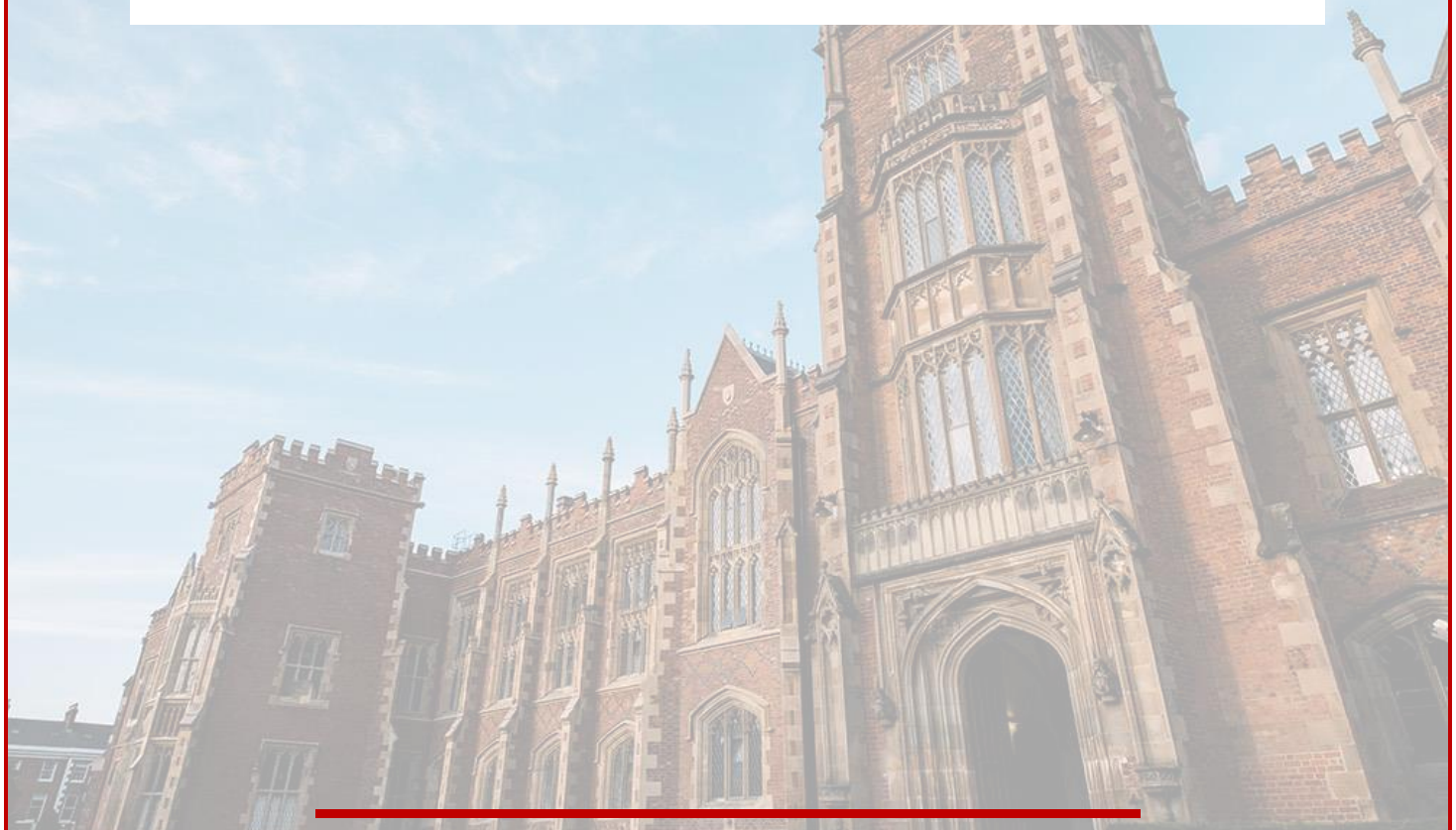
12TH INTERNATIONAL CONFERENCE ON POPULATION GEOGRAPHIES

Queen's University Belfast
30 June - 3 July 2024



CONFERENCE PROGRAMME AND BOOK OF ABSTRACTS

QUEEN'S UNIVERSITY BELFAST

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WELCOME

A MESSAGE FROM THE CONFERENCE CHAIR

We are delighted to extend a warm welcome to delegates of the 12th International Conference on Population Geographies (ICPG). The 12th ICPG is being held at Queen's University Belfast from 30th June to 3rd July 2024, and has been organised by a team from Geography in the School of Natural and Built Environment.

The ICPG is a biennial gathering of Population Geographers, Spatial Demographers and others interested in presenting papers and sharing ideas on spatial population issues. The ICPG provides a unique opportunity for population scholars to engage with colleagues from around the world, share their research, explore innovative ideas and new developments, and contribute to the discipline.

The first ICPG was held in St Andrews in 2002, where the Conference was also held in 2004. The third ICPG was held at the University of Liverpool, with subsequent ICPGs in Hong Kong, Dartmouth, Umeå, Groningen, Brisbane, Seattle, and Loughborough. The Tokyo ICPG – the 11th in the series – was held online given the Covid-19 pandemic. This 12th ICPG is a special opportunity for delegates to meet together in person once again.

The ICPG provides a friendly and supportive environment for delegates at all career stages – a characteristic that typifies the sub-discipline of Population Geography. The Conference has become an important and special time in the diaries of Population Geographers across the world. The ICPG has a loyal following and we extend a special welcome to those who have participated in all previous ICPG meetings. We also extend a warm welcome to first-time ICPG delegates.

The ICPG is a truly international conference; at the 12th ICPG we will welcome over 130 delegates joining from 70 institutions across 25 countries, with many more countries and institutions represented through co-authorship. We welcome delegates from (mainly) academic institutions, as well as national statistical agencies and research centres.

The 12th ICPG follows a similar structure to previous conferences. Following the welcome reception on Sunday 30th June, we have three days of plenary and parallel sessions, as well as a poster session on Tuesday 2nd July. Delegates will have time to network and socialise during the refreshment breaks, meals, three receptions, and the excursions which follow the formal close of the conference on Wednesday 3rd July. Please feel free to make use of the many breakout spaces in Riddel Hall to meet, chat, share and debate with colleagues old and new.

We are delighted to have three plenary sessions from internationally leading scholars and we look forward in particular to their presentations, taking place across the three days. The themes of the plenary, parallel and poster sessions reflect the breadth of Population Geography, and we are set to enjoy a stimulating three days of papers on internal and international migration, age and ageing, ethnic and social diversity and

segregation, social and spatial inequalities, population projections, rural geographies, population data and methods, family and life course dynamics, health, mortality, fertility – and more!

A number of delegates have written to say that they are excited to visit Belfast/Northern Ireland (NI) for the first time. To these delegates, and to delegates who are returning, we hope you enjoy your stay in this vibrant and welcoming city. Belfast has many wonderful visitor attractions and provides a hub for exploring the beautiful landscapes of NI. We hope that you will have time to enjoy what Belfast and NI have to offer before or after the conference (including through one of the three ICPG excursions). You can find lots of helpful information on attractions and how to get around at www.visitbelfast.com and www.discovernorthernireland.com. Delegates can avail of exclusive offers for restaurants and experiences at www.businesseventsbelfastandni.com/exclusive-delegate-offers.

Queen's University Belfast (www.qub.ac.uk) is situated on a stunning campus in the south of the city. The welcome reception (Sunday 30th June) will take place in Queen's University Belfast's historic Great Hall, known for its panelled walls with a selection of portraits from the University's art collection. The second evening meal (Tuesday 2nd July) will be hosted at the Titanic Hotel, located in the former Headquarters and Drawing Offices of Harland & Wolff shipbuilders. The main three days of the Conference are being held in Queen's University Belfast's beautiful Riddel Hall, a dedicated conference centre situated in the leafy Stranmillis area of the campus. This Victorian building is situated in 13-acre grounds, just a short walk from the main University building. A series of maps and information about how to reach each conference location can be found on pages 92-99 of the programme.

A Conference of this scale requires contributions from many colleagues and organisations. We are sincerely grateful to our Conference sponsors (listed on page 5) for their financial support. We wish to thank the international ICPG committee, in particular Darren Smith, for supporting this ICPG, as well as past ICPGs and those to come. Thank you to the events and catering teams at Riddel Hall for all their support and advice, and to the finance teams at Queen's University Belfast (in particular events support and the School of Natural and Built Environment) for administrative assistance. I would also like to personally thank the local organising committee for their dedication to, and support in, organising and delivering the 12th ICPG.

We hope you enjoy the 12th International Conference on Population Geographies!

On behalf of the local organising committee,

Gemma Catney

12th ICPG Chair
Geography, Queen's University Belfast

12TH ICPG ORGANISING COMMITTEE

The 12th International Conference on Population Geographies has been organised by a team from Geography (School of Natural and Built Environment) at Queen's University Belfast:

Professor Gemma Catney (Conference Chair)
Dr Sara Ferguson
Neal Halforty
Professor Christopher Lloyd
Dr Estelle Lowry
Dr Momoko Nishikido
Dr Ian Shuttleworth

www.qub.ac.uk/sites/icpg24
icpg@qub.ac.uk
#ICPG2024

CONFERENCE SPONSORS

The organisers are sincerely grateful for financial support from the sponsors of the 12th International Conference on Population Geographies: Belfast City Council, Visit Belfast, Tourism Northern Ireland, People Research Group and Geography at Queen's University Belfast, School of Natural and Built Environment at Queen's University Belfast, Northern Ireland Longitudinal Study (NILS), Population Geography Research Group of the Royal Geographical Society (with the Institute of British Geographers).

VISIT BELFAST

TOURISM NORTHERN IRELAND

GEOGRAPHY AND SCHOOL OF NATURAL AND BUILT ENVIRONMENT AT QUB

NORTHERN IRELAND LONGITUDINAL STUDY

POPULATION GEOGRAPHY RESEARCH GROUP OF THE ROYAL GEOGRAPHICAL SOCIETY (WITH IBG)

KEY INFORMATION

REGISTRATION DESK

Delegates are welcome to register during the welcome reception on Sunday 30th June (17.00-19.00) at the Great Hall, Lanyon Building (main Queen's University Belfast building). The registration desk will also be open outside the Isdell Courtyard in Riddel Hall between 08.50 and 09.15 each morning (Monday 1st – Wednesday 3rd July).
Delegates will receive a pack which includes a hardcopy of the Conference Programme and Book of Abstracts.

PRESENTERS – ORAL SESSIONS

Please check the programme for the timing and location of the session to which your paper has been assigned. Please bring your presentation on a USB stick 5-10 minutes before the start of your session and upload your presentation to the desktop/laptop in your session room. Presenters have 20 minutes for their presentation, inclusive of question and answer (discussion) time. Session chairs will hold up a flash card to advise you when there are five minutes and one minute left of your presenting time. If you are in one of the few sessions allowing for slightly longer than 20 minutes per paper, please feel free to use a proportionate amount of this time to extend your presentation or discussion time.
Presenting authors are denoted in **bold**.
Delegates are welcome to move between parallel sessions.
A member of the conference team will be present in each room throughout all sessions.

PRESENTERS – POSTER SESSIONS

Posters will be on display in Conference Room 1 (Riddel Hall) throughout the duration of the conference. Poster presenters are asked to bring their poster to the Conference registration desk during the morning registration period on Monday 1st July (pins will be provided). Poster presenters are asked to stand by their posters during the poster session at the lunchtime slot on Tuesday 2nd July.

WI-FI ACCESS

To gain internet access, please use eduroam (if you have access via your home institution; please check this before arrival) or the Queen's University Belfast guest Wifi network.

To connect to visitor WiFi:
On your laptop, tablet or phone connect to QUB Guest Wifi network.
On the welcome page that appears, click the Get Online button.

NEARBY FACILITIES

Riddel Hall is situated near a row of local convenience stores and coffee shops on the Stranmillis Road (turn left out of Riddel Hall). An ATM can be found near the Centra convenience store. The Business School (opposite Riddel Hall, on the same site) offers a quiet space to work and has a café serving tea, coffee and light snacks. Further down Stranmillis Road (towards the University) is the Ulster Museum, which is home to a fantastic collection of archaeology and history, natural history, and art, as well as a café. The Museum is located in Belfast's Botanic Gardens, a beautiful park which includes The Palm House and Tropical Ravine (all free entry). From Riddel Hall there is convenient access to the Lagan Towpath, a pleasant riverside walk. To get to the River Lagan path, walk along the Stranmillis Road in the opposite direction to the University (turn right when leaving Riddel Hall grounds), then turn left at the roundabout.

LUGGAGE STORAGE

Luggage can be left at Riddel Hall on the final day. Please note that this must be collected by 5pm and so will be unsuitable for delegates on one of the optional excursions; please alternatively store luggage at your accommodation.

PLENARY SPEAKERS

We thank the plenary speakers at the 12th International Conference on Population Geographies and look forward to their presentations:

PROFESSOR DARREN SMITH (LOUGHBOROUGH UNIVERSITY, UK)

PLENARY TITLE: **THE CHALLENGES AND OPPORTUNITIES FOR A PLANETARY POPULATION GEOGRAPHY**

MONDAY 1ST JULY, 09.45 – 10.45

Abstract: In this paper it will be argued that population geographers have an integral part to play in addressing the grand challenges of the twenty-first century, and that this ambition needs to be more fully realised. Understanding the changing nature of the widely recognised components of population studies (e.g. migration and mobilities, birth and death rates, life expectancy, lifecourse events, etc) is essential to more fully inform policy makers, politicians, and other stakeholders to find new solutions to the grand challenges, such as the climate emergency, cost of living crisis, widening social inequalities and segregation, ecological breakdowns, and food poverty. To consider these issues, the paper will reflect on a series of previous commentaries within the sub-discipline to consider if there are 'moments of inspiration' from the past that contemporary population geographers could more fully embrace to move forward in a meaningful way. The paper concludes by outlining a possible research agenda for population geographers in the 2020s.

Darren Smith is Professor in Geography at Loughborough University since 2012. He is currently a fellow of LISA at University of Cambridge and Visiting Professor at Hunan and Hunan Normal Universities in China. He is co-editor of *Population, Space and Place*; *Journal of Rural Studies* and *The Geographical Journal*. Darren is a Fellow of the Academy of Socia Sciences and Chair of the Population Geography Commission of the IGU. He is currently analysing census data to investigate population change in the post-pandemic city-region, and co-authoring a monograph on The Conception of Gentrification.

PROFESSOR RICHARD WRIGHT (DARTMOUTH COLLEGE, USA)

PLENARY TITLE: **CHANGES IN RACIAL-ETHNIC DIVERSITY AND THE RECONFIGURATION OF WHITE SPACE IN THE US, 1990-2020**

TUESDAY 2ND JULY, 16.05 – 17.05

Abstract: Between 1990 and 2020 the share of Whites in the United States fell from 76% to 58%. Inspired by recent research in a UK context, this paper explores the implications of this demographic shift at four spatial scales: the nation as a whole, states, metropolitan areas, and neighbourhoods. The analysis relies on the "mixed-metro" taxonomy of ethnic-racial composition that simultaneously appraises both the diversity of a place and the lack thereof (Holloway, et al. 2012). At the most granular scale, the paper introduces a visualization method for research involving neighborhood transitions. The analysis juxtaposes the insights gained from transition matrices with those from Sankey charts, a type of banded-flow diagram where each ribbon represents a particular pathway of change, whose width represents the count of neighborhoods that experienced that type of transition. The implications, however, go beyond the insights gained from different spatial scales, the place typology used in the study, and the utility of Sankey charts. The results force us to reflect on the meanings of terms like "majority-minority", "replacement," and the terms social scientists use to understand ethno-racial demographic change across spatial scales. For example, while few states were "majority-minority" in 2020, many metropolitan areas were, and had been for decades. In addition, that term also seems to lose its heft at finer spatial scales such as the neighbourhood (or household).

Richard Wright is the Orvil Dryfoos Chair in Public Affairs and Professor of Geography Emeritus at Dartmouth College. He worked there for 37 years, chairing the Department of Geography for a decade and also serving as Associate Dean of the Faculty for the Social Sciences. He's received grant support from the Guggenheim Foundation, National Science Foundation, the Russell Sage Foundation, and the Economic and Social Research Council. His current research focuses on ethnic and racial diversity in housing and labor markets, migration, and immigration and has published on each of these topics. Lower down his cv, you'll find that he's refereed for 64 different peer-review journals, from *ACME* to *Signs* to *Historical Geography* to *Social Forces* to *Population Space and Place*. Off his cv, he likes being in nature (birding and hiking), and he likes to cook. Also, long ago, building on his mis-spent youth, he was the state champion of Indiana in darts.

PROFESSOR SHENJING HE (THE UNIVERSITY OF HONG KONG)

PLENARY TITLE: **THE CHANGING LANDSCAPE OF LOW - INCOME HOUSING IN POST-2008 URBAN CHINA**

WEDNESDAY 3RD JULY, 11.45 – 12.45

Abstract: Not only offering shelters but also the access to various life chances, affordable housing is considered an essential social infrastructure enabling physical and social mobility for low-income population. This talk provides an overview of the changing landscape of low-income housing in urban China and its implications for the mobility and wellbeing of low-income urban population in the post-global financial crisis era. Accounting for both formal and informal housing development, this study seeks to offer a comprehensive understanding of the multifaceted low-income housing development through unpacking its multifarious processes and implications in the recent two decades. In parallel to a political economy analysis of two major stages of affordable housing development in post-2008 urban China, the development of informal housing in major Chinese cities is also scrutinised. Examining diverse types of low-income housing development, including shanty-town redevelopment, public and private rental housing, long-term rental apartments, “urban villages”, “small property right housing”, this research aims to explore more comprehensive and inclusive approaches to low-income housing development and diverse pathways to enhancing low-income populations’ social mobility and wellbeing.

Shenjing He is Professor of Urban Studies and Head of the Department of Urban Planning and Design, The University of Hong Kong (HKU). Shenjing’s research interests include urban governance, urban redevelopment/gentrification, low-income housing, housing price mechanism, health and the city, and rural-urban interface. Shenjing was conferred the award of Fellow of the Academy of Social Sciences (UK) in 2021. She serves as co-Editor in Chief for Area Development Policy since 2023 and editor for Urban Studies since 2012, and sits on the editorial board of several urban and geographical journals. She is the founding director of the Social Infrastructure for Equity and Wellbeing (SIEW) Lab and the executive deputy director of the Urban Systems Institute at HKU. Her current research projects include housing inequalities and wellbeing, neighbourhood governance, climate gentrification, and cross border healthcare utilization.

PROGRAMME AT A GLANCE

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<tr><th>Sunday 30th June</th><th>Monday 1st July</th><th>Tuesday 2nd July</th><th>Wednesday 3rd July</th></tr>
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Registration/ Delegate pack collection</td></tr>
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Parallel Session VII</td></tr>
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<tr><td>10.45 – 11.15
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Refreshment break</td><td>11.15 – 11.45
Refreshment break</td></tr>
<tr><td>11.15 – 12.35
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<tr><td>12.35 – 13.35
Lunch break
(Riddel Hall)</td><td>13.05 – 14.05
Poster Session
Lunch break (Riddel Hall)</td><td>12.45 – 13.15
Conference Close
(Isdell Courtyard)</td></tr>
<tr><td>13.35 – 15.15
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Parallel Session VI</td><td rowspan="3">13.30 –

Lunch packs available for all delegates

Field Excursions
(Buses depart Riddel Hall)</td></tr>
<tr><td>15.15 – 15.45
Refreshment break</td><td>15.35 – 16.05
Refreshment break</td></tr>
<tr><td>15.45 – 17.15
Parallel Session III</td><td>16.05 – 17.05
Plenary Session
(Isdell Courtyard)</td></tr>
<tr><td rowspan="2">17.00 – 19.00
Welcome Reception
(Great Hall, Lanyon Building)
Registration opens</td><td>17.15 – 17.45
Drinks Reception (Riddel Hall)</td><td>17.10
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<tr><td>17.45 – 20.00
Dinner (Isdell Courtyard)</td><td>19.30 –
Dinner (The Titanic Hotel)</td></tr>
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PARALLEL SESSION SUMMARY

Monday 1st July

Parallel Session I, 11.15 – 12.35

1. Social and spatial dynamics of migration 1
2. Rural and island mobilities
3. Migration motivations and implications
4. Age and ageing 1

Parallel Session II, 13.35 – 15.15

5. Neighbourhood diversity and cohesion
6. Population projections
7. Health and mortality 1

Parallel Session III, 15.45 – 17.15

8. Rural Geographies: Remembering Professor Aileen Stockdale
9. Fertility
10. Data and methods 1

Tuesday 2nd July

Parallel Session IV, 09.15 – 10.55

11. Migration: youth and education
12. Ethnic and social segregation 1
13. Social and spatial inequalities 1
14. Health and mortality 2

Parallel Session V, 11.25 – 13.05

15. Migration and (im)mobilities
16. Ethnic and social segregation 2
17. Social and spatial inequalities 2
18. Social and spatial dynamics of migration 2

Poster Session, **13.05 – 14.05** (lunch session)

Parallel Session VI, 14.05 – 15.35

19. Rural migration trends
20. Migration and life course trajectories
21. Age and ageing 2
22. Immigration, internal migration and integration

Wednesday 3rd July

Parallel Session VII, 09.15 – 11.15

23. Ethnic and social segregation 3
24. Health and mortality 3
25. Families and lifecourse
26. Data and methods 2

PROGRAMME BY DAY

DAY 1: SUNDAY 30TH JUNE 2024

Time	Session
17.00 – 19.00	**Welcome reception** (*The Great Hall, Lanyon Building, Queen's University Belfast*) Registration opens. Delegate packs available for collection. Note: only light snacks provided (see www.visitbelfast.com for local restaurants. Exclusive delegate offers available at www.businesseventsbelfastandni.com/exclusive-delegate-offers)

DAY 2: MONDAY 1ST JULY 2024

Time	Session	
08.50 – 09.15	Registration opens. Delegate packs available for collection.	
09.15 – 09.45	**Conference Opening** *Isdell Courtyard*	**Welcome to Queen's University Belfast**: Professor Margaret Topping, Pro-Vice-Chancellor for Global Engagement **Welcome to the 12th ICPG**: Professor Gemma Catney, Conference Chair **Overview of the Changing Population Geographies of Northern Ireland**: Dr Ian Shuttleworth, Professor Christopher Lloyd
09.45 – 10.45	**Plenary Session** *Isdell Courtyard*	**Professor Darren Smith** (Loughborough University, UK) **The Challenges and Opportunities for a Planetary Population Geography** *Chair: Ian Shuttleworth*
10.45 – 11.15	Morning refreshment break	

11.15 – 12.35	**Parallel Session I**	**1. Social and spatial dynamics of migration 1** Chair: Oliver Duke-Williams *Isdell Courtyard* 1. The contributions of new immigrant groups to regional population change in Australia since 2000 – ***James Raymer****, Qing Guan, James O'Donnell* 2. Education, mobility and workforce: a regional analysis in Spain, 1999-2023 – ***Pau Miret-Gamundi*** 3. Residential location and the educational outcome of Swedish-born children whose parents obtained refugee status in Sweden – ***Frankseco Yorke*** 4. Housing tenure disparities among immigrant population in Spain: An analysis through 2001, 2011 and	**2. Rural and island mobilities** Chair: Neil Argent *Lecture Room 1* 1. From environmental change perceptions to mobility intentions: case study in rural Senegal – ***Etienne Piguet****, Florence De Longueville, Sabine Henry, Jelena Luyts, Issa Mballo* 2. Migration and gossip: gendered effects of gossip and shaming in tightly knit rural communities – ***Gréta Bergrún Jóhannesdóttir*** 3. The effect of regional labour market mobility on civic engagement: differences between rural and urban areas? – ***Heiko Rüger****, Nico Stawarz, Thomas Skora, Lena Greinke* 4. An internal diaspora: opportunities for island repopulation? – ***Paula***	**3. Migration motivations and implications** Chair: Neal Halforty *Lecture Room 3* 1. Human development, basic needs and inter-city out-migration: Subnational perspectives on the mobility transition – ***Dorothee Beckendorff****, Wenxiu Du, Mathias Lerch* 2. Analyzing and modelling of interregional migration in China in 2010-2020: Revisiting the log-linear and Poisson migration models – ***Jianfa Shen*** 3. Stay, leave late, leave early, return, or move onward? Inter-provincial migration choices of older adults in China, 2000-2005 and 2010-2015 – ***Ye Liu****, Cuiying Huang, Zehan Pan*	**4. Age and ageing 1** Chair: Emma Lundholm *Conference Room 2* 1. Association between the change of the age composition and the development of the low-income rate in regional populations – *Milena Nevanto,* ***Timo Kauppinen*** 2. Micro-demographic modelling of age and community structure – ***Paul Longley****, Justin van Dijk, Maurizio Gibin, James Todd, Zi Ye, Tian Lan* 3. Subnational population ageing in New Zealand: Past, present, and future – ***Michael Cameron*** 4. Who cares when children are absent? Exploring contact, care, and support among older people in Europe – ***Jenny Olofsson****,*

