

# Spatial integration of overseas-born immigrants in Australia

**Qing Guan and Mengxue Chen**

School of Demography, Australian National University

This research is supported by the 2022 Australian Centre on China in the World Research Support Grant



Australian  
National  
University

# Background

- 28% of the Australian population are born overseas (2021 Census)
- Shifts in migration forms since mid-1990s
- Spatial integration - Relevant to chances for inter-group interactions, cultural diversities, and social cohesion
- The conventional spatial assimilation theory

# Overseas-born immigrants in Australia, 2021 Census

Country or region of birth	Persons	Percentage
Australia*	17,020,422	70.8
New Zealand	530,492	2.2
Other Oceania and Antarctica	157,726	0.7
United Kingdom**	1,108,404	4.6
Other North-West Europe	351,429	1.5
Southern and Eastern Europe	658,197	2.7
Northern America	152,119	0.6
South America^^	187,500	0.8
Sub-Saharan Africa	372,151	1.5
North Africa and the Middle East	454,856	1.9
Vietnam	257,997	1.1
Indonesia	87,075	0.4
Malaysia	165,616	0.7
Philippines	293,892	1.2
Other South-East Asia	246,853	1.0
China^	549,618	2.3
Other North-East Asia	305,189	1.3
India	673,352	2.8

\* includes External Territories

\*\* include the Channel Islands and Isle of Man

^ excludes SARs and Taiwan

^^ includes South America, Central America, and the Caribbean



# Research Aim

- To understand spatial integration of overseas-born immigrants in Australia
  - Decompose the residential integration at a finer geographic level (SA2) across various nested geographic scales
  - Variations by immigrants' overseas origins
  - Changes between 2011 and 2021 Censuses
  - Contributing factors such as income (education levels, and arriving cohort).

# Australian Census Data

- Sourced from ABS TableBuilder (and Datapacks)
- Census years: 2011, 2016, 2021
- Birthplaces: 18 overseas countries and regions + Australia
- Geographic levels (*Australian Statistical Geography Standard - ASGS*)
  - Statistical Area Level 2 (SA2)
  - SA3
  - SA4
  - Greater Capital City Statistical Areas (GCCSA)
  - One capital region and one rest-of-state region
- Year of first arrival in Australia
- Highest education attainment

# Measuring spatial integration

- Multiple dimensions
  - Evenness, exposure, concentration, clustering, centralization, etc. (Massey & Denton 1988)
- Indices to measure spatial integration
  - Dissimilarity index, Gini index, Theil index, Exposure index, Coefficient of Variation, etc. (Massey & Denton 1988; Reardon & Firebaugh 2002; Reardon & O'Sullivan 2004; Iceland 2004; Lichter et al. 2015; Guan 2019)
- Advantages of the Theil index
  - Decomposable into additive contributions from different geographic levels (Fischer et al. 2004; Reardon & Firebaugh 2002; Reardon & O'Sullivan 2004)
  - Residential integration measured at a lower geographic level is **net** of residential integration at higher geographic levels



# Measuring residential unevenness between two populations

- Theil index ( $H$ ) measures how evenly two populations are distributed across subnational areas, controlling for the size of the two populations (Fischer et al. 2004; Reardon & Firebaugh 2002; Reardon & O'Sullivan 2004; Iceland 2004; Lichter et al. 2015)

- 0=maximum integration; 1=maximum separation
- Theil index ) at geographic level  $i$  is calculated as:

$H_A$  : two-population total of Australia       $H_i$  : two-population total of subnational geographic area  $i$   
 $E_A$  : Entropy at Australian national level       $E_i$  : Entropy at subnational geographic area  $i$

- Entropy ( $E$ ) measures the population diversity of an area (0~0.69)
  - Two-population Entropy ( $E_i$ ) of area  $i$  is calculated from the percentage ( $p_i$ ) of a population



# Decompose across multi-scalar geographic levels

(build on ASGS) 
$$H_{SA2_A} = \frac{1}{N_A E_A} \sum_{sa2=1}^{SA2} N_{sa2} (E_A - E_{sa2})$$

