

FAMILY AND HOUSEHOLD DEMOGRAPHY

Frans Willekens

Netherlands Interdisciplinary Demographic Institute (NIDI), The Hague, The Netherlands

Keywords: family, household, conceptual and measurement issues, trends, life course, headship, transitions, multistate models, agent-based models

Contents

1. Introduction
 2. A Brief History
 3. Conceptual and Measurement Issues
 4. Major Trends in Households and Families
 5. Household Models
 - 5.1. Introduction
 - 5.2. Headship Rate Models
 - 5.3. Multistate Models
 - 5.4. Microsimulation Models
 - 5.5. Behavioral Models
 6. Discussion and Conclusion
- Acknowledgement
Glossary
Bibliography
Biographical Sketch

Summary

Households are groups of people that co-reside and share some resources. Families are households of related individuals. Household and family demography is the study of these primary social groups or social units, and in particular of group membership and the relationships between members of the group. The concepts of household and family depend on cultural, social and economic factors that vary in time and between countries. The conceptual and measurement issues that result are addressed in the chapter. The documentation of changes in households and families and the modelling of these changes represent major challenges in demography. To capture the complexity of households, tabulations of the full array of household relationships replace tabulations of household positions relative to the household head. Household models follow a similar path. Headship rate models that describe household structures from the perspective of the head of household are increasingly being replaced by dynamic models that focus on relationship among members of a household. As a consequence, models of household dynamics change in the direction of models that describe the demographic dynamics of kinship. The chapter reviews the different approaches to the demographic study of households and families, discusses strengths and weaknesses of models, and proposes agent-based models for the description and projection of households and families in varying contexts.

1. Introduction

Family demography is the study of families and household demography is the study of households. A household usually consists of a number of persons who share a housing unit or part of a housing unit and share food and possibly other essentials for living. A housing unit is a house, an apartment, a mobile home, a group of rooms, or a single room that is occupied as a separate living quarter. Co-residence is a necessary condition but it is not sufficient. Individuals who share a housing unit but do not share food and other essentials for living represent different households, e.g. unrelated students sharing a flat. Co-residence and sharing of at least some resources are two criteria that define a household. A family is a particular type of household. Household members that are related by marriage and parents and children that are related by blood or adoption form a family. Marriage often but not always includes formal or legally sanctioned marriage and common-law marriage (consensual union). A household may consist of a single family, several families (e.g. extended family), or a family (families) and unrelated persons (e.g. lodger). A family is often defined without the strict co-residence criterion. In that case it is a group of people (social unit) related by marriage or by blood or adoption, irrespective of place of residence. The group is usually referred to as kin. The definition of household and family varies in time and between countries. New forms of households and families emerge as individuals organize their lives differently and tradition and social constraints are fading. The challenge is to accommodate new living arrangements and social relationships in family and household demography.

The aim of this chapter is to provide an overview of the field. Family and household demography differs from traditional demography in its emphasis on *groups* rather than individuals. In a group, individuals are important but the relations between individuals are equally important. Much of family and household demography is about group membership and the emotional, biological or economic ties that bind. Individuals move in and out of groups, or change their position in a group. As a result the size and structure of the group change. Family and household demography is concerned with the *structure* of households and families and the *processes* that produce the events that alter the structure. Structure refers to (a) the distribution of households and families by type and (b) the distribution of individuals by position in the household or family (relation to other members of the group).

The structure of the chapter is as follows. Section 2 presents a selected history of family and household demography. It does not pretend to be complete because that is not possible given the long history of the field and the many disciplines that study families and households. Section 3 addresses conceptual and measurement issues that arise in the recording of household and family types and structures. Section 4 summarizes major global and regional characteristics of households and families and trends. Section 5 discusses family and household modelling. It covers static models that distribute a population over family and household types (headship rate models) and dynamic models that describe changes in families and households in terms of life course transitions experienced by members. Two classes of dynamic models are distinguished: models of cohorts and models of individuals. The first class focuses on populations (macro-demography) and is often referred to as macrosimulation models, the second focuses on individuals in a population (micro-demography) and is known as

microsimulation models. The section also addresses a major methodological issue in the modelling of households. It is the consistency requirement that, if an individual experiences an event that involves another person (e.g. marriage), the other person experiences the same event at the same time. The event becomes a shared experience. This problem is never encountered in conventional demography, which deals with individuals separately, but is central to family and household demography. One particularly interesting solution is to model the decision rules that govern social interaction and the shared experiences that result. Section 6 concludes the chapter and discusses promising directions of study.