		2021 census – ***Carolina Orozco-Martínez***, *Jordi Bayona-i-Carrasco, Fernando Gil-Alonso*	***Duffy, Lorna Philip***, *Kirsten Gow, Mags Currie, Ruth Wilson*	4. Understanding internal migration in Azerbaijan – ***Gulvin Yusifova***, *Ian Shuttleworth, Merav Amir*	*Gunnar Malmberg, Emma Lundholm*
12.35 – 13.35	Lunch break *(Riddel Hall)* Jointly sponsored by Geography at Queen's University Belfast and the Population Geography Research Group of the Royal Geographical Society with IBG				
13.35 – 15.15	**Parallel Session II**	**5. Neighbourhood diversity and cohesion** Chair: David Manley *Lecture Room 1* 1. Neighborhood cohesion, residential continuity, and wellbeing outcomes – ***William Clark***, *Daichun Yi* 2. Exploring patterns of ethnic diversification and residential intermixing in the neighbourhoods of Riga – ***Maris Berzins***, *Zaiga Krišjāne, Elina Apsite-Berina, Sindija Balode, Janis Krumins* 3. The age of diversity: the neighbourhood demographic structure	**6. Population projections** Chair: Nikola Sander *Lecture Room 3* 1. The role of population geography in microsimulation models – ***Nik Lomax*** 2. Recent trends and changing spatial patterns of international and internal migration in Germany: Consequences for regional population projections – ***Frank Swiaczny***, *Laura Cilek, Elke Loichinger* 3. Spatial interaction modelling for forecasting interregional migration	**7. Health and mortality 1** Chair: Estelle Lowry *Conference Room 2* 1. Monitoring the global spread of Covid-19 – ***Philip Rees*** 2. Spatial disparities in cause-specific mortality in Ukraine: A district-level analysis, 2006-2019 – ***Sebastian Kluesener,*** *Pavel Grigoriev, Nataliia Levchuk, Pavlo Schevchuk, Svitlana Poniakina* 3. A closer look at regional mortality disparities in Algeria: Current level and future prospects – ***Amina Boukhalfa***, *Farid Flici*	

		of ethnic groups in England and Wales, 2001-2021 – ***Momoko Nishikido**, Richard Wright, Gemma Catney, Mark Ellis* 4. Neighbourhood belonging and experiences of racism for ethnic minorities in Britain – ***Nissa Finney**, Joseph Harrison* 5. Migrants and social cohesion within the neighbourhood: Evidence from an Australian panel data – ***Qing Guan**, James O'Donnell*	in Australia – ***Jacques Poot**, Charles Siriban, Aude Bernard, Tom Wilson, Arkadiusz Wiśniowski* 4. Evaluation of population projections for Tokyo Area using the Cohort Share Extension Method: Comparison of accuracy with the Cohort Component Method – ***Moriyuki Oe*** 5. The Prague Population and Public Amenities Prognosis – ***Tomas Brabec**, Zdenka Havlova, Nina Dvorakova, Jakub Hruby, Hana Peckelova, Jan Sykora*	4. Migration experience and infant mortality in Romania: a hierarchical linear model – ***Mădălina Manoilă***	
15.15 – 15.45	Afternoon refreshment break				

15.45 – 17.15	**Parallel Session III**	**8. Rural Geographies: Remembering Professor Aileen Stockdale** Chair: Tialda Haartsen *Lecture Room 1* 1. Mobility, stability and staying in the rural – ***Sara Ferguson****, Tialda Haartsen, Gemma Catney, Tineke Reitsma* 2. Staying Connected: Rural stayers and 'reverse' place elasticity – ***Tialda Haartsen****, Sara Ferguson, Aileen Stockdale* 3. Future Rural Population Geographies panel discussion – ***Tialda Haartsen, Darren Smith, Lorna Philip*** Followed by a drinks reception in memory of Professor Aileen Stockdale (*Riddel Hall;*	**9. Fertility** Chair: Momoko Nishikido *Lecture Room 3* 1. Measuring fertility rates and fertility behavior across European countries – ***Marek Endrich****, Philipp Ueffing* 2. First and second births in China: Individual and contextual determinants – ***Kuoshi Hu****, Hill Kulu, Julia Mikolai* 3. The effect of borders on the spatial diffusion of nonmarital births in France and Belgium (1968-2017) – ***Yoann Doignon****, Adrita Banerjee* 4. Fertility trends in contemporary Northern Ireland: How does fertility behaviour vary by education and religion? – ***Sarah Christison****, Hill Kulu,*	**10. Data and methods 1** Chair: Paul Longley *Conference Room 2* 1. Assessing the accuracy of national gridded population estimates: a case study from the Zambia 2022 Population and Housing Census – ***Heather Chamberlain****, Frank Kakungu, Webster Sikalumbi, Welani Simwinga, Salomi Naluyele, Hildah Chileshe, Mubita Sikufele, Thomas Abbott, Garikai Membele, Chisenga Abel Musuka, Olena Borkovska, Warren C. Jochem, Attila N. Lazar, Andrew J. Tatem* 2. Tracing suburbanization in Germany using gridded Census data, 2011-2022 – ***Tamilwai J. Kolowa****, Nikola Sander, Hannes Taubenböck* 3. Towards a model of Residential Area	

		all ICPG delegates welcome. Start: 17.15)	*Bernice Kuang, Ann Berrington*	Encoding – ***Alex Singleton*** 4. Functional Urban Areas – Application of the concept on traditional longitudinal data for intra- and inter-city analysis - ***Wenxiu Du****, Dorothee Beckendorff, Mathias Lerch, Andrew Ding*	
17.15 – 17.45	Drinks Reception *(Riddel Hall)* Sponsored by the School of Natural and Built Environment at Queen's University Belfast				
17.45 – 20.00	Dinner – fork buffet *(Isdell Courtyard)*				

DAY 3: TUESDAY 2ND JULY 2024

Time	Session					
08.50 – 09.15	Registration. Delegate packs available for collection.					
09.15 – 10.55	**Parallel Session IV**	**11. Migration: youth and education** Chair: David McCollum *Isdell Courtyard* 1. The gainers and losers from the UK university-related migration: a sub-regional analysis of Graduate Outcomes Survey data – ***Tony Champion, Anne Green,*** *Konstantinos Kollydas* 2. Stability: The influence of the Hukou System on the recruitment of Chinese international students upon returning – ***Erli Kang*** 3. European Union youth mobility Down Under: working holiday scheme migrant trends, characteristics and experiences in New Zealand (2000-2023) – ***Oksana Opara***	**12. Ethnic and social segregation 1** Chair: Rich Harris *Lecture Room 1* 1. Inequality, residential mobility and economic segregation: Conceptual relationships and empirical analysis in the Netherlands – ***Clémentine Cottineau*** 2. Understanding ethnic, socio-economic and age segregation in England and Wales using the 2021 Census: towards an intersectional segregation approach – ***David Manley****, Gemma Catney, Momoko Nishikido, Christopher Lloyd*	**13. Social and spatial inequalities 1** Chair: Jamie Goodwin-White *Lecture Room 3* 1. Trajectories of neighbourhood deprivation in England – ***Christopher Lloyd****, Sara Ferguson, Paul Norman, David McLennan, Gemma Catney* 2. The evolution of compounding residential inequalities: A multiscale analysis of neighbourhood change trajectories in Amsterdam – ***Ignacio Urria****, Ana Petrović, Maarten van Ham, David Manley* 3. Temporal trends in UK individuals falling	**14. Health and mortality 2** Chair: Neil Rowland *Conference Room 2* 1. Is medium-term exposure to ambient air pollution a risk factor for Parkinson's Disease? – ***Babak Jahanshahi****, Duncan McVicar, Neil Rowland, Dermot O'Reilly* 2. The effects of adult children's unemployment on parental mental health: Geographical distance as a moderator – ***Erika Sandow****, Anna Baranowska-Rataj, Jordi Gumà Lao* 3. Mapping the mobility of construction workers (homeless floating population) in Chennai City: An exploratory

		4. Evaluating the impact of the end of free movement (Brexit) and COVID-19 on inflows of EU Students into UK Universities – ***Ruth Neville***, *Francisco Rowe, Alex Singleton* 5. Exploring international students' experiences and national promotion activities in the Baltic States – ***Elina Apsite-Berina***, *Eero Loonurm, Sintija Šmite-Tilika*	3. Locating Irish and Ulster Scots in Northern Ireland: Perspectives from Census microdata – ***Ian Shuttleworth***, *John Hughes* 4. The intersectional nature of urban segregation in São Paulo, Brazil – ***Joana Barros***, *Flavia Feitosa, Flavia Lisboa* 5. Spatial segregation on micro, mezzo and macro-scale and inter-marriage patterns in Stockholm – ***Juta Kawalerowicz***, *Chris Fowler*	behind on household bill payments from 2010-2022 – ***Maya Middleton-Welch***, *Mark Green* 4. The operationalisation of contextual poverty from individual and household perspectives: Does it matter how we measure income when estimating neighbourhood effects? – ***Jerome Francisco Conceicao***, *Ana Petrović, Maarten Van Ham, David Manley* 5. Residential and housing tenure mobility trajectories of immigrants and their descendants in England and Wales – ***Parth Pandya***, *Hill Kulu, Julia Mikolai, Chia Liu*	regression model analysis using GIS – ***Geetha Karthikeyan***, *L.G. Thasmaiya* 4. Cancer incidence and mortality in Pakistanis, Bangladeshis and their descendants in England and Wales – ***Joseph Harrison***, *Frank Sullivan, Katherine Keenan, Hill Kulu* 5. Mortality of older people living alone: The Northern Ireland Longitudinal Study – ***Estelle Lowry***, *Alan Mitchell*
10.55 – 11.25	Morning refreshment break				

11.25 – 13.05	**Parallel Session V**	**15. Migration and (im)mobilities** Chair: Jianfa Shen *Isdell Courtyard* 1. Migration and commuting behaviour in Toronto's commuter shed: The impact of COVID-19 – ***Bruce Newbold*** 2. Measuring constraints to moving and motives for immobility: A review and an assessment of seven surveys – ***Clara H. Mulder****, Isabel Palomares-Linares, Brian Joseph Gillespie, Jonne A.K. Thomassen, Ewoud T. Jansma, Tialda Haartsen* 3. Post-pandemic geographies of work and home: plus ça change for spatial inequalities? – ***David McCollum*** 4. Immobility in the US: The numbers and characteristics of those who never migrated between 2000 and 2020	**16. Ethnic and social segregation 2** Chair: Joana Barros *Lecture Room 1* 1. Segregation of the foreign population in the large metropolitan areas of Spain. Towards new dynamics of socio-spatial fragmentation? – ***Fernando Gil-Alonso****, Miguel Rubiales-Pérez, Cristina López-Villanueva, Arlinda Garcia-Coll* 2. The time of segregation: Advancing insights into income inequality and segregation with a focus on temporal dynamics – ***Javier San Millán Tejedor****, Clémentine Cottineau, Maarten van Ham* 3. A study of ethnic residential patterns in the inner-city of Riga using scalable individualised	**17. Social and spatial inequalities 2** Chair: Sarah Wood *Lecture Room 3* 1. Women's employment, financial inclusion, gender norms and intimate partner violence across the 640 districts of India: an ecological analysis – ***Abhishek Singh****, Ashish Kumar Upadhyay* 2. Where is the gender revolution?: Gendered local labor market dynamics 2000-2020 – ***Jamie Goodwin-White*** 3. Understanding unemployment: an intersectional analysis of disability status and ethnic group – ***Matthew Minifie****, Sarah Wood, Charlotte Standeven* 4. Gender patterns in housework among the older adult population in Europe – ***Mireia***	**18. Social and spatial dynamics of migration 2** Chair: James Raymer *Conference Room 2* 1. The long run and cumulative impacts of international migration on Australia's population – ***James O'Donnell****, Qing Guan, James Raymer* 2. Concentration and dispersion via internal migration. The case of the immigrant population in Spain, 2000-2021 – ***Jordi Bayona-i-Carrasco****, Juan José Lizcano* 3. Temporal and spatial migration patterns of Ukrainian war refugees in Poland – ***Monika Stanny****, Agata Mróz* 4. The Role of Russia in Post-Soviet Migration: Insights from CIS and Baltic State Statistics – ***Salavat Abylkalikov***

		at different spatial scales – ***Mark Ellis*** 5. Three spatial mobilities. A trend study on internal and international migration and commuting using data from the German Microcensus – ***Nico Stawarz****, Andreas Genoni, Heiko Rüger, Matthias Rosenbaum-Feldbrügge, Andreas Ette, Thomas Skora, Nikola Sander*	neighbourhoods – ***Sindija Balode****, Māris Bērziņš, Zaiga Krišjāne* 4. Comparative study of socio-economic segregation in European cities: 2001-2011-2021 – ***Ruta Ubareviciene****, Maarten van Ham, Tiit Tammaru*	***Almirall Llambrich****, Pau Miret-Gamundi, Joan García-Roman* 5. Understanding the emergency accommodation use patterns of homeless families – ***Richard Waldron****, Declan Redmond*	5. Residential mobility to/from small and medium-sized cities and its impact on local social inequalities – ***Sylvie Dubuc****, Julie Fromentin*
13.05 – 14.05	Lunch break *(Riddel Hall)* **Poster session plus Northern Ireland Statistics and Research Agency 2021 Census demonstration** *(Conference Room 1)* Poster presenters available to discuss poster contents. NISRA practical demonstration on the 2021 Census Flexible Table Builder Sponsored by the Northern Ireland Longitudinal Study (NILS)				
14.05 – 15.35	**Parallel Session VI**	**19. Rural migration trends** Chair: Sara Ferguson *Isdell Courtyard* 1. Latin American internal migration to rural areas in Spain: characteristics and main drivers of mobility – *Jenniffer Thiers Quintana,* ***Jordi Bayona-i-Carrasco***	**20. Migration and life course trajectories** Chair: Clara Mulder *Lecture Room 1* 1. The effects of parental migration on educational and child labour outcomes for children left behind in low- and middle-	**21. Age and ageing 2** Chair: Michael Cameron *Lecture Room 3* 1. Population ageing patterns on family and regional level – ***Emma Lundholm****, Gunnar Malmberg, Jenny Olofsson*	**22. Immigration, internal migration and integration** Chair: Mark Ellis *Conference Room 2* 1. Homeownership across immigrant groups and generations in Sweden: Assimilation or segmentation? – ***Mary***

		2. Migrant place identity and neighbourhood attachment in a post-conflict society: A study of Portuguese communities across Northern Ireland's semi-rural areas – ***Neal Halforty***, *Gemma Catney, Ian Shuttleworth* 3. Retaining permanent and temporary immigrants in rural Australia: Place-based and individual determinants – ***Neil Argent***, *Aude Bernard, Dagmara Laukova, Tom Wilson, Tomasz Zajac, Anthony Kimpton* 4. No place for young women? The impact of internal migration on adult sex ratios in rural East Germany – ***Nikola Sander***, *Nico Stawarz, Matthias Rosenbaum-Feldbrügge, Uta Brehm*	income countries: a systematic review and meta-analysis – *Anne Lieke Ebbers,* ***Emily Häntschel***, *Natascha Wagner* 2. Residential relocations, quality of life and mover characteristics: insight from Swedish register data – ***Gijs Westra*** 3. Shaping the life course: The interaction between partnerships, family building and employment among migrants and their descendants – ***Sarah Christison***, *Júlia Mikolai, Hill Kulu* 4. Why does migration decrease fertility? The relationship between migration experiences and attitudes toward family formation norms – ***Yohei Maruyama***	2. Drivers of population ageing in Asia 1990-2019: A decomposition analysis applying the prospective age concept – ***Markus Dörflinger*** 3. Are local places in Britain becoming more age segregated (and what does internal migration have to do with it)? – ***Nissa Finney***, *Jo Mhairi Hale, Elspeth Graham* 4. Where do older people work? The geographies of old-age employment in Sweden – ***Sebastian Hanika***	***Abed Al Ahad***, *Gunnar Andersson, Hill Kulu* 2. Not just migrants, but also transnational people: Linking integration and transnationalism through spatial mobility – ***Olle Järv***, *Veronika Mooses, Kerli Müürisepp, Emily Dovydaitis, Tiit Tammaru* 3. Are adaptation challenges relevant to the location choices of internal migrants? Evidence from China–- ***Qiujie Shi***, *Tao Liu* 4. "Home in a better place" or "Home aside from home": Two patterns of migrants' social integration through community participation in China – ***Yixin Zhang***, *Louise Meijering*
15.35 – 16.05	Afternoon refreshment break				

16.05 – 17.05	**Plenary Session** *Isdell Courtyard*	**Professor Richard Wright** (Dartmouth College, USA) **Changes in Racial-Ethnic Diversity and the Reconfiguration of White Space in the US, 1990-2020** *Chair: Gemma Catney*
17.10	Delegate photo	Please assemble outside *Riddel Hall* for the 12th ICPG delegate group photograph
19.30 –	Dinner (*The Titanic Hotel*) Includes welcome reception and short history talk Delegates to make their own way (see Belfast map, pg 95). If you would like to walk with one of our conference team members, please meet at the front of Belfast City Hall (main gates) at 18.50	

DAY 4: WEDNESDAY 3RD JULY 2024

Time	Session				
08.50 – 09.15	Registration. Delegate packs available for collection.				
09.15 – 11.15	**Parallel Session VII**	**23. Ethnic and social segregation 3** Chair: Nissa Finney *Isdell Courtyard* 1. Measuring the changing ethnic 'segregation' patterns of England and Wales using a longitudinal and intersectional index of dissimilarity and an harmonised census geography for 2001 – 2021 - ***Richard Harris*** 2. Multiscale sociospatial inequality: Segregation trends in the Netherlands – ***Ana Petrović***, *Maarten van Ham, David Manley* 3. Linking neighbourhoods and activity spaces to understand segregation: Capturing	**24. Health and mortality 3** Chair: Phil Rees *Lecture Room 1* 1. Factors associated with care home use for older people in Scotland: Analysis of cohorts before and after a social care policy change – ***Helen Corby*** 2. Migrant mortality advantage in two different welfare contexts: A comparison of England & Wales and Norway – ***Joseph Harrison***, *Frank Sullivan, Katherine Keenan, Hill Kulu* 3. History of place and older adults' depressive symptoms in China: Effects of urbanicity across the life course –	**25. Families and life course** Chair: Sylvie Dubuc *Lecture Room 3* 1. Intergenerational transmission of residential segregation after a major societal upheaval – ***Elina Maarja Suitso***, *Kadri Leetmaa, Kadi Kalm, Allan Puur, Tiit Tammaru* 2. Son preference in India: a spatial analysis - ***Abhishek Singh***, *Ashish Kumar Upadhyay* 3. Neighbourhood effects following the death of the breadwinner: a study of the remaining family in Nancy, France in the 1890s – ***Gillian Stewart***, *Konstantinos*	**26. Data and methods 2** Chair: Alex Singleton *Conference Room 2* 1. Smart population data: Sources and services – ***Paul Longley***, *Alex Singleton, James Cheshire* 2. Comparing alternative transcriptions of nineteenth century population data: how easy are they to use for population analysis? – ***Oliver Duke-Williams*** 3. Surface modelling of human population distribution in China – ***Ying-an Wang***, *Tian-xiang Yue* 4. Identifying people with a disability from

		the rhythms of daily lives across neighbourhoods in Helsinki – ***Kerli Müürisepp***, *Matti Manninen, Venla Bernelius, Tiit Tammaru, Tuuli Toivonen, Olle Järv* 4. Evolving patterns of ethnic segregation in English schools: A decomposition analysis – ***Yiyang Gao*** 5. Intersection of geography, ethnicity and age as a precondition for differences in educational achievements in Latvia – ***Zaiga Kriskane***, *Elīna Apsīte-Beriņa, Maris Bērziņš, Ieva Jegermane*	***Zhuolin Pan***, *Ye Liu, Yuqi Liu* 4. Are ethnic health inequalities underestimated by assuming everyone in a neighbourhood faces the same contextual deprivation? – ***Stephen Jivraj***, *Gemma Catney, Christopher Lloyd, David McLennan* 5. Exposure to PM2.5 air pollution and mortality in Northern Ireland – ***Neil Rowland***, *Duncan McVicar, Dermot O'Reilly, Mark McGovern, Babak Jahanshahi, Corina Miller*	*Angelopoulos, Rebecca Mancy* 4. The Influence of marriage squeeze on the age at first marriage in China – ***Wei Chen***, *Baihui Ouyang, Jinju Liu* 5. Heterogeneity versus assimilation in family formation across generations and origin of descendants of immigrants in Sweden: Which comes first, homeownership, marriage, or childbirth? – ***Mary Abed Al Ahad***, *Gunnar Andersson, Hill Kulu*	administrative data – ***Sarah Wood***, *Charlotte Standeven, Matthew Minifie* 5. Ethnicity data in vital statistics: Useful or not in the demographic analysis of floating ethnic groups in Serbia? – ***Nevena Trnavčević***, *Aleksandar Knežević*
11.15 – 11.45	Morning refreshment break				
11.45 – 12.45	**Plenary Session** *Isdell Courtyard*	**Professor Shenjing He** (The University of Hong Kong) **The Changing Landscape of Low-Income Housing in Urban China** *Chair: Christopher Lloyd*			

12.45 – 13.15	**Conference Close** *Isdell Courtyard*	Overview of Population Geography Research Group of RGS-IBG: Dr David McCollum (University of St Andrews, PopGRG Chair) Early career poster prizes: Dr Estelle Lowry Closing remarks: Professor Gemma Catney
13.30 –	**Lunch** **Field Excursions**	Grab and go lunch packs available from *Riddel Hall* for all delegates Buses depart from *Riddel Hall*

12TH ICPG PARALLEL SESSION ABSTRACTS

DAY 2: MONDAY 1ST JULY

Parallel Session I	11:15 – 12:35
1. SOCIAL AND SPATIAL DYNAMICS OF MIGRATION 1	
ISDELL COURTYARD	
Chair: Oliver Duke-Williams (University College London, UK)	
1.1	**The contributions of new immigrant groups to regional population change in Australia since 2000** **James Raymer** (Australian National University, Australia), Qing Guan (Australian National University, Australia), James O'Donnell (Australian National University, Australia) Since the end of the While Australia Policy in the 1970s, Australia has experienced increasing diversity in the origins of immigration. More recently, immigrants from Asia have formed the main source of immigration to Australia. In this paper, we are interested in exploring how some of these newer immigrant groups are influencing demographic change across Australia. Specifically, we explore the contributions of six immigrant groups born in China, India, Indonesia, Malaysia, Philippines and Vietnam towards population change across seven cities and four regional areas in Australia from 2001 to 2021. The analyses utilise recently reconciled demographic component data by age and sex, which allows levels of immigration to be compared to the other components of population change, namely, emigration, births, deaths and internal migration, for each area and immigrant group. Our aim is to understand demographic impacts of different immigration streams and how they influence change over time and across regions, as well as differences across immigrant groups.
1.2	**Education, mobility and workforce: a regional analysis in Spain, 1999-2023** **Pau Miret-Gamundi** (Centre d'Estudis Demogràfics, Universitat Autònoma de Barcelona, Spain) The initial hypothesis posits that while a university degree amplifies the geographic mobility of the labour active population, vocational studies tether it to specific territories. To explore this, we gathered a sample of individuals aged 26 to 50, who have stablished independent households or autonomous family units, who are engaged in full-time work, or are either in part-time employment or in job seeking but not concurrently pursuing formal education. The aim is to scrutinize the provincial job market. Using the Spanish Labour Force Survey, a quarterly household inquiry with a rotating one-sixth sample per wave, we examined 1,006,482 individuals observed 3,710,288 times from 1999 to 2023, 49% women. This sample distinguishes whether they reside in their birth province (66%), are not born in the province where they live (19%) or are international migrants (15%). We differentiate between early school leavers (40%), those holding a baccalaureate or university degree (50%) or individuals with followed a vocational training (10%). Across gender, age, and time of observation, we found that among people born in Spain, the most rooted population comprises those with vocation training, whereas those with baccalaureate or university backgrounds exhibit the highest interprovincial mobility. On

	contrast, international immigrants show a sharp gap: they are either with a minimum education level or holding bachelor's or university degrees, but not with vocational training. Moreover, there could not be found any evidence based on education in explaining why specific regions attract a larger international population.
1.3	**Residential location and the educational outcome of Swedish-born children whose parents obtained refugee status in Sweden** **Frankseco Yorke** (Demography Unit, Stockholm University, Sweden) Sweden has a long history of receiving refugees. Scholars have found that refugees experience disparities in socioeconomic outcomes relative to the native-born population. However, there is limited knowledge regarding the socioeconomic prospects of native-born children of refugees (the second generation, G2). While the extent of adaptive patterns existing among the G2 in general has been researched, little is known about the G2 children of refugees, despite the additional obstacles faced by their parents. In addition to increased risks of poorer health, one of these obstacles is the fact that refugees typically have fewer opportunities to determine where they live. Using longitudinal register data of the Swedish population, we apply advanced regression techniques to compare outcomes of persons born between 1990 and 2005. We investigate whether the educational outcomes of the G2 children of refugees in Sweden are influenced by their residential location. We also examine the impact of the area-level education (general educational level of residents in an area), as well as the migrant/refugee student compositions on educational outcomes. Comparisons are made between the G2 children of refugees and the Swedish-born children of Swedish-born parents, as well as with foreign-born children of refugees. Country of origin differentials are also explored. The study provides insights that can inform the under-researched patterns of adaptation for the G2 children of refugees. It adds to the research on systematic inequality and linkages between inequality and segregation. Our results demonstrate how patterns of inequality vary. We also suggest possible consequences and propose suggestions for further research.
1.4	**Housing tenure disparities among immigrant population in Spain: An analysis through 2001, 2011 and 2021 census** **Carolina Orozco-Martínez** (Geography Department, University of Barcelona, Spain), Jordi Bayona-i-Carrasco (University of Barcelona and Centre for Demographic Studies (CED), Spain), Fernando Gil-Alonso (University of Barcelona, Spain) In Spain, the significance of foreign immigration in sociodemographic processes is undeniable, with over 8.2 million immigrants currently accounting 17.1% of the population. Various waves of arrivals have generated a strong demand for housing that stresses the existing residential systems. Through an analysis of official census data from 2001, 2011, and 2021, this research aims to identify trends in the dwelling access and the main housing characteristics among the immigrant population. The principal objective is to analyse the evolution of rental and homeownership access among foreign-born population, grouped by continental origin, and to compare these trends with those of the native population. The study also examines how the tenure patterns of the immigrant population have evolved in relation to age and the year of arrival in Spain. Our hypothesis suggests a potential worsening of housing conditions of those who arrived more recently in 2021 compared to those arrived in earlier periods. This is reflected in a reduced access to homeownership, which occurs in a scenario of rising prices in both tenure regimes. In Spain, and over the last decade, there has been an 18% increase in rental dwellings.