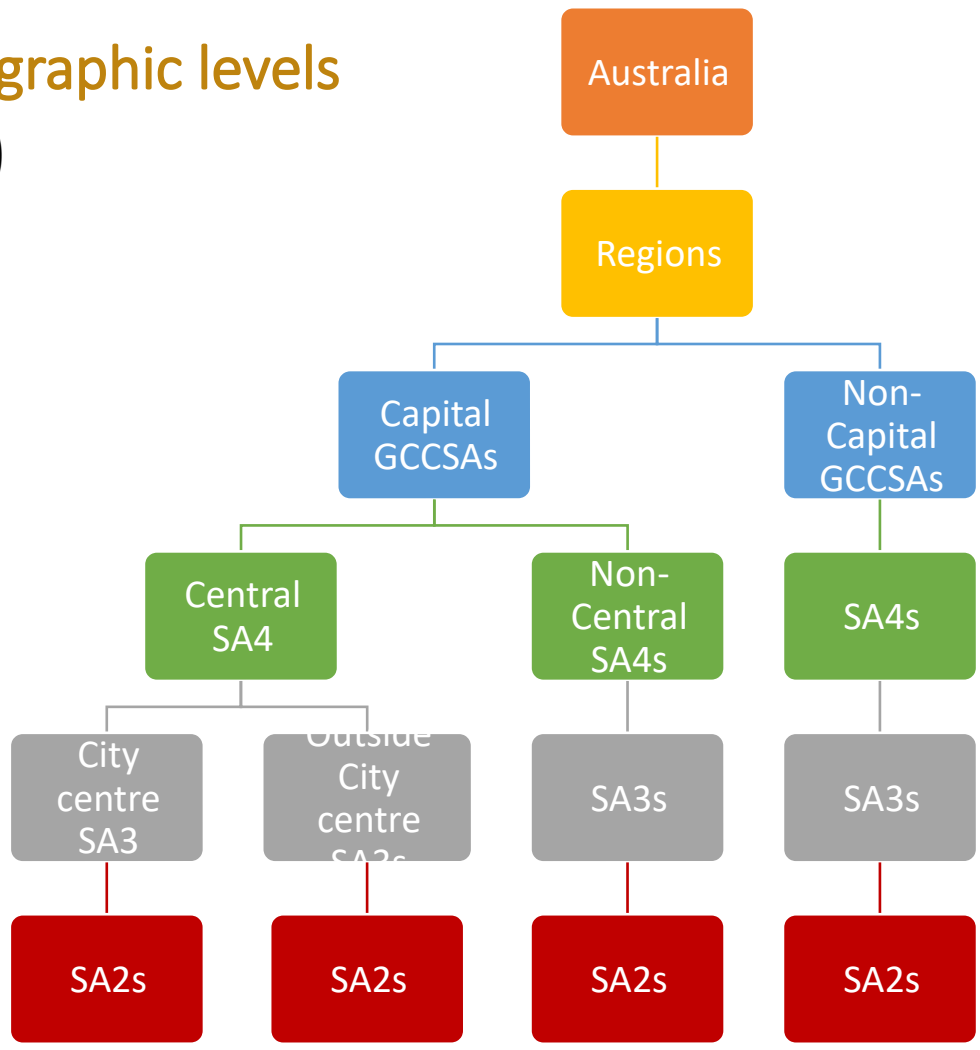
$$H_{R_A} = \frac{1}{N_A E_A} \sum_{r=1}^R N_r (E_A - E_r)$$

$$H_{GCCSA_A} - H_{R_A} = \frac{1}{N_A E_A} \sum_{r=1}^R \sum_{gccsa=1}^{GCCSA} N_{gccsa} (E_r - E_{gccsa})$$

$$H_{SA4_A} - H_{GCCSA_A} = \frac{1}{N_A E_A} \sum_{r=1}^R \sum_{gccsa=1}^{GCCSA} \sum_{sa4=1}^{SA4} N_{sa4} (E_{gccsa} - E_{sa4})$$

$$H_{SA3_A} - H_{SA4_A} = \frac{1}{N_A E_A} \sum_{r=1}^R \sum_{gccsa=1}^{GCCSA} \sum_{sa4=1}^{SA4} \sum_{sa3=1}^{SA3} N_{sa3} (E_{sa4} - E_{sa3})$$

$$H_{SA2_A} - H_{SA3_A} = \frac{1}{N_A E_A} \sum_{r=1}^R \sum_{gccsa=1}^{GCCSA} \sum_{sa4=1}^{SA4} \sum_{sa3=1}^{SA3} \sum_{sa2=1}^{SA2} N_{sa2} (E_{sa3} - E_{sa2})$$