2. A Brief History

The study of the family started in historical demography in the 1950s. Historical demographers in France and later in England used parish registers (village censuses) and linked individual marriage, baptismal and burial entries to reconstruct families (Henry, 1953; Laslett and Wall, 1973; Wrigley et al., 1997). The technique is known as family reconstitution. In the 1980s, family and household demography emerged as a subfield of demography. The International Union for the Scientific Study of Population (IUSSP) was instrumental. In 1982 the IUSSP Council established a Scientific Committee on *Family Demography and the Life Cycle* with the mandate to promote research in the emerging subdiscipline and to give a visibility within the scientific community. It was the first Scientific Committee on the subject in the history of the IUSSP, established a year after Becker (1981) published his landmark book "A treatise on the family" in which he applies economic theory to explain family life. The IUSSP committee prepared a volume representing the state-of-the-art of family demography (Bongaarts et al., 1987). The book covers the major areas on which research had been focused: the family life cycle, marital and family status life table, kin models and household projection models. The book also covered issues of measurement and estimation. The IUSSP initiative triggered others to follow. In 1984 the Netherlands Interuniversity Demographic Institute (NIDI) under the auspices of the European Association for Population Studies (EAPS) organized a workshop on household demography with an emphasis on modelling. The workshop resulted in a volume that covered different perspectives on and approaches to household modelling and different policy areas that need information on households (Keilman et al., 1988). The book was followed by another a few years later (van Imhoff et al., 1995). In the 1980s a number of excellent papers were published reviewing accomplishments and challenges that remained to be addressed (e.g. Burch, 1979; Brass, 1983; Bongaarts, 1983; Teachman et al., 1987). The very active research in family and household demography in the 1980s also resulted in methods and software for the production of family status life tables and household projections.

As society is evolving, family and household demography is evolving too. In the early days, demography was not directly concerned with the functioning of families and households but with their structure and the processes that take place or unfold over time and produce events that alter their structure. With the gradual disappearance of borders that separate disciplines in the social and behavioral sciences, the study of the functioning of these groups is no longer viewed as a subject of social psychology and sociology, but increasingly also as a subject of demography. It includes topics such the

mutual influence of family and household members, role configurations, the division of labour and the distribution of power, communication between members, domestic violence, and self-efficacy and empowerment of members. Today household and family demography studies the size, structure and functioning of households and families. It addresses also the processes that produce the events that alter the structure. Relations between members receive particular attention, not only the nature of the relationship but also the content.

-
-
-

TO ACCESS ALL THE 27 PAGES OF THIS CHAPTER,
Visit: <http://www.eolss.net/Eolss-sampleAllChapter.aspx>

Bibliography

Becker, G. (1981) *A treatise on the family*. Harvard University Press, Cambridge, Mass. [A classic. Application of neoclassical economic theory to the family]

Billari, F.C., A. Prskawetz, B.A. Diaz and T. Fent (2007) The “Wedding-Ring”: an agent-based marriage model based on social interaction. *Demographic Research*, 17(3):59-82. [Application of heuristics to model partner choice]

Blossfeld, H.-P. and A. Timm (2003) Educational systems as marriage markets in modern societies: a conceptual framework. In: H.P. Blossfeld and A. Timm eds. *Who marries whom? Educational systems as marriage markets in modern societies*. Kluwer Academic Publishers, Dordrecht, pp. 1-18. [Good introduction to assortative mating]

Bongaarts, J. (1983) The formal demography of families and households: an overview. *IUSSP Newsletter*, 17:27-42. [Early overview of the field of family and household demography]

Bongaarts, J. (1987) The projection of family composition over the life course with family status life tables. In: J. Bongaarts, T.K. Burch and K.W. Wachter eds. *Family demography. Methods and their application*. Clarendon Press, Oxford, pp. 189-212. [Presents a multistate model to project family composition]

Bongaarts, J. (2001) Household size and composition in the developing world in the 1990s. *Population Studies*, 55: 263-279. [Trends in developing countries]

Bongaarts, J., T.K. Burch and K.W. Wachter eds. *Family demography. Methods and their application*. Clarendon Press, Oxford. [A classic. The first major publication on family and household demography, outcome of IUSSP workshop]

Brass, W. (1983) The formal demography of the family: an overview of proximate determinants. In: British Society for Population Studies, *The family*. Occasional Paper no. 31, pp. 37-49. Office of Population Censuses and Surveys, London. [Introduces the concept of marker in household modeling]

