Preface

Health and Medical Geography is the fourth edition of the book formerly titled *Medical Geography*. Our hope is that this text will be a sound foundation for the future development and practice of health and medical geography, and that it will inspire geographers and others to bring their own special subdisciplinary knowledge and theoretical approaches to enrich and advance this growing course of study. It provides a historical review of the field and includes the latest advances in health and medical geography. It is intended for both undergraduate- and graduate-level courses, and it should be an invaluable resource for all health and medical geographers. It can also provide an overview of the field to students and scholars in related fields, including public health, population health, and social and biophysical sciences that contribute to the study of health.

ORGANIZATION

The book has 14 chapters organized into five sections. We recommend that it be taught in sequence over a semester. The parts are organized into groups of chapters with common themes. Part I, "Introduction and Big Ideas," introduces health and medical geography, explores the historical roots of the subdiscipline, and provides background in order to understand the diverse and holistic approaches that are used today by health and medical geographers. Part II, "Maps and Methods," focuses on the methodological approaches of the field, including mapping sciences, methods that measure the spread of diseases, and genetic methods that inform the field. Part III, "What We Eat and Where We Live," explores how our changing

food behaviors and living environments impact human health. Part IV, "Environments and Climates," focuses on the environmental, weather, and climate impacts on human health. Part V, "Health Care and Final Thoughts," focuses on geographic understandings of the provision of health services and access to health care, followed by a concluding chapter.

We have attempted to write a general textbook that can be read without the constant interruption of strings of citations, most of which are publications themselves citing the common source of an idea/term or general knowledge in a field ("It is hot in the tropics [x, 1958]" or "The malaria plasmodia (schistosome, tick, etc.) has several life stages [y, 1999]"). Where possible, we have referenced the seminal ideas and influential discussions, not all of which represent the most recent applications of those ideas. Our references are not meant to be comprehensive bibliographies of works in health and medical geography. The approaches, information, or examples we have consulted (i.e., actually used in writing the chapter) are listed under "References." Students can usually identify relevant materials simply by their titles. "Further Reading" contains relevant geographic studies or foundations that have not actually been used in writing the chapter. Some of the "Further Reading" entries were cited in past editions or are important, somewhat parallel, works. Many of them are suitable for term papers and further study. Finally, original ideas, quotes, or individual studies used for data are specifically cited in the body of the text.

PEDAGOGICAL FEATURES

The book includes the following pedagogical tools to help guide students and instructors:

- *Part introductions*: For each of the five parts, introductions provide a description of the theme for the part and introductions to the chapters within them.
- *Key terms*: Specialized terminology is highlighted in boldfaced text.
- *Glossary*: Short definitions of all boldfaced key terms are included in a consolidated glossary at the end of the book.
- *Quick reviews*: Each chapter includes one or more review sections of key concepts that are covered in the chapter.
- *End-of-chapter review questions*: Review questions are provided for students to consider and apply the material and concepts presented in each chapter.
- *Reference sections*: Specific references for work that is cited in the chapter are provided at the end of each chapter.
- *Further Reading sections*: A list of other suggested scholarly work that is not specifically cited in each chapter but that is related to the topic is provided.
- *PowerPoints*: PowerPoint presentation files for each chapter are provided on

the website of The Guilford Press to help instructors present the material to their classes.

NEW COVERAGE FOR THIS EDITION

With a new title and two new authors comes a book very different from the third edition. This new edition includes five wholly new chapters, and all other chapters were substantially revised and extended with new and updated material. The new chapters and topics are as follows. Chapter 3, "Expanding Disease Ecology: Politics, Economics, and Gender," expands the theory of disease ecology to include upstream political and economic forces that change these ecologies and create patterns of unequal mortality. Chapter 7, "Emerging Infectious Diseases and Landscape Genetics," describes the forces that drive emergence and reemergence of infectious diseases, such as globalization and migration, and introduces the field of landscape genetics and its application to questions from health and medical geography. Chapter 8, "Food, Diet, and the Nutrition Transition," discusses the emergence of obesity, diabetes, and other diet-related diseases that come with changes in food production, marketing, and distribution. The context for these discussions is the nutrition transition. Chapter 10, "Urban Health," focuses on how the movement of the global population into urban areas is impacting human health. Chapter 12, "Climate and Health," focuses on how weather and climate affect human health. It also offers a discussion of climate change science and reviews how future climate change scenarios are being used to predict how climate change will impact health and disease distributions.