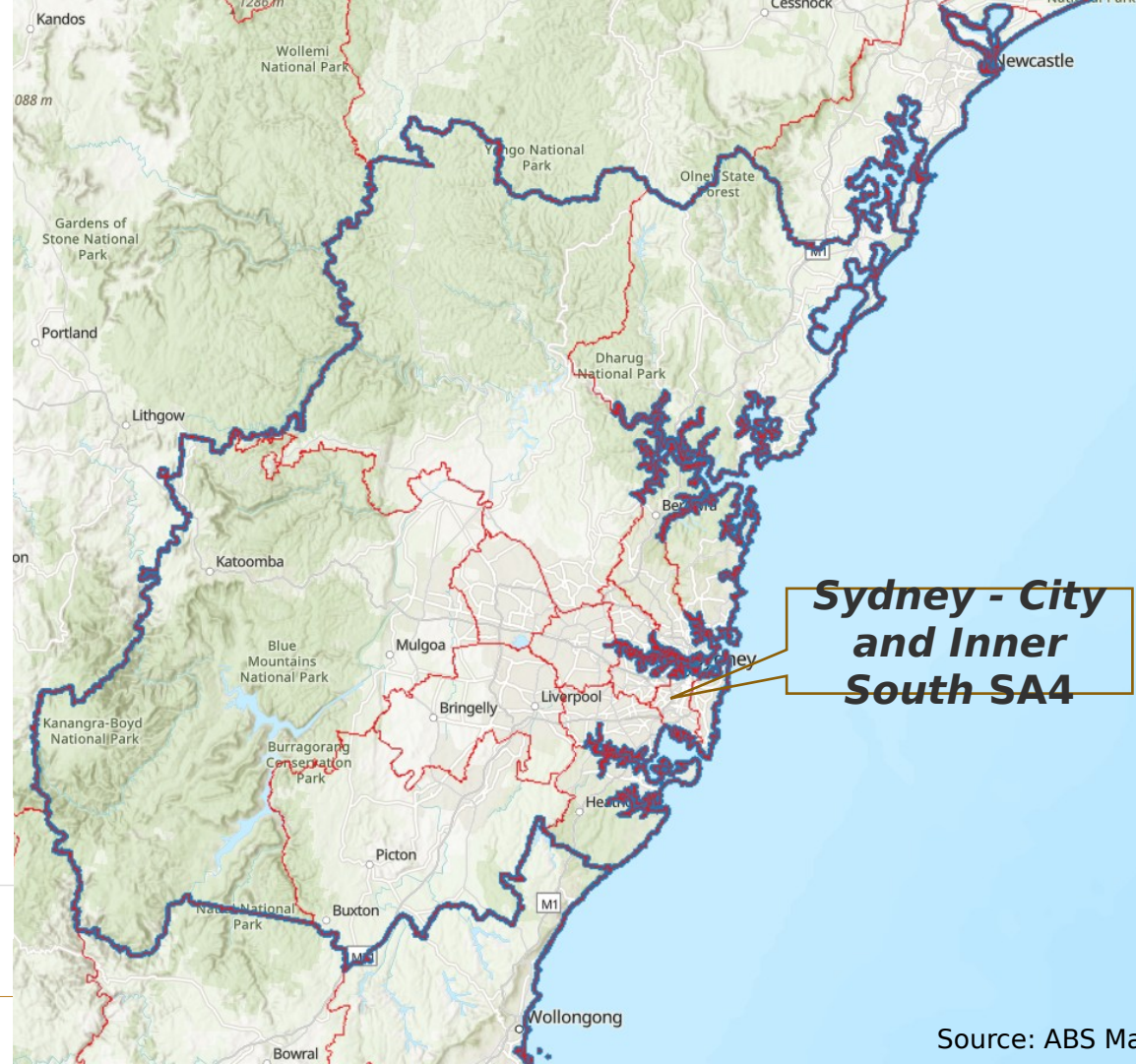


# SA4s nested in the Greater Sydney GCCSA

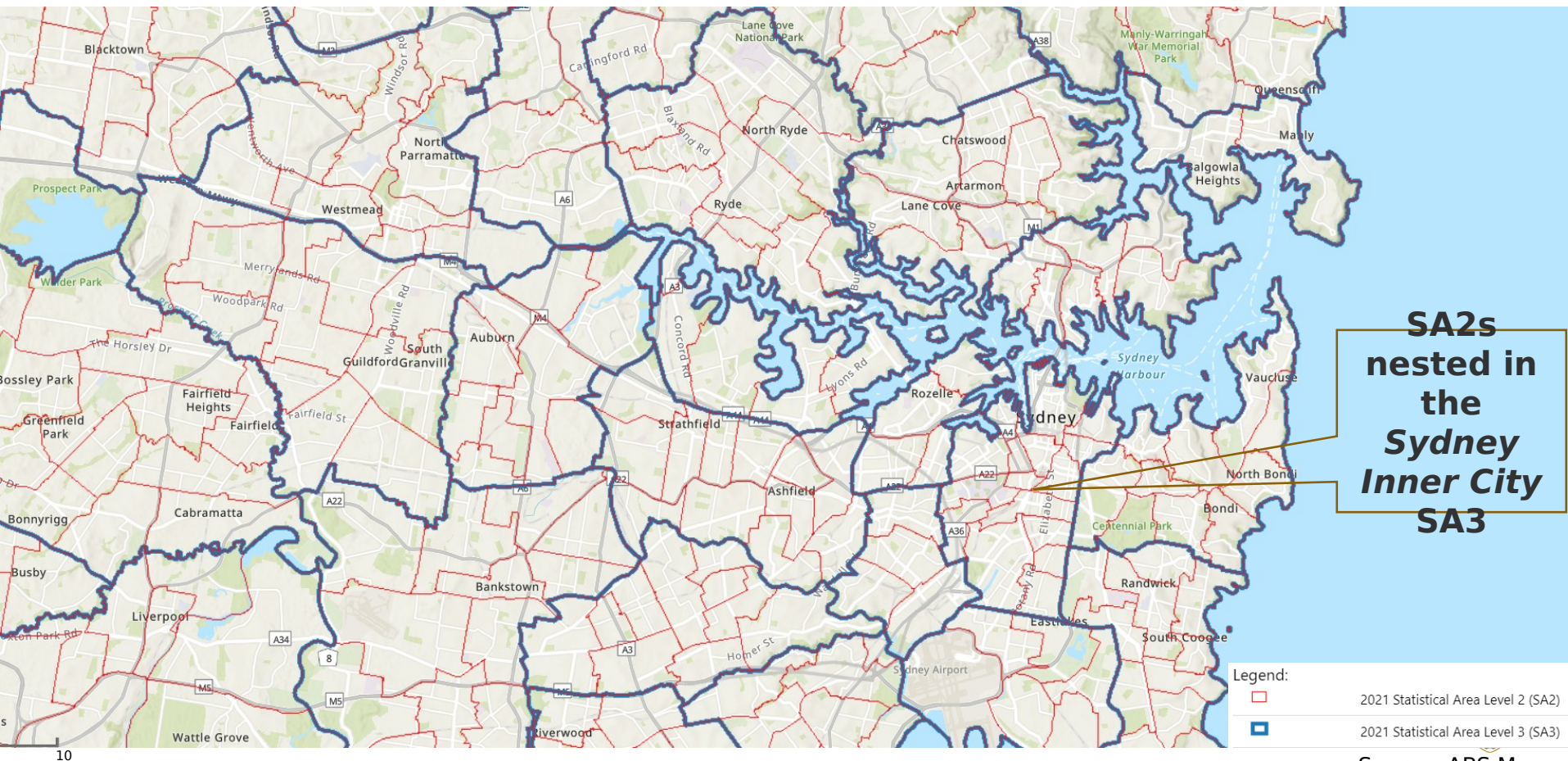
- Central SA4:  
*Sydney – City and Inner South*

Legend:

- 2021 Statistical Area Level 4 (SA4)
- 2021 Greater Capital City Statistical Area (GCCSA)