Burch, T.K. (1979) Household and family demography: a bibliographic essay. *Population Index*, 43:173-195. [An early overview of the field]

Burch, T.K. (2003) Data, models, theory and reality: the structure of demographic knowledge. In F.C. Billari and A. Prskawetz eds., *Agent-based computational demography*. Physica-Verlag, Heidelberg,

pp.19-40. [On the usefulness of simulation in theory building]

Coleman, J.S. (1990) *Foundations of social theory*. Harvard University Press, Cambridge, Mass. [A classic. The study of social change by focusing on individuals]

D'Andrade, R. (1995) *The development of cognitive anthropology*. Cambridge University Press, Cambridge. [On schemata]

De Beer, J. (1995) National household forecasts for the Netherlands. In: E. van Imhoff, A. Kuijsten, P. Hooimeijer and L. van Wissen eds. *Household demography and household modeling*, Prenum Press, New York, pp. 251-272 [Introduces a hybrid household model that combines a multistate model and a headship rate model]

Department for Communities and Local Government (2009) Household projections to 2031, England. Housing Statistical Release, 11 March 2009 (ISBN: 978-1-4098-1285-2). Available at <http://www.communities.gov.uk/documents/statistics/pdf/1172133.pdf>. The methodology report (ISBN: 978-1-4098-1116-9) is available at <http://www.communities.gov.uk/documents/statistics/pdf/1172197.pdf> [UK household projections]

Dyke, B. and JU. MacCluer eds. (1979) *Computer simulation in human populations*. Academic Press, New York. [Early introduction to simulation in population studies]

Dykstra, P.A., M. Kalmijn, T.C.M. Knijn, A.K. Komter, A.C. Liefbroer and C.H. Mulder eds. (2006) *Family solidarity in the Netherlands*. Dutch University Press, Amsterdam. [Focuses on content of relations, e.g. frequency of contact]

Fokkema, T. and A. Liefbroer (2008) Trends in living arrangements in Europe: convergence or divergence? *Demographic Research*, Vol. 19, Article 36, pp. 1351-1418. [Household trends in Europe]

Giddens, A. (1984) *The constitution of society: outline of the theory of structuration*. Polity Press, Cambridge, UK. [Theory of social change based on agency and structure]

Hammel, E.A. (2005) Demographic dynamics of kinship in anthropological populations. *Proceedings of the National Academy of Sciences*, 102(6):2248-2253. [Applications of SOCSIM]

Hammel, E.A., C. Mason, and K.W. Wachter (1990) SOCSIM II, a sociodemographic microsimulation program, rev. 1.0, operating manual: Graduate Group in Demography Working Paper No. 29. University of California, Institute of International Studies, Program in Population Research. Berkeley, California. [Presents SOCSIM]

Hernes, G. (1972). The process of entry into first marriage. *American Sociological Review*, 37: 47-82. [marriage model based on behavioural rules]

Henry, L. (1953) Vues sur la statistique des familles (View on family statistics), *Population*, 8(3) : 473-490. [A classic in historical demography]

Jiang, L. and B.C. O'Neill (2009) Household projections for rural and urban areas of major regions of the world. Iterim Report IR-09-026, International Institute for Applied Systems Analysis (IIASA), Laxenburg, Austria. Available at <http://www.iiasa.ac.at/Admin/PUB/Documents/IR-09-026.pdf> [Projections of households for 9 regions of the world]

Keilman, N. (1985) Nuptiality models and the two-sex problem in national population forecasts. *European Journal of Population*, 1(2/3): 207-235. [Discusses the two-sex problem]

Keilman, N. (1988) Dynamic household models. In: N. Keilman, A. Kuijsten and A. Vossen eds. *Modelling household formation and dissolution*. Clarendon Press of Oxford University Press, Oxford, pp. 123-138. [Overview of household models and presentation of NIDI model]

Keilman, N., A. Kuijsten and A. Vossen eds. (1988) *Modelling household formation and dissolution*. Clarendon Press of Oxford University Press, Oxford [On household models]

Kiernan, K. (2004) Redrawing the boundaries of marriage. *Journal of Marriage and Family*, 66: 980-987 [On need to revise the concept of marriage]

Laslett, P., and Wall, R., eds. (1973). *Household and Family in Past Times*. Cambridge University Press,

Cambridge. [A classic in historical demography]

Maté, I. and G. Miller (2003) The UK 2001 census question on within household relationships. *Statistical Journal of the United Nations Commission for Europe*, 20(1):27-37. [Introduces the concept of household relationship matrix]

