

## Atlas of Classified Disability in China: Spatial Statistics and Pattern

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Disability, stemming from heredity, chronic illness or injury, constitutes a global public health concern, a human rights matter, and a significant obstacle for social development. In recent years, China has acknowledged the significance of disability prevention and control as an integral aspect of its health strategy, aiming to enhance the overall quality of life for its citizens. However, the evolving landscape of disability epidemiology remains inadequately understood, which substantially hinders precise prevention and control strategies and the optimization of resource distribution. Consequently, there is an urgent necessity for research that provides solid scientific evidence to effectively address this pressing issue.

Professors Xiaoying Zheng and Jinfeng Wang, along with their respective teams, have been extensively involved in epidemiological research on population health and disability. Specifically, they have cooperated across disciplines to investigate the spatial prevalence patterns of disability in China over the past few years. The comprehensive results from their research are presented in the 2023 monograph titled “The Atlas of Classified Disability in China: Spatial Statistics and Pattern,” published by China Science Publishing & Media Ltd (*1*). This pioneering publication, organized into three sections — introduction, sequence map, and disability spectrum — represents the world’s first inquiry into the incidence, distribution, and pattern atlas of disability within a national population. As an individual involved in non-communicable disease management at the World Health Organization headquarters, I highly endorse this book for its significant contributions in the following areas:

First, this monograph employs an interdisciplinary approach, combining medical and spatial attribution studies from traditional epidemiology and spatial epidemiology. This innovative method transcends the limitations of conventional analysis. The team identifies multiplicative interactions and linear relationships while pioneering the spatial nonlinear

attribution and generalized interaction metric geographic detector model. By incorporating data from the national sample survey on disabled persons and relevant open-source materials, the team has generated the world’s first country-level disability subtype spectrum for the entire population’s lifespan, using data from 734 sampled counties in China. Through rigorous cross-checking, they have established a three-way distribution of disability levels at the county level, providing a comprehensive representation of disability levels, distribution, and pattern track pedigrees with optimal precision. Furthermore, building on previous research regarding gestational age developmental disorders, the team has advanced innovative research in the field of population health across the life course. This work has become a critical foundation for the trinity of “gestational age-aging process-old age” scientific identification of risk markers throughout the life cycle and serves as a technical reference for resource allocation.

Second, the monograph delivers a thorough examination of the spatiotemporal patterns within the disability spectrum, offering valuable insights for policymakers and researchers. The disabled population in China has experienced an increase due to the aging population and the prevalence of chronic diseases. Social transformation, accompanied by the overlapping effects of “disability aging” and “aging disability,” has altered the patterns and composition of disabilities. In this monograph, disability is defined as one or more abnormalities in anatomical structure, or the loss of a specific organ or function (either physical or psychological) that impacts an individual’s ability to engage in normal activities and fully participate in study, work, and community and social life. While congenital genetic factors contributing to disabilities have decreased, disabilities resulting from chronic diseases and injuries have increased. Furthermore, the incidence of hearing, speech, intellectual, and visual disabilities has declined, while neurodegenerative, psychiatric, and physical disabilities have experienced a

rise. This monograph can provide guidance for the development of disability prevention and control policies, assisting in refining the targeted prevention and control of disabilities in the future. Moreover, it presents an economical and effective reference framework for disability information management in China. The unbiased optimal global estimation derived from limited local sample survey data in this monograph prevents insufficient data mining or excessive resource usage for large-scale cross-sectional epidemiological surveys.

This monograph is primarily based on the theory of population health and the concept of the disability epidemic trajectory. Utilizing a multidisciplinary, multifaceted, and multidimensional approach, it integrates spatial analysis techniques with disability epidemiology to identify the prevalence patterns of population disabilities at the county level in China, as well as the range of various disability types across distinct spatial regions. This work serves as a foundation for examining the multidimensional and intricate factors underlying the levels, distribution, and

patterns of disabilities within the entire population. The outcomes of this monograph not only reveal the levels, distribution, and patterns of disabilities but also demonstrate the integration of interdisciplinary knowledge and the spatial variability analysis of disability occurrence and development. Future research should encompass the spatial and temporal distribution of disabilities in developing countries, which could contribute to providing scientific references for the formulation and optimization of disability prevention and control policies.

doi: [10.46234/ccdcw2023.081](https://doi.org/10.46234/ccdcw2023.081)

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Submitted: April 13, 2023; Accepted: May 06, 2023

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