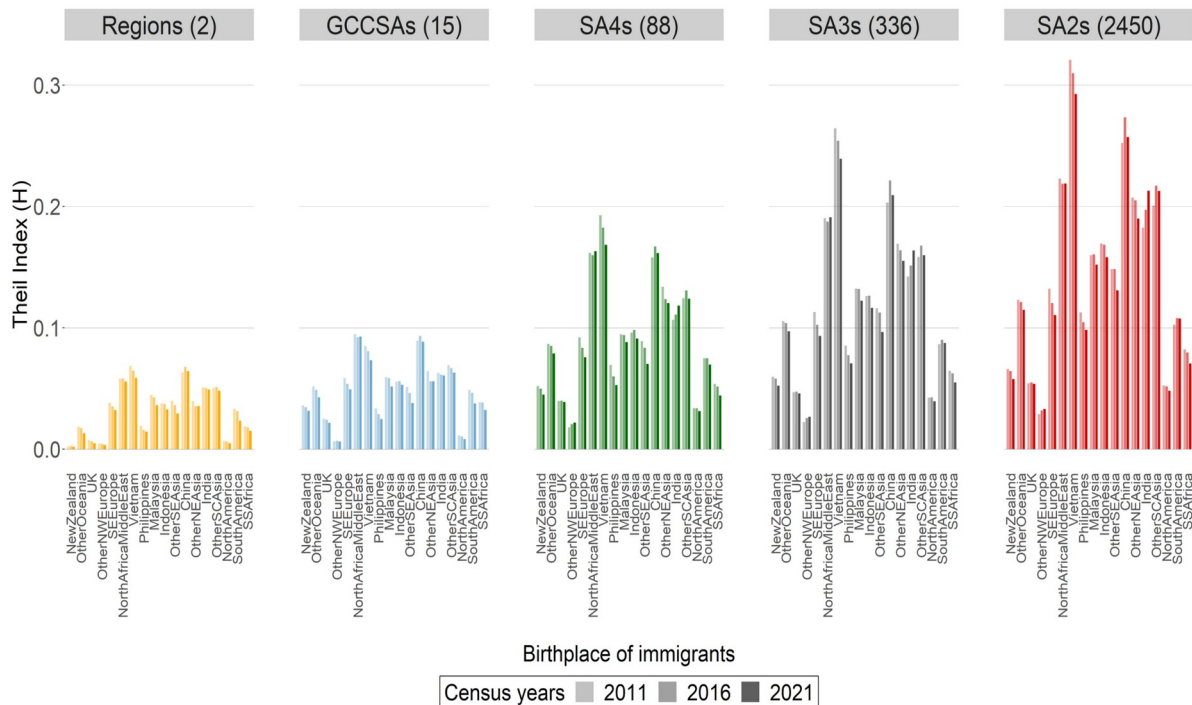


# SA2s nested in SA3s in Sydney





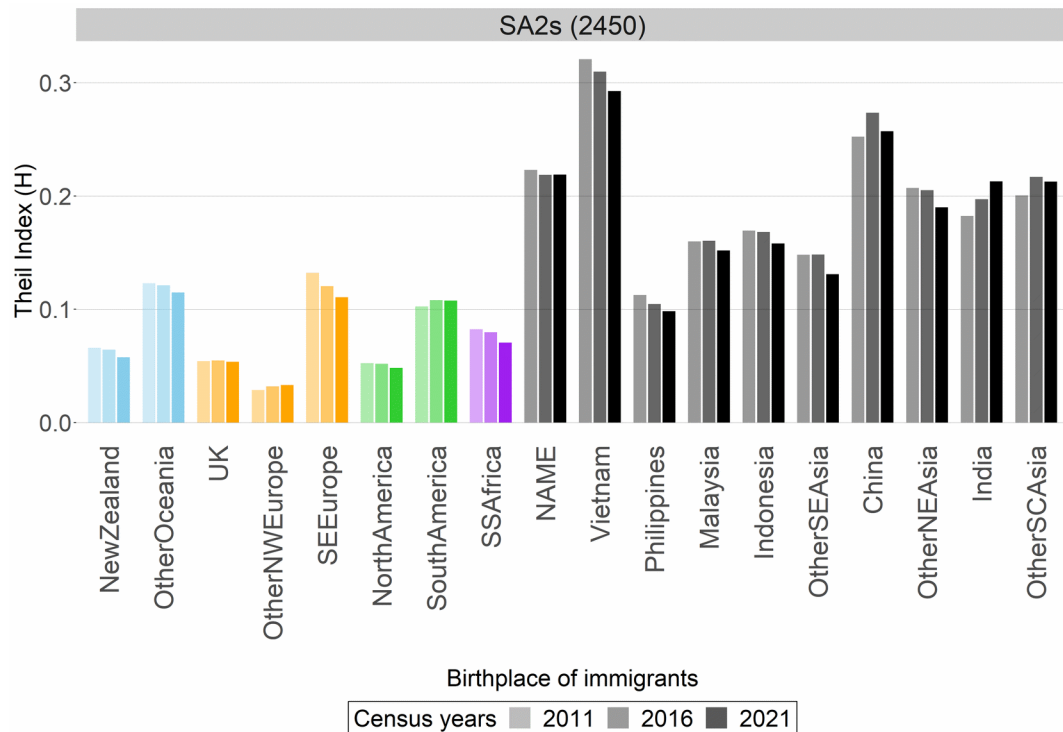
# Theil index ( $H$ ) at different levels by immigrants' birthplace