Much has changed in the world and in the discipline of geography since the third edition of this text was published in 2010. Globalization has extended and intensified the processes that drive spatial patterns of disease, including the demographic transition, migration and circulation, income inequality, and cultural/economic/technological connectivity. The power of the geographic perspective of health is that these and other processes can be integrated by place, by region, and by geography. This text is about both geography as integration in place and geography as spatial analysis. Specific post-2010 changes worthy of attention in this edition of the book include the following:

- World population has grown to about 7.4 billion, more than half of whom now live in urban areas; the global fertility rate has dropped to 2.5 children per family, although many countries in sub-Saharan Africa still have rates of 6 or 7 children per family; and the population growth rate has decreased to 1.2% a year. The richest European and northeast Asian countries have raised life expectancy to over 80 years, but their birth rates have dropped so low that they have negative population growth today. Life expectancy in the United States is slightly lower at 79 years because of large socioeconomic disparities in health. Sub-Saharan Africa has a life expectancy of only 57, with some countries in southern Africa in the 40s.

In our discussion of the demographic transition, we examine how the population trajectories of countries have changed in the last 5 years and some of the drivers of these changes.

- Extreme poverty rates have fallen in many countries, as can be seen through progress toward the Millennium Development Goals (MDG), which the United Nations established in 2000 to be met by 2015. MDG 1, to halve the proportion of people living in extreme poverty, was achieved several years early. In 2012, 22% of the world's population lived on $1.25 per day, compared with 47% in 1990. While MDG 4, to reduce the global child mortality rate by two-thirds, was not achieved, much progress was made. The global rate in 2012 was about half of what it was in 1990. Southern Asia and sub-Saharan Africa lagged behind the rest of the world, although there are exceptions such as Bangladesh, which reduced child mortality from 144 to 41 child deaths per thousand from 1990 to 2015. Some progress was made on MDG 5, to reduce maternal mortality by three-quarters, but the target was not met and progress was highly variable by region and country. From 1990 to 2013, the rate dropped from 380 to 210 maternal deaths per 100,000 live births. Notable success stories include Cambodia, Laos, Eritrea, Rwanda, and Nepal, all of which had maternal mortality reductions greater than 75%. In contrast, several sub-Saharan African countries had reductions of less than 33%, including the Democratic Republic of Congo, Cameroon, Kenya, and Côte d'Ivoire.

- There has been great progress in treatment and prevention of the leading causes of death in low-income countries, especially in sub-Saharan Africa. The three leading causes of death in low-income countries are lower respiratory infection, HIV/AIDS, and diarrheal diseases, in that order. In sub-Saharan Africa, the order of causes of death is HIV/AIDS, respiratory infections, and diarrheal diseases, with malaria a fourth important cause. Much progress has been made during the past decade in malaria and HIV/AIDS prevention and control, especially in sub-Saharan Africa.

  - Malaria mortality decreased by almost half from 2000 to 2012 in this region, which is home to approximately 90% of the world's cases. In 2013, there were an estimated 584,000 malaria deaths worldwide, but increased prevention and control measures have led to a reduction in malaria mortality rates by 47% globally since 2000 and by 54% in sub-Saharan Africa. The main control method has been the mass distribution of insecticide-treated bed nets.