	Furthermore, the study takes into account age-related variations, expecting immigrants aged 25 to 34 to exhibit lower rates of homeownership compared to older age groups, because of their recent arrival. The findings will contribute to a comprehensive understanding of the housing challenges faced by different immigrant cohorts during their residential integration, providing insights for policymakers to address these disparities effectively.

2. RURAL AND ISLAND MOBILITIES

LECTURE ROOM 1

Chair: Neil Argent (University of New England, Australia)

2.1

From environmental change perceptions to mobility intentions: case study in rural Senegal

Etienne Piguet (Institute of Geography, University of Neuchâtel, Switzerland), Florence De Longueville (Department of Geography, University of Namur, Belgium), Sabine Henry (Department of Geography, University of Namur, Belgium), Jelena Luyts (Department of Geography, University of Namur, Belgium), Issa Mballo (Institute of Geography, University of Neuchâtel, Switzerland)

The amount of research focusing on the links between environmental degradation and population mobility has increased significantly in recent decades. New syntheses and meta-studies have identified the main issues of scientific consensus and the new research questions that merit future investigation. Among the latter, perceptions of environmental change - which may differ from "measured" environmental degradation - and their links with mobility intentions - which may differ from actual population movements - are of particular interest. In this paper, we will present the results of a research project in rural areas of northern Senegal, based mainly on a survey of 905 households conducted in 2022-2023. Multivariate analyses are used to weigh the socio-demographic and economic drivers of environmental change perceptions. The intensity of the links between perceptions and mobility intentions at the household level is then measured using the same methods.

2.2

Migration and gossip: gendered effects of gossip and shaming in tightly knit rural communities

Gréta Bergrún Jóhannesdóttir (University of Akureyri, Iceland)

Small communities often become tightly knit social spaces, where each individual is not just important for the function of the community, but also quite visible to others living there. Flow of information becomes personal, where there will be gossip about the people living in such a space. Gossip has often been considered one of the social factors making live in small communities a challenge for people and their happiness with living in such a place. Gossip is often linked to women but a recent study in rural Iceland shows no gender difference of the amount of gossip that people estimate to be about themselves in their community. It also shows statistically significant relations between migration intentions and the amount of gossip. There are also complex power relations within the flow of gossip, where being a local is favourable. Social capital and family relations affect the gossip, and the shaming that often follows and flows with the stories. Having a reputation does in fact influence the life of an individual in a tight social space, and having your closest family living there can work as a shield against the gossip. Some people are though likely to take the flight response of migration instead of the fight

	response, against harsh gossip and shaming. Research data is from a survey conducted in 56 rural communities in Iceland and from interviews with young women in small fishing villages in Iceland.
2.3	**The effect of regional labour market mobility on civic engagement: differences between rural and urban areas?** **Heiko Rüger** (Federal Institute for Population Research (BiB), Wiesbaden, Germany), Nico Stawarz (Federal Institute for Population Research (BiB), Wiesbaden, Germany), Thomas Skora (GESIS Leibniz Institute for the Social Sciences, Germany), Lena Greinke (Gottfried Wilhelm Leibniz University, Germany) Forms of regional mobility in the labour market such as long-distance commuting and multi-local living, i.e. second homes used for work, have increased in Germany and other countries. These forms of commuting between regions are seen as alternatives to internal migration. On the one hand, regional mobility is relevant for the functioning of labour markets and is positively related to individual income. On the other hand, increased spatial mobilisation could lead to uprooting and isolation as individuals become detached from place-based social relations. This paper examines the effect of regional mobility on civic engagement using the example of long daily commutes. Civic engagement is an important dimension of social cohesion and hence social sustainability, and of particular relevance to rural areas, where key public services are often provided by volunteers. Based on theoretical considerations, including the Civic Voluntarism Model, we expect a negative association between commuting distance and the extent of volunteering. We apply fixed effects (FE) panel regression to longitudinal data for 1997-2019 from the German Socio-Economic Panel (SOEP) (N=102,171 observations, 23,517 individuals). First results show that medium-distance commuting (25-49 km) and especially long-distance commuting (≥50 km) were associated with a reduction in volunteering compared to short-distance commuting. The negative effects of both medium and long-distance commuting tended to be stronger in more sparsely populated, rural regions. Overall, the findings suggest that while regional mobility is important for economic sustainability, it may have a negative impact on social sustainability by reducing civic engagement, particularly in rural areas.
2.4	**An internal diaspora: opportunities for island repopulation?** **Paula Duffy** (Department of Geography & Environment, School of Geosciences, University of Aberdeen, UK), **Lorna Philip** (University of Aberdeen, UK), Kirsten Gow (University of Aberdeen and The James Hutton Institute, UK), Mags Currie (The James Hutton Institute, UK), Ruth Wilson (The James Hutton Institute, UK) Academic researchers and policy makers have had a long-standing interest in diaspora populations. Reflecting an increasingly transnational lens, diaspora research has largely been international in scale, interested in expatriates and their descendants. In this paper we propose that studies of internal diaspora groups represent an opportunity for advancing diaspora studies. Across the world there has been long-term out-migration from island communities and associated island depopulation. Islanders are often internal migrants who settle on the mainland, often in locations where other islanders have moved to in the past which creates opportunities for an islander identity to be sustained. Sustained out-migration from Scotland's numerous inhabited islands and associated islands depopulation has resulted in generations of islanders settling on the Scottish mainland and the creation of 'island spaces', notably in cities such as Glasgow, Edinburgh and Aberdeen. Little is known about Scotland's internal islands diaspora or whether members could contribute to achieving Strategic Objective 1 in the Scottish National Islands Plan, "address population decline and ensure a healthy, balanced population

	profile" (Scottish Government, 2019)? We present findings from analysis of data collected via a questionnaire survey designed to map attributes of the Scottish islands diaspora to: (i) identify aspirations to return to live in an island; (ii) understand attributes of diaspora members who aspire and do not aspire to return to live in an island; and (iii) identify spatial patterns of return aspirations. Combined, this analysis provides novel insights into the population potential of an island diaspora group.

3. MIGRATION MOTIVATIONS AND IMPLICATIONS

LECTURE ROOM 3

Chair: Neal Halforty (Queen's University Belfast, UK)

3.1

Human development, basic needs and inter-city out-migration: Subnational perspectives on the mobility transition

Dorothee Beckendorff (Architecture, Civil and Environmental Engineering, EPFL, Switzerland), Wenxiu Du (Institute of Architecture and City Science, EPFL, Switzerland), Mathias Lerch (EPFL, Switzerland)

The conventional approach to understanding the migration-development relationship has primarily focused on economic factors. Although economic development undeniably plays a significant role in influencing human mobility, the quest for an improved quality of life transcends purely economic motivations. This research delves into the realms of human development and basic needs as fundamental drivers of internal migration, with a particular emphasis on exploring their impact at the inter-city level. While the influence of human development on international migration has been widely examined, its implications at the subnational scale, especially between cities, remain largely unexplored. This paper aims to investigate whether the mobility transition hypothesis or the inverted U-shaped curve, which relates emigration to economic development, holds true at the subnational level. Drawing on Amartya Sen's capability approach and incorporating his conceptualization of basic needs, the study examines three pivotal dimensions of human development: health, knowledge, and standard of living. Furthermore, household assets are incorporated into the analysis to provide insights into aspects of basic needs beyond the conventional measure of GDP. Through empirical analysis encompassing 76 censuses in 30 countries across the Global South, covering the entire development spectrum, and focusing on 1200 consistently identified functional urban areas over time and space, the study seeks to shed light on the intricate relationship between human development, basic needs, urbanization, and inter-city migration.

3.2

Analyzing and modelling of interregional migration in China in 2010-2020: Revisiting the log-linear and Poisson migration models

Jianfa Shen (Department of Geography and Resource Management, The Chinese University of Hong Kong, Hong Kong SAR)

As migration and mobility are driven by social and economic forces, Zelinsky proposed "the hypothesis of the mobility transition" which links the changing spatial patterns of migration with the process of modernization. How has the spatial pattern of migration in China been transformed in the recent decades with new strategies and patterns of spatial development in China? This paper analyzed the patterns and determinants of interregional migration in China using the migration data from recent censuses. First, the changes of regional migration pattern

	from 1985-1990 to 2015-2020 were revealed. Second, various environmental, demographic, social and economic variables were used to explain regional migration in 2005-2010 and 2015-2020. Five variables were not significant in 2015-2020, indicating the shifting consideration and choice by migrants under a lower level of interprovincial migration. The tertiary sector became very important in the migration process in 2015-2020. The results were compared to reveal new drivers of regional migration in the 2010s. Third, both log-linear and Poisson migration models were used in the migration analysis. They were more rigorously compared by modelling simulated migration flows. The difference in model performance of log-linear and Poisson migration models seems a result of different optimization objectives of model estimation, rather than different random processes of migration.
3.3	**Stay, leave late, leave early, return, or move onward? Inter-provincial migration choices of older adults in China, 2000-2005 and 2010-2015** **Ye Liu** (School of Geography and Planning, Sun Yat-sen University, China), Cuiying Huang (Sun Yat-sen University, China), Zehan Pan (Fudan University, China) Existing studies on the migration of older adults in China have tended to treat older migration as a one-off activity and have failed to investigate the multiple processes involved. Based on the microdata samples of the 1% national population sample survey in 2005 and 2015, this study makes the first attempt to examine the extent to which regional and personal attributes jointly affect older adults' decision of whether to leave the province of household registration, which is usually their hometown or the province of residence prior to five years ago, while in the second phase, older adults choose to stay in the same province, return to the province of household registration, or move onward to a new province. For older adults deciding whether to stay in or leave the province of household registration (the first phase), results from the binary logit models showed that provinces with fewer medical services, fewer public green areas, more severe air pollution, and larger extreme temperature differences had a higher propensity of out-migration, while the personal characteristics of older adults also played a role in their migration choices. For those who move to a new province in the first phase and decide whether to stay, return, or move onward in the second phase, results from the multinomial probit models showed that older adults who resided in provinces with a higher cost of living tended to return to the province of household registration in 2000-2005, while older adults who resided in provinces with a lower cost of living tended to return to the province of household registration in 2010-2015. This study enhances our understanding of the heterogeneity of older migration in China by disentangling the complexity of multiple migration processes.
3.4	**Understanding internal migration in Azerbaijan** **Gulvin Yusifova** (Geography, School of Natural and Built Environment, Queen's University Belfast, UK), Ian Shuttleworth (Geography, School of Natural and Built Environment, Queen's University Belfast, UK), Merav Amir (Geography, School of Natural and Built Environment, Queen's University Belfast, UK) Internal migration plays a key role in national well-being because of its effects on economic, social, and demographic change. It is a major factor in patterns of population and employment growth and decline within countries (Champion, Cooke and Shuttleworth, 2018, p.31). While internal migration is widely considered an essential driver of economic efficiency, and therefore thoroughly investigated by scholars in developed countries, the process remains relatively understudied and unmeasured in most former Soviet Republics. Therefore, this research aims to explore and understand internal migration in Azerbaijan where there has been little academic

	work on internal migration, and where the concentration of population in the capital city of Baku is seen as a problem. A questionnaire was used to estimate the percentage of internal migrants among the citizens of Baku, to explore the causes of internal migration and to understand the experiences of Baku residents. More than 40 per cent of 400 respondents were born outside Baku, but half of them is not registered in the city despite living there and so hidden from official data. Over 40 per cent of these unregistered migrants viewed registration as unnecessary. The reasons why people moved are various, but admission to university in Baku is the leading cause. However, young people are unwilling to return once they graduate. According to the results, the life standards of the internal migrants improved after they moved in almost all realms of life. However, several problems annoy the citizens of Baku among which congestion and overcrowding is prime.

4. AGE AND AGEING 1

CONFERENCE ROOM 2

Chair: Emma Lundholm (Umeå University, Sweden)

4.1	**Association between the change of the age composition and the development of the low-income rate in regional populations** Milena Nevanto (Finnish Institute for Health and Welfare, Finland), **Timo Kauppinen** (Finnish Institute for Health and Welfare, THL, Finland) Population ageing is a megatrend that is spatially differentiated. Predicted changes in the age structure are used for example in regional predictions of changes in the costs of social and health services. However, also the development of the socioeconomic composition of the population affects such costs and human capital and well-being. Therefore, awareness of the possibly diverging trajectories of these two aspects of the population composition is necessary in regional policy. The aim of this study is to investigate how the change of the age composition of the regional population predicts the development of the low-income rate. We use full-population register data from Statistics Finland for 2000–2020, aggregated to regional units in Finland. We apply growth curve analysis to estimate how the change of the age composition predicts the development of the low-income rate, how much this varies between regions, and how other regional characteristics such as urbanicity and regional GDP explain this variation. Additionally, we estimate the simultaneous development of the age and socioeconomic compositions with multivariate growth curve analysis. The preliminary results indicate that increase in the share of population aged 65 and over is related to increasing low-income rate, but there is large variation in this association and differences in the change of the age composition do not explain the variation in the development of the low-income rate. These results suggest that some other regional factors may modify the association. We find evidence of such modifying factors, although most of the variation between the regions remains.
4.2	**Micro-demographic modelling of age and community structure** **Paul Longley** (Department of Geography, University College London, UK), Justin van Dijk (University College London, UK), Maurizio Gibin (University College London, UK), James Todd (Geolytics Ltd.), Zi Ye (University of Liverpool, UK), Tian Lan (Wuhan University, China)

	Consistent with previously reported research into the micro-scale ethnic composition of communities (doi: full/10.1080/02723638.2019.1645554) we advocate modelling of the age characteristics of populations at the level of the individual. Here we use a large consumer data source alongside published data on baby names to understand the age distributions of bearers of all given names found amongst the UK population. Using the Consumer Data Research Centre (CDRC) Linked Consumer Registers (doi: 10.1111/rssa.12713), individual age estimates are refined using names and probable ages of other household members. Georeferencing of the addresses of all residents then enables micro-scale modelling of the geography of aging and changes in household composition. This makes it possible to ascertain community composition with respect to aging and fertility, and hence make provision for health and education needs. We assess the importance of this work in community planning.
4.3	**Subnational population ageing in New Zealand: Past, present, and future** **Michael Cameron** (University of Waikato, New Zealand) The structural ageing of the population is one of the key global trends of the 21st Century. The importance of population ageing has gained prominence because of a growing recognition that future populations will include an increasing share of older people, raising potentially important resource implications for national and local governments alike. In this paper, I summarise past, present, and future measures of population ageing for New Zealand at the regional and territorial authority level. This exercise highlights two key facts. First, all subnational areas have been, and are projected to continue, ageing. Second, not all subnational areas are ageing at the same rate. Moreover, the ranking of subnational areas in terms of past, present, and future ageing depends on the measure of structural ageing that is employed. In particular, I highlight the differences between 'traditional' measures of structural ageing, such as the median age or the proportion of the population aged 65 years and over, and a new class of axiomatically-consistent structural ageing measures developed by Cameron (2022). Looking more deeply at the results, it appears that more rural and peripheral areas have been ageing faster than more urban and peri-urban areas, and will continue to do so into the future. Policymakers and other decision-makers should remain cognisant of the importance of subnational population ageing.
4.4	**Who cares when children are absent? Exploring contact, care, and support among older people in Europe** **Jenny Olofsson** (Centre for Demographic and Ageing Research, Umeå University, Sweden), Gunnar Malmberg (CEDAR and Department of Geography, Umeå University, Sweden), Emma Lundholm (Department of Geography, Umeå University, Sweden) Previous research on the living conditions of older people in Europe reports improved health and growing independence, changes in access to family-based networks, and limited funding for public welfare institutions. In some countries, trends of refamilization are noted. Hence, a key question is to what extent older people without children or with children living out of daily reach manage their daily activities and social life. Do we observe trends towards greater – voluntary or involuntary - independence over time? Are these trends similar across countries with different welfare models? To what extent does informal, non-family-based support increase or decrease over time? Based on three waves of data from SHARE (Survey of Health Ageing and Retirement in Europe), we examine how Europeans over the age of 65, without any adult children or with children living at a distance, have managed daily life activities and maintained social contacts, and how this has changed for different age groups. For comparisons over time, we use data from Wave 1 in 2004, Wave 7 in 2017, and Wave 9 in 2022, thus including observations from before and after the

	COVID-19 pandemic. We analyse information on the frequency of social contacts and to what extent people aged have managed their daily activities on their own, with assistance from friends and relatives, and to what extent they have relied on public organised caring institutions. One focus is on differences between countries with different welfare models.

Parallel Session II	**13:35 – 15:15**
5. NEIGHBOURHOOD DIVERSITY AND COHESION	
LECTURE ROOM 1	
Chair: David Manley (University of Bristol, UK)	
5.1	**Neighborhood cohesion, residential continuity, and wellbeing outcomes** **William Clark** (Geography, University of California, Los Angeles, USA), Daichun Yi (Southwestern University of Finance and Economics, Chengdu, China) For the past two or three decades there has been a common narrative, in part stimulated by Bowling Alone, that local community connections among individuals' social networks, and the norms of reciprocity and trustworthiness that arise from them, are in decline. Those ideas were underscored by studies which suggested that local spaces have been marginalized in the global digital world. A recent turn in these discussions has reinvigorated the potential role of the neighborhood in creating modest positive health effects, and wellbeing generally. The review and research reported in this paper provides a re-evaluation of the role of local connections and their importance for wellbeing and healthy living. Specifically, we extend the research by examining how length of residence and variations in neighborhood quality play roles in wellbeing outcomes. We also ask how aging in place increases the positive outcomes in various ways for families, singles, and older people. We use four measures of social cohesion, with demographic controls, to evaluate variations in social cohesion and their contribution to outcomes on mental health, self-reported general health, and life satisfaction.
5.2	**Exploring patterns of ethnic diversification and residential intermixing in the neighbourhoods of Riga** **Maris Berzins** (Department of Geography, University of Latvia, Latvia), Zaiga Krišjāne (University of Latvia, Latvia), Elina Apsite-Berina (University of Latvia, Latvia), Sindija Balode (University of Latvia, Latvia), Janis Krumins (University of Latvia, Latvia) Immigration and social inequalities reflect the increasing ethnic and socioeconomic segregation in contemporary urban Europe. Residential segregation is a long-lasting phenomenon in European cities and a subject of concern in urban policy. Extensive literature has shown that the concentration of deprived populations in specific neighbourhoods can represent a threat to social cohesion, access to the labour market, educational attainment, and even lead to public discontent and urban unrest. This analysis is motivated by the fact that Latvia has a relatively high proportion of ethnic minorities, which have been historically formed over a longer period of time under Soviet occupation, but in the past few years, ethnic diversity due to immigration has increased. Since the early 1990s, Latvia has experienced high levels of emigration, while the most recent dynamics reveal net migration close to zero and an increasing proportion of

	emergent immigrant populations originating from non-European countries. This study examines the changing geographies of ethnic diversity and residential segregation in Riga, the most populous city in Latvia and the Baltic states. Conventional explanations of neighbourhood ethnic transitions are considered by using consistent data for urban neighbourhoods and ethnicities from the 2000, 2011, and 2021 Latvian census. Understanding local inequality and diversity across urban neighbourhoods has been the focus of substantial academic effort, most notably in the widely used approach of segregation indices to measure spatial separation among multiple ethnic groups and in determining residential mixture.
5.3	**The age of diversity: the neighbourhood demographic structure of ethnic groups in England and Wales, 2001-2021** **Momoko Nishikido** (Geography, School of Natural and Built Environment, Queen's University Belfast, UK), Richard Wright (Department of Geography, Dartmouth College, USA), Gemma Catney (Geography, School of Natural and Built Environment, Queen's University Belfast, UK), Mark Ellis (Geography, University of Washington, USA) The ethnic diversification of England and Wales between 2001 and 2011 at national and neighbourhood levels continued through the subsequent decade (Catney et al., 2023a). This paper shows how demographic change associated with age is a factor in this process. Using data from the 2001, 2011 and 2021 Censuses of England and Wales, we investigate the extent to which a neighbourhood's ethnic diversity varies across age groups and how this variation changes as groups age in place. We find that ethnic diversity has increased across the age distribution over time nationally and in neighbourhoods as the populations of many groups - not just those who are White British - age. This increase renders the typical neighbourhood diversity experienced by those 65 and older in 2021 greater than that experienced by any age group two decades prior. Ageing-related increases in ethnic mix in White majority neighbourhoods are apparent across all ages, with the biggest increases in middle age. The ageing out of White groups from some other neighbourhood types (e.g., majority Pakistani) is also clear. Through a focus on age, our analysis offers a new means to gauge the experience of ethnic diversity of neighbourhood residents. Our findings can help inform debates about intergenerational mixing and contact between ethnic groups and how they matter for the social conviviality of local communities.
5.4	**Neighbourhood belonging and experiences of racism for ethnic minorities in Britain** **Nissa Finney** (School of Geography and Sustainable Development, University of St Andrews, UK), Joseph Harrison (University of St Andrews, UK) This paper is concerned with how neighbourhood belonging, as an aspect of home, varies between ethnic groups and how this is related to experiences of racism. Using the Evidence for Equality National Survey (EVENS), conducted in 2021, we determine factors which are associated with professing strong local belonging. We consider individual characteristics, such as experiences of racism and attachment to ethnic identity, along with local area characteristics including ethnic diversity and deprivation. Results show that those from South Asian ethnic groups persistently report strong local belonging, whereas Roma and Eastern European people report the lowest levels of belonging to their neighbourhood. These extremities remain clear when considering characteristics at both individual and area level demonstrating the value of analysis with fine grained ethnic group detail. Our discussion highlights the notable findings of the long-lasting negative effect of experiences of racism on local belonging and the positive relationship between attachment to ethnic identity and local belonging. The results suggest that

	attachment to culture and shared bonds with co-ethnics provide foundations for the development of strong attachment to the local area, but there can be strong and lasting negative impacts of experiences of racism on feeling at home which scholarship on belonging, segregation and spatial inequalities should attend to.
5.5	**Migrants and social cohesion within the neighbourhood: Evidence from an Australian panel data** **Qing Guan** (School of Demography, Australian National University, Australia), James O'Donnell (School of Demography, Australian National University, Australia) With immigrant populations continuing to grow across the world and heightened concern for inter-group conflict, social cohesion has become an increasingly critical issue today. Evidence are relatively consistent in support of a negative relationship between ethnic heterogeneity and social cohesion at the neighbourhood level, though mixed evidence are found at other subnational levels. In this paper, we use panel data from the Household, Income and Labour Dynamic in Australia survey to examine the relationship between the share and distribution of migrants in the neighbourhood and social cohesion at neighbourhood and community levels. Crossed-effect models are used to disentangle the relationship, controlling for migrant status, socio-demographic characteristics, residential incumbency, neighbourhood socioeconomic status, and random effects at individual and neighbourhood levels. Models for foreign-born persons are compared with Australia-born persons. We found low correlations and differing over-time changes for seven social cohesion variables and modelled them separately. The negative relationship is substantiated for non-migrants and migrants from main English-speaking countries: a higher presence of overseas-born residents in the neighbourhood is negatively associated with higher attitudinal and behavioural cohesion. The opposite is observed for migrants from non-English-speaking backgrounds. Within the neighbourhood, more opportunities for inter-group contact attenuate social cohesion for non-migrants but not for migrants. Neighbourhood socioeconomic level is positively associated with social cohesion for both migrants and non-migrants. Results from this study suggest mixed evidence of the relationship between neighbourhood diversity and social cohesion, depending on migrant status and also how social cohesion is defined and measured.

