migration, and small community development in sparsely populated areas.

Dean B. Carson has spent the past 20 years researching who lives in, works in, and visits sparsely populated areas, and how and why these patterns change over time. Dean has worked in Australia, Canada, Scotland, Australia, and Sweden. He is currently the inaugural Visiting Professor at the Arctic Research Centre at Umeå University (Arcum) and Guest Professor with Sweden's Centre for Rural Medicine. His primary research interest is demographic change in small towns and villages.

Serhii Cholii is an associate professor (docent) at the chair of history, Igor Sikorsky Kyiv Polytechnic Institute. He is a historian, investigating the processes of implementation of different military strategies in Europe during the period of European Modernity and evolution of civil–military relations. Serhii is also interested in processes of forced migration during the nineteenth and twentieth centuries. During last years, he conducted field trips and interviews in different locations of European Polesia, studying the case of population relocation as an aftermath of Chernobyl power plant disaster in 1986.

Stephen T. Garnett is Professor of Conservation and Sustainable Livelihoods at the Research Institute for the Environment and Livelihoods, Charles Darwin University. Much of his research has been on threatened species, particularly birds, but he has studied and written on a wide variety of environmental issues. He is particularly interested in the synergies arising from combining biodiversity conservation and natural resource-based livelihoods, particularly Indigenous livelihoods.

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David King is an Associate Professor of Geography in the College of Science and Engineering at James Cook University, and is director of the Centre for Disaster Studies, and the Centre for Tropical Urban and Regional Planning. He is a Fellow of the Planning Institute of Australia. He has taught and researched at James Cook University for 28 years and was formerly at the University of Papua New Guinea for ten years. He began his career as a school teacher on the diamond fields of Sierra Leone, turning that experience into a doctorate on the social impact of the diamond rush. His research specializes in social impact and evaluation in such areas as planning, natural hazard vulnerability, climate change adaptation and resilience,

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