

AUSTRALIA-CHINA POPULATION AGEING RESEARCH HUB



UNSW
SYDNEY

INTRODUCTION

Overview

The Australia-China Population Ageing Research Hub was established in 2015 with significant financial support from the UNSW Vice-Chancellor's Strategic Priority Fund. It is based at the UNSW node of the ARC Centre of Excellence in Population Ageing Research (CEPAR), a globally recognised multidisciplinary research organisation which is uniquely placed to spearhead this initiative. The Hub undertakes extensive research into the pension, social security and health implications of population ageing in China. Its high-calibre personnel have developed relationships with Chinese academics and policy-makers at both the institutional and individual levels. Over a long period, they have been involved in the policy debate on the social and economic consequences of rapid population ageing in China.

The Hub's research team is led by CEPAR Director John Piggott as the Hub's Director and by CEPAR Partner Investigator Hanming Fang as the Hub's Scientific Director. Professor Fang is Professor of Economics at the University of Pennsylvania. The team consists of four full-time researchers - Senior Research Fellow Dr Katja Hanewald, Research Fellow Dr Bei Lu, and Senior Research Associates Drs Han Li and Shang Wu - and a number of PhD students.

Research Program

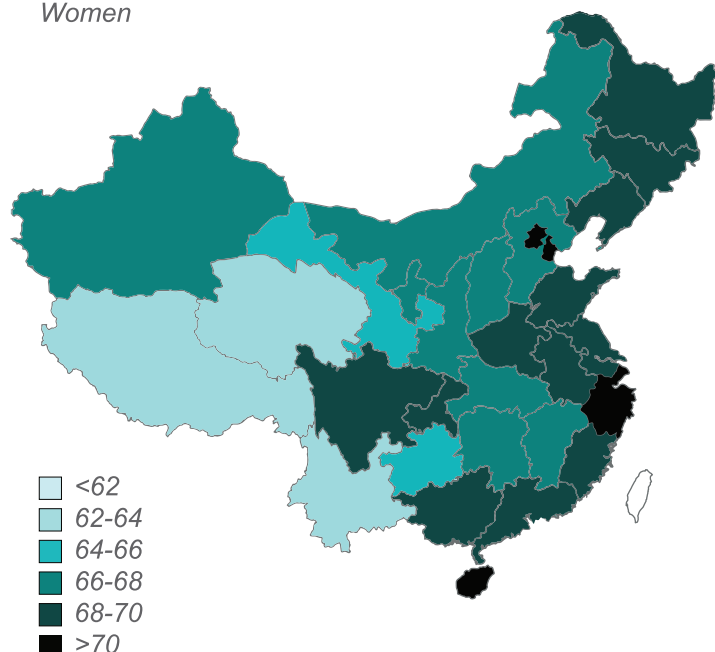
The research program draws on multiple disciplines to deliver new insights on reform priorities for an ageing China. The research focuses on:

- 1 Ageing trends:** Improvements in longevity and health in China have not been equal across provinces. The Hub analyses ageing trends over time and across provinces, and is developing an index measuring the preparedness of Chinese provinces for population ageing.
- 2 Long-term care:** Demographic, urbanisation, and economic patterns put pressure on traditional care arrangements in China. The Hub analyses attitudes to different long-term care arrangements, estimates future demand of modes of care, and evaluates measures that can ensure the supply of care meets the demand for it.
- 3 Mature labour force participation:** Pension ages for urban Chinese workers are 60 for men and 50 or 55 for women, but most retire earlier. The Hub studies the determinants of mature labour force participation and the effects of future increases in pension ages.
- 4 Retirement income, financial products and housing:** The market for retirement financial products in China is small but will become important as the population ages. The Hub develops new financing mechanisms based on empirical research into income trends and risk exposures of older Chinese. A key focus is on housing-related products such as reverse mortgages as a source of retirement income.