6. POPULATION PROJECTIONS	
LECTURE ROOM 3	
Chair: Nikola Sander (Federal Institute for Population Research (BiB), Germany)	
6.1	**The role of population geography in microsimulation models** **Nik Lomax** (School of Geography, University of Leeds, UK) Microsimulation models, that are designed to estimate trajectories of individuals, are making their way in to the mainstream as tools for producing population projections and assessing policy interventions. They are capable of capturing heterogeneity in ways that group based models (e.g. cohort component models) are not and are also well suited to incorporating multiple attributes in to demographic rate calculations. However they also introduce complexity, they are data hungry, computationally expensive and require methods for calculating transition probabilities that are suitable for diverse data types. Many demographic microsimulation models are only a part of larger modelling ecosystems, that deal with synthetic data generation,

	imputation, baseline (demographic) model runs, alignment and applied outcomes such as changes in health and income. This paper makes the case for developing well specified spatial population microsimulation models that serve as the core of larger applied models as an art in itself. Some of the pitfalls of developing these models are considered and case studies focused on health and infrastructure are presented to demonstrate the utility of the approach.
6.2	**Recent trends and changing spatial patterns of international and internal migration in Germany - Consequences for regional population projections** **Frank Swiaczny** (Federal Institute for Population Research (BiB), Germany), Laura Cilek (Federal Institute for Population Research (BiB), Germany), Elke Loichinger (Federal Institute for Population Research (BiB), Germany) Population projections, under conditions of below replacement fertility and rising life expectancy, are increasingly dependent on the scale and direction of international and internal migration. In Germany, both - respective trends and spatial patterns - are highly volatile and changed repeatedly over time. Recently, COVID related variation in internal migration and refugee migration from Ukraine had an impact on regional population dynamics. Making assumptions for regional population projections should reflect such changes – the last official projection comprises one status quo scenario only. The presentation will show latest trends and patterns in internal and international migration over the life-course, using most recent migration data for NUTS-3 regions classified by urban to most rural counties. The analysis will focus on results from a new regional population projection up to 2070, prepared by the Federal Institute for Population Research (BiB) in collaboration with the Federal Institute for Research on Building, Urban Affairs and Spatial Development (BBSR), using scenarios that reflect the degree of uncertainty around future trends and spatial patterns in internal and international migration. Results show that by 2070 population of large cities will only fall below current figures in scenarios with assumptions of a continuously low international migration balance. Contrary, populations of the most rural counties will only remain slightly above current figures in a scenario that combines high international migration with sub-/counter-urbanisation assumptions for internal migration. In all other scenarios, rural counties are projected to lose a considerable number of inhabitants.
6.3	**Spatial interaction modelling for forecasting interregional migration in Australia** **Jacques Poot** (Te Ngira: Institute for Population Research, University of Waikato, New Zealand), Charles Siriban (University of Queensland, Australia), Aude Bernard (University of Queensland, Australia), Tom Wilson (Demographic Consultant – Melbourne, Australia), Arkadiusz Wiśniowski (University of Manchester, UK) In most multi-regional population projections, assumptions about interregional migration tend to be rather unsophisticated. No account is usually taken of the interdependencies between inward and outward migration of all regions, except for imposing the 'adding up' assumption that net internal migration of the nation must be zero. Spatial interaction models developed since the 1970s can take interdependencies between inward and outward migration of all regions explicitly into account. The gravity model of migration – in which migration is positively related to the populations of sending and receiving regions, but inversely related to various types of spatial friction associated with migrating between them – is a special case within the family of spatial interaction models. More generally, migration from a region can be assumed to be a function of the spatially weighted 'draw' of all other regions, while migration into a region is a function of the spatially weighted 'competitiveness' of all other regions. In this paper we estimate spatial

	interaction models of 12-month inter-GCCSA migration flows in Australia for the years ending June 2007 until June 2022. We use these models to forecast inter- GCCSA migration 12 months ahead, out-of-sample. Similarly, we estimate models of inter-State migration using census data from 2006, 2011, 2016 and 2021. In the latter case we forecast inter-State migration 5 years ahead, out-of-sample. Finally, we compare the forecasts derived from spatial interaction modelling with those obtained from alternative methodologies, such as time-series extrapolation, Bayesian forecasting and machine learning.
6.4	**Evaluation of population projections for Tokyo Area using the Cohort Share Extension Method: Comparison of accuracy with the Cohort Component Method** **Moriyuki Oe** (Keio University, Japan) In 1995, the author proposed the Cohort Share Extension Method (CSEM) as a new method for projecting regional populations. While almost all local governments use the Cohort Component Method (CCM) for their projections, Kanagawa Prefecture, a part of the Tokyo area, with a population of 9.24 million in 2020, has conducted five official population projections using CSEM over the past 20 years based on joint research with the author. The CSEM calculation process is as follows. Using five-year census data, we calculate the share of the population by sex and five-year age group in the region of interest relative to the nation as a whole. We then convert the time series shares into shares by cohort and draw line graphs of the cohort shares. Since there is a regularity in the line graphs of cohort shares, we extend each cohort share line into the future according to certain rules. Using these future cohort shares, we break down the latest projected populations for Japan by sex and five-year age group to the population of the region of interest. We made the population projections for the Tokyo area using CSEM and CCM using census data from 1995 to 2015 as the base population, and compared them with actual values from 2000 to 2020 to evaluate the accuracy of the projections. Using actual values for birth and death rates, we checked how accurately CSEM and CCM could track future net migration.
6.5	**The Prague Population and Public Amenities Prognosis** **Tomas Brabec**, Zdenka Havlova, Nina Dvorakova, Jakub Hruby, Hana Peckelova, Jan Sykora (The Prague Institute of Planning and Development, Czech Republic) Our paper will introduce the Prague Population and Public Amenities Prognosis project, a new study and an interactive Dashboard made by the Office for City Analysis at Prague Institute of Planning and Development in 2023. It is one of the key sources for the debate on the current and future needs of public amenities in the city. The study serves as an important foundation for urban planning documents, urban studies, development projects in Prague, decision-making, and other activities concerting the development of the city. It serves the departments of the City Hall, Prague City Council and Prague City Assembly and their specialized committees in dealing with funding requests from individual Prague Municipalities. The study is divided into two main parts. The first one deals with the population (demographic) development and outlook (forecast) in Prague. Five variants for the future population, including the age composition up to 2050, were developed. The population of Prague has been growing for a long time and an increase can be expected also in the future. The population of Prague should increase by almost 300 thousand to 1.66 million inhabitants by 2050 (22% growth). Furthermore, the study evaluates a total of 8 types of public amenities, always according to the current situation and according to the variants of future population development. For example, in 2050, there will be 12 285 missing spots in kindergartens and 18 601 missing spots in primary schools.

7. HEALTH AND MORTALITY 1

CONFERENCE ROOM 2

Chair: Estelle Lowry (Queen's University Belfast, UK)

7.1

Monitoring the Global Spread of Covid-19

Philip Rees (School of Geography, University of Leeds, UK)

This paper reviews the excess deaths methods used to monitor Covid-19 globally during the 2020-2023 pandemic.
Mortality caused by Covid-19 is the most reliable method of monitoring its global spread. However, many countries do not report cause of death to the World Health Organization (WHO). To fill this gap, epidemiologists compare forecasts of all cause expected deaths with recorded deaths during the pandemic. The difference, excess deaths, estimates mortality from Covid-19. Total deaths for a reference period are used to forecast the expected number of deaths during the pandemic. Pandemic excess deaths approximate deaths from Covid-19. Deaths from other causes may rise because resources are diverted to Covid-19 care. Occasionally, the excess deaths estimate is negative.
Four groups developed world estimates of excess deaths. A team at The Economist developed the first model, using a machine learning algorithm. Results report the median, maximum and minimum excess deaths for multiple runs. Estimates for 2020-2023 were produced for nearly all countries. Kalinsky and Kobak (2022) developed a simple excess deaths model for countries with all-cause mortality data for 2020-2021. The Institute for Health Metrics and Evaluation developed excess deaths estimates for 2020-2021 using a statistical model for imputing deaths in low-income countries. Explicit 95% credible intervals are provided with central estimates. WHO and academic biostatisticians generated official excess deaths for all member states for 2020-2021, using a Bayesian model carefully "tuned" for individual countries. The paper evaluates results of the four models.

7.2

Spatial disparities in cause-specific mortality in Ukraine: A district-level analysis, 2006-2019

Sebastian Kluesener (Federal Institute for Population Research (BiB), Germany), Pavel Grigoriev (Federal Institute for Population Research (BiB), Germany), Nataliia Levchuk (Ptoukha Institute for Demography and Social Studies, NAS of Ukraine, Ukraine and Max Planck Institute for Demographic Research, MPIDR, Germany), Pavlo Schevchuk (Ptoukha Institute for Demography and Social Studies, NAS of Ukraine, Ukraine), Svitlana Poniakina (French Institute for Demographic Studies (INED), France)

Turbulent socioeconomic development, recent political challenges, and remarkable regional diversity with deep historical roots make Ukraine an important case for understanding mortality trends in Eastern Europe. In this paper, we provide the first comprehensive spatially-detailed analysis of cause-specific mortality trends and patterns in Ukraine focusing on the period 2006–2019. We rely on official mortality data and employ various demographic and spatial analysis techniques. Our results suggest a notable attenuation of the long-standing West–East and West–South–East mortality gradients. Cardiovascular mortality at older ages largely explains the gap between the vanguard and laggard regions, especially for females and for the most recent period. By contrast, the impact of mortality from external causes has greatly diminished over time. Hot-spot analyses reveal strong and persistent clustering of mortality from suicide, HIV,

	and lung cancer. We are currently extending our research by adding additional countries in Eastern and Central-Eastern Europe. Thus, at the ICPG we could present analyses of geographically fine-grained cause-specific mortality data covering Ukraine, European Russia, Belarus, Romania, Slovakia, Hungary, and Poland. This will allow to put our findings for Ukraine in a broader geographic context.
7.3	**A closer look at regional mortality disparities in Algeria: Current level and future prospects** **Amina Boukhalfa** (Department of Finance and Actuarial Science, Higher National Institute of Statistics and Applied Economics, Algeria), Farid Flici (Research Center in Applied Economics for Development, Algeria) Producing reliable estimates and projections of regional life tables is essential for capturing the disparities in mortality and longevity at the regional scale, and helping to better adapt social and health policies. No previous research was devoted to regional mortality estimation and forecasting in Algeria. The aim of this study was to estimate and forecast life tables for men and women in the seven sanitary regions of Algeria. To this end, we make use of the data from the Multiple Indicator Cluster Surveys (MICS, Wave VI, 2018-2019) to estimate the regional-to-national standardized mortality ratios by sex. Then, we adjusted the initial estimates using an indirect standardized approach. The standardized mortality ratio by sex and region was utilized for projecting the regional mortality surface based on national projections, assuming that this ratio remains constant after the period 2018-2019. Comparing the estimates and forecasts of mortality rates by sex and region indicates the existence of mortality inequalities in favor of women, who recorded the lowest mortality rates over the period 2018-2070. The concentration of high mortality rates was observed in the northwest region and the great south region for men and women, respectively. However, the western highlands reported the lowest mortality levels for both men and women.
7.4	**Migration experience and infant mortality in Romania: a hierarchical linear model** **Mădălina Manoilă** (Research Institute for Quality of Life, Romania) This paper explores the relationship between international migration and infant mortality in Romania, in the wider framework of the migration-development nexus. As everywhere in Europe, in the last decades, infant mortality has been decreasing significantly in Romania, but progress is still slower than in most other European countries. Moreover, the gap between urban and rural areas decreased very slowly in the period studied even if there have been changes across regions. During this time, accumulation of migration experience has been associated with economic development, change in housing conditions and even values in origin communities, which have a positive influence on infant survival. However, migration experience is heterogeneous and it can also have negative consequences at local level. Using data at local (LAU) and county (NUTS3) level from the Romanian National Institute of Statistics, the paper uses a hierarchical linear model to assess the relationship between international migration and infant mortality, controlling for demographic, geographical, economic and health care factors.

Parallel Session III	15:45 – 17:15

8. RURAL GEOGRAPHIES: REMEMBERING PROFESSOR AILEEN STOCKDALE

LECTURE ROOM 1

Chair: Tialda Haartsen (University of Groningen, the Netherlands)

8.1

Mobility, stability and staying in the rural

Sara Ferguson (Geography, School of Natural and Built Environment, Queen's University Belfast, UK), Tialda Haartsen (Rural Geography, Faculty of Spatial Sciences, University of Groningen, the Netherlands), Gemma Catney (Geography, School of Natural and Built Environment, Queen's University Belfast, UK), Tineke Reitsma (Rural Geography, University of Groningen, the Netherlands)

With the 'new mobilities' paradigm and the 'mobility turn' (Sheller and Urry, 2016) which acknowledge the relational nature of (im)mobility, it is now recognised that our increasingly mobile and connected world may also serve to facilitate staying in the rural (Stockdale and Haartsen, 2018). Indeed, there are multiple mobilities which have been identified as important constituents of both rural lifestyles and rural places (Milbourne and Kitchen, 2014). This paper will specifically explore the multifaceted roles (and requirements) of everyday and virtual mobilities, and highlight how these can potentially serve to both promote rural stability (for example economically and socially) and enable staying.
Using data collected from a large household survey and subsequent semi-structured interviews in three rural case study areas (UK, Netherlands, Germany) as part of the wider STAYin(g)Rural project, this paper highlights the role of multiple mobilities in (i) cementing rural identities, (ii) facilitating fixity in place, and even (iii) (re-)vitalising villages, both directly and indirectly; all of which accordingly have provided incentives and opportunities to stay. However, it will also importantly allude to 'requirements', such as accessible locations and adequate infrastructural investments. Without meeting such requirements, there are 'ramifications' or important consequences to consider. These include potential disparities in how residents can (and do) benefit from every day and virtual mobility, both within and between rural areas. It is therefore important to acknowledge, that whilst supporting staying, these multiple mobilities may also introduce or exacerbate susceptibility to rural vulnerabilities and inequalities.

8.2

Staying connected: Rural stayers and 'reverse' place elasticity

Tialda Haartsen (Rural Geography, Faculty of Spatial Sciences, University of Groningen, the Netherlands), Sara Ferguson (Geography, School of Natural and Built Environment, Queen's University Belfast, UK), Aileen Stockdale (Planning, School of Natural and Built Environment, Queen's University Belfast, UK)

Developments in information and communication technologies (ICTs) and transportation have transformed our daily and residential mobility patterns. We can commute over considerable distances or work remotely from home and are able to physically and virtually visit co-workers, family and friends anywhere in the world. ICTs, especially online social media, have stretched place boundaries facilitating migration and enabling migrants to maintain place connections at greater distances. This has been termed 'place elasticity' by Barcus and Brunn (2010: 291) '…in essence living a virtual life in the [home or origin] community without being present'. While place elasticity has been explored, this is almost always done from the migrants' perspective, in international migration patterns.

	In this paper, we focus on the stayers' perspective in an internal setting. Based on data from the STAYin(g)Rural project in the Netherlands, Germany and Northern Ireland we discuss: i) in what ways do stayers maintain contacts with friends and relatives who have moved?, and ii) to what extent does 'staying connected' to friends and relatives elsewhere make it easier to stay in the home area? We term this 'reverse' place elasticity: by maintaining virtual (ICTs) and occasional physical (personal visits) connections to friends and relatives elsewhere, the world comes to the stayer enabling them to remain in place. Insights from this project can be relevant for policymakers in rural areas who struggle to keep their regions populated.
8.3	**Future Rural Population Geographies panel discussion** **Tialda Haartsen** (Rural Geography, Faculty of Spatial Sciences, University of Groningen, the Netherlands), **Darren Smith** (Geography, Loughborough University, UK), **Lorna Philip** (University of Aberdeen, UK) Join us for a panel discussion with delegate contributions on population dynamics that can be expected, foreseen or may be relevant for rural areas in the coming years. We would like to go beyond ageing and rejuvenation, and consider topics including (the desirability of) keeping (peripheral) rural areas populated; health and climate change related (im)mobilities; etc. In line with Aileen Stockdale's favourite research topics, we would like to bring life course and linked lives perspectives into the discussions, as well as people's senses of belonging and attachment to the rural. **This session is followed by a drinks reception at Riddel Hall (17.15-17.45). All delegates welcome.**

9. FERTILITY	
LECTURE ROOM 3	
Chair: Momoko Nishikido (Queen's University Belfast, UK)	
9.1	**Measuring fertility rates and fertility behavior across European countries** **Marek Endrich** (Joint Research Center, European Commission, Italy), Philipp Ueffing (Joint Research Center, European Commission, Italy) Most measures of fertility for European countries have a retrospective focus as they are based on cohorts who have passed childbearing age. They provide information on the development of fertility for the broader society but lack insights for specific groups. Recent methodological developments in the literature suggest to calculate period-specific fertility rates using the own-children approach. We apply these methodologies to data from the EU Survey of Income and Living Conditions (EU-SILC) and the EU Labour Force Survey (EU-LFS). Both datasets come with a wealth of individual information. We measure fertility rates for different subgroups of the population according to socio-economic and demographic characteristics. The panel structure of the data allows us to observe how these subgroups contribute to the development of fertility over time and across subnational units. Applying the same methodology to the two datasets allows us further to compare their suitability to analyze current fertility behaviour.

9.2	**First and second births in China: Individual and contextual determinants** **Kuoshi Hu** (School of Geography and Sustainable Development, University of St Andrews, UK), Hill Kulu (University of St Andrews, UK), Julia Mikolai (University of St Andrews, UK) Fertility change is an important topic for the social and economic development in China. The proportion of females with two children increased after the change in family planning policy; however, the postponement of family formation and the low share of women with one child are the main reasons for the declining aggregate fertility in China. Therefore, to have a thorough understanding of fertility change in China, it is important to analyse the timing and levels of first and second births. However, very few studies analysed the timing and levels of first and second births from a life course perspective in China. In addition, these previous studies paid less attention to how the local context influences fertility behaviour and the young cohorts who are still experiencing fertility ages. This research investigates the first and second birth rates of females who were born in 1960-1999. We apply event history analysis to data from China Family Panel Studies (CFPS). Preliminary results show that the variation in the timing and level of first births is small, and the impact of individual and contextual characteristics (e.g. Hukou status, ethnicity, birth cohort) on the first birth rates is limited. The variation in the second birth rates is large. Birth cohort, ethnicity, educational level, Hukou status, sex of first child, living context and family planning policies are all important for the propensity of having a second birth.
9.3	**The effect of borders on the spatial diffusion of nonmarital births in France and Belgium (1968-2017)** **Yoann Doignon** (IDEES, French National Centre for Scientific Research (CNRS), France), Adrita Banerjee (IDEES, French National Centre for Scientific Research (CNRS), France) While extensive research in population science has focused on family change, the spatial dimension of these changes has been largely unexplored in the literature. Some studies have taken a spatio-temporal approach, highlighting a process of spatial diffusion and identifying explanatory factors for different time periods. However, to the best of our knowledge, no study has examined the spatial dynamics of family change in two countries simultaneously. This paper examines the spatial dynamics of non-marital births in the France-Belgium border area from 1968 to 2017, how this process shapes spatial heterogeneity, and whether state and cultural borders act as barriers to the spatial diffusion of this phenomenon, i.e. spatial heterogeneity across borders. This research aims to contribute to the understanding of how spatial patterns of family behaviour evolve and the role of state and cultural borders in shaping these patterns. The originality of this research lies in the fact that it combines the study of family change simultaneously in two countries, a long study period (50 years) and a local geographical level (municipalities). Two methods of analysis are used to answer the research question: 1.Thematic mapping: classical mapping techniques are used, ensuring the comparability of the maps through an appropriate discretisation of the variables. This approach allows the observation of spatial dynamics in the cross-border area. 2.Spatial discontinuity indices: they identify the largest gaps between two regions and make it possible to determine whether the largest discontinuities coincide with borders (national, cultural).

9.4	**Fertility trends in contemporary Northern Ireland: How does fertility behaviour vary by education and religion?** **Sarah Christison** (School of Geography and Sustainable Development, University of St Andrews, Scotland, UK), Hill Kulu (University of St Andrews, UK), Bernice Kuang (University of Southampton, UK), Ann Berrington (University of Southampton, UK) Despite numerous studies examining fertility behaviour in Britain and its constituent nations (England, Wales and Scotland), they often do not cover the whole of the UK, neglecting to include Northern Ireland. As a result, little is known about recent fertility trends in Northern Ireland. This paper uses data from the Northern Irish Longitudinal Study and event history analysis techniques to examine how fertility patterns have changed between 2001 and 2019, using a parity specific approach to explore changes in the levels and timing of first, second and third births over time and by religious and educational groups. Our initial results suggest that religion has little effect on the risk of having a first birth but that timing and age of first births may vary between religious groups. Education appears to have a greater influence on the likelihood of a first birth, with evidence of postponement for highly educated women. We will also extend this analysis to include second and third births. While we find little difference in the likelihood of a first birth by religious identity, we may expect to find larger differences for higher order births, with religious background influencing decision making regarding family size. We may also expect there to be differences in transition to second and third births by education based upon the results of our existing analysis that more highly educating women were more likely to postpone childbearing to older ages.

10. DATA AND METHODS 1	
CONFERENCE ROOM 2	
Chair: Paul Longley (University College London, UK)	
10.1	**Assessing the accuracy of national gridded population estimates: a case study from the Zambia 2022 Population and Housing Census** **Heather Chamberlain** (WorldPop, School of Geography and Environmental Science, University of Southampton, UK), Frank Kakungu (Zambia Statistics Agency, Zambia), Webster Sikalumbi (Zambia Statistics Agency, Zambia), Welani Simwinga (Zambia Statistics Agency, Zambia), Salomi Naluyele (Zambia Statistics Agency, Zambia), Hildah Chileshe (Zambia Statistics Agency, Zambia), Mubita Sikufele (Zambia Statistics Agency, Zambia), Thomas Abbott (WorldPop, School of Geography and Environmental Science, University of Southampton, UK), Garikai Membele (GRID3 / University of Zambia, Zambia), Chisenga Abel Musuka (GRID3 / Blue Byte Analytics Ltd, Zambia), Olena Borkovska (GRID3), Warren C. Jochem (WorldPop, School of Geography and Environmental Science, University of Southampton, UK), Attila N. Lazar (WorldPop, School of Geography and Environmental Science, University of Southampton, UK), Andrew J. Tatem (WorldPop, School of Geography and Environmental Science, University of Southampton, UK) Population and housing censuses are fundamental data sources for planning and development applications. However, when census data are represented geographically, they are typically mapped to subnational administrative units, forcing users to assume a homogenous

	distribution of population within units. To overcome this limitation, spatial demographers and geographers have developed several techniques to produce gridded estimates of population – allocating counts of population and demographics into small, uniform squares across a region of interest. These techniques often use ancillary geospatial datasets such as landcover, slope, infrastructure, and more recently, building footprints, which strongly correlate to locations of human settlement, to model the spatial distribution of population. Despite the increasingly widespread use of gridded population estimates in areas such as public health and humanitarian response, their accuracy has not been systematically evaluated due to an absence of temporally aligned population data at sufficiently high spatial resolutions. The 2022 Zambia Census collected georeferenced household-level data, providing a rare opportunity to evaluate population disaggregation techniques and the accuracy of gridded datasets. In this work, we employ several disaggregation techniques with data from the 2022 census and assess the accuracy of derived grid-cell level estimates against household-level enumeration. Initial results show that the accuracy of gridded population counts is influenced by the disaggregation technique and ancillary geospatial data. Differences are most pronounced at higher spatial resolutions, providing a trade-off for users between accuracy and utility. Given the growing interest in and use of gridded population estimates, these results have relevance for both users and producers of gridded data.
10.2	**Tracing suburbanization in Germany using gridded Census data, 2011-2022** **Tamilwai J. Kolowa** (Federal Institute for Population Research (BiB), Germany), Nikola Sander (Federal Institute for Population Research (BiB), Germany), Hannes Taubenböck (German Aerospace Center (DLR), Germany) Population shifts across the urban-rural continuum can alter local demographics, affecting housing and social infrastructure accessibility for various demographic subgroups. In the context of suburban areas in Europe, especially Germany, there is a consensus that many countries are undergoing suburbanization. Yet, quantifying suburbanization has mostly relied on administrative areas and thus, a detailed understanding of its effects at finer spatial scales is lacking. Remotely-sensed morphological data can provide a remedy. For instance, Europe's larger morphological urban areas consistently exceed administrative boundaries (Taubenböck et al. 2019). However, urban form-based approaches often lack direct ties to population data. This paper aims to address the shortcomings of both administrative population data and morphological data. This study uses a novel classification of suburban areas by the German Aerospace Center (DLR) for Germany's cities with populations greater than 100,000 (n = 80). This suburban classification is then spatially matched with population census grids for two time periods: 2011 and 2022. Spatial statistics for the urban and suburban areas are used to compare the two time periods regarding population change and growth rates. The 2022 census grid is released in March 2024. However, preliminary results are obtained using an official registry-based interpolation of the census for 2021. In most city regions, the population in urban areas grew more than in suburban areas. A regional comparison reveals notable exceptions. The paper aims to leverage census information beyond population counts, such as age and household sizes to identify determinants for urban and suburban growth.
10.3	**Towards a Model of Residential Area Encoding** **Alex Singleton** (Department of Geography and Planning, University of Liverpool, UK) RAE aspires to enhance the understanding of urban residential structures and population geography, offering a nuanced, multidimensional perspective for urban planners and policymakers.