Miller, P.H. (1983) *Theories of developmental psychology*. W.H. Freeman, San Francisco. [introduction to developmental psychology]

Murphy, M. (2004) Tracing very long-term kinship networks using SOCSIM. *Demographic Research*, Vol. 10, Article 7, pp. 171-196. [Application of SOCSIM to historical demography]

Post, W., F. van Poppel, E. van Imhoff and E. Kruse (1997) Reconstructing the extended kin-network in the Netherlands with genealogical data: methods, problems, and results. *Population Studies*, 51:263-278. [Present the KINSIM microsimulation model]

Rogers, A. (1986) Parameterized multistate population dynamics and projections. *Journal of the American Statistical Association*, 81(393):48-61. [Broad overview of use of age profiles in multistate models]

Schoen, R. (1981) The harmonic mean as the basis of a realistic two-sex marriage model. *Demography*, 18: 201-216. [On the two-sex problem]

Schoen, R. (1983) Measuring the tightness of marriage squeeze. *Demography*, 20:61-78. [Documents the marriage squeeze in the USA]

Smith, J. (1987) The computer simulation of kin sets and kin counts. In: J. Bongaarts, T.K. Burch and K.W. Wachter eds. *Family demography. Methods and their application*. Clarendon Press, Oxford, pp. 249-266. [Presents CAMSIM]

Spielauer, M. (2007) Dynamic microsimulation of health care demand, health care finance and the economic impact of health behaviours” survey and review. *International Journal of Microsimulation*. 1(1):35-53. [Recent overview of microsimulation models in population studies]

Teachman, J.D., K.A. Polonko and J. Scanzoni (1987) Demography of the family. In: M.B. Sussman and S.K. Steinmetz eds. *Handbook of marriage and the family*. Plenum, New York, pp. 3-36. Reprinted as “Household and family demography: an overview” in D.J. Bogue, E.E. Arriaga and D.L. Anderton eds. *Readings in population research methodology*. Vol 4, pp. pp. 15.1 – 15.2 [Introduction to the field of family demography]

Todd, P.M. and F.C. Billari (2003) Population-wide marriage patterns produced by individual mate-search heuristics. In: F.C. Billari and A. Prskawetz eds. *Agent-based computational demography*. Physica Verlag, Heidelberg, pp. 117-137. [agent-based model of first marriage patterns]

Todd, P.M., F. Billari and J. Simao (2005) Aggregate age-at-marriage patterns from individual mate-search heuristics. *Demography*, 42(3):559-574. [agent-based model of first marriage patterns, Identification of heuristics]

Tuljapurkar, S., N. Li, and M.W. Feldman (1995) High sex ratios in China’s future. *Science* 267: 874-876 [Documents marriage squeeze in China]

United Nations (1987) Recommendations for the 1990 censuses of population and housing in the ECE region: a regional variant of the world recommendations for the 1990 round of population and housing censuses. Statistical Standards and Studies No. 40, Conference of European Statisticians, United Nations, New York. [Guidelines for 1990 population census]

United Nations (2008) Principles and recommendations for population and housing censuses. Revision 2. Statistical Papers Series M No. 67/Rev.2, United Nations, New York. [Guidelines for 2010 population census]

United Nations Economic Commission for Europe (2006) Conference of European Statisticians recommendations for the 2010 Censuses of Population and Housing, United Nations Publication ECE/CES/STAT/NONE/2006/4, United Nations, New York. ISSN 0069-8458 [Guidelines for 2010 population census in Europe]