In 2016 Census, there are: 2 regions, 15 GCCSAs, 88 SA4s, 336 SA3s, and 2288 SA2s.  
In 2011 Census, there are: 2 regions, 15 GCCSAs, 87 SA4s, 330 SA3s, and 2193 SA2s.

- Relative higher residential separation from the Australia-born persons for **Asia-born populations**
- Over-time changes
  - Increased integration in most immigrant groups
  - Declined integration: India, other NW Europe
  - Declined then increased: UK, China,

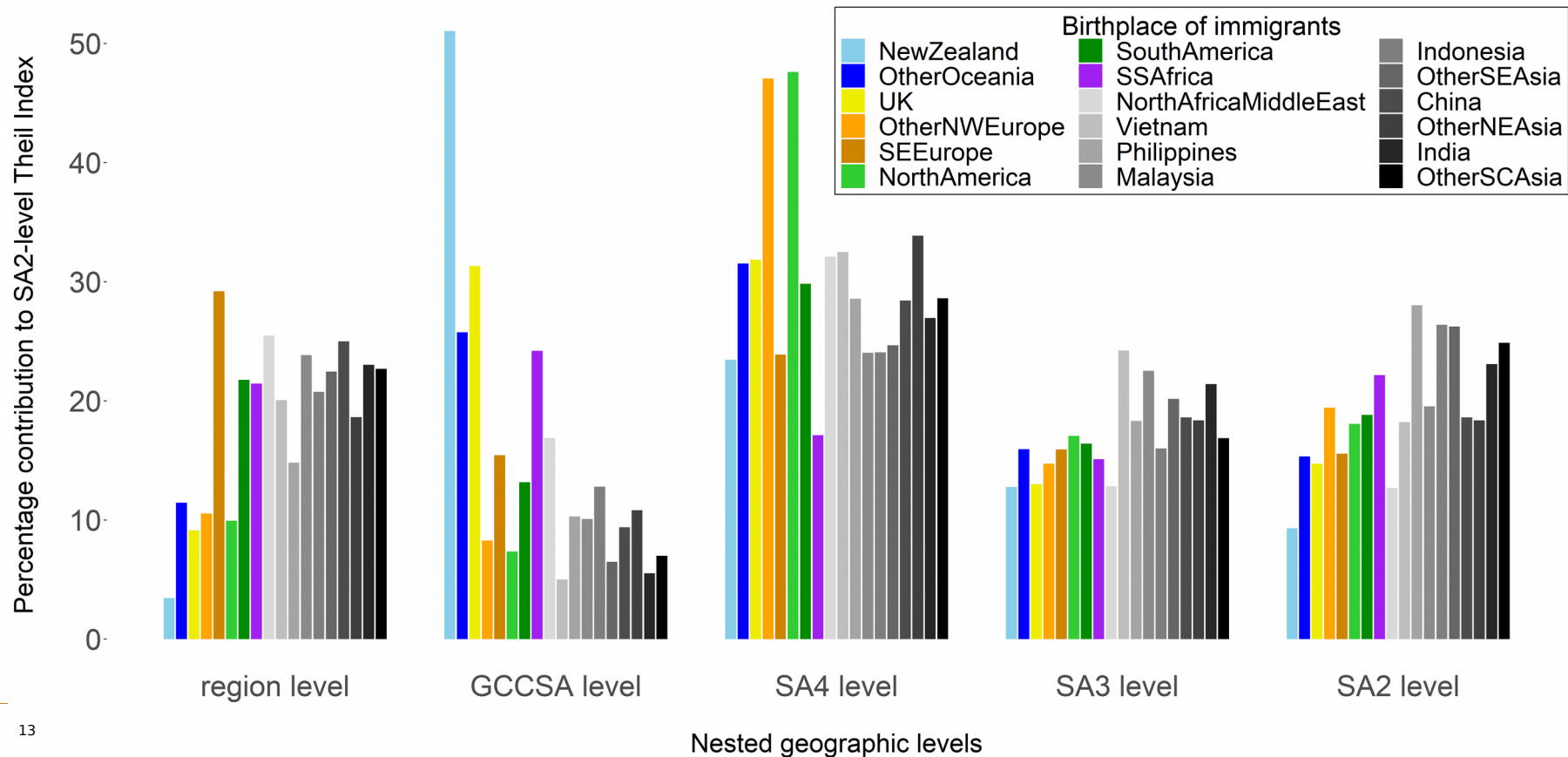
# Theil index ( $H$ ) at SA2 level by immigrants' birthplace



