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Invitation to the
Max Planck Institute for Demographic Research
Seminar

Wednesday, 7 August 2013, 5 p.m.

Household and Living Arrangement Projections:
The Extended Cohort-Component Method and
Applications to the U.S. and China

Yi Zeng

Professor at the Center for Study of Aging and Human Development and
Geriatric Division / Dept of Medicine of Medical School, and Institute of
Population Research and Dept. of Sociology, Duke University

Zhenglian Wang

Senior Research Scientist at the Center for Population Health and Aging of
Population Research Institute, Duke University

Demographic Analysis May Play a More
Important Role in Big Data Analysis

Wenzhao Shi

Senior Research Fellow and Technical Director of PADIS (China National
Population Administration Decision-making Information System)

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Max Planck Institute for Demographic Research Seminar

Contents: Household projections and big data analysis
Presenters: Prof. Yi Zeng, Dr. Zhenglian Wang, Wenzhao Shi
Chair: Prof. James W. Vaupel

Household and Living Arrangement Projections: The Extended Cohort-Component Method and Applications to the U.S. and China

by

Yi Zeng, Ph.D.

Professor, Center for Study of Aging and Human Development and Geriatric Division of Medical School; Director of Center for Chinese Populations and Socioeconomic Studies, Duke University

Professor and Director of Center for Healthy Aging and Development Studies, National School of Development, Peking University

Distinguished Research Scholar, Max Planck Institute for Demographic Research
Foreign member of the Royal Netherlands Academy of Arts and Sciences

Zhenglian Wang, Ph.D.

Senior Research Scientist, Center for Population Health and Aging of Population Research Institute, Duke University, President, Household and Consumption Forecasting, Inc. NC

Abstract: We present in this seminar an innovative demographic toolkit known as the ProFamy extended cohort-component method for the projection of household structures and living arrangements with empirical applications to the United States, the largest developed country, and China, the largest developing country. The ProFamy method uses demographic rates as inputs to project detailed distributions of household types and sizes, living arrangements of all household members, and population by age, sex, race/ethnicity, and urban/rural residence at national, sub-national, or small area levels. It can also project elderly care needs





and costs, pension deficits, and household consumption. Our presentation consists of four parts. The first part presents the methodology, data, estimation issues, and empirical assessments. The next parts highlight applications in the United States (part two) and China (part three), including brief summaries of forecasting future trends of household type/size, elderly living arrangements, disability, and home-based care costs, and household consumption including housing and vehicles. The fourth part briefly demonstrates the ProFamy software to project households, living arrangements, and home-based consumptions.

Demographic Analysis May Play a More Important Role in Big Data Analysis

by

Wenzhao Shi

Senior Research Fellow and Technical Director of PADIS (China National Population Administration Decision-making Information System),
Executive Director of Data Technology Center and General Manager of Public Business Division of Digital China Group

Abstract: Big data usually includes data sets with sizes beyond the ability of commonly used software tools to capture, curate, manage, and process. Big data require new forms of processing to enable enhanced decision making and insight discovery. Increasing volume (amount of data), velocity (speed of data in and out), and variety (range of data types and sources), are that, the more data and facts one has, and the more predictions matter, the more important human judgment becomes. Demographic analysis, as one of key approaches for social analysis, may also be evolving in the era of big data. In this seminar, I will present our study of linking demographic variables with social-economic factors, education expense, healthcare cost, energy consumption and environmental data a closed loop system, and to make analysis on those effects.



Prof. Yi Zeng's Summary Biography

Yi Zeng received his PhD degree in Demography from Brass Free University in 1986 and conducted his post-doctoral research at Princeton University in 1986-1987. He is a Professor at Center for Study of Aging and Human Development, Medical School of Duke University, Center for Healthy Aging and Development Studies, National School of Development at Peking University, Distinguished Research Scholar of the Max Planck Institute for Demographic Research, and a foreign member of the Royal Netherlands Academy of Arts and Sciences. Up to July 2013, he has had 126 professional articles written in English published in academic journals or as book chapters in the United States and Europe; among them, 89 articles were published in anonymously peer-reviewed academic journals. He has had 108 professional articles written in Chinese and published in China; among them, 85 articles were published in peer-reviewed Chinese academic journals. He has published twenty-three academic books; among them, eight were written in English (three published by Springer Publisher and one by University of Wisconsin Press). Yi Zeng has been awarded eleven national academic prizes and three international academic prizes, such as the Dorothy Thomas Prize of the Population Association of America, the Harold D. Lasswell Prize in Policy Science awarded by the international journal Policy Sciences and Kluwer Academic Publishers, Award for 2011 AJPH (American Journal of Public Health) Paper of the Year, the national prizes for advancement of science and technology awarded by the State Sciences and Technology Commission of China, the highest academic honor of Peking University: "Prize for Outstanding Contributions in Sciences," and the "Chinese Population Prize (Science and Technology)", jointly awarded by nine ministries and seven national non-governmental associations in China.

Dr. Zhenglian Wang's Summary Biography

Dr. Zhenglian Wang received her PhD degree in Health Science (Medical Demography) of Medical School of the University of Southern Denmark in May 2001. She is currently the President of Households and Consumption Forecasting Inc., NC, U.S.A., and a Senior Research Scientist at Center for Study of Population and Health of Duke University. Her main research interests are family household projections, estimates, market research, population aging, and software development. She has expertise and been working on ProFamy extended cohort-component method and software development for household, living arrangement and consumption projections. She was PI of NIH funded SBIR Phase I and Phase II projects which develop the new method/program into user-friendly software, and develop the associated database for wide applications of households and consumption forecasting at national and subnational levels. She has published dozens of research articles and one book (as second author) with Vaupel, J. W., Kirill Andreev and A. Yashin.



Wenzhao Shi's Summary Biography

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Work Experience:

April, 2007-- Digital China Group

Executive Director of Data Technology Center
General Manager of Public Business Division

- 2012, successfully applied two National Technology Support Program funded above 7 Million U.S. dollars, which are "Social Security Policy Automation Model Platform and Decision Support System" and "Population and Development Mathematic Model and Multiple Decision Support System".
- 2011, developed international version of population projection software PADIS-int and launched it in the 44th United Nations Conference on Population and Development in April 2011.
- 2007--2010, led a team of 200+ software engineers, developed a state key e-government project: Population Administration Decision Information System (PADIS); established a leading solution for decision support system and modeling system in China. The PADIS project was highly praised by experts and the government.

September, 1993-October, 2006
Technical Manager

IBM U.S.

Software

Education Background

Sep, 1989—July, 1993, Xi'An Jiaotong University, Material Science and Engineering, Bachelor

September, 1994—July, 1996, National University of Singapore, Computer Science, Master