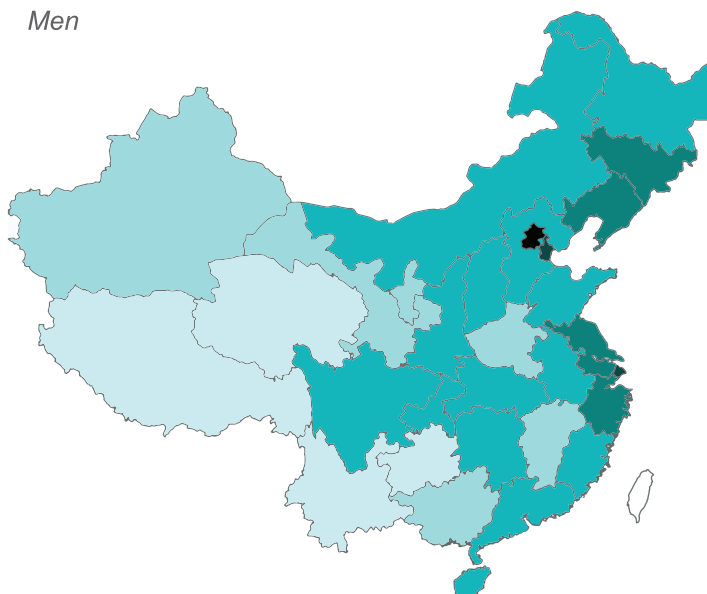
Healthy life expectancy by province, 2010

(Data from 'Estimating Healthy Life Expectancy: A Province-by-Province Study for China' project)

Women



Men



RESEARCH STREAM: AGEING TRENDS

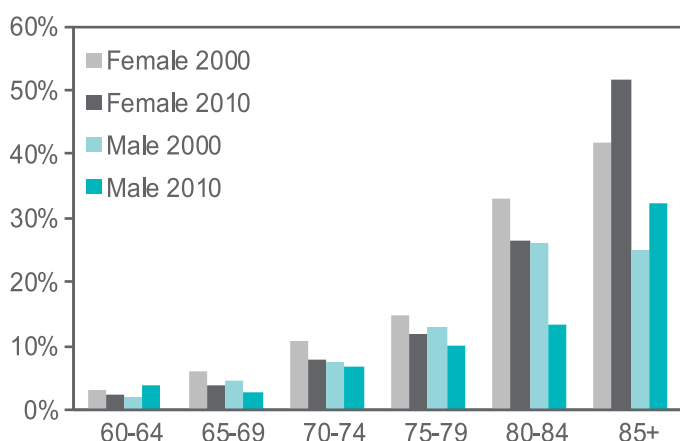
A Dynamic Analysis of Chinese Elders' Health

Researchers: Bei Lu and John Piggott
External Collaborators: Xiaoting Liu and Mingxu Yang
(both Zhejiang University)

Dramatic demographic, social and economic changes have taken place in the last few decades in China and they have huge impacts on population health. We aim to identify trends in health status, healthy life expectancy, and total life expectancy through the first part of this century.

We use the Aged Population in Urban/Rural China (SSAPUR) data to explore the dynamic changes of elders' health and disability prevalence from 2000-2010. Models are used to predict the impact factors of disability of elders and these are integrated with adjusted population mortality tables and projections using the Sullivan method. Disability Life Expectancy (DLE) and Life Expectancy (LE) at old ages are calculated and estimated. The first part of this study focuses on the disabled status using Activities of Daily Living criteria (ADLs). The results show that nationally, DLE has been compressing from 2000-2010. Improvement in disability prevalence is mainly attributed to urbanisation, better health among the younger old (60-80), higher income and better education. But morbidity expansion is observed in the 80+ age group. In 2017, we will turn attention to Instrumental Activities of Daily Living (IADLs) and chronic disease prevalence. A statistical model will be developed to identify the major predictors for changes in these trends.

Prevalence of ADL disability by age, 2000-2010
(SSAPUR data)



Estimating Healthy Life Expectancy: A Province-by-Province Study for China

Researchers: Han Li, Katja Hanewald and Shang Wu

With rapid economic growth and medical advances, longevity and health in China have been continuously improving in recent decades. However, even as one nation, health inequalities across Chinese provinces are still large. In this paper, we provide a province-by-province analysis of healthy life expectancy (HLE) at birth for China. We develop a multiple regression model utilising information on life expectancy (LE), health and socio-economic factors to estimate HLE for Chinese provinces. The model does not require data on ill-health prevalence rates, which are required by the standard Sullivan's method but are not available for each province. We calibrated the model using data from the Global Burden of Disease Study (2013) for LE and HLE at birth for 188 countries in the years 1990, 2005 and 2013. Using the calibrated model, we provide estimates of HLE at birth for 31 Chinese provinces in 2015. We then discuss the implications of our results for the development of long-term care insurance and the design of pension programs in China.