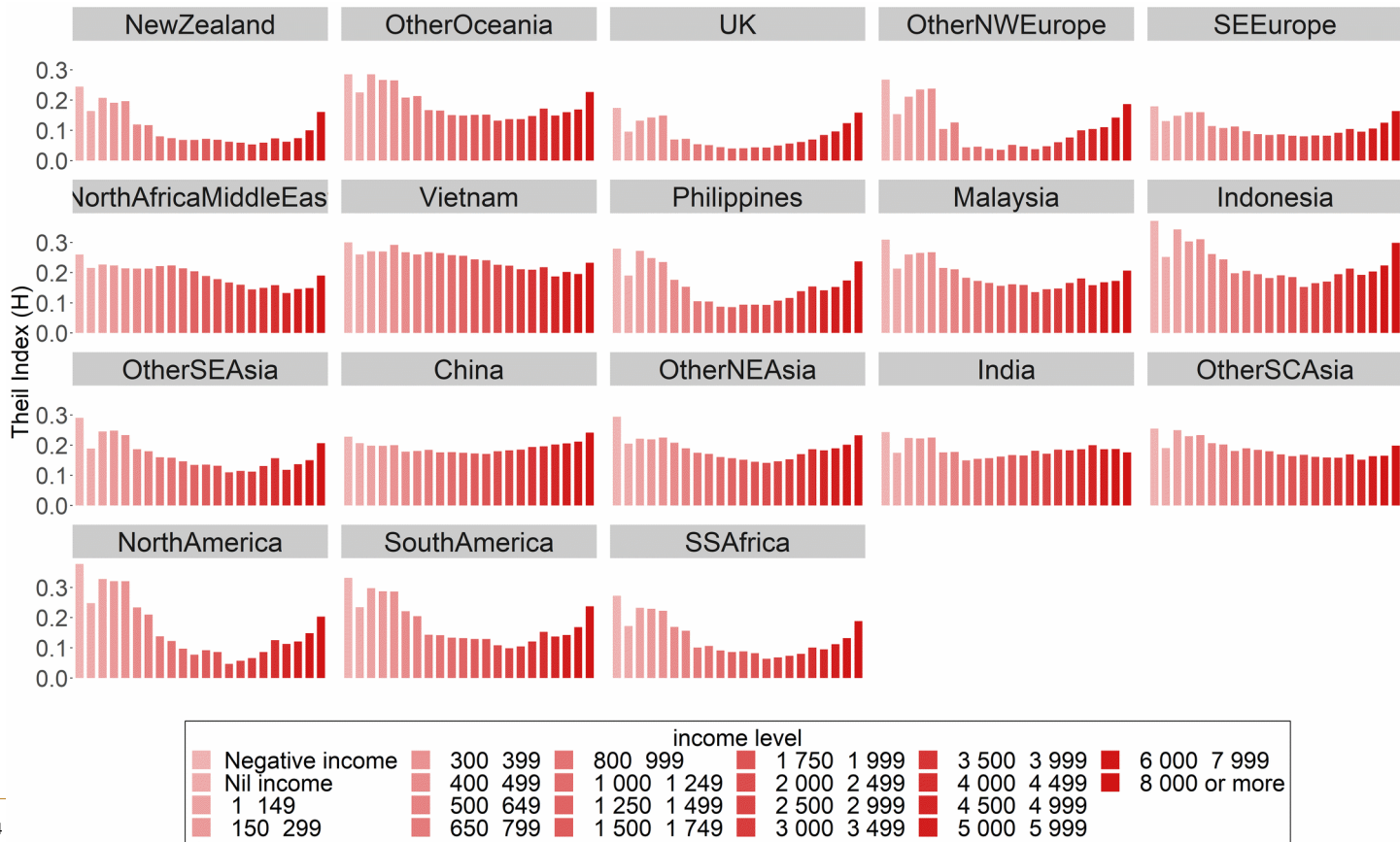
In 2016 Census, there are: 2 regions, 15 GCCSAs, 88 SA4s, 336 SA3s, and 2288 SA2s.  
In 2011 Census, there are: 2 regions, 15 GCCSAs, 87 SA4s, 330 SA3s, and 2193 SA2s.