- Van Imhoff, E. (1991) PROFILE: a program for estimating the coefficients of demographic age-intensity profiles. NIDI Report, No. 15, ISBN 90-70990-29-6. viii, 53 pp. Netherlands Interdisciplinary Demographic Institute [NIDI]: The Hague, Netherlands. [Computer programme for estimation of age profiles from data]
- Van Imhoff, E. (1992) A general characterization of consistency algorithms in multidimensional demographic projection models. *Population Studies*, 46(1):159-169. [Multistate projection that meets externally imposed total numbers of births, deaths, and transitions.
- Van Imhoff, E. (1995) LIPRO: a multistate household projection model. In: E. van Imhoff, A. Kuijsten, P. Hooimeijer and L. van Wissen eds. *Household demography and household modeling*. Plenum Press, New York, pp. 273-291. [Brief presentation of the LIPRO model]
- Van Imhoff, E. and N. Keilman (1991) *LIPRO 2.0: an application of a dynamic demographic projection model to household structure in the Netherlands*. Swets and Zeitlinger, Amsterdam. [Full presentation of the LIPRO model, with consistency algorithm and examples]
- Van Imhoff, E., A. Kuijsten, P. Hooimeijer and L. van Wissen eds. (1995) *Household demography and household modeling*. Plenum Press, New York. [On household models]
- Van Imhoff, E. and W. Post (1998) Microsimulation methods for population projection. *Population: An English Selection*, 10(1), pp. 97-138. [Overview of microsimulation models in population studies]
- Wachter, K.W. (1987) Microsimulation of household cycles. In: J. Bongaarts, T.K. Burch and K.W. Wachter eds. *Family demography. Methods and their application*. Clarendon Press, Oxford, pp. 215-227. [General discussion of issues in microsimulation. Advocates use of macrosimulation and microsimulation in tandem]
- Wachter, K.W., E.A. Hammel, and P. Laslett (1978) *Statistical studies of historical social structure*. Academic Press, New York. [Presents SOCSIM]
- Willekens, F. (1988) A life course perspective on household dynamics. In: N. Keilman, A. Kuijsten and A. Vossen eds. *Modelling household formation and dissolution*. Clarendon Press, Oxford, pp. 87-107. [Process approach to household modeling]
- Willekens, F. (1997) Household and family dynamics as a sequential process. In: L.A. Vaskovics ed. *Familienleitbilder und Familienrealitäten*, Leske and Budrich, Opladen, pp. 199-223. [Discussion of the Coale-McNeil model and related models]
- Wrigley, E. A., R.S. Davies, J.E. Oeppen and R.S. Schofield (1997). *English Population History from Family Reconstitution, 1580-1837*. Cambridge University Press, Cambridge, UK. [A classic in historical demography. The study shows that family reconstitution is particularly useful in obtaining accurate information about the demography of past populations.]
- Yang, H. (1992) Population dynamics and kinship of the Chinese rural elderly: a microsimulation study. *Journal of Cross-Cultural Gerontology*, 7(2):135-150. [Application of SOCSIM to China]
- Zeng, Y. (1991) *Family dynamics in China. A life table analysis*. The University of Wisconsin Press, Madison, Wisconsin. [Studies impact of fertility decline on families in China. Predecessor of ProFamy]
- Zeng, Y., Vaupel, J. W., and Wang, Z. 1997. A Multidimensional model for projecting family households -- with an illustrative numerical application. *Mathematical Population Studies*, 6(3): 187-216. [Documents ProFamy]
- Zeng, Y., Vaupel, J. W., and Wang, Z. 1998. Household projection using conventional demographic data. *Population and Development Review*, Supplementary Issue: Frontiers of Population Forecasting. Volume 24: 59-87. [Application of ProFamy to USA]
- Zeng, Y., K. Land, Z. Wang and D. Gu (2006) U.S. family household momentum and dynamics: an extension and application of the ProFamy method. *Population Research and Policy Review*, 25:1-41. [Application of ProFamy to USA, adding race. Extensive use of model age profiles]
- Zeng, Y., E. Stallard and Z. Wang (2004) Computing time-varying sex-age-specific rates of

marriage/union formation and dissolution in family household projection or simulation. *Demographic Research*, 11(10):261-304. [Discusses two-sex problem in context of ProFamy]

Zhao, Z. (1998) Demographic conditions, microsimulation, and family support for the elderly. Past, present and future in China. In: P. Horden and R. Smith eds. *The locus of care. Families, communities, institutions and the provision of welfare since antiquity*. Routledge, 1998, pp. 259-279. [Application of the CAMSIM microsimulation model to China]

Biographical Sketch

Frans Willekens is director of the Netherlands Interdisciplinary Demographic Institute (NIDI) (www.nidi.nl) and Honorary Professor of Population Studies, University of Groningen, The Netherlands. He is a member of Royal Netherlands Academy of Arts and Sciences (KNAW) and Secretary of the Behavioural and Social Sciences Section of the KNAW.

He studied agricultural sciences and economics at the University of Leuven, Belgium, and holds a PhD in Urban Systems Engineering and Policy Planning from the Technological Institute, Northwestern University, Evanston, Illinois, USA (1976). When he was professor at the University of Groningen, he founded the Population Research Centre (1991) (<http://www.rug.nl/prc/index>). He successfully supervised more than 30 PhD students. His main research interest is life course analysis, modelling and forecasting.

In 2005 Frans Willekens and colleagues established the European Doctoral School of Demography (EDSD; <http://www.eds-demography.org>).