

Tianyu SHEN

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EMPLOYMENT

Vienna Institute of Demography (VID)

Austrian Academy of Sciences

Postdoc Researcher

Research group: *Health & Longevity* (Marc Luy)

Vienna, Austria

Dec 2024 – Present

EDUCATION

The Australian National University

PhD in Demography

Advisory panel: Collin F. Payne, Vladimir Canudas-Romo, Alyson van Raalte

Canberra, Australia

Jul 2021 – Jan 2025

SCHOLARLY OUTPUTS

Peer-reviewed Publications

Shen, T., van Raalte, A. & Payne, C.F. (2025). Changing educational attainment as a driver of cohort changes in healthy longevity: a decomposition analysis of US birth cohorts.

American Journal of Epidemiology.

<https://doi.org/10.1093/aje/kwaf066>

Shen, T., and O'Donnell, J. (2024). Modeling Disability-free Life Expectancy with Duration

Dependence: A Research Note on the bias in the Markov Assumption. *Demography*.

<https://doi.org/10.1215/00703370-11696463>

Shen, T., Payne, C.F. & Jahromi, M. (2024). Dynamics of Health Expectancy: An introduction to the Multiple Multistate Method (MMM). *Sociological Methods & Research*.

<https://doi.org/10.1177/00491241241268775>

Shen, T., Raymer, J., and Hendy, C. (2024). Forecasting school enrollments in the Australian Capital Territory. *Journal of the Royal Statistical Society Series A*.

<https://doi.org/10.1093/jrsssa/qnae094>

Shen, T., Riffe, T., Payne, C.F. & Canudas-Romo, V. (2023). Decomposition of Differentials in Health Expectancies From Multistate Life Tables: A Research Note. *Demography*.

<https://doi.org/10.1215/00703370-11058373>

Shen, T. & Payne, C.F. (2023). Disability and morbidity among US birth cohorts, 1998-2018: a multidimensional test of dynamic equilibrium theory. *SSM-Population Health*.

<https://doi.org/10.1016/j.ssmph.2023.101528>

Shen, T., Raymer, J., Guan, Q. & Wiśniowski, A. (2023). The estimation of age and sex profiles for international migration amongst countries in the Asia-Pacific region. *Population, Space and Place*.

<https://doi.org/10.1002/psp.2716>

Shen, T., Lazzari, E. & Canudas-Romo, V. (2023). The contribution of survival to changes in the net reproduction rate. *Population Studies*.

<https://doi.org/10.1080/00324728.2023.2187441>

- Raymer, J., Guan, Q., **Shen, T.**, Hertog, S. & Gerland, P. (2025). Modelling the age and sex profiles of net international migration. **Demographic Research**.
<https://doi.org/10.4054/DemRes.2025.53.19>
- Liwin, L., **Shen, T.** & Payne, C.F. (2025). The role of education composition in shaping the burden of obesity and diabetes in Indonesia: a microsimulation-based projection study. **Population Health Metrics**. <https://doi.org/10.1186/s12963-025-00372-2>
- Canudas-Romo, V., **Shen, T.** & Payne, C.F. (2024). National population growth rate, its components, and subnational contributions: A research note. **Demography**.
<https://doi.org/10.1215/00703370-11372369>
- Baptista, E. A., **Shen, T.**, & Canudas-Romo, V. (2024). Disability and its impact on life expectancy: heterogeneity across Mexican states. **BMC Public Health**.
<https://doi.org/10.1186/s12889-024-20245-x>
- Raymer, J., Guan, Q., **Shen, T.**, Wiśniowski, A., Pietsch, J. (2022). Estimating international migration flows for the Asia-Pacific region: Application of a generation–distribution model. **Migration Studies**. <https://doi.org/10.1093/migration/mnac023>
- Canudas-Romo, V., **Shen, T.** & Payne, C.F. (2022). The Components of Change in Population Growth Rates. **Demography**. <https://doi.org/10.1215/00703370-9765067>
- Canudas-Romo, V., **Shen, T.** & Payne, C.F. (2021). The Role of Reductions of Old-Age Mortality in Old-Age Population Growth. **Demographic Research**.
<https://doi.org/10.4054/DemRes.2021.44.44>

Book Chapter/Report

- Shen, T.**, Guan, Q., Canudas-Romo, V. (forthcoming). “Estimating net international migration by age and sex from the Human Mortality Database”, in L. van Wissen & N. Keilman (Eds.), *Liber Amicorum for Frans Willekens*.
- Raymer, J., Guan, Q., **Shen, T.**, Hertog, S. and Gerland, P. (2023). Modelling the Age and Sex Profiles of Net International Migration. United Nations, Department of Economics and Social Affairs, Population Division, Technical Paper No. UN DESA/POP/2023/TP/No.7.
https://www.un.org/development/desa/pd/sites/www.un.org.development.desa.pd/files/undesapd_2023_tp_net_migration.pdf

Papers Under Review

- Shen, T.**, Boen, C. & Payne, C.F. (2025). Educational Inequalities in Life Expectancy and Disabled Life Expectancy in the U.S.: An Intersectional Cohort Analysis by Race and Gender [**Under review**]. Working paper: <https://doi.org/10.1553/ox00408a51>.
- Shen, T.**, Wang, X., Basellini, U., Alexander M. & Chen, I. (2025). Leveraging Population Change to Improve Estimation of Mortality in Data-Scarce Context [**Under review**].