An Ageing-readiness Index for Chinese Provinces

Researchers: Katja Hanewald and Ke Shen

China's population is rapidly ageing but large differences exist across provinces. This paper uses data from the National Bureau of Statistics of China to construct a composite index in order to compare the varied ageing rates and regional preparedness for population ageing across provinces. We improve existing ageing indicators by developing a microeconomic model to optimize the selection and relative weights of index components. We estimate a multilevel multinomial logistic model using the data from the Chinese Health and Retirement Longitudinal Study (CHARLS). The results identify provinces that are better prepared for population ageing. We also find that government investments in health care and aged care facilities are critical for improving older people's wellbeing. The new index provides an important evidence base for policymakers dealing with the challenges of population ageing in China.

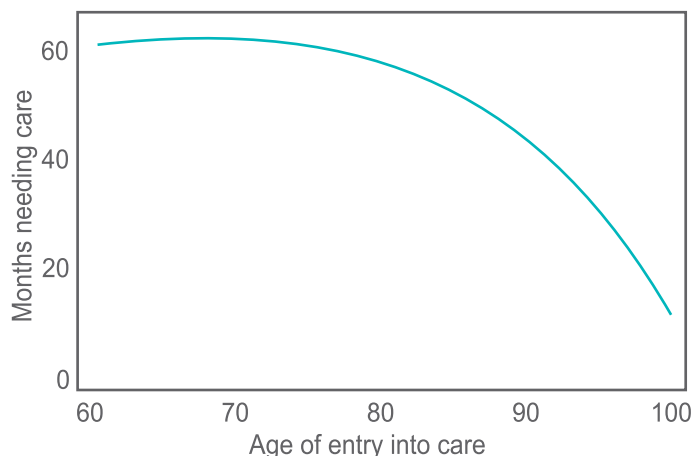
RESEARCH STREAM: LONG TERM CARE

Long-Term Care in China: Estimating Multi-state Life Tables and Costs from a Pilot Provision Program

Researchers: Bei Lu, John Piggott and Michael Sherris
External Collaborators: Mi Hong and Yanan Zhu (both Zhejiang University)

The Chinese authorities have established a range of pilot programs to test the efficacy of alternative approaches to delivering long-term care. One of the first of these is located in Qingdao. A preliminary step has been the documentation of what the pilot actually entails, and this has been completed. Essentially, the pilot is designed to move medical services out of a hospital setting into either home or institutional settings. This reduces pressure on the hospital system, and allows more people to receive medical care in their homes. We are currently working on patterns of exit probabilities from the Long-Term Care system using a multi-state life table (MSLT) model. Preliminary estimates of multistate probabilities for mortality rates in the Qingdao Long Term Care system have also been obtained. Current service pricing rates are used to estimate the individual cost based on each age cohort. Once refined, these will allow us to project the expected tenure with age and the cost-covering premium required to provide sustainable coverage.

Estimated duration of public LTC in Qingdao, 2010-15



Rural Urban Migration and the Health of Elderly Parents in China

Researcher: Xiaoyun Zhang

Large-scale rural-urban migration and rapid population ageing mean a growing number of rural elderly are left behind. The research looks at the effects of adult children's migration on the health of their left-behind elderly parents. We use a panel data set constructed from the 2011 and 2013 waves of the China Health and Retirement Longitudinal Study (CHARLS) and employ an instrumental variables (IV) strategy to account for the endogeneity of children's migration decisions. We use village level sent-down youth (SDY) numbers as an exogenous source of variation in the likelihood of adult children's migration. Preliminary results show that children's migration has a positive effect on parents' health outcomes. The income effect from remittances is the most likely transmission channel. The work provides a detailed picture of the health effects of rural-urban migration in China. It contributes new findings to the growing international literature analysing the effects of rural-urban migration on the health of elderly family members, controlling for self-selection of the migration decision. We also provide new evidence on the changing mechanisms of intergenerational support in the context of rapid urbanisation and population ageing in China.