- Relative higher residential separation from the Australia-born persons for **Asia-born populations** at SA2 level
- Over-time changes
  - Increased integration in most immigrant groups
  - Declined integration: India, other NW Europe
  - Declined then increased: UK, China, Other SC Asia

# SA2-level residential unevenness is largely attributed to the unevenness at higher geographic levels (in %)



# Theil index (H) at SA2 level by immigrants' birthplace and family income, 2021 Census



- **Very high or very low income, higher H index, higher residential unevenness compared to Australia-born persons (U-shape)**

– Exceptions are immigrants born in North Africa and Middle East, Vietnam

- **Median weekly household income ranged between 1,358 in TAS to 2,373 in ACT**



# Limitations

- Changes in geographic boundaries between censuses
- Integration is measured as against the local-born population
  - Residential separation between different overseas-born groups

# Key findings

- The capital-regional divide, the balance between capital cities, and the distribution outside capital city centres contribute the most to residential unevenness between the overseas-born and the Australia-born persons
  - Also recorded substantial differences between Asia-born immigrants and immigrants born elsewhere
  - Differences in finer-geography index are largely contributed by residential unevenness between immigration and the Australia-born persons at higher geographic levels rather than neighbourhood level
- Immigrants born in Asia, with very high or very low family income are generally more separated from the Australia-born persons



# Concluding remarks

- On top of the diverse origin, heterogeneity within an immigrant population further complicates their residential choices
  - E.g. education and income ladders
- The role of migration policies in transforming immigrants residential patterns and spatial integration
  - E.g. skill selection, the State Nomination and Regional Sponsored scheme
  - The regional migration policies could have made a major contribution to the increased spatial integration of the skilled immigrant cohorts
- Future works
  - Separating effects from the eight capital cities (and compare individual cities)
  - Theorizing the multidimensional and multi-way approach of immigrant integration
  - The gaps between (residential) similarities to the local-born population and “integration”
    - » E.g. Sense of belonging and (spatial) integration



# THANK YOU

[qing.guan@anu.edu.au](mailto:qing.guan@anu.edu.au)

[mengxue.chen@anu.edu.au](mailto:mengxue.chen@anu.edu.au)



Australian  
National  
University

# Spatial integration of immigrants

- Recent development of the integration debate to understand residential choices of immigrants from more diverse backgrounds
  - **Segmented assimilation theory** (Portes & Zhou, 1993; South et al., 2005; Edgar, 2014; Hirschman, 2001)
  - **The heterolocalism model** (Zelinsky & Lee, 1998)
  - **The positive benefits of segregation** (Merry, 2012a, 2012b)
  - **A multi-way approach** (Bolt et al., 2010; Samaluk, 2020)
- The skilled migration context
  - **New arrivals characterised by high human capital, channelled by migration policies, connected to co-national networks**
  - **Post-2000 dispersion for China-born immigrants** (Wang et al., 2018; Guan, 2019, 2021)