Selected Conference Papers (see [personal website](#) for all conference papers)

- Shen, T.**, Payne, C.F. & Jahromi, M. (2023). Dynamics of Health Expectancy: An introduction to the Multiple Multistate Method (MMM). **Population Association of America 2023 Annual Meeting**, 12–15 April 2023, New Orleans, US. [Full paper: <https://events.rdmobile.com/Lists/Details/1725852>]
- Shen, T.**, van Raalte, A. & Payne, C.F. (2024). Changing Educational Attainment as A Driver of Cohort Changes in Healthy Longevity: A Decomposition Analysis of US Birth Cohorts. **Population Association of America 2024 Annual Meeting**, 17–20 April 2024, Columbus, US. [Full paper: <https://events.rdmobile.com/Lists/Details/2276206>]
- Shen, T.**, and O'Donnell, J. (2024). Modeling Disability-free Life Expectancy with Duration Dependence: A Research Note on the bias in the Markov Assumption. **European**

Population Conference 2024, 12-15 June 2024, Edinburgh, UK. [Full paper: <https://epc2024.eaps.nl/abstracts/240418>]

Shen, T., Wang, X., Basellini, U., Alexander M. & Chen, I. (2025). Improving Mortality Estimation in Data-Scarce Context: Leveraging Population Change Information. **Population Association of America 2025 Annual Meeting**, 10–13 April 2025, Washington DC, US. [Full paper: <https://events.rdmobile.com/Lists/Details/2774001>]

Shen, T., Boen, C. & Payne, C.F. (2025). Educational Inequalities in Healthy Longevity: An Intersectional Analysis of Race in the United States. **36th REVES Conference 2025**, 14-16 May 2025 Tampere, Finland. [Program: <https://events.tuni.fi/reves2025/programme>]

Invited talk

Shen, T. *Healthy Life Expectancy and its Decompositions*. (March 2024). Presented at Formal Demography Working Group. <https://www.youtube.com/watch?v=xPscZoWZnOU&t=10s>

PROFESSIONAL SERVICE

Guest Lecturer

<i>Special Topics in Population Change</i> (DEMO8091)	2021, 2023, 2024
<i>Life table and population projection with R</i> (short training course)	2020, 2021
<i>Demographic tools and application with R</i> (short training course)	2024

Reviewer/Editor

Sage Open (Editorial Board)	2025
<i>SSM - Population Health</i>	2023
<i>Preventive medicine reports; Population Health Metrics;</i>	
<i>BMC Public Health; Scientific Reports</i>	2024
<i>Demography; Population Space and Place; Demographic Research; Population studies</i>	2025

Senior Research Officer

Mar 2022 – Nov 2024

ANU School of Demography with *ACT Education Directorate*

- Analysing the historical student records and capturing the time trend
 - Developing models to project student enrolment in each ACT school and academic level
 - Proposing assumptions for new schools to the *ACT Education Directorate* based on population trends and enrolment policies
 - Assessing the accuracy of the models and drafting reports for the *Education Directorate*
- [News article: <https://www.abc.net.au/news/2022-11-28/schools-crowding-in-canberras-north-and-west/101478860>]

Project Assistant

Mar 2021 – Jun 2021

ANU School of Demography with *ACT Treasury*

- Training *ACT treasury* with basic demographic knowledge and programming for demographer
- Facilitating the development of short- and long-term population forecast for suburbs (SA2) in ACT
- Accommodating the insights and visions from different stakeholders, such as Urban Planning and Health Department, to generate forecasting assumptions
- Analysing the population impact of ongoing Covid19 in ACT to create scenarios and perdition intervals for forecast

[News article: <https://www.abc.net.au/news/2021-08-22/act-population-set-to-double-leaving-canberrans-divided/100389274>]

Research Officer

Jul 2020 – Dec 2021

ANU School of Demography, *Supervisors: James Raymer*

- Estimating migration flows in Asia-Pacific and incorporating empirical findings as well as migration theories into the estimates
- Developing models and framework for better estimates and visualizing the results
- Leading and co-authoring papers with other colleagues

Research Officer

Feb 2020 – Jun 2020

ANU School of Demography, *Supervisors: Vladimir Canudas-Romo*

- Tailoring a flexible program for *Australian Commonwealth Treasury: Centre of Population* to better project resident population
- Translating the multiregional life table into R and generate population projection for each Australian's states and territories
- Testing the model fit and modifying assumptions
- Drafting report and train the *Treasury* officers with demographic knowledge and program usage

Professional memberships

Population Association of America, International Union for the Scientific Study of Population, European Association for Population Studies

SKILLS

Method

Multistate Modelling | Population Projection | Econometric Modelling
Microsimulation | Time-Series Forecasting | Structural Equation Modelling
Multilevel Modelling | Sequence Analysis | Survival Analysis | Network Analysis

Software

R | Stata | Atlas.ti | Microsoft Access | Adobe Illustrator

Languages (CEFR level)

English	●●●●●●	Chinese	●●●●●●	Cantonese	●●●●●●
Japanese	●●●●○○	German	●●○○○○		

SERVICE TO THE COMMUNITY

Research School of Social Science (RSSS)

Jul 2023 – Nov 2024

First aid officer

ANU Students' Association (ANUSA)

Aug 2023 – Nov 2024

Student representative (CASS HDR)