Modelling Multi-state Health Transitions in China: A Generalized Linear Model with Time Trends

Researchers: Han Li, Katja Hanewald and Adam Wenqiang Shao

Rapid population ageing in China has urged the need to understand health transitions of Chinese elderly in order to assist the development of social security programs and financial products aimed at funding aged care. In this paper, we develop a new approach to modelling health transitions in a multi-state Markov model that allows for age effects, time trends and age-time interactions. The model is implemented in the generalized linear models (GLM) framework. We apply the model to evaluate health transitions of Chinese elderly using individual-level panel data from the Chinese Longitudinal Healthy Longevity Survey (CLHLS) for the period 1998-2012. Our results show that time trends and age-time interactions are important factors explaining health transitions. We also find that differences in disability, recovery and mortality rates continue to persist between urban and rural older Chinese. Moreover, healthy life expectancy is computed based on the proposed model to predict the demand for aged care services in China.

RESEARCH STREAM: MATURE LABOUR FORCE PARTICIPATION

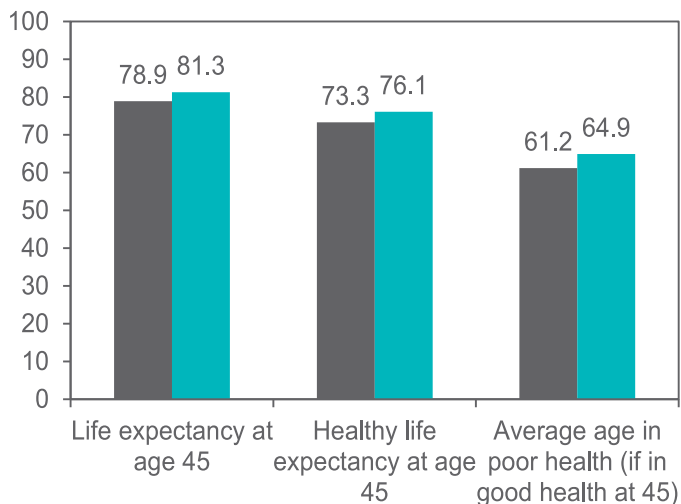
Delaying the Public Pension Age: Implications for Labour Force Participation and Individual Welfare

Researchers: Shang Wu, Katja Hanewald and Hanming Fang

The Chinese government is considering delaying the public pension age and this change is likely to happen in the near future. We develop a life-cycle model of consumption and labour supply decisions for two types of agents: high-skilled and low-skilled. The model incorporates uncertainties in income, health and lifetime, and is calibrated using data from the China Health and Retirement Longitudinal Study (CHARLS). Using the calibrated model, we perform policy simulations to investigate the impact on labour supply decisions and individual welfare of delaying the public pension age for the two heterogeneous groups. Our results will inform the design of public pension policies.

Health prospects by worker type, 1998-2011

■ Blue-collar ■ White-collar



Female Labour Force Participation and Informal Care in Rural China: The Impact of the New Cooperative Medical Scheme

Researcher: Xiaoyun Zhang

In 2003, a heavily subsidized voluntary health insurance scheme - the New Cooperative Medical Scheme (NCMS) - was launched for rural residents in China. This paper investigates the impact of the NCMS policy on informal care-giving provided by adult daughters/in-law and their labour force participation outcomes. The study is based on data from the China Health and Nutrition Survey (CHNS). We use data from the 2004 and 2006 waves to cover the critical phase of the progressive introduction of the NCMS. We employ propensity score matching combined with difference-in-difference estimation to estimate the “average treatment effect on the treated”, addressing the selection bias resulting from the voluntary enrolment in the health insurance plan.

Our results show that the NCMS has significantly decreased the propensity of older Chinese needing care and has significantly increased the working hours of adult daughters/in-law. We also find heterogeneous impacts across household income groups. Older Chinese in low-income household groups benefit more from NCMS enrolment in terms of care demand. Our results suggest that the NCMS helps to reduce health inequality in rural China. The paper contributes new findings to the literature on the beneficial impact of government-sponsored health insurance on health, informal care and labour markets in developing countries.