  - The HIV/AIDS epidemic has slowed since the last edition of this book, especially in sub-Saharan Africa, which comprises three-quarters of the world's cases. Increased antiretroviral therapy (ART) access in sub-Saharan Africa has led to a steep decline in HIV/AIDS incidence. From 2009 to 2013, the number of people dying from HIV/AIDS decreased by 22% and the number of children dying from HIV/AIDS decreased by 31%. While there has been progress, in 2013 there were still an estimated 1.5 million people who died from HIV/AIDS globally. ART programs prevented an estimated 7.6 million deaths

between 1995 and 2013. During the past few years, there has been growing evidence that HIV treatment can be used to prevent transmission. A landmark study, HPTN 052, showed that ART can reduce transmission rates by 96%. Therefore, it might be possible for the world to treat itself out of this epidemic with mass distribution of ART. Although there has been great progress in developing treatments for this disease—enough that some misguided people in the richest countries are starting to consider HIV/AIDS a chronic disease—there are still disparities in who gets ART. This is changing, however, with multibillion dollar programs, such as the United States–funded President's Emergency Plan for AIDS Relief, that distribute ART drugs in sub-Saharan Africa. HIV is discussed throughout the book, but most notably in Chapter 3, "Expanding Disease Ecology."

- China has developed faster than any other society in history. It is now the world's second biggest economy, and is on its way to becoming the first. Its urban areas are almost unrecognizable from 30 years ago, and there has been enormous environmental change. It has completed many massive projects of environmental engineering, including the Three Gorges Dam, which redistributes the flow of water from the south to the arid north. There has been devastating environmental degradation associated with this alteration, as well as with industrial growth and uncontrolled coal burning. The unique case of China is discussed in multiple chapters, notably Chapter 10, "Urban Health," and Chapter 11, "Environment and Health."

- New diseases have emerged, such as MERS, Middle East respiratory syndrome; old diseases have spread and been redistributed, such as Ebola and Zika; and the aging world population means that we may see epidemics of cancer and chronic diseases associated with older people. A new chapter is included that specifically addresses emerging and reemerging infectious diseases, including the processes that underlie their emergence.

- What may be the first impacts of climate warming on human health have been expressed in increasing drought conditions in arid lands and increasing flooding and cyclone severity, which have already destroyed crops and villages and have displaced tens of millions in sub-Saharan Africa and South Asia. Chapter 12, "Climate and Health," is updated with the most recent research on how global climate change will impact human health.

A genetic component has been discovered for many diseases; however, the environmental context for the expressions of those genes is still largely unknown and must be explored in order to understand the complex etiology of many diseases. Social science has developed an interdisciplinary theoretical perspective and a new vocabulary for addressing old processes. Geographic information systems (GIS), with their ability to manage and portray spatial data, have become the dominant tools in geography and have transformed the structuring of public data and health

analyses. Health and medical geography as a subdiscipline has become less concerned with the optimization of health service delivery or a dichotomy between health service and disease ecology (etiology). Instead, it has become increasingly concerned with health and medical geography as a behavioral and social construction, and with disease ecology as an interface between the natural (physical world) and cultural dimensions of existence.

In this text, we endeavor to provide a broad-based, comprehensive survey of the rich diversity of health and medical geography, while also serving as a sound reference for the complexities of classifications, processes, and systems. Our perspective is holistic and global in scope. We hope to provide the necessary biological background for geographers to understand disease processes, as well as the necessary geographic background for health researchers to understand spatial processes. Students who have used the text in the past decade have included medical doctors pursuing doctorates in epidemiology; graduate students working on doctorates in geography; graduate students from such public health disciplines as epidemiology, biostatistics, health behavior, nutrition, health administration, and public policy; undergraduate geography majors; and premedical undergraduates with majors in chemistry or biology, but little background in the social sciences or geography.

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This book is dedicated to Melinda Meade, who passed away in 2013. It would not have been possible without her wisdom and guidance of us all. Melinda trained many graduate students who went on to shape this field. She also informally mentored many other faculty and students, particularly women scholars. Melinda was a well-respected and well-loved mentor. Her intellect and compassion were always on hand when working through research or contemplating life as a student. She gave unselfishly of her time to her students and approached research with an enthusiasm and excitement that was contagious. She encouraged people to think deeply and to strive not just to "do research" on a population, but to truly understand and appreciate the different ways in which diverse populations live their lives. Melinda engaged her students in scholarly dialogue that demanded a maturity of thinking

that naturally led to intellectual development. She read voraciously and widely. Her academic legacy is a far-reaching network of scholars who focus on people and places and health outcomes. We encourage you to go to *swraex.wistia.com/medias/plaluvak07* to view a beautiful video tribute to Melinda's life entitled *Atlas Hands*.

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