	The paper introduces a novel methodology, Residential Area Encoding (RAE), which utilizes machine learning to capture complex, non-linear urban features; extending a history of geodemographic classification. Initially, the process of creating a model of residential differentiation involves selecting and standardizing variables, followed by clustering to identify areas with significant similarities. However, the paper suggests a more prominent role for machine learning, particularly through deep learning techniques such as autoencoders, in preparing input data for models of residential differentiation. Autoencoders, specifically convolutional autoencoders, are highlighted for their potential in this context. They operate by compressing input data into a lower-dimensional representation and then reconstructing the original data, focusing on capturing salient features without requiring labeled data. This approach could also offer an advantage over traditional methods like Principal Component Analysis (PCA) by addressing non-linear relationships in data. The paper explores the possibility of applying these encoded features in cluster analysis for residential area classification. It suggests that this method could lead to a more nuanced understanding of residential patterns and facilitate the development of predictive or explanatory models within the RAE framework.
10.4	**Functional Urban Areas: Application of the concept on traditional longitudinal data for intra- and inter-city analysis** **Wenxiu Du** (Institute of Architecture and City Science, EPFL, Switzerland), Dorothee Beckendorff (EPFL, Switzerland), Mathias Lerch (EPFL, Switzerland), Andrew Ding (University of Waterloo, UK) The use of satellite-based data has greatly improved our understanding of the world. In demography, urban planning, and city science, one of the most important satellite-based datasets to consider is the Global Human Settlement Layer (GHSL). However, the image-based data does not show individual-level information, therefore with no qualitative insights on who lives in a given city, how the population grow etc, which are only possible through surveying or data collected by governments. Among individual-level data, census data, which are extensively used around the world for planning, are especially rich in information. Due to privacy issues, census data are often anonymised and grouped into administrative regions, so that individuals cannot be identified. Administrative borders are frequently changed by the governments, making longitudinal research on a particular region challenging to conduct. On top of that, census data are country-specific in terms of defining the criteria for classifying an area as urban or rural and whether an area belongs to a city or metropolitan area. These factors make cross-national longitudinal studies challenging when performing urbanisation or city-related studies. Because the newly available satellite-derived data are rich in nature and enable analyses that were previously impossible to perform, it is empirical to harmonise the geographical divisions of each country through different observation periods and to develop novel approaches of integrating newly available satellite-derived data into research using traditional data. This research is an attempt to bridge this gap between satellite-derived GHSL data and census data for longitudinal urban studies.

DAY 3: TUESDAY 2ND JULY

Parallel Session IV	09.15 – 10.55
11. MIGRATION: YOUTH AND EDUCATION	
ISDELL COURTYARD	
Chair: David McCollum (University of St Andrews, UK)	
11.1	**The gainers and losers from the UK university-related migration: a sub-regional analysis of Graduate Outcomes Survey data** **Tony Champion** (Centre for Urban & Regional Development Studies (CURDS), Newcastle University, UK), **Anne Green** (Department of Strategy and international Business, University of Birmingham, UK), Konstantinos Kollydas (City-REDI, Birmingham) Against the background of the rise in higher-education participation rates, we analyse the spatial redistribution of undergraduates across the UK resulting from moves to and from university. Drawing on the Graduate Outcomes Surveys of 2017/18 and 2018/19, address data coded to 53 sub-regions are used to track those who enrolled on degree courses by age 20 as they move (or not) from domicile to university and workplace 15 months after graduation. We begin by examining how university-ward migration serves to concentrate this group geographically and the extent to which subsequent job-related moves tend to reinforce this process. Each person is then classified on the basis of their migration trajectories between domicile and workplace, enabling a set of migration accounts to be produced for each sub-region. Applying cluster analysis to these accounts, a six-way grouping of sub-regions is used to gauge changes between their domicile and workplace populations in both overall numbers and qualitative characteristics, the latter being measured in terms of educational qualifications pre-university and occupational status 15 months after graduation. These analyses demonstrate how the different types of sub-regions fare in these exchanges of students/graduates, with more sub-regions suffering the 'double whammy' of losing out in both quantitative and qualitative terms than gaining from this process, with challenging implications for central government's current 'levelling-up' agenda.
11.2	**Stability: The influence of the Hukou System on the recruitment of Chinese international students upon returning.** **Erli Kang** (School of Geography and Sustainable Development, University of St Andrews, UK) International student mobility (ISM) has long been considered an effective strategy for young people to enhance their employability and attain favorable employment outcomes. However, recent studies have shown that ISM does not always guarantee ideal employment outcomes. Given that China is one of the most important ISM-sending countries, an increasing number of studies have shown that Chinese returning students also face career difficulties in the domestic labour market. However, there are limited studies examined how Chinese hukou system, an internal migration regulation, affects returnees' employment outcomes. This paper is based on an analysis of in-depth interviews with 20 HR staff in Shanghai. Employing the concept of employability and adopting the perspectives of HR staff, this paper illustrates the crucial role of returnees' original hukou status in shaping their career outcome in Shanghai. Drawing from

	employers' consideration of connecting recruiting costs with returnees' original hukou status, this article raises an original concept of stability to explain the effect of returnees' hukou status/original place on their employment outcomes. Conceptually, this study aims to understand the factors contributing to heterogeneity among international graduates in terms of employment outcomes, and to reevaluate the role of ISM in terms of the employability in the Chinese context.
11.3	**European Union youth mobility Down Under: working holiday scheme migrant trends, characteristics and experiences in New Zealand (2000-2023)** **Oksana Opara** (School of Social Sciences and Public Policy, Auckland University of Technology, Auckland, Aotearoa New Zealand) Since reopening its borders after Covid-19 pandemic, New Zealand experienced its highest ever number of annual migrant arrivals when it reached 249,500 in November 2023. This number is more than double compared with the long-term average of 120,900 migrant arrivals for November during the pre-Covid 2002-2019 years. One of the largest components of these migrant flows are Working Holiday Scheme (WHS) participants. New Zealand WHS allows young people from more than 40, mostly developed, countries to travel to and spend between 12- 18th months in the country combining active holidays with temporary paid work. According to Immigration New Zealand data, 354,855 WHS visas were granted over 12 months in 2023. This paper presents critical comparative analysis of the New Zealand WHS expansion, its trends and patterns, including age and sex composition, with particular focus on the WHS migrant arrivals to New Zealand from the European Union member states. Special attention is paid to comparison of the dynamics and characteristics of the WHS arrivals from the old EU member states and the new EU8 post-2004 assession member states (Czechia, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia, and Slovenia) during the pre-covid 19 and post-Covid 19 time periods (2000-2023). This paper ultimately aims to highlight WHS migrants to New Zealand from the European Union as an important but relatively understudied group and to contribute to a better understanding of the new and complex forms of contemporary transnational temporary youth mobility.
11.4	**Evaluating the impact of the end of free movement (Brexit) and COVID-19 on inflows of EU students into UK universities** **Ruth Neville** (Geographic Data Science Lab, University of Liverpool, UK), Francisco Rowe (University of Liverpool, UK), Alexander Singleton (University of Liverpool, UK) Whilst the numbers of international students attending UK universities has been increasing in recent years, the 2021/22 and 2022/23 academic years saw a decline in applications from EU domiciled students. It is hypothesised that this decline is a direct result of the end of free movement due to the UK's withdrawal from the European Union (EU), but that the magnitude of this decline is heterogenous across types of institutions and subject groups. However, given these changes occurred during the COVID-19 pandemic, we seek to understand how pandemic related restrictions interacted with these declines. This research uses acceptances data provided by the Universities and Colleges Admission Service (UCAS) as well as COVID stringency indicators to uncover the extent of this decline. Using difference-in-differences and hierarchical modelling, we find evidence of a substantial but heterogeneous decline of EU students across different institutions and subject groups alongside a continued increase in non-EU students. We are also able to untangle the impact of COVID-19 restrictions, finding that in some cases harsher restrictions in an origin country led to an increase in applications. Our

	results hold importance for government and institutional policy- makers who are seeking to understand where losses are occurring and how international students respond to external shocks and policy changes.
11.5	**Exploring international Students' experiences and national promotion activities in the Baltic States** **Elina Apsite-Berina** (University of Latvia, Latvia), Eero Loonurm, Sintija Šmite-Tilika The Baltic states are experiencing a decline in local students, prompting universities to implement internationalisation plans and attract international students. The number of mobile students attending universities in Latvia has almost tripled in the last 20 years, representing up to 13% of the total student number. Geographically, most international students in Latvia come from India, Uzbekistan, Ukraine, to Lithuania from Belarus, Ukraine, and India, while in Estonia from Finland, Russia, and Nigeria. The impact of recent political events can be credited to the recent increase in the number of Ukrainian students studying in the Baltic states. This study explores ISM in the Baltic region by utilising a mixed-method comparative approach that combines available statistical data sources and experiences of international students. Insightful interviews conducted at the national level with experts representing each Baltic state illuminate the diverse strategies and persistent challenges inherent in the endeavour to allure and retain international students. Comparative data on mobile students across the Baltic states indicate an upward trend in ISM. The results show that the main attraction factors relate to the recognised quality of education, cost-effectiveness represented by affordable tuition fees, and the conducive and hospitable environment fostered by universities. On the contrary, limited avenues for social integration and the prospective job opportunities available to international students upon completing their academic pursuits are seen as limitations, particularly in Latvia.

12. ETHNIC AND SOCIAL SEGREGATION 1	
LECTURE ROOM 1	
Chair: Rich Harris (University of Bristol, UK)	
12.1	**Inequality, residential mobility and economic segregation. Conceptual relationships and empirical analysis in the Netherlands.** **Clémentine Cottineau** (Department of Urbanism, BK-TU Delft, the Netherlands) Urban economic segregation is the process through which households of different economic means end up residing in separate cities and in separate parts of cities. Its evolution is affected both by changes in the income and wealth distribution (economic inequality factors) and by changes in residential mobility behaviour (geodemographic factors). In this paper, I show how these concepts are related in theory, how scarce and disconnected the literature is on these relationships, and how we can begin to disentangle the factors of urban economic segregation evolution in cities using longitudinal microdata from the Netherlands. The first set of results relies on a systematic literature review of peer-reviewed articles dedicated to economic inequality and economic segregation. It shows the misalignment between three fields of research, their methodological inconsistency and the predominance of housing inequalities as a mediator between economic inequality and economic segregation. The second set of results relies on an empirical analysis of longitudinal Dutch register data, whereby individuals and households' economic and residential transitions are analysed and compared across cities of

	the Netherlands and compared to theoretical predictions about economic inequality and economic segregation. We find that the covariation between inequality and segregation is positive and significant but not straightforward. It varies between cities and is mediated by taxation, welfare, intra-urban and interurban residential mobility.
12.2	**Understanding ethnic, socio-economic and age segregation in England and Wales using the 2021 Census: towards an intersectional segregation approach** **David Manley** (School of Geographical Sciences, University of Bristol, UK), Gemma Catney (Geography, School of Natural and Built Environment, Queen's University Belfast, UK), Momoko Nishikido (Geography, School of Natural and Built Environment, Queen's University Belfast, UK), Christopher Lloyd (Geography, School of Natural and Built Environment, Queen's University Belfast, UK) The segregation literature focuses on ethnic or socio-economic or age segregation separately and little attention is paid to how different types of segregation coincide or diverge. This limits our understanding of the ways in which people share residential space. In this paper, we make the case for exploring multiple types of segregation together, using measures of ethnicity, age and socio-economic status. Using data from the 2021 Census of England and Wales, we measure segregation with the Index of Dissimilarity for Lower Super Output Areas within Travel To Work Areas: to represent neighbourhoods and housing/labour markets respectively. We provide a place-based regional overview of segregation, exploring regional variation in the interaction of segregation types, and showing that relationships with socio-economic and age segregation vary by ethnic group. In terms of residential segregation we see that where is as important as what in terms of these relationships, with no clear national trends. We explicitly consider what analysing three types of segregation concurrently adds to our understanding of experiences of contact – between people in different ethnic, socio-economic and age groups, and across neighbourhoods. In doing so we reflect on the potential of an intersectional framework for segregation. We consider if this could recognise the pluralities of residential experiences and unequal opportunities and constraints. Such an approach may reveal the connections and interplay between ethnic inequalities and how they are compounded by other inequalities in the housing and labour market such as age discrimination and socio-economic disadvantage.
12.3	**Locating Irish and Ulster Scots in Northern Ireland: Perspectives from Census microdata** **Ian Shuttleworth** (Geography, School of Natural and Built Environment, Queen's University Belfast, UK), John Hughes (Northern Ireland Statistics and Research Agency, UK) Challenges to traditional forms of government by the American and French Revolutions (starting the Age of Revolutions in the Old and New Worlds) focussed on popular sovereignty and the people as embodied in a nation. But who are the people? Following Herder, language became seen as a key factor in forging identities across Europe; Germans speak German, the French speak French. For peoples without a state in the 19th Century such as the Lithuanians and the Irish, their language became a way to preserve (and to create) a national identity. Sometimes this nation-building process failed. In contemporary Europe, one example of failure is Ireland where the island was partitioned, creating Northern Ireland which remains internally segregated, and whose existence is questioned by some.

	In these circumstances, language is controversial, a concern for cultural policy, and politically difficult. Because of this, it is important to know more about who speaks Irish and Ulster Scots; the languages associated respectively with Irish and British national identities and Catholics and Protestants. The presentation, using Census microdata, therefore looks at the individual, household, and geographical correlates of knowing Irish and Ulster Scots in 2011 and, for the first time, explores who gained, retained, and lost Irish between 2001 and 2011. The analysis finds that those who know Irish and Ulster Scots differ in their age profiles, that there are crosscutting minorities (eg Protestants who know Irish, Catholics who know Ulster Scots), and that the influence of national identity on language varies across Northern Ireland.
12.4	**The intersectional nature of urban segregation in São Paulo, Brazil** **Joana Barros** (CASA, University College London, UK), Flavia Feitosa (University of ABC, Brazil), Flavia Lisboa (University of ABC, Brazil) Urban segregation has traditionally been studied as a characteristic of places based on their demographic profiles, usually with a focus on a single social domain such as race/ethnicity, class, or religion. The idea is that people living in places with certain population characteristics are more or less likely to interact with others from different population groups. Yet individuals interact with others across different geographic and temporal domains which are not captured by such approaches. The present study proposes a methodological strategy to analyse segregation as an individual-based experience which allows the study of intersectional aspects of the phenomenon. This was possible via the analysis of the Metropolitan Region of São Paulo's travel survey, which contains geographical and temporal information, as well as socio-economic characteristics for a large sample of individuals. Based on the location of individuals' long stays, we measured their potential exposure to members to others with other social characteristics (age, gender, qualification levels, economic group, employment status, and role in the household). The individual-based measures allowed for inter and intra-group analysis and, more importantly, insights into how segregation affects intersectional subgroups. The study revealed that within the highest and lowest economic groups which are the most segregated, women tend to carry out their daily routines within their residential zones. Results also showed that the subgroup of women in the lowest economic group, that have the highest isolation levels, are those who are heads of households, have low levels of qualification, and do not have regular jobs.
12.5	**Spatial segregation on micro, mezzo and macro-scale and inter-marriage patterns in Stockholm** **Juta Kawalerowicz** (Department of Human Geography, Stockholm University, Sweden), Chris Fowler (Department of Geography, Pennsylvania State University, USA) In this paper we methods developed for measuring spatial segregation developed by Reardon and colleagues (2008) and later by Fowler (2016) to present a typology of segregation profiles for grid cell data in Stockholm county in Sweden. We use Swedish register data which provides demographic characteristics as well as coordinates of residents for all persons registered in Sweden. By classifying different segregation profiles at scales ranging from 250 meters to 5000 meters we are able to distinguish between micro-segregation and large-scale segregation that persists across scales. There are good theoretical reasons for thinking that these two types of segregation may work differently, with the later having more negative consequences for integration. On outcome we can test this notion on is the extent to which we see that couples marry out of their ancestry group.

13. SOCIAL AND SPATIAL INEQUALITIES 1	
LECTURE ROOM 3	
Chair: Jamie Goodwin-White (University of California, Los Angeles, USA)	
13.1	**Trajectories of neighbourhood deprivation in England** **Christopher Lloyd** (Geography, School of Natural and Built Environment, Queen's University Belfast, UK), Sara Ferguson (Geography, School of Natural and Built Environment, Queen's University Belfast, UK), Paul Norman (University of Leeds, UK), David McLennan (Deprivation.org), Gemma Catney (Geography, School of Natural and Built Environment, Queen's University Belfast, UK) Neighbourhood deprivation measures play a major role in identifying vulnerable communities in the UK, and in targeting resources to them. Official measures of multiple deprivation in each of the four nations of the UK are used to allocate billions of pounds of government money. The success of schemes to reduce deprivation should be assessed by measuring changes in deprivation over time, yet this is rarely attempted. This is important because their impacts are likely to be a partly a function of the deprivation history of an area (e.g., deindustrialisation, population decline) and, more generally, the trajectory of deprivation, and not just its current state, is significant. This paper takes as its focus trajectories of deprivation in England using the Index of Deprivation (IoD) for several time points: 2004, 2007, 2010, 2015, and 2019 for common geographical areas (2021 Lower Layer Super Outputs Areas; LSOAs, which we consider as neighbourhoods). The ranks for each of the seven sets of domains which each index release comprises are classified using a variant of k-medians adapted to longitudinal data. The end result is a set of trajectory clusters which differentiate, for example, LSOAs with persistently high or low deprivation over the study period and LSOAs with deprivation levels which have fluctuated. The lessons learned from cases where deprivation has decreased, and also where it is stubbornly high, are being used to inform the work of Local Authority analysts and other analysts. Understanding possible interventions associated with decreases in deprivation may help to shape similar schemes elsewhere.
13.2	**The evolution of compounding residential inequalities: A multiscale analysis of neighbourhood change trajectories in Amsterdam** **Ignacio Urria** (Department of Urbanism, Delft University of Technology, the Netherlands), Ana Petrović (Delft University of Technology, the Netherlands), Maarten van Ham (Delft University of Technology, the Netherlands), David Manley (School of Geographical Sciences, University of Bristol, UK) Traditionally, studies of spatial inequalities only consider one single dimension, such as income, and one spatial scale - usually a neighbourhood determined by administrative boundaries. Although the existing literature increasingly recognises the multifaceted nature of inequalities in cities, this paper introduces a novel approach by integrating the multidimensional and multiscale perspectives to understand the evolution of social and spatial inequalities over time. Drawing on clustering techniques based on factor analysis and using individual-level geocoded register data from the metropolitan agglomeration of Amsterdam, our methodology classifies neighbourhoods by grouping detailed residential locations with similar socioeconomic, demographic and housing characteristics across multiple geographical scales. Through sequence analysis, we identify trajectories of neighbourhood change from 1999 to

	2022, revealing patterns in the timing, duration, and sequencing of shifts across various dimensions. Our results bridge gaps in the multidimensional and multiscale neighbourhood classification literatures, providing a better understanding of how social inequalities interact and overlap in space. By examining the path dependence between different dimensions of spatial and social inequalities, this study provides insights into the processes that produce and reproduce social stratification in cities that may act at different geographical scales for different groups of people. Moreover, the rich and granular data paint a detailed picture of how residential contexts are segregated and how the trajectories of neighbourhood change are distributed spatially. This research offers an innovative framework for visualise and study the dynamic evolution of urban structures over time.
13.3	**Temporal trends in UK individuals falling behind on household bill payments from 2010-2022** **Maya Middleton-Welch** (Geographic Data Science Lab, University of Liverpool, UK), Mark Green (University of Liverpool, UK) This analysis will explore temporal trends in the extent to which individuals in the UK population have been affected by debt incurred as a result of falling behind on bills for basic necessities between 2010 and 2022. This is a particularly harmful form of debt (Salter, 2014) and can affect the ability of individuals to access basic necessities such as housing and energy (Lane et al, 2018). To my knowledge, there is currently limited empirical evidence regarding the extent to which UK populations have been affected by this form of indebtedness over time. This analysis will therefore investigate the extent to which the UK population has been affected by this form of indebtedness over time. It will also explore how individuals with different demographic, health and socioeconomic characteristics have had varying likelihoods of experiencing this form of debt over time. The analysis will involve the utilisation of descriptive analysis and regression analysis to analyse data from the Understanding Society Main Study data. This research will further understanding of social inequalities through exploring which demographic and socioeconomic groups have been particularly affected by this form of debt. Through exploring socioeconomic variables, this analysis will also offer an insight into possible drivers of temporal trends identified.
13.4	**The operationalisation of contextual poverty from individual and household perspectives: Does it matter how we measure income when estimating neighbourhood effects?** **Jerome Francisco Conceicao** (Department of Urbanism, Delft University of Technology, the Netherlands), Ana Petrović (Delft University of Technology, the Netherlands), Maarten van Ham (Delft University of Technology, the Netherlands), David Manley (School of Geographical Sciences, University of Bristol, UK) The ever-growing neighbourhood effect literature, analysing the effects of contextual poverty on individual outcomes, predominantly uses the personal incomes of neighbourhood residents to measure contextual poverty. However, this income type does not necessarily reflect contextual poverty well since many people live in multi-person households. Moreover, the distribution of households by size and income over neighbourhoods is highly selective. In this regard, household income might provide a better insight on poverty. This paper investigates the sensitivity of the neighbourhood effect estimates to the operationalisation of contextual poverty. To what extent does selecting an income variable when creating a poverty indicator determine the modelling outcomes? The article builds upon a prior study (Francisco Conceicao et al., in progress) introducing the concept of the Uncertain Categorical Measurements Problem

	(UCaMP). The UCaMP refers to the uncertainty surrounding what is being measured and represented when constructing contextual variables, resulting in estimation biases. We use longitudinal micro-data from Dutch population registers spanning from 2011 to 2020, which provides detailed income data at the individual and household levels. We consider five potentially influential factors when measuring poverty: income unit (individual vs household), income redistribution (gross vs net), household standardisation (equivalence factor), sample selection (gender groups), and summary statistics (poverty rates and Watts indexes). We conduct a systematic analysis modelling the effect of each poverty indicator while keeping all other factors constant. The results of this study will shed light on how using individual or household income would lead to different estimations of neighbourhood effects.
13.5	**Residential and housing tenure mobility trajectories of immigrants and their descendants in England and Wales** **Parth Pandya** (School of Geography and Sustainable Development, University of St Andrews, UK), Hill Kulu (University of St Andrews, UK), Julia Mikolai (University of St Andrews, UK), Chia Liu (University of St Andrews, UK) Immigrants and their descendants in the UK are disproportionately affected by housing insecurity due to the housing market nature being unregulated, expensive, and residualised. Naturally, therefore, evidence shows that housing tenure varies considerably by ethnic group. Studies that have analysed ethnic differences, have not distinguished between migrant generations, especially the so called 1.5 generation, making it hard to assess the complexity of ethnic disadvantage in housing, which, is crucial in other life area performance such as employment and family formation. Additionally, owing to a dearth of longitudinal data, evidence on housing variation and inequalities is unknown. Using the ONS Longitudinal Study and repeated observations methodology, this study maps ethnic and migrant generational residential and housing tenure mobility trajectories. We hypothesise that there will be variation across groups depending on historical migration flows and patterns which inform later migrant cohort decisions as well as existing access inequalities within and between these groups in other life areas such as employment. This will also impact the extent to which descendants outperform their immigrant counterparts and vice versa however we broadly expect descendants to mirror their immigrant counterparts due to the slow changes in housing tenure and mobility. We will examine sociodemographic profiles such as occupational class to provide a comprehensive understanding of housing barriers and opportunities faced. We hypothesise that barriers in relevant areas such as employment will negatively affect the residential mobility and stability but that these results may be moderated by other factors such as voluntary segregation and family requirements.

14. HEALTH AND MORTALITY 2	
CONFERENCE ROOM 2	
Chair: Neil Rowland (Queen's University Belfast, UK)	
14.1	**Is medium-term exposure to ambient air pollution a risk factor for Parkinson's Disease?** **Babak Jahanshahi** (Department of Economics, Queen's Business School, Queen's University Belfast, UK), Duncan McVicar (Queen's Business School, Queen's University Belfast, UK), Neil Rowland (Queen's Business School, Queen's University Belfast, UK),

	Dermot O'Reilly (Centre of Excellence for Public Health, Queen's University Belfast, UK) The emerging literature studying the association between exposure to ambient air pollution and Parkinson's Disease (PD) draws mixed conclusions, with some studies reporting significant associations but others reporting no association. This study contributes to this literature by providing new evidence in a comparatively low pollution context, using rich and nationally representative cohort data with comprehensive information on PD medications dispensed by community pharmacies over an extended period. Specifically, we used Census data from Northern Ireland linked to administrative data on prescriptions between 2010 and 2016, exploiting complete address records before and after the Census to link to annual average ambient pollution concentrations at the local level (PM2.5 and NO2), focussing on medium-term exposures. We estimated Cox Proportional Hazards models for the association between pollution exposure and PD onset as proxied by first receipt of PD medication, controlling extensively for potentially confounding factors at the neighbourhood, household and individual levels. There was a clear unconditional association between medium-term exposure to ambient pollution and the risk of developing PD, with those experiencing higher exposures being at greater risk. Once individual, household and neighbourhood confounders were adjusted for, however, we found no evidence of an overall association between medium-term PM2.5 or NO2 exposure and the risk of onset of PD. However, there was evidence of a positive association with both PM2.5 and NO2 exposure for those aged under 50 years and tentative evidence of an association with PM2.5 exposure for those reporting poor general health prior to the analysis period.
14.2	**The effects of adult children's unemployment on parental mental health: Geographical distance as a moderator** **Erika Sandow** (Geography/CEDAR, Umeå University, Sweden), Anna Baranowska-Rataj (Centre for Demographic and Ageing Research, Umeå University, Sweden), Jordi Gumà Lao (Center for Demographic Studies, Universitat Autònoma de Barcelona, Spain) A large body of research shows that parental unemployment has negative consequences for children's mental health. However, we know much less about the reverse pattern in intergenerational crossover effects. This study fills the gap by showing how unemployment among adult children is related to parents' mental health, and how this relationship is moderated by the geographical distance separating parents from their children. We analyze longitudinal data from the first eight waves of the SHARE survey for 19 European countries from 2004 to 2020. Our analytical sample consists of 299,755 distinct observations for 78,837 parent–child dyads. We employ correlated random effects models, which control for unobserved fixed-in-time confounders and allow for interacting time-varying observed characteristics in an appropriate way. Our results show that generally, adult children's unemployment affects parental mental health negatively. Adult children's unemployment has particularly strong negative consequences for the mental health of mothers who co-reside with their children. Regarding fathers, the effects emerge mainly in the group with children who live near enough to have regular interactions but not close enough to provide direct instrumental support. Our findings highlight the role of coresidence and distance in shaping the interrelatedness of economic wellbeing and health across generations.

14.3	**Mapping the mobility of construction workers (homeless floating population) in Chennai City: An exploratory regression model analysis using GIS** **Geetha Karthikeyan** (Department of Geography, Queen Mary's College(A), Tamilnadu, India), L.G. Thasmaiya (Department of Geography, Queen Mary's College(A), Tamilnadu, India) The Indian construction sector stands as a pivotal force in the nation's economic landscape, serving as a cornerstone for progress. Given its foundational role in infrastructure development, it garners significant governmental attention, employing a staggering 44 million individuals and poised to potentially rank as the country's second-largest employer by 2020. However, a predominant portion of this workforce operates within the unorganized or informal sector, facing numerous occupational health challenges. This study delves into the health aspects of this workforce, particularly examining the prevalence of mental health disorders, a dimension hitherto less explored. While occupational injuries and musculoskeletal pain are prevalent, the extent of mental health issues, encompassing emotional and behavioural well-being, remains relatively unknown. Notably, issues such as depression, anxiety, chronic stress, and tragically, elevated suicide rates among construction workers have been identified. A survey-based approach was adopted to assess the health status, specifically targeting mental health susceptibility related to depression and anxiety. Employing a frequency ratio model, this study identified critical factors influencing these mental health disorders among construction workers in Chennai city. Land Surface Temperature (LST) emerged as a significant contributor to mental ill-health, particularly in association with depression, alongside factors like inadequate Personal Protective Equipment (PPE) and compromised physical health. Conclusively, this research underscores the pivotal role of LST in impacting the mental well-being of construction workers, followed closely by the importance of adequate PPE provision and safeguarding physical health. Recommendations are made regarding the imperative for governmental intervention to ensure the provision of appropriate PPE, enhancing worker safety in this hazardous environment.
14.4	**Cancer incidence and mortality in Pakistanis, Bangladeshis and their descendants in England and Wales** **Joseph Harrison** (University of St Andrews, UK), Frank Sullivan (University of St Andrews, UK), Katherine Keenan (University of St Andrews, UK), Hill Kulu (University of St Andrews, UK) This paper seeks to further understand health differentials between Pakistani and Bangladeshi immigrants, their descendants, and the native population in England and Wales. We choose to focus on cancer as one of the leading causes of morbidity and mortality in developed countries. We apply survival analysis to the Office for National Statistics Longitudinal Study of England and Wales, to compare hazard ratios of cancer incidence between these groups. Moreover, we observe the ten-year period after diagnosis to identify differences between these groups in mortality following onset of cancer. We apply stepwise models to control for socioeconomic characteristics that have previously been found to influence health and mortality. We find that the risk of cancer onset is substantially lower for individuals born in Pakistan and Bangladesh. This advantage is also seen in their British born descendants. However, following incidence of cancer there is no significant difference in mortality between these groups, and for descendants the mortality risk after onset may be elevated. We conclude that lower incidence of cancer and not better survival once diagnosed is the driver of the low cancer mortality observed in Pakistanis and Bangladeshis in England and Wales. We should investigate further how protective behaviours prevent the onset of cancer but fail to improve survivability. Using

	this administrative data to investigate both incidence and onset of cancer across immigrant generations is a novel contribution and sheds new light on the health of the Pakistani and Bangladeshi immigrant group particularly in relation to cancer.
14.5	**Mortality of older people living alone: The Northern Ireland Longitudinal Study** **Estelle Lowry** (Geography, School of Natural and Built Environment, Queen's University Belfast, UK), Alan Mitchell (Fermanagh and Omagh District Council (NI), UK) Background & Aims: Increasing numbers of older people are living alone. Living alone as a proxy measure of social isolation and lack of social support is of importance due to potential negative impacts on health and mortality. This is of particular interest in a geographical area such as Northern Ireland in which about half the population live rurally, another risk factor for social isolation. Thus, we aim to explore the prevalence of social isolation within Northern Ireland, and to what extent this is associated with mortality risk. Methods & Results: Using data from the Northern Ireland Longitudinal Study provides a large, representative sample of approx. 28% of the resident population. Potential explanatory variables from Census 2011 were linked with mortality data up to 2018 allowing for a 7-year follow-up. At baseline, approx. 13% of study members were living alone, almost half of which were aged over 65 years of age. During the follow-up period, approx. 37% of those living alone aged over 65 years died. We then investigated the association of living alone with mortality among older persons, controlling for other potential confounders. Conclusions & Further Study: We found an association between living alone and mortality, particularly in older persons. In order to further explore the importance of social support and connections, we are working with AgeNI, an older persons charity, to conduct community engagement events within the most vulnerable groups.

Parallel Session V	**11.25 – 13.05**
15. MIGRATION AND (IM)MOBILITIES	
ISDELL COURTYARD	
Chair: Jianfa Shen (The Chinese University of Hong Kong)	
15.1	**Migration and commuting behaviour in Toronto's commuter shed: The impact of COVID-19** **Bruce Newbold** (School of Earth, Environment & Society, McMaster University, Canada) With the announcement of the global COVID-19 pandemic in March 2020, human mobility was transformed. Even before the declaration of the pandemic, countries had already moved to close their borders, told their citizens to come home and/or sent foreign workers home, and temporally shuttered offices that dealt with immigration and related issues. But the impact of the pandemic on human mobility was not felt just at the international level. It was also felt (or would be felt as the pandemic unfolded) at a variety of geographic scales ranging from the international down to the local community level, with impacts including migration choices,

	commuting patterns, and daily trips. Out-migration from major urban centers to smaller towns and/or rural areas during the pandemic may result in ever-increasing commute distances or a larger share of individuals working from home. For example, population deconcentration and increased long distance commuting among rural workers have been associated with a more decentralized settlement pattern where work and residence are increasingly separated. Using data from the master file of the 2021 Canadian census, this paper will explore the impact of the pandemic on migration choices and commuting behaviors using the Toronto, Canada, commuter shed as an example.
15.2	**Measuring constraints to moving and motives for immobility: A review and an assessment of seven surveys** **Clara H. Mulder** (Population Research Centre, University of Groningen, the Netherlands), Isabel Palomares-Linares (Universidad de Granada, Spain), Brian Joseph Gillespie (University of Groningen, the Netherlands), Jonne A.K. Thomassen (University of Groningen, the Netherlands), Ewoud T. Jansma (University of Groningen, the Netherlands), Tialda Haartsen (University of Groningen, the Netherlands) In the migration literature, self-reported motivations for moving have been proven a useful way to look into why people move. Likewise, it could be helpful to investigate self-reported constraints to moving or motives for immobility. Research that does so has been rare, however. In this paper, we review survey questions about constraints to moving and motives for immobility, as well as the patterns in the answers to these questions, in seven existing surveys. These were conducted in single countries or sets of countries across the globe (in total: 11 countries). We also assess the advantages and disadvantages of the different measures that were used. The measures range from open-ended to closed-ended questions; from an emphasis on constraints to motivations; from retrospective (referring to the past) to prospective (referring to the future); and from staying in the dwelling to staying in the area. Our preliminary findings suggest, first, that a sizable proportion of respondents find the question about constraints to migration or motives for immobility difficult to answer. This is likely because they regard immobility as self-evident and have not given much thought to the option of moving. Second, it seems that the likelihood of giving certain answers is contingent on the wording of the question and the routing of the questionnaire. For example, answers related to proximity to family and friends were given much more frequently to open-ended questions than to a question for which the opportunity to give free-text answers only appeared after picking the closed-ended 'other' category twice.
15.3	**Post-pandemic geographies of work and home: plus ça change for spatial inequalities?** **David McCollum** (Geography, University of St Andrews, UK) Rather than being an indiscriminate 'greater leveller', it is widely recognised that the burden of the covid-19 pandemic and its aftermath has largely mirrored longstanding cleavages of social and spatial disadvantage. This paper considers the nature and effects of the mass covid-induced shift to remote and hybrid working through the lens of regional inequalities in the UK. Through a loosening of the relationship between the geography of home and employment, in theory these novel working practices and associated changing residential preferences hold potential for levelling up spatial disparities. Drawing predominantly on interviews and workshops across 15 case study areas, this analysis however contends that stark social and spatial divides in the prevalence of remote/hybrid working mean that the propagation of Working From Home (WFH) may well in fact entrench rather than alleviate geographical

	inequalities. In this sense the resilience of the UK's uneven economic geography is just as compelling as the significant shift in working practices and residential preferences that the pandemic created. As such regional inequalities and Levelling Up are likely to remain a considerable policy challenge for the foreseeable future.
15.4	**Immobility in the US: The numbers and characteristics of those who never migrated between 2000 and 2020 at different spatial scales** **Mark Ellis** (Geography, University of Washington, USA) This paper focuses on never movers in the US, those who did not migrate between 2000 and 2020. We know little about this population, partly because migration research focuses on those who move rather than those who never do so, and partly because never migrating is more challenging to observe than migrating. To identify those who never migrate requires repeated regular observation of a person's residential location over a lifetime, or at least for many years. A novel US population-sized longitudinal dataset that links individual level Internal Revenue Service (IRS) and Social Security Administration (SSA) administrative records supplies this information, along with information on income and socio-demographic characteristics. We use this administrative microdata to explore the size, characteristics, and geography of the US population who never moved at a variety of spatial scales (zip, county, commuter zone and state) between 2000 and 2020. We pay particular attention to the immobility of young adults, those who were 15 in 2000 and 35 at the end of our study period. This is the age range when people are most likely to move for educational or employment opportunities; we are interested in finding out how many never do so and their characteristics. Our findings motivate a discussion on the need for more work on those who never migrate and the consequences for staying put. As such, they add to calls for decentering mobility in migration research.
15.5	**Three spatial mobilities. A trend study on internal and international migration and commuting using data from the German Microcensus** **Nico Stawarz** (Federal Institute for Population Research (BiB), Germany), Andreas Genoni (Federal Institute for Population Research (BiB), Germany), Heiko Rüger (Federal Institute for Population Research (BiB), Germany), Matthias Rosenbaum-Feldbrügge (Radboud University, the Netherlands), Andreas Ette (Federal Institute for Population Research (BiB), Germany), Thomas Skora (Leibniz Institute for the Social Sciences (GESIS), Germany), Nikola Sander (Federal Institute for Population Research (BiB), Germany) Spatial mobility is a key demographic component with impacts on individual lives and societies. Given its importance, scholars are eager to find out whether spatial mobility in modern societies changes over time. Some assume an increase in spatial mobility, e.g. due to the changing nature of labor markets. Others assume declining mobility, e.g. due to ageing in western societies. Whether or not mobility within societies is increasing, however, is difficult to answer. There are established gaps between the research strands on the different forms of mobility, which makes it difficult to provide more comprehensive trends of population mobility. We analyze how internal and international migration and commuting have changed over the past decades. We use German Microcensus data, a representative one percent sample of German households. The study extends the state of research by providing a trend analysis over 30 years, differentiated by age, gender, and education, as well as other socio-demographic characteristics. For the period 1985 to 2019, the results show increasing rates of international migration (measured as remigration to Germany) and commuting over at least 25 km or 30 minutes, while internal migration is relatively stable. For different age groups, we find that

	migration behavior among young adults has markedly raised, while that of middle-aged and older adults has hardly changed. Commuting, in contrast, has less increased among young adults compared to middle-aged and older adults. With regard to education we find that international migration and commuting has increased more strongly for higher educated compared to lower educated.

16. ETHNIC AND SOCIAL SEGREGATION 2

LECTURE ROOM 1

Chair: Joana Barros (University College London, UK)

16.1

Segregation of the foreign population in the large metropolitan areas of Spain. Towards new dynamics of socio-spatial fragmentation

Fernando Gil-Alonso (Geography Department, University of Barcelona, Spain), Miguel Rubiales-Pérez (University of Barcelona, Spain), Cristina López-Villanueva (University of Barcelona, Spain), Arlinda Garcia-Coll (University of Barcelona, Spain)

This paper offers an initial analysis of the socio-spatial segregation of foreigners living in the main metropolitan areas of Spain –Madrid, Barcelona, Valencia, Seville, and Bilbao. Special attention is given to a specific morphology: fragmentation, understood as segregation at a micro-spatial scale. Recently published 2021 Census microdata are used to develop local spatial autocorrelation indicators (Local Moran's I) because of their capacity to detect both the concentration and the clustering dimensions of the population at the census section level. This technique provides a vision of residential fragmentation both of the foreign population as a whole and of the particularities by nationality (continental aggregates): Africa, South America, North America, Asia, and the rest of Europe. The results of this initial analysis permit to identify the areas of fragmentation in the five metropolitan areas and provide their socio-demographic characteristics. In addition, they also show the importance of three elements in terms of fragmentation: economic components, country of origin (Global North or Global South) and public interventions in terms of urban planning or social housing projects. Finally, two major fragmentation patterns are also observed –situations arising from the 'border effect' and specific 'islands'. These initial results are the starting point of an ongoing research project combining quantitative and qualitative techniques. These preliminary results permit to initially locate and describe fragmentation areas in detail. Later, the fieldwork will allow for an in-depth study of the effects and conditioning factors that fragmentation has on the foreign population.

16.2

The time of segregation: Advancing insights into income inequality and segregation with a focus on temporal dynamics

Javier San Millán Tejedor (Department of Urbanism, TU Delft, the Netherlands), Clémentine Cottineau (Delft University of Technology, the Netherlands), Maarten van Ham (Delft University of Technology, the Netherlands)

This research delves into the dynamic relationship between economic inequality and residential segregation in all Dutch metropolitan areas from 2011 to 2022, with a special focus on the temporal aspects. Utilizing detailed microdata encompassing the entire Dutch population, the research distinguishes between segregation of poverty and segregation of affluence by analysing indicators across every income percentile. The findings indicate an overall rise in inequality levels, yet the rate of this increase varies across different regions.

	Despite these changes, the stability of segregation levels is noteworthy. The study reveals that wealthier individuals tend to live in more concentrated areas compared to their less affluent counterparts. However, there is a growing trend of increased segregation among lower-income groups, while the segregation of the wealthy remains largely unchanged. The paper concludes by exploring the relationship between income inequality and segregation, particularly focusing on the potential time lag in their development. To test this linkage, various analytical approaches are explored, such as Granger causality tests, auto-regressive models or distributed lags. In addition, the multi-scale nature of the relationship is assessed in regard to geographical levels, in a way that changes of the levels of inequality and segregation at the urban level are also studied in comparison with their general evolution in the country. The use of distributed lag models is proposed as a valuable method to enhance current understanding of how urban inequality and segregation are interconnected.
16.3	**A study of ethnic residential patterns in the inner-city of Riga using scalable individualised neighbourhoods** **Sindija Balode** (Department of Human Geography, University of Latvia, Latvia), Māris Bērziņš (University of Latvia, Latvia), Zaiga Krišjāne (University of Latvia, Latvia) The spatial distribution of immigrant populations in host societies has always attracted academic interest with particular attention when it takes the form of residential segregation. The Baltic States have a long history of high proportions of ethnic minorities in their urban populations, which is attributed to immigration and industrialisation policies implemented during the Soviet era. Moreover, in recent years, these cities have experienced a significant increase in ethnic diversity, becoming more attractive to emerging immigrant groups. Despite long-standing emigration, growing immigration has led to more balanced international net migration rates and increasing ethnic diversity. In response to rising ethnic diversity, a comprehensive understanding of the dynamics of ethnic concentrations is critical to elucidate spatial inequalities, particularly considering that the residential geographies of emerging ethnic groups tend to be spatially more concentrated. Most studies on urban ethnic residential patterns still rely on fixed spatial units, aspatial measures, and single scales. This study adopts an explicit geographic approach and considers individualised neighbourhoods using EquiPop-software, allowing various scales. Thus, we explore ethnic residential geographies based on geo-referenced, anonymised individual-level data derived from the most recent population census of 2021 and using the inner-city of Riga, the capital of Latvia, as a case study. We are especially interested in how the levels and patterns of ethnic residential segregation change with an increase in scale level. Our findings indicate that segregation levels and patterns differ across various spatial scales. Measuring and mapping ethnic residential patterns while using scalable individualised neighbourhoods seems an appropriate way to deal with both the multiscalar nature of segregation and the intra-neighbourhood variety associated with it. The results of the study offer valuable insights into the spatial organisation of emerging ethnic communities at a fine scale.
16.4	**Comparative study of socio-economic segregation in European cities: 2001-2011-2021** **Ruta Ubareviciene** (Delft University of Technology, the Netherlands & Lithuanian Centre for Social Science, Lithuania), Maarten van Ham (Delft University of Technology, the Netherlands), Tiit Tammaru (University of Tartu, Finland) This comparative study of socio-economic segregation in European cities, involving researchers from 16 European countries, aims to examine the evolving geography of segregation over a 20-

	year timeframe and provide an up-to-date understanding of residential socio-economic segregation. By utilising three data points and a substantial number of case studies, this study stands out in its ability to offer a comprehensive observation and analysis of the levels and spatial dynamics of residential segregation in Europe. To achieve this, the study addresses the following research questions: 1. What are the current levels of residential socio-economic segregation in European cities? Do levels of segregation continue to increase? 2. How have the patterns of segregation changed over the past 20 years, and are these patterns and their trends of change similar between European cities? 3. What are the key factors contributing to the observed levels and spatial changes of residential segregation in European cities? The paper includes the following case studies associated with the author teams with in-depth local knowledge and access to data: Amsterdam, Barcelona, Bratislava, Dublin, Helsinki, Lisbon, London, Oslo, Paris, Prague, Riga, Rome, Stockholm, Tallinn, Vilnius and Warsaw. To ensure comparability, researchers adopted a consistent definition of functional urban areas and used small spatial units to analyse segregation levels and spatial patterns, following a pre-established and unified methodology. The empirical analysis draws on census or register-based data, from approximately 2001, 2011, and 2021. Socio-economic groups are distinguished based on occupational status and classified into Top, Middle, and Bottom categories. The study is currently in advanced progress.

17. SOCIAL AND SPATIAL INEQUALITIES 2

LECTURE ROOM 3

Chair: Sarah Wood (Office for National Statistics, UK)

17.1

Women's employment, financial Inclusion, gender norms and intimate partner violence across the 640 districts of India: an ecological analysis

Abhishek Singh (Department of Public Health Mortality Studies, International Institute for Population Sciences, Mumbai, India), Ashish Kumar Upadhyay (University of California San Diego, USA)

Nearly one-third of currently married women in India have experienced physical, emotional or sexual violence from an intimate partner in the past 12 months, with substantial variations in the prevalence of intimate partner violence (IPV) across the 640 districts of India. Improving women's economic autonomy and preventing IPV has become a prominent feature of the SDG targets. We used data from the Indian National Family Health Survey (2015-16) to examine the association of women's employment, financial inclusion and gender norms with IPV at the district-level. We used area-level small-area estimation (SAE) techniques to compute district-level estimates of women's employment and financial inclusion for the 640 districts of India. We used India Patriarchy Index (IPI) to measure gender norms for the 640 districts of India. We used classical and spatial models, such as multivariable regressions, bivariate local indicators of spatial autocorrelation (LISA) and spatial regressions, to examine the associations. In our study, women's employment and cash-earnings were positively associated with IPV. In contrast, indicators of women's financial inclusion, such as ownership of a bank/savings account, were negatively associated with IPV. These results hold even after adjusting for gender norms at the district level. Traditional gender norms, measured using the IPI in our study, were positively associated with IPV. These findings suggest that existing policies and programs intended to prevent IPV by increasing economic autonomy may be less effective in the absence of overall social change.

17.2	**Where is the gender revolution?: Gendered local labor market dynamics 2000-2020** **Jamie Goodwin-White** (Geography, University of California, Los Angeles, USA) Although gender segregation in the labor force and the gender wage gap have declined over the last half-century, this decline has not been continuous, complete, or geographically consistent. Previous studies have identified sub-regional variation in both occupational segregation and gender wage inequality, suggesting that local labor market configurations of gender inequality require more attention. In this paper, I use a Gelbach decomposition to rigorously test 1) gender division of labor 2) industrial structure and 3) ethnic division of labour explanations of occupational segregation across US metro areas from 2000-2020, a period where gender inequality was expected to experience further decline. These models require place effects to contribute a significant share of the explained variance, regardless of the sequence in which coefficients are added. Results show that more segregated places are those where women are less educated and more likely to be married and mothers. Ethnic divisions of labor also help to explain occupational segregation, in that racially-segregated workforces are also segregated by gender, and also in that immigrant shares explain the reduced segregation of college-educated women. Quantile regressions show that the mechanisms of the earnings gap depend on how unequal cities are: in highly unequal cities workforce segregation and family status determine the gender wage gap, while college education and knowledge economy employment significantly reduce the gender wage gap only in low-inequality cities. I suggest that geographers' "gender contract of the region" and sociologists' "complex inequality" approaches to understanding local labor market dynamics are useful in understanding the spatiality of the "gender revolution".
17.3	**Understanding unemployment: an intersectional analysis of disability status and ethnic group** **Matthew Minifie** (Office for National Statistics, UK), Sarah Wood (Office for National Statistics, UK), Charlotte Standeven (Office for National Statistics, UK) Social research often focusses on social identity categories in isolation, but this can overlook the disadvantages that many people in society face because of the combined effects of their multiple social identities. Using Census 2021 data, we have taken an intersectional approach and applied a quantitative method to estimate levels of unemployment and show how they differ between 38 intersections of disability status (disabled and non-disabled) and ethnic group (19 categories) for adults in England and Wales. For our analysis, we ran Census 2021 data through five binary logistic regression models in a stepwise approach, with each model being adjusted for an additional range of factors. Marginal means were estimated from the outputs of the regression models to give the unemployment rates of the 38 intersections of disability status and ethnic group. The intersectional approach to the analysis worked well and highlighted information that would have been hidden by analysing disability status and ethnic group in isolation. Unemployment rates varied from 2.9% to 17.2% across the 38 intersections. The unemployment rate was higher among disabled adults in every ethnic group compared with non-disabled adults in the same ethnic group. Non-disabled adults who identified as "Other ethnic group: Arab" had a higher likelihood of unemployment than disabled adults who identified with 13 of the 19 ethnic groups. Disabled adults who identified as "White: English, Welsh, Scottish, Northern Irish or British" were less likely to be unemployed than non-disabled adults who identified with 8 of the 19 ethnic groups.

17.4	**Gender patterns in housework among the older adult population in Europe** **Mireia Almirall Llambrich** (Centre Estudis Demogràfics, Universitat Autònoma de Barcelona, Spain), Pau Miret-Gamundi (Centre Estudis Demogràfics, Universitat Autònoma de Barcelona, Spain), Joan García-Roman (Centre Estudis Demogràfics, Universitat Autònoma de Barcelona, Spain) This article examines the dedication to unpaid domestic work among population aged 55 to 71 in eighteen European countries. The SHARE survey is used, which includes a specific 'time use' module for the first time, to determine the dedication of women and men to unpaid domestic work. The initial results confirm that in Mediterranean and Eastern countries, more time is allocated to this work, but in the central-north and east, the time allocation between women and men for unpaid domestic work is more equitable. To explain these differences, countries have been classified into four groups, and a gender pattern has been drawn based on variables such as labor market participation, level of education, and income. This has allowed determining that it is primarily a gender-related issue linked to the regional context.
17.5	**Understanding the emergency accommodation use patterns of homeless families** **Richard Waldron** (Planning, School of Natural and Built Environment, Queen's University Belfast, UK), Declan Redmond (University College Dublin, Ireland) This paper examines homeless families' shelter stay records to gain insight into their patterns of service use and how they exit, or remain, within the emergency accommodation system. There is little understanding of how homeless families stay patterns vary from the general homeless population, or across different welfare contexts, nor how such variation might be explained by structural or individual factors. The paper deploys a k-means cluster analysis of homeless families shelter stay records from 2012 – 2016 from Dublin, Ireland. The data (n=2356) is drawn from the 'Pathway Accommodation and Support System' (PASS), which provides 'real-time' information on homeless presentation and bed occupancy in Dublin, as well as basic profile data relating to service users. The results demonstrate that family homelessness is both a pernicious and growing problem in Ireland, emanating from structural failings within the Irish housing system. However, the majority of homeless families experience a relatively small number of homeless episodes for short periods of time. Most do not exhibit the kinds of complex needs that might necessitate additional social services, but simply require support in accessing affordable, stable housing. Inter-cluster differences were found on the basis of household composition, migrant status, race/ethnicity and the type of emergency accommodation placement. The findings have significant implications for the operation of homeless accommodation in Ireland, and will have relevance for policymakers in similar housing-welfare regimes.

18. SOCIAL AND SPATIAL DYNAMICS OF MIGRATION 2	
CONFERENCE ROOM 2	
Chair: James Raymer (Australian National University, Australia)	
18.1	**The long run and cumulative impacts of international migration on Australia's population** **James O'Donnell** (School of Demography, Australian National University, Australia), Qing Guan (Australian National University, Australia), James Raymer (Australian National University, Australia) International migration is having a growing demographic impact around the world. While a relative recent phenomenon for some, countries like Australia have several decades of experience with mass migration, likely contributing to faster population growth, slower ageing and growing diversity. The long run impacts though are difficult to quantify as they accumulate through space, time and across generations through migrants and their descendants. In this study, we harmonise official population data from Australia covering the period 1981 to 2021 to quantify the cumulative impact of migration on the population growth, turnover, age structure and migrant diversity of 11 regions. We create a full set of demographic accounts integrating population stocks and flows by age, sex, location and country of birth and apply the data to multiregional life tables under a set of factual and counterfactual scenarios. Among several key findings, migration from China, India and south east Asia has driven substantial population growth, turnover and diversity in Australia's largest cities and helped to suppress population ageing both through the migrants themselves and their children. Early waves of migration from Europe to smaller towns and cities has given way to population ageing, outward migration and, in some cases, decline. However, in certain regions, recent waves of migration are contributing to population replenishment and diversity. In an era of population ageing and decline, these results shed important new light on the long run, distributional consequences of international migration, critical for urban and workforce planning, migrant integration and social cohesion.
18.2	**Concentration and dispersion via internal migration. The case of the immigrant population in Spain, 2000-2021** **Jordi Bayona-i-Carrasco** (Universitat de Barcelona & Centre d'Estudis Demogràfics, Spain), Juan José Lizcano (Universitat de Barcelona, Spain) In a context of high immigration, with 8.2 million immigrants (17.1% of population in 2023), internal migrations of the population of immigrant origin become the main explanatory factor of the redistribution of the immigrant population and of the migratory growth of large areas of the country. This is especially true in rural areas, where more than half of foreign immigrants arrive through internal migration, or in suburban areas that receive migrant flows from central cities. These migrations have been marked in the last two decades by the impact of the economic situation, with stages of growth in the intensity of flows (2000-2007 and 2016-2019) and decline (2009-2015 and 2020). These cycles have been accompanied by changes in the territorial patterns of these migratory flows, with modifications in the areas of expulsion and attraction of immigrants. In this changing context, this proposal analyses the relationship between internal migration and territorial concentration or dispersion of immigrants. For this purpose, microdata from the Estadística de Variaciones Residenciales are used, at the municipal level and for the period 2000-2021. Spanish municipalities (more than 8,000) are grouped according to the concentration of immigrant population. The resulting migration matrices point to a relationship

	between dispersion and concentration and economic periods, which would not work equally for all origins. The results provide a further explanatory element to the debate on the evolution of the territorial concentration of the immigrant population in Spain, and on the origins of migratory growth in large parts of the country.
18.3	**Temporal and spatial migration patterns of Ukrainian war refugees in Poland** **Monika Stanny** (Institute of Rural and Agricultural Development of the Polish Academy of Sciences, Polish Academy of Sciences, Poland), Agata Mróz (Institute of Rural and Agricultural Development of the Polish Academy of Sciences, Poland) The study aims to identify the spatiotemporal patterns of large-scale migration from Ukraine to Poland, which started on the 24th of February 2022 after Russia's aggression against Ukraine, and to check the relationship between the wave size of migration and various theoretical determinants. In particular, we are looking for answers to the following research questions: What are the spatial trends of migration of Ukrainian refugees in Poland? What factors determine the settlement of Ukrainians outside large cities? What is the role of the location of the existing Ukrainian diaspora in Poland? The main data source was of Personal ID number assigned to Ukrainians (PESEL UKR) by the Ministry of Digitalization. There were 5 moments of migrations wave under research, it was after 100, 200, 300, 400, and 500 days of Russia's aggression in Ukraine. It was assumed that the main administrative units of the influx of migrants were large cities with the status of municipal counties (NUTS 3). At the same time, the hypothesis was tested that the more deagrarisation in the local economy there is, the bigger the influx of Ukrainian refugees in the local community. Another correlation was verified that the ethnical and cultural Ukrainian networks which existed before the war, determine the migration patterns and refugee relocation.
18.4	**The tole of Russia in Post-Soviet migration: Insights from CIS and Baltic State statistics** **Salavat Abylkalikov** (School of Arts & Social Sciences, Northumbria University, UK) This study examines migration processes within the Commonwealth of Independent States (CIS) and the Baltic states, focusing on the post-Soviet era. Utilizing the Net migration rate, the research offers a comparative analysis of migration trends and their impact on population dynamics. The paper highlights the challenges of working with incomplete and inconsistent migration data, emphasizing the need for accurate statistical tracking of emigration. Russia's dominant role in regional migration is explored, alongside the evolving migration connections with non-CIS countries. The analysis reveals three distinct groups of post-Soviet republics based on net migration data from 2010 to 2020: countries with consistent migration surplus, those with persistent migration loss, and nations with fluctuating migration rates. The study also discusses the interplay between natural growth and migration in shaping population changes, noting the unique case of Azerbaijan, which exhibits both natural and migration growth. The findings underscore the increasing volume and changing patterns of migration across the post-Soviet space, with implications for regional demographic and socio-economic development.

18.5	**Residential mobility to/from small and medium-sized cities and its impact on local social inequalities** **Sylvie Dubuc** (University of Strasbourg, France), Julie Fromentin (French Institute for Demographic (INED), France) This work focuses on internal migration to and from small and medium-sized cities and towns (SMSCT) in France. It aims to evaluate the attractiveness of SMSCT and its impact on regional and local settlement structure, as well as to analyse the social dynamics of residential mobility in SMSCT. Largely ignored in urban research until recently, SMSCT are the subject of new attention, especially in the context of urban shrinkage (Martinez-Fernandez et al., 2012), with a focus on cities' population decline and low residential mobility. However, some recent studies have broadened the framework of urban decline to show, for example, the importance of inward mobility in the dynamics of aging in small towns (Steinführer and Grossmann, 2021), highlighting the importance of a renewed analysis of residential mobility dynamics to SMSCT. Using individual data from the population censuses (2008, 2013, 2018), we map migration flows and propose a two-level multivariate analysis (using factorial analyses, clustering and logistic models). First, we analyse the flows of inward and outward residential mobilities to/from SMSCT, the social characteristics of this mobile population, and its contribution to social change in SMSCT, particularly to explore the hypothesis of an increase in residential mobilities of socially disadvantaged individuals and families to these towns. We identify contrasted patterns and dynamics of social change. We relate them to the demographic and economic characteristics and trajectories of SMSCT. Through a local and regional approach of demographic and social dynamics, this work revisits, details and specifies the processes of spatial inequalities.

Parallel Session VI	**14.05 – 15.35**
19. RURAL MIGRATION TRENDS	
ISDELL COURTYARD	
Chair: Sara Ferguson (Queen's University Belfast, UK)	
19.1	**Latin American internal migration to rural areas in Spain: characteristics and main drivers of mobility** Jenniffer Thiers Quintana (Universidad de Barcelona & Universidad Complutense de Madrid, Spain), **Jordi Bayona-i-Carrasco** (Departamento de Geografia, Universidad de Barcelona & Centre d'Estudis Demogràfics, Spain) Around 46% of the migrant population in Spain is of Latin American origin, 3.8 of the 8.2 million immigrants in 2023. This migration is characterised, in comparison with other origins, by its feminisation (57% women), a high level of education and an over-representation in the country's urban areas (55% of them reside in cities with more than 100,000 inhabitants), in relation to their greater activity in the service sector. Despite this, they continue to have a significant weight among migrants in rural areas, where 28% of foreign immigrants are Latin Americans. In recent years, a slow but continuous growth has been observed, mainly through migration from other areas of the country. Given the prevailing dynamics of depopulation in rural areas of Spain, it is of interest to analyse the characteristics associated with Latin American migrants

	who settle in rural areas. Using data from the 2021 Census, the characteristics of recent Latin American migrants who arrived in the last five years will be analysed, and the results will be compared with those Latin Americans living in intermediate or rural areas and in relation to the population of these same municipalities.
19.2	**Migrant place identity and neighbourhood attachment in a post-conflict society: A study of Portuguese communities across Northern Ireland's semi-rural areas** **Neal Halforty** (Geography, School of Natural and Built Environment, Queen's University Belfast, UK), Gemma Catney (Geography, School of Natural and Built Environment, Queen's University Belfast, UK), Ian Shuttleworth (Geography, School of Natural and Built Environment, Queen's University Belfast, UK) Migration to and from the UK is changing considerably, with key patterns emerging including variation in migrant group origins and the spatial concentration of some migrant communities within particular semi-rural localities. Northern Ireland (NI), a region undergoing a post-conflict transition, is also becoming a new immigration destination, with the region emerging post-millennium as a focal point for migration flows from Portugal. This paper examines the lived experiences of post-migration Portuguese populations living in small towns and rural areas across the Mid Ulster and Armagh, Banbridge and Craigavon local government districts. The paper brings together important concepts from migration scholarship including place identity, neighbourhood attachment, integration and transnationalism. In-depth interviews with people who migrated to NI from Portugal explored the role of place in constructing identity, as well as assessing attachment to neighbourhood in semi-rural areas traditionally segregated by religion and with low levels of ethnic diversity. The research focuses on diverse rural migratory patterns occurring in NI, highlighting the spatiality and (im)mobilities of migration that have led to a degree of residential concentration for Portuguese populations. The significance of place in enabling Portuguese migrants to forge local attachments and identities through their interactions with NI-born and migrant-origin communities emerged as a key theme in the interview narratives. These emotional bonds to neighbourhood and the wider semi-rural area were strengthened by the central role of families and a spatially concentrated Portuguese community. The research addresses a gap whereby NI has received considerably less attention in the scholarship on migrant rural diversification.
19.3	**Retaining permanent and temporary immigrants in rural Australia: Place-based and individual determinants** **Neil Argent** (Department of Geography and Planning, University of New England, Armidale, Australia), Aude Bernard (University of Queensland, Australia), Dagmara Laukova (University of Queensland, Australia), Tom Wilson (Independent researcher), Tomasz Zajac (University of Queensland, Australia), Anthony Kimpton (University of Southern Queensland, Australia) In many demographically advanced countries, immigration is increasingly seen as a solution to the twin problem of rural depopulation and labour shortages. In Australia, this dilemma has been addressed primarily through regional visa schemes that require both skilled and humanitarian migrants to reside in non-metropolitan regions for minimum periods. Applying survival analysis to administrative data from the Person Level Integrated Data Asset (PLIDA), this paper investigates the level and determinants of rural retention – relative to the Australian population – among immigrants who arrived across eight different visa types between January and August 2011 to the end of 2019. Migrants on regional skilled visas and temporary skilled

	workers display a 40 per cent nine-year retention rate compared with over 50 per cent for Australian and New Zealand citizens, permanent family, skilled and humanitarian migrants and 30 per cent for students. Low retention of temporary skilled migrants seems related to their relative youth and higher education. We identify a negative selection process by which less educated immigrants, those on lower incomes and with low English proficiency, including humanitarian migrants, are more likely to stay in non-metropolitan regions, which potentially signals segmented labour and housing markets. Regions with a diverse occupational mix and co-ethnic networks are more likely to retain immigrants whereas those with high housing costs are significantly less likely to. Regional visa schemes appear effective in attracting permanent skilled migrants to non-metropolitan areas but not in retaining them, even controlling for socio-demographic characteristics. These results provide important policy lessons for boosting rural retention.
19.4	**No place for young women? The impact of internal migration on adult sex ratios in rural East Germany** **Nikola Sander** (Federal Institute for Population Research (BiB), Germany), Nico Stawarz (Federal Institute for Population Research (BiB), Germany), Matthias Rosenbaum-Feldbrügge (Radboud University, the Netherlands), Uta Brehm (Federal Institute for Population Research (BiB), Germany) Shortages of women in rural areas are a phenomenon in many highly urbanized countries. Rural East Germany is an ideal case to study this phenomenon, because of its low adult sex ratios (ASRs) – men greatly outnumber women – coupled with high out-migration among young adults. This study researches how internal migration between rural and urban areas contributes to the shortage of young adult women. We use data on inter-county migration flows (years 2002–2021) to decompose the impacts of migration on ASRs. We find that the low ASRs in rural East Germany are due to sex-selective migration. The main destination of these sex-selective flows was West Germany in the early 2000s, while in the 2010s urban areas in the East were the important destinations. We find that movements among 20–24-year-olds increase the shortage of women in the rural population, while the 25–29-year-olds contribute to more balanced ASRs.

20. MIGRATION AND LIFE COURSE TRAJECTORIES	
LECTURE ROOM 1	
Chair: Clara Mulder (University of Groningen, the Netherlands)	
20.1	**The effects of parental migration on educational and child labour outcomes for children left behind in low- and middle-income countries: a systematic review and meta-analysis** Anne Lieke Ebbers (Radboud University, the Netherlands), **Emily Häntschel** (Radboud University, the Netherlands), Natascha Wagner (Radboud University, the Netherlands) The previous literature finds two contradictory effects of parental migration on the educational and child labour outcomes of children left behind. On the one hand, migratory parents send back remittances, which can be used for the left-behind children's education. In a similar vein, more schooling and an improved financial situation might decrease the probability of child labour. On the other hand, the lack of parental presence, care and attention might outweigh the benefits of improved financial means. This meta-analysis synthesises these contradictory

	results in the current literature to improve policy-making concerning child protection, and in particular, children left behind. We systematically retrieved 302 estimates from 21 papers published between 2000 and March 3rd, 2023, and available in Scopus and Web of Science. The meta-analysis benefits from employing automated tools, increasing the objectivity of our structural approach. The search string for retrieving the articles was optimised using litsearchr. Articles assessment was done by means of ASReview. Both are machine learning tools that partially automate search terms and abstract selection. The meta-impact of parental migration on educational attainment, educational performance, educational expenditures, and child labour is analysed. Preliminary analyses reveal that family disruption, i.e., the substitution effect, seems to have a bigger effect than the financial benefits, the income effect, stemming from parental migration. Accordingly, this paper contributes to the current literature by building a stronger evidence base, particularly by obtaining higher statistical power and estimating robustness and uncertainty in effect sizes, whereby special attention is paid to heterogeneity in effects.
20.2	**Residential relocations, quality of life and mover characteristics: insight from Swedish register data** **Gijs Westra** (Department of Human Geography, Uppsala University, Sweden) Traditionally, the outcomes of residential relocations, in particular those over longer distances, have been assessed in economic terms such as change in wage or employment. Nevertheless, how quality of life changes overall is rarely assessed. Using highly detailed Swedish register data, a measure of external well-being was created based on previous findings on life course and internal well-being. Subsequently, the outcomes of residential relocations are explored and how these changes over time are mediated by ethnicity, gender, distance of the move, and previous mobility history. In general, residential relocations are associated with a static drop in quality of life. It is found that in particular the well-being of visible minorities and long-distance migrants are negatively affected by the relocation, while the gender differences are minimal. A general recovery of well-being through subsequent short-distance mobility has been found as well. These findings contrast with previous findings that used internal well-being that find positive effects. Moreover, they fit in a broader pattern of minorities being unable to escape deprived neighbourhoods.
20.3	**Shaping the life course: The interaction between partnerships, family building and employment among migrants and their descendants** **Sarah Christison** (School of Geography and Sustainable Development, University of St Andrews, UK), Júlia Mikolai (University of St Andrews, UK), Hill Kulu (University of St Andrews, UK) This study examines the interaction between the three life course domains of partnerships, family building and employment among migrants and their descendants in the UK. The UK has a long history of migration resulting in a diverse mix of migrants and their descendants from a range cultural backgrounds. While previous studies have sought to examine the life course trajectories of migrant groups, these tend to focus on a single life course domain. In this study, we employ a multistate approach to bring together the three interconnected domains of union formation, fertility and employment comparing differences in trajectories between natives, migrants, and their descendants. Using data from the UK Household Longitudinal Study, we use multilevel, multistate event history models to explore life course trajectories of UK natives, 1G, 1.5G and 2G migrants related to the domains of fertility, partnership and employment We model men and women separately to further explore differences gender differences in these

	trajectories by migrant status and background. We expect our results to suggest that some migrant groups such as those from South Asian backgrounds to exhibit more conservative partnership and fertility trajectories compared to natives and European/Western migrants, and that these differences will persist for 2G migrants to some extent. We also anticipate that our analysis will reveal differences in engagement with the labour market between natives and migrants, particularly for women with children from Pakistani and Bangladeshi backgrounds.
20.4	**Why does migration decrease fertility? The relationship between migration experiences and attitudes toward family formation norms** **Yohei Maruyama** (School of Design, Sapporo City University, Japan) Several studies have analyzed the relationship between migration experiences and family formation behavior. The common finding among them is that migration reduces fertility. Studies conducted in Japan have pointed out that the fertility rate is low among those who migrated from non-metropolitan areas to metropolitan areas, that both in-migrants of the Tokyo metropolitan area and non-Tokyo metropolitan area have low marital fertility, and that women who migrated to the Tokyo metropolitan area became a group with a high lifetime unmarried rate. However, in these studies, the subject of comparative analysis by migration experiments is the result of demographic events related to family formation, such as fertility, not differences in family formation attitudes that form the basis of behavioral choices. Therefore, the factors that cause differences in family formation behavior based on migration experiments are speculative. In contrast, the 15th Japanese National Fertility Survey (2015) conducted by the National Institute of Population and Social Security Research examines attitudes toward family formation, such as marriage, gender relations, family, and children. Also, it examines the prefecture of residence at the time of graduation from junior high school; the last school attended, and current marriage, in addition to that of current residence. We will explore whether differences in attitudes toward family formation due to migration experiences exist by combining these factors.

21. AGE AND AGEING 2	
LECTURE ROOM 3	
Chair: Michael Cameron (University of Waikato, New Zealand)	
21.1	**Population ageing patterns on family and regional level** **Emma Lundholm** (Department of Geography, Umeå University, Sweden), Gunnar Malmberg (CEDAR and Department of Geography, Umeå University, Sweden), Jenny Olofsson (Department of Geography, Umeå University, Sweden) There are significant regional disparities in population aging, formed by the long-term consequences of migration patterns. The age composition within a region is shaped by the age profile of migration flows, impacting not only the demographic structure but also the geographical configuration of family networks. In addition to the strain on local resources and services in communities with an ageing population, there is a simultaneous impact on accessibility to intergenerational support in regions where adult children have left ageing parents behind, or in regions where there are many retirement-migrants lacking a local family network. These processes can create a dual challenge for many, often rural communities, especially in a time of re-familisation of elderly care. This study aims to investigate trends and

	geographical patterns of old age dependency at both regional and family levels in Sweden. Utilizing Swedish administrative annual data, with detailed information on distances between old parents and adult children, we scrutinize intergenerational distances as well as age compositions within Swedish municipalities between 1990-2019. By doing so, we aim to uncover the intricate interplay between demographic trends and familial structures, offering a nuanced understanding of the dual challenges faced by regions grappling with population ageing, both economically and socially.
21.2	**Drivers of population ageing in Asia 1990-2019: A decomposition analysis applying the prospective age concept** **Markus Dörflinger** (Federal Institute for Population Research (BiB), Germany) Population ageing has become a global trend which unfolds with different speed across world regions and countries. In Asia both rapidly ageing populations and countries that still maintain a younger age structure can be found. One potential driver of such differences is international migration. In this study we assess the impact of migration on population ageing in Asian countries over the period 1990-2019. Using data from the United Nations World Population Prospects 2022, we decompose changes in the old-age dependency ratio in 51 countries into the effects of cohort turnover, mortality, changes in life expectancy, and net migration. In contrast to existing decomposition analyses, we apply the concept of prospective age to make population ageing better comparable in the context of varying life expectancy. Our results reveal that cohort turnover and mortality had the largest effect on changes in the age-structure over the last decades, whereas the impact of international migration and changes in life expectancy was smaller in all countries. However, in countries which are characterized by high immigration (e.g., Bahrain) or high emigration (e.g., Timor-Leste) the migration effect on the age structure is substantial. As migration largely occurs at younger ages, immigration decelerated population ageing, whereas outmigration contributed to faster ageing populations in these countries.
21.3	**Are local places in Britain becoming more age segregated (and what does internal migration have to do with it)?** **Nissa Finney** (School of Geography and Sustainable Development, University of St Andrews, UK), Jo Mhairi Hale (University of St Andrews, UK), Elspeth Graham (University of St Andrews, UK) This paper engages directly with the notion that all-age communities are vital for intergenerational connection and for tackling the causes of intergenerational unfairness (House of Lords 2019); and the idea that the development of 'age friendly environments' supports the wellbeing and participation of older people (WHO, 2017). It addresses the dearth of recent empirical evidence on these topics by answering the questions: What is the extent of intergenerational residential mixing at a local level in Britain? How is this changing over time? How is residential mobility shaping age mixing/age segregation? The paper uses 2021/2022 Census data (Aggregate level tables and interaction/flow data) for small areas of England and Wales/Scotland, compared with 2011 and 2001, to calculate residential age segregation and mixing; and age-specific migration rates between neighbourhoods. Associates of neighbourhood type (e.g. age polarising, youth in-migration, age mixed) will then be modelled. Persistence of trends of neighbourhood residential age segregation is expected, and particularly for areas of economic decline and tight housing markets. Our contention is that the divergence in the internal migration (residential mobility) patterns of older and younger populations is driven not by a desire to live separately but by different opportunity structures

	(affordability) that stratify the population spatially along lines of age. This raises policy implications about housing provision if we are to achieve age sustainable neighbourhoods.
21.4	**Where do older people work? The geographies of old-age employment in Sweden** **Sebastian Hanika** (Department of Human Geography, Lund University, Sweden) This article provides a comprehensive examination of employment trends among individuals aged 60 and above in Sweden, utilizing a spatially nuanced approach. The key contribution is the systematic mapping of older workers across diverse regions, highlighting regional disparities in labor force participation before and after retirement. Drawing on Swedish register data from 1990 to 2021, the study explores older workers' labor force participation and tracks regional changes in old-age employment over time. The findings reveal significant variation in old-age employment across different settlements and labour market classifications. These patterns seem to stem from distinctive age-related trends within different sectors, hinting at a higher representation of older workers in the primary sector and manufacturing. Preliminary results also propose that post-retirement employment is primarily driven by smaller businesses and self-employment, whereas larger organizations, exhibit a lower prevalence of workers past the retirement age. Notably, gender differences in post-retirement employment persist more consistently across various spatial contexts. The observed spatial variations highlight the importance of a nuanced study on old-age employment, stressing the need to incorporate subnational differences into research. Acknowledging these nuances is vital for a thorough understanding of factors influencing employment among older adults.

22. IMMIGRATION, INTERNAL MIGRATION AND INTEGRATION

CONFERENCE ROOM 2

Chair: Mark Ellis (University of Washington, USA)

22.1	**Homeownership across immigrant groups and generations in Sweden: Assimilation or segmentation?** **Mary Abed Al Ahad** (School of Geography and Sustainable Development, University of St Andrews, UK), Gunnar Andersson (Demography Unit, Department of Sociology, Stockholm University, Stockholm, Sweden), Hill Kulu (School of Geography and Sustainable Development, University of St Andrews, UK) Homeownership is an important indicator of immigrant integration. Using large administrative individual-level longitudinal data from Sweden, we investigate entry into homeownership across immigrant groups and generations. We differentiate between immigrants arriving as adults (1G) and children (1.5G) and between descendants of immigrants with two (2G) and one (2.5G) foreign-born parent(s). We consider immigrants from both high and low- to middle-income countries. We include all immigrants who arrived in Sweden during 1997-2016 and Swedish-born individuals who became 18 between 1997 and 2016. Results were obtained using survival analysis. Immigrants from sub-Saharan Africa have the lowest propensity to move into homeownership, whereas immigrants from Nordic countries, Western Europe and North America have the highest. A very large proportion of immigrants, especially those from Nordic and Western Europe moved to first-time homeownership already in their first year in Sweden. In

	general, we observe a clear gradient across immigrant generations: the 2.5G has homeownership levels closer to native Swedes than the other generations. However, the 2G, especially from low-income countries show slightly lower entry levels into homeownership than the 1.5G. Overall, our results support gradual housing assimilation and integration across migrant generations, but also highlights the special circumstances during migrants' first year in Sweden as well as demonstrate the importance of financial resources, the reason for immigration and the socio-cultural background for housing careers.
22.2	**Not just migrants, but also transnational people: Linking integration and transnationalism through spatial mobility** **Olle Järv** (Digital Geography Lab, Department of Geosciences and Geography, University of Helsinki, Finland), Veronika Mooses (University of Tartu, Finland), Kerli Müürisepp (University of Helsinki, Finland), Emily Dovydaitis (University of Helsinki, Finland), Tiit Tammaru (University of Tartu, Finland) Mobility is a global megatrend – constant mobilities of people transcend nation-state borders. Country borders are crossed not only for permanent migration and temporary tourism, but also recurrently and frequently for work, shopping, services, leisure and socialization as individuals' daily life practices and social networks are increasingly not confined to a fixed territory of one country. This transnational (migrant) population is growing, for example in cross-border regions of Europe, yet we know little about their simultaneous integration and transnationalism processes, and how these impact societies. The few studies focusing on the nexus between integration and transnationalism neglect the spatial aspect of these processes, although spatial mobility is an inherent part of migrant's settlement processes beyond the migration act, per se. This study proposes a conceptual framework where integration and transnationalism processes are studied jointly, and which incorporates also their spatiality. We operationalize the framework by using comprehensive survey data about Estonians in Finland living in the Finnish-Estonian cross-border region. The study indicates a zero-sum relationship between the two processes from the aspatial perspective, however, it is challenged when the spatial mobility is included to the analysis. Further, the impact of individual traits like income, age and length of stay are not straightforward on the nexus. The proposed framework facilitates rethinking of the role of spatial (recurrent cross-border) mobility and its underlying social practices in the immigrant integration process. The study further contributes to a better understanding on socio-spatial cohesion within cross-border regions of Europe and broadens the discussion on return migration.
22.3	**Are adaptation challenges relevant to the location choices of internal migrants? Evidence from China** **Qiujie Shi** (School of Geographical Sciences, University of Bristol, UK), Tao Liu (Colleage of Urban and Environmental Sciences, Peking University, China) This paper highlights the relevance of adaptation challenges to the location choices of internal migrants, thereby adding to the recognition that they are newcomers to the host society. To achieve this, it presents an examination of how cultural, institutional and social differences between origin and destination regions, which internal migrants need to adapt to, impact their location choices, using labour migration within China as a case study. Competing-destination models show that these adaptation-related differences are indeed significant to internal migration, especially for younger and older women, more educated migrants, the self-employed, singles, and households moving together.

22.4	**“Home in a better place” or “Home aside from home”: Two patterns of migrants’ social integration through community participation in China** **Yixin Zhang** (Population Research Center, University of Groningen, the Netherlands), Louise Meijering (Population Research Center, University of Groningen, the Netherlands) Migrants’ social integration is closely related to their place of residence and their participation in place-based community activities. Homogeneous communities dominated by one migrant group and heterogeneous communities with diverse migrant groups may facilitate migrants’ social integration differently. We conducted 57 interviews with the internal migrants and employed participatory observations in two urban villages in China. One community consisted of rural internal migrants mainly from the same town, and the other encompassed low-income internal migrants from diverse origins. We compared the organization of community activities, the social integration, and the psychological integration of migrants. The organization of community activities in the homogeneous community was top-down, initiated by the local government, while the heterogeneous community demonstrated spontaneous participation. Social integration in the homogeneous community was characterized by group relationships and citizenization. In the heterogeneous community, social integration focused on the acceptance of feminist values and children's education due to hukou segregation. In both communities, a sense of belonging to the community was observed, but not much belonging to the city. Overall, “Home in a better place” reflected a relational integration describing the close-knit and exclusive network reinforced by community participation within the homogeneous community, whereas “Home aside from home” indicated a spatial integration featuring migrants’ enhanced place attachment to the public space in their community participation. This study further confirms the agency of migrants during their adjustment to the city and implies that urban governance at the community level should consider the varied needs of different migrant groups.

DAY 3: WEDNESDAY 3RD JULY

Parallel Session VII	**09:15 – 11:15**
23. ETHNIC AND SOCIAL SEGREGATION 3	
ISDELL COURTYARD	
Chair: Nissa Finney (University of St Andrews, UK)	
23.1	**Measuring the changing ethnic ‘segregation’ patterns of England and Wales using a longitudinal and intersectional index of dissimilarity and an harmonised census geography for 2001 – 2021** **Richard Harris** (School of Geographical Sciences, University of Bristol, UK) The classic index of dissimilarity conceives segregation as a spatial separation such that where the relative spatial distribution of one (e.g. ethnic) group differs from that of another then it suggests that the first group disproportionately chooses or is constrained to live in some neighbourhoods, whereas the second resides in others. A problem with the index is when it is

	used to study change over time, because any changes to its numeric value can be due to changes in the spatial distribution of the first group, the second group, or both. A different approach is not to look at one group relative to another but to look at one group relative to itself – to ask, is it becoming more or less concentrated in particular neighbourhoods over time? This can be operationalised as a longitudinal index of dissimilarity, provided that the base geography is consistent over time, which an harmonised census geography allows. Furthermore, as Harris (2017) has previously shown, the index can be treated as a regression equation, the advantage of which is it can be extended to be a multilevel model. That extension allows both the geographic scale of any change to be determined and also allows for intersectional thinking, such as whether particular ethnic groups are more or less bound to deprived (or affluent) areas. This paper adopts this approach looking at intercensal change in ethnic 'segregation' (or concentration) in England and Wales. It also introduces proportionally filled cartograms as a possible visualisation methods for presenting the results.
23.2	**Multiscale sociospatial inequality: Segregation trends in the Netherlands** **Ana Petrović** (Department of Urbanism, Delft University of Technology, the Netherlands), Maarten van Ham (Delft University of Technology, the Netherlands), David Manley (School of Geographical Sciences, University of Bristol, UK) Urban segregation affects life course outcomes of people, including their education, socioeconomic status or health. Segregation is an increasingly important phenomenon with rising economic inequalities, internal and international migration, and population aging. However, most of the empirical evidence about segregation in the Netherlands is cross-sectional and uses single – usually too coarse spatial scales, focusing only on the four largest cities. Therefore, there is no clear evidence in which ways social inequalities in the Netherlands are reflected across space, from small neighbourhoods to urban regions, and how this develops over longer periods of time in different places within the country. A major challenge in the research on sociospatial inequalities, segregation and spatial contextual effects is the measurement of the spatial context in which people live. Moreover, empirical evidence of segregation usually focusses on one specific characteristic of people, such as ethnicity or socioeconomic status, while the sociodemographics of people are more complex. To address all these challenges, this study uses individual-level register data for the full population of the Netherlands from 1999 onwards, geocoded at 100m by 100m grid cells, on the ODISSEI Secure Supercomputer. We create the full residential histories of people across a range of 101 spatial scales, which represent multiscale spatial contexts in which people live – from their immediate surrounding up to their larger urban environment with a 10km radius. Considering various social and economic population characteristics at this range of scales, we investigate how social inequalities in the Netherlands develop over time and space.
23.3	**Linking neighbourhoods and activity spaces to understand segregation: Capturing the rhythms of daily lives across neighbourhoods in Helsinki** **Kerli Müürisepp** (Digital Geography Lab, Department of Geosciences and Geography, University of Helsinki, Finland), Matti Manninen (University of Helsinki, Finland), Venla Bernelius (The Ministry of Education and Culture, Finland), Tiit Tammaru (University of Tartu, Finland), Tuuli Toivonen (University of Helsinki, Finland), Olle Järv (University of Helsinki, Finland) While the study of spatial segregation has traditionally been based on the location and context of residential neighbourhoods, the emerging activity space approach to segregation stresses the importance of considering people's actual activity locations and mobility. Although these

	two approaches to segregation complement each other, they have, paradoxically, remained loosely linked in empirical research. This study demonstrates the importance of bringing neighbourhood research and activity space segregation research together. By combining the strengths of population register data and mobile phone data from the Helsinki Metropolitan Area, Finland, we provide insights into residential communities' spatial integration, or isolation, over their daily use of urban space. In specific, we show residential communities' use of urban space across residential and non-residential contexts hour-by-hour on a workday and a weekend day, and its time-sensitive associations with their neighbourhood-level socio-economic characteristics. We place special attention on the differences between residents of advantaged, mixed, and disadvantaged neighbourhoods. We find that residents of disadvantaged neighbourhoods have more isolated use of urban space than residents of advantaged and mixed neighbourhoods. For example, they spend more time in their own neighbourhood and have more concentrated exposure to non-residential contexts. However, the inter-group differences are significant mainly on weekends, which highlights the importance of time-sensitive segregation analysis. Finally, as a case from the Nordic welfare state context, the study argues for the need for neighbourhood-centred social mix policies to consider residents' use of urban space over non-residential contexts.
23.4	**Evolving patterns of ethnic segregation in English Schools: A decomposition analysis** **Yiyang Gao** (Durham University Evidence Centre for Education, UK) The proportion of ethnic minority pupils in English schools has seen a marked increase since the 2000s, now comprising about a third of the state school population. This demographic shift, influenced by factors like birth rates, immigration, and age structures, has significantly diversified the ethnic and linguistic landscape in schools. This paper seeks to understand the impact of this change on ethnic segregation in schools, particularly considering the complex interplay of demographics, residential patterns, and education policies. Despite common perceptions of increasing segregation, research suggests a more nuanced reality. This study aims to provide a comprehensive analysis of ethnic segregation trends in English schools over the past two decades, focusing on multi-group and multi-scale perspectives. Employing the decomposable entropy-based measures, alongside multilevel models, the research examines how evolving demographics affect segregation patterns. Findings reveal a general decline in segregation, with notable geographic variations. London is identified as a model of integration and stability, contrasting with the persisting high levels of segregation in areas like Yorkshire. The study also scrutinizes the impact of education reforms like academization, indicating minimal changes in ethnic composition in academization, yet highlighting some academies' less representative ethnic makeup compared to other schools. Additionally, the increase in faith schools is linked to greater ethnic concentration. This paper contributes to the understanding of ethnic segregation in education, highlighting the complexities and regional disparities, and challenges prevailing notions by showcasing the multifaceted nature of ethnic diversity and segregation in English schools.
23.5	**Intersection of geography, ethnicity and age as a precondition for differences in educational achievements in Latvia** **Zaiga Krišjāne** (Department of Geography, University of Latvia, Latvia), Elīna Apsīte-Beriņa (University of Latvia, Latvia), Maris Bērziņš (University of Latvia, Latvia), Ieva Jegermane (University of Latvia, Latvia)

	The growing social, ethnic, and cultural differences observed across European nations correspond with changes in residential segregation and polarisation among population groups with various socioeconomic, ethnic, and cultural origins. Despite extensive research on the impact of individuals' educational attainment on intergenerational social mobility in multiple contexts, there is a notable lack of analysis in the Latvian context, particularly given the significant proportion of ethnic minorities living in cities. Existing research confirms that in Latvia, socioeconomic segregation is highly consistent with ethnic residential segregation, a link exacerbated by the rapid ageing of dominant ethnic minority groups. As a result, continuous socioeconomic and demographic trends may increase the importance of intergenerational educational gaps as a significant factor in maintaining current inequalities and geographical disparities. This study explores intergenerational differences in educational achievement across four separate birth cohorts dating back to the 1960s by using Latvian census data from 2021. The primary focus of the analysis is on identifying cohort disparities within majority and minority ethnic groups in two aspects of social mobility: (1) intergenerational advancement in educational achievement, which indicates the ability to attain higher education regardless of parental educational backgrounds, and (2) the correlation between educational attainment and the type of settlement, which elucidates the urban dynamics of social change in Latvia. In general, our findings imply that educational achievement is a critical explanatory element for societal transitions in Latvia. Nonetheless, certain ethnic minorities and settlement patterns have lower educational mobility. These findings suggest that the examined generational cohorts had distinct paths to socioeconomic integration.

24. HEALTH AND MORTALITY 3

LECTURE ROOM 1

Chair: Phil Rees (University of Leeds, UK)

24.1	**Factors associated with care home use for older people in Scotland: Analysis of cohorts before and after a social care policy change** **Helen Corby** (Scottish Longitudinal Study, University of Edinburgh, UK) Background: Scotland has an ageing population so will need to meet the increasing need for old age social care. In 2002 a new social care policy meant that personal and nursing care became free throughout Scotland for over 65s. Aims: Exploring the factors associated with older people entering care homes in Scotland and investigating whether this was different following the policy change mentioned above. Methods: Linked administrative data from The Scottish Longitudinal Study (SLS) (https://sls.lscs.ac.uk/) provided a representative 5.3% sample of Scottish population aged 65+ for two cohorts (1991-2001 and 2001-2011). This provided socio-demographics, geography and health status from one census, and older people's care status at the following census 10 years later. The effects of these factors on care outcome at follow-up were modelled using logistic regression. Results: For 1991-2001, age, sex, marital status, deprivation, health, housing tenure, living in a flat, recent employment, urban rural classification, and population density were all associated with care outcome. A notable interaction between geographies was observed. However, spatial factors no longer predicted care outcome in 2001-2011 - suggesting there was less social and geographical inequality in care home use. Sex/gender differences were also observed. Key findings: In the cohort who benefitted from the 2002 policy for free personal and nursing care, less spatial and social inequalities in who entered care home by follow-up were

	observed. Further research is needed to investigate whether this difference might be attributable to the policy or wider social care reform over the period.
24.2	**Migrant mortality advantage in two different welfare contexts: A comparison of England & Wales and Norway** **Joseph Harrison** (School of Geography and Sustainable Development, University of St Andrews, UK), Frank Sullivan (University of St Andrews, UK), Katherine Keenan (University of St Andrews, UK), Hill Kulu (University of St Andrews, UK) The migrant mortality advantage is a well observed phenomenon in Western industrialised nations. A combination of selection, positive health behaviours amongst migrants and the rapid health transition, in which environmental risks faced in less developed origin countries decrease after migration, are thought to be the contributing factors to this phenomenon. However, research on migrant mortality has seldom compared differences in magnitude of this advantage across destinations, nor compared the mortality outcomes of comparable migrants in different destination contexts. This study uses the Office for National Statistics Longitudinal Study of England and Wales and the Norwegian Population Register to study migrant mortality across two contexts. We use event history analysis to compare the advantage across two contexts and identify if it is found in the descendants of immigrants too. We compare similar origin groups across the destinations to infer if health assimilation operates differently under competing welfare regimes. In aggregate, we find that the migrant mortality advantage exists in both countries, but with different magnitudes of advantage between groups, culturally similar countries experience the least advantage. We find no observable advantage for descendants; in fact they may experience a disadvantage. The most comparable group is that of Pakistani immigrants which has a smaller advantage in England and Wales compared to other migrant groups and a mortality disadvantage in Norway. We posit that the universal welfare state in Norway sustains inequalities and cannot maintain the positive health advantage that migrants tend to experience.
24.3	**History of place and older adults' depressive symptoms in China: Effects of urbanicity across the life course** **Zhuolin Pan** (School of Geography and Planning, Sun Yat-sen University, China), Ye Liu (School of Geography and Planning, Sun Yat-sen University, China), Yuqi Liu (Department of Urban Planning, School of Architecture, South China University of Technology, China) The global prevalence of depression among older adults continues to grow with rapid urban development. However, scant attention has been paid to whether and how exposure to urbanicity over people's lives affects older adults' depressive symptoms through interpersonal relationships in China, which has experienced substantial urbanization over the past decades. Using the China Health and Retirement Longitudinal Study with its Life History Survey and the night-time light data, this study adopts the life course approach with an emphasis on historical places and the evolving exposure to urbanicity to examine the effects of exposure to urbanicity over 27 years from accumulation and sequence on older adults' depression and further investigate the mediating roles of social relationships and family relationships. Results from multilevel regression show that older adults who are cumulatively exposed to higher levels of urbanicity are associated with reduced depressive symptoms, but residing in less urbanized areas with higher growth rates may predispose them to depression. While social relationships with friends and neighbours mediate the urbanicity-depression association, cumulative urbanicity exposure is negatively associated with satisfaction with the parent-child relationship

	and aggregates depressive symptoms. The protective effect of urbanicity is independent of the health-selective migration effect and varies by sex.
24.4	**Are ethnic health inequalities underestimated by assuming everyone in a neighbourhood faces the same contextual deprivation?** **Stephen Jivraj** (Institute of Epidemiology and Healthcare, University College London, UK), Gemma Catney (Geography, School of Natural and Built Environment, Queen's University Belfast, UK), Christopher Lloyd (Geography, School of Natural and Built Environment, Queen's University Belfast, UK), David McLennan (deprivation.org) There is a growing body of evidence demonstrating ethnic group specific disparities in the presence of multimorbidity at mid-life and older age in England. A related literature shows there is an increased prevalence of multimorbidity in more deprived neighbourhoods compared with the least deprived neighbourhoods in England. This paper aims to bring these empirical findings together to ask whether ethnic health inequality is greatest when the ethnic group specific deprivation is high in the neighbourhood. The paper uses data from Understanding Society waves 10-13 (2018-2023) to measure individual multimorbidity linked to an ethnic group specific deprivation index for measuring neighbourhood inequalities which recognises the marked inequalities between ethnic groups, and the distinctive geographies of these inequalities. The aim of the study is to determine whether the deprivation context specific to an individual's ethnic group is a more important determinant of their health compared with the overall deprivation context. The results will help shape locally and culturally sensitive policies which may reduce health inequality.
24.5	**Exposure to PM2.5 air pollution and mortality in Northern Ireland** **Neil Rowland** (Queen's Business School, Queen's University Belfast, UK), Duncan McVicar, Dermot O'Reilly (Centre of Excellence for Public Health, Queen's University Belfast, UK), Mark McGovern (Rutgers University, USA), Babak Jahanshahi (Queen's University Belfast, UK), Corina Miller (Queen's University Belfast, UK) This paper assesses the relationship between PM2.5 exposure and mortality in Northern Ireland, a setting where pollution is low compared with similar countries. It draws on a rich array of person-level mortality and census data from the Northern Ireland Longitudinal Study combined with finely grained area-level modelled air pollution data. Cox proportional hazards models reveal associations between mortality risk and PM2.5 exposure, though the magnitude of the effects depend on the specification. Without adjustment for measured characteristics, an interquartile range increase in the five-year moving average of exposure is associated with a relatively large increase in the hazard of mortality. This effect decreases after adjusting for prior individual-level demographic, socioeconomic and health-related factors and household-level factors; however, the hazard ratio remains above one and comparable with estimates from other studies. In further analysis, propensity score matching is used to assess whether, among those with similar levels of pre-move exposure, those who go on to move to areas with different pollution levels face different subsequent mortality risks. This analysis suggests that mortality risk is higher (lower) for those who move to a more (less) polluted area. This study offers evidence of mortality effects of PM2.5 from a setting where annual mean PM2.5 concentrations averaged roughly 8 micrograms per cubic metre over the study period.

25. FAMILIES AND LIFE COURSE

LECTURE ROOM 3

Chair: Sylvie Dubuc (University of Strasbourg, France)

25.1

Intergenerational transmission of residential segregation after a major societal upheaval

Elina Maarja Suitso (Department of Geography, University of Tartu, Estonia), Kadri Leetmaa (University of Tartu, Estonia), Kadi Kalm (University of Tartu, Estonia), Allan Puur (Tallinn University, Estonia), Tiit Tammaru (University of Tartu, Estonia)

This paper brings new perspectives on intergenerational transmission of residential segregation by focussing on a society that has experienced a major societal upheaval. Such upheavals and disruptions that set a new development path for countries are common to many parts of the world. More specifically, we are interested what are the path dependencies and changes in residential segregation among a generation who grew up before the societal upheaval but established its own residential career after the societal upheaval. Our study context relates to Estonia, a country that regained her independence in 1991. We focus on the childhood and adulthood neighbourhoods of residence of a generation born between 1975 and 1984. The study is based on linked censuses and register microdata that cover the period between 1989 and 2020. We link also people with their parents and partners. The findings show, firstly, important intergenerational transmissions of segregation despite a major societal disruption. Secondly, our results show that within-generation difference amplify housing differences and segregation because of individual social mobility and pooling of the financial resources of partners as residential mobility is often a family-related process.

25.2

Son preference in India: a spatial analysis

Abhishek Singh (Department of Public Health and Mortality Studies, International Institute for Population Sciences, Mumbai, India), Ashish Kumar Upadhyay (University of California San Diego, USA)

Son preference is deeply rooted in the Indian society since the ancient times. While demographic, social and economic implications of son preference are widely documented, there is little evidence on spatial patterns and trends of son preference differentiated by parity in India at the district-level. This study examines spatial patterns and trends of son preference differentiated by parity in the districts of India over the last two decades. We used data from four rounds of large-scale household surveys conducted in India in 2002-04, 2007-08, 2015-16 and 2019-21 and two most recent Indian censuses (2001 and 2011) to derive the estimates of son preference for the 640 districts of India for the four survey rounds. We used area-level small-area estimation technique to derive the district-level estimates. We used Moran's I and Local Indicators of Spatial Autocorrelation to examine the spatial patterns and trends. Model based estimates reveal considerable heterogeneity in son preference at parity 1, parity 2 and parity 3 or higher across the districts of India, which are often masked by the state-averages. Pockets of high son preference were located primarily in northern, central and western parts of India. At parity 1, only a few districts of India showed high son preference in 2002-04. The number of districts showing high son preference at parity 1 has consistently increased over the survey rounds. At parity 2 and 3 or higher, the number of districts depicting high son preference increased in 2007-08 and then decreased in both the subsequent survey rounds.

25.3	**Neighbourhood effects following the death of the breadwinner: a study of the remaining family in Nancy, France in the 1890s** **Gillian Stewart** (MRC/CSO Social and Public Health Sciences Unit, University of Glasgow, UK), Konstantinos Angelopoulos (University of Glasgow, UK), Rebecca Mancy (University of Glasgow, UK) The death of the breadwinner in the nineteenth century had a major impact on the family left behind. Using a unique dataset constructed from archives in Nancy, France in work with Professor Konstantinos Angelopoulos and Dr Rebecca Mancy, University of Glasgow, we examine several dimensions of the way in which families in the 1890s adjusted in the years immediately following the death of the breadwinner. The dataset is derived from the annual censuses taken in the city of Nancy, summarising information on location and family characteristics and how they changed over time. Using this information, we examine the family history following the death of the breadwinner in terms of the rent and quality of accommodation and of other factors such as remarriage and relocation. Following the death of the breadwinner, bereaved families appear to have had a less stable accommodation situation than prior to this death and paid, on average, a lower rent. Our results also show that the impact of the death of the father on subsequent rent that the family paid varied among neighbourhoods, controlling for other family characteristics. The loss of the breadwinner in 1890s Nancy permits a deeper understanding of the conditions of the period that determined how individuals and families responded to severe negative events, during a period when formal institutional support was limited.
25.4	**The influence of marriage squeeze on the age at first marriage in China** **Wei Chen** (Center for Population and Development Studies, Renmin University of China, China), Baihui Ouyang (School of Sociology and Population Studies, Renmin University of China, P.R.China), Jinju Liu (Department of Public Administration, Beijing City University, P.R.China) Age at first marriage rose more rapidly in China in the last decade than earlier decades, and current studies focus on the impacts from sociostructural changes, including the expansion of higher education and wage labour market participation. However, we test a demographic perspective, marriage squeeze resulting from sex ratio imbalance, on the accelerated postponement of first marriage in China. China experienced a highly skewed sex ratio at birth under the one-child policy, and these birth cohorts were entering marriage in the past decade. Based on microdata of China’s population census and sampling surveys, we examine the effect of marriage squeeze measured at the provincial level on individuals' risk of first marriage using multilevel survival analysis. Not surprisingly, provincial-level marriage squeeze level has a significant negative impact on individual risk of first marriage, indicating that the imbalance in the gender structure of the marriage market is an important factor leading to the delay of individual first marriage. An increase in sex ratio of marriage market affects both men (the "surplus" side) and women (the “shortage” side) in the marriage market, but the influencing mechanism and degree differ. On the one hand, for men (the "surplus" side), an increase in sex ratio of marriage market mainly delays their first marriage by inhibiting the availability and feasibility of marriage. Housing prices play an intermediate role. On the other hand, for women (the “shortage” side), an increase in sex ratio of marriage market delays their first marriage by inhibiting the desirability of marriage.

25.5	**Heterogeneity versus assimilation in family formation across generations and origin of descendants of immigrants in Sweden: Which comes first, homeownership, marriage, or childbirth?** **Mary Abed Al Ahad** (School of Geography and Sustainable Development, University of St Andrews, UK), Gunnar Andersson (Stockholm University Demography Unit (SUDA), Stockholm University, Sweden), Hill Kulu (University of St Andrews, UK) With more than one-quarter of Swedish residents having an immigration background, it becomes important to understand the family formation patterns of immigrants and their descendants. In this study, we examine the risk of entry to first-time homeownership, marriage, and childbirth by immigrant origin and generations in Sweden focusing on only immigrants arriving in