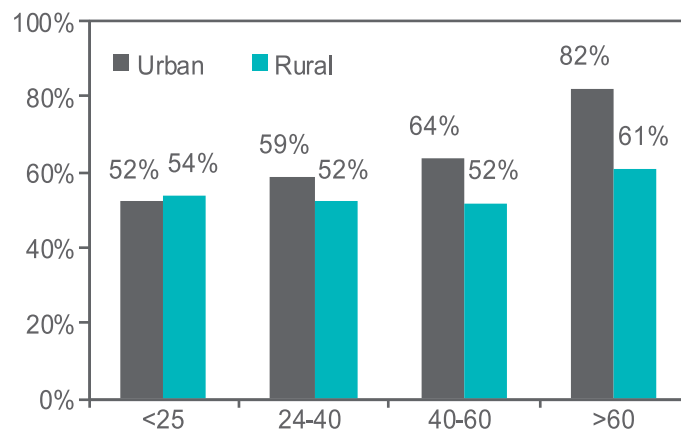
RESEARCH STREAM: RETIREMENT INCOME, FINANCIAL PRODUCTS AND HOUSING

The Role of Home Equity for Retirement Financial Planning in China

Researchers: Katja Hanewald, Hazel Bateman, Hanming Fang and Shang Wu

A very large component of Chinese household wealth is held in the form of home equity. The aim of this project is to conduct an online survey of Chinese adults aged 45+ on the role of home equity for their retirement financial planning and their potential interest in home equity release products. It will provide important insights for further theoretical research on optimal retirement financial strategies of older Chinese households and for the design of effective new retirement financial products for the Chinese market.

Home equity as % of wealth by age of household head, 2013 (CHIPS data)



DIRECTORS



Hub Director
Professor
John Piggott

John Piggott is Scientia Professor of Economics in the UNSW Business School and Director of the ARC Centre of Excellence in Population Ageing Research (CEPAR).

He has a long standing interest in retirement and pension economics and finance. His publications include more than 100 journal articles and chapters in books, which have appeared in the leading international academic journals as well as in highly cited conference volumes. His national policy experience includes membership of the Henry Tax Review Panel and the Australian Ministerial Superannuation Advisory Committee, among other appointments. He worked with the Japanese government for nearly a decade from 1999 on pension and population ageing issues. In 2004, he was tasked with evaluating World Bank assistance on pension reform in the Asian region for the Bank's Operations Evaluation Department. In 2007 he was appointed Visiting Professor, Zhejiang University, China, an on-going appointment, and from 2008-2010 was Visiting Scholar with the Department of Insurance and Risk Management, Wharton School of Business, University of Pennsylvania. He has a PhD in Economics from the University of London.



Scientific Director
Professor
Hanming Fang

Hanming Fang is Class of 1965 Term Professor of Economics at the University of Pennsylvania, a Research Associate at the National Bureau of Economic Research (NBER), and a CEPAR Partner Investigator.

Professor Fang is an applied microeconomist with broad theoretical and empirical interests focusing on public economics. His research covers topics ranging from discrimination, social economics, welfare reform, psychology and economics, to public good provision mechanisms, auctions, health insurance markets and population ageing.

Professor Fang received his PhD in Economics from the University of Pennsylvania in 2000. Before joining the Penn faculty, he held positions at Yale University and Duke University.

RESEACHERS



Senior Research Fellow
Dr Katja Hanewald

Katja Hanewald's research addresses risk management and insurance aspects of population ageing. Her current research investigates ageing trends, the design of retirement financial products and optimal retirement financial decisions of older households in China.

Katja held academic positions at Humboldt-Universität zu Berlin, Germany (2008-2010), and at the University of New South Wales (2011-2013), and worked at the German Federal Ministry of Finance (2013-2015). She was a CEPAR Associate Investigator from 2011-2015. She obtained her doctoral degree in Economics from Humboldt-Universität zu Berlin in November 2010.



Senior Research Associate
Dr Han Li

Han Li received a Bachelor of Commerce (Honours) degree in Actuarial Studies at the University of Melbourne and completed her PhD degree at Monash University.

Han's research expertise is in the field of mortality modelling and forecasting using advanced econometric and statistical techniques. She is currently working on projects involving multi-state health transition models and long-term care insurance in China. Her research has been published in top tier journals including Insurance: Mathematics and Economics and the Journal of Forecasting.



Senior Research Associate
Dr Shang Wu

Shang Wu has a PhD in Actuarial Studies from UNSW. His PhD thesis studies the demand for long-term care and longevity insurance. Before starting his PhD he obtained a Bachelor of Business (Honours) degree in Finance from University of Technology, Sydney and a Master's degree in Accounting.

Shang's main research interests are retirement income, retirement financial products and portfolio optimisation. He also has expertise in life-cycle modelling and survey design. His current research focuses on retirement financial decisions of older households and pension reforms in China.



Research Fellow
Dr Bei Lu

Bei returned to academia in 2002 to undertake a PhD in Economics at UNSW after working as an international trader for 12 years. Her thesis and subsequent research focuses on pensions and population ageing related social welfare and economic issues.

She has been successful in developing international linkages over the past ten years with organisations such as the provincial government of Zhejiang, the World Bank's Operations Evaluation Department and Zhejiang University. Bei is currently participating in a Chinese Key National Science Project, as well as a project focused on China's Second Pillar Pension Reform organised by the Chinese Academy of Social Sciences and major insurance companies in China. She has presented her research at international conferences including the Stanford-Harvard Population Ageing Conference and the London School of Economics Long-Term Care Conference. Her research has appeared in the International Social Security Review, the Journal of the Economics of Aging, Population Review, CESifo Economic Studies and the Journal of Aging and Social Policy. She has also published in Chinese newspapers, journals and books. In addition to her role with the Hub, Lu Bei holds fellowships with CEPAR, Tsinghua University and Zhejiang University.

Other Researchers Associated with the Hub

Other researchers contribute their expertise to particular projects within the Hub's research program. Contributors include Professors Hazel Bateman and Michael Sherris from the UNSW School of Risk and Actuarial Studies and Dr Adam Wenqiang Shao from Mine Wealth + Wellbeing.

PhD students include Cheng Wan, Callan Windsor and Xiaoyun Zhang.

Research Assistants include Kevin Krahe and Ke Shen.

OUTREACH AND LINKAGES

Workshop on Population Ageing and the Chinese Economy

The Hub hosts an annual Workshop on Population Ageing and the Chinese Economy to strengthen our links with key researchers and research groups focused on this topic. The two day program usually comprises a day of presentations from leading national and international scholars and a second day focused on presentations from PhD students and early career researchers. The aim of the second day is to provide regional networking and development opportunities for the next generation of researchers in the field.

The 2nd Annual Workshop held in July 2016 at UNSW attracted 38 participants and included presentations from Albert Park (Hong Kong University of Science and Technology), Rod Tyers (University of Western Australia), Jing You (Renmin University), Hanming Fang (University of Pennsylvania) and Xin Meng (Australian National University) followed by a lively roundtable discussion. The second day was reserved for presentations from nine PhD students or early career researchers from APRU (Association of Pacific Rim Universities) in Australia and Asia, who presented their innovative projects and gained feedback from senior experts and other workshop participants. The topics were varied and covered important issues in population ageing with regard to the Chinese economy, including presentations on public transfer inequality in China; female labour force participation; migration; long-term care needs and financing; informal care; and the high Chinese savings rate. The workshop was jointly hosted by CEPAR and APRU.

Conference Presentations

Research conducted in the Australia-China Population Ageing Research Hub was presented at several major conferences in China in 2016 including the Workshop on Economics of Aging and Health (Shanghai, May 2016), the China Second Pillar Pension Reform Project Workshop (Beijing, June 2016), the Urbanization and Social Development Forum (Qingdao, June 2016), the 7th China International Conference on Insurance and Risk Management (Xi'an, July 2016), the Asia-Pacific Risk and Insurance Association 2016 Annual Conference (Chengdu, August 2016), the Ageing in the Asia-Pacific Research Symposium 2016 (Beijing, November 2016) and the 16th China Economics Annual Conference (Wuhan, December 2016).

Visits

Hub researchers visited key leading research institutions in China in 2016, including Peking University, the Chinese Academy of Social Sciences (CASS) and Renmin University. PhD candidate Xiaoyun Zhang spent four weeks with the China Health and Retirement Longitudinal Study (CHARLS) at Peking University to advance her PhD research. Hub researchers also visited several Chinese government agencies in 2016, including the Social Welfare Division of the Ministry of Finance of China in Beijing and the Guangdong Bureau of Human Resources and Social Security in Guangzhou.

Connect with the Hub

The Hub is interested in connecting with high quality research organisations with a research program focused on the economic and social impacts of population ageing in China and the Asia-Pacific region, with a view to establishing collaborative research projects or other joint initiatives.

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