



EDITORIAL

Danish population-based registers for public health and health-related welfare research: Introduction to the supplement

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Denmark and other Nordic countries have exceptional opportunities to perform register-based research, because of the unique personal identification number available to all persons with permanent residence [1]. This number makes it possible to link information at the individual level from several registers for investigation of various research questions. The unique personal identification number was introduced in Denmark in 1968, which enables follow-up of individuals for decades. This supplement of the *Scandinavian Journal of Public Health* presents public health and health-related registers and health-related welfare research based on Danish nationwide registers. The topics range from presentations of important registers, to introduction to the Danish legal foundations for register-based research, to short reviews of selected applications of registers for public health research.

Linkage of the Danish registers is based on three base registers including identification numbers for persons, businesses, and real estates (Figure 1). All three base registers have linking keys to related registers and also to the other base registers. The linking keys are: the personal identification number (CPR-number) [1], the business identification number (SE/CVR-number) [2], and the building and housing identification number (BBR-number) [3]. The Civil Registration System contains the CPR-number and includes references to parents and spouses, making it possible to establish the family unit. The Business Register contains the SE/CVR-number of all businesses. The Building and Housing Register (BBR) contains the BBR-number, which

identifies all unique housing units. By the base registers it is possible to link persons, businesses and housing units.

The aim of the supplement is to present a wide range of Danish registers and register-based research. We invited Danish key researchers performing register-based research to contribute to this supplement. Thus, this publication also highlights that register-based research in Denmark is widely distributed at various research institutions and that registers are fundamental data sources in health and health-related welfare research. Twenty two institutes and departments at four Danish universities and 21 Danish administrative and research institutions contributed to the papers in this supplement.

The supplement has three sections. The first section gives an overview of Danish registers, briefly introduces how to get access to data at Statistics Denmark and the legal foundation for register-based research. The section also presents an online database, which gives further information and an overview of the content of various Danish registers. This database also includes a search engine to help researchers to get more details on register contents.

The second section includes presentations of important Danish registers on health and social factors. All papers have the same format, including four sections – in the Introduction section the background and rationale for establishing the register, the current purpose and historical pioneers are presented. In the Content section information on central variables in the register is provided and changes in variables and content, in reporting to the

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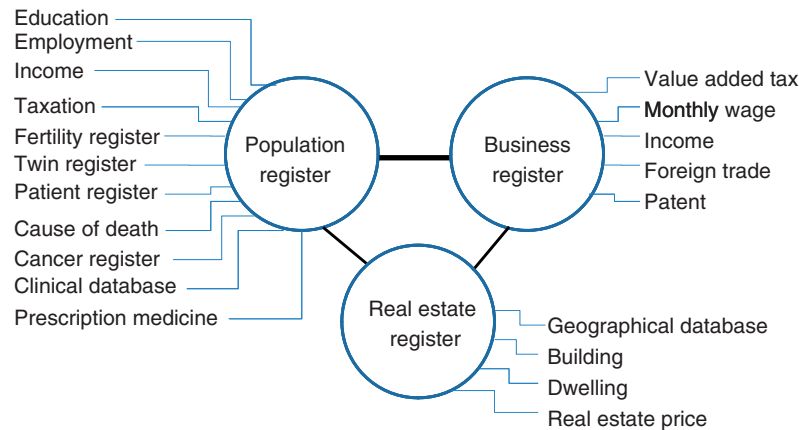


Figure 1. Schematic presentation of the base registers in Denmark. Linkage between all registers through three base registers. The keys are the personal identification number (CPR-number), the business identification number (SE/CVR-number) and the housing identification number (BBR-number). Inspired by Wallgren and Wallgren (2007) [4].

register or in classification are presented. In the Validity and coverage section information on validity and coverage are presented including central studies evaluating these elements. In the Conclusion section further comments and final conclusions on the value of the register as a research source are summarized.

The third section consists of research applications of Danish registers. All papers include three sections: In the Introduction section the background and the reasoning for the research themes are presented. In the Research topics section selected research topics are presented and discussed with focus on how information from registers was used. In the Conclusion section the results are briefly summarized and the results are put into perspective.

A total of 44 papers are published including 23 presentations of Danish registers and 19 short reviews of research applications of Danish registers. All papers are peer-reviewed. Throughout the supplement we have aimed at using a consistent terminology regarding the term “register”. A register is defined as a complete list of the objects in a population (e.g. all individuals in Denmark) including data on each object’s identity, which makes it possible to update and expand the register with new variable values for each object [4,5].

The presentation papers describe a wide spectrum of registers available, including the Danish Civil Registration System, the Danish Register of Causes of Death and registers on contacts to both the primary and secondary healthcare system and registers on drug prescriptions. Another group of presentation papers include registers on specific disease entities, including cancer, heart disease, psychiatric diseases, diabetes and an overview of clinical

databases. Registers on twins, adoptions and reproduction outcomes are also presented. Finally, the supplement contains presentations on important registers on social factors including education, labour market affiliation, personal income and housing conditions.

The research application papers cover a wide range of topics including perinatal and child epidemiology, lifestyle epidemiology and occupational epidemiology. Research applications of register-based studies of cancer screening, heart disease, mental disorders, diabetes and multiple sclerosis are included. Studies of morbidity and mortality outcomes among twins, adoptees and ethnic minorities, and presentations of health-related economic analyses are provided. These research applications show that it is possible to perform research either by linking information from several registers or by linking surveys or clinical data with nationwide registers.

This supplement was edited by the European Centre for Register-Based Health-Related Population Research – Public Health, Major Diseases and Welfare (ECREPH), University of Southern Denmark. ECREPH is a centre aiming at promoting research based on registers, facilitating collaboration and offering training courses and education within register-based research. The centre is a multidisciplinary research centre covering topics within public health, epidemiology, statistics and spatial modelling [6]. Please visit www.ecreph.org to obtain further information on research topics, educational courses, current staff and opportunities for research collaboration.

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We hope this supplement will increase the knowledge of the possibilities of doing health and health-related welfare research using Danish registers and that it will enhance further use of Danish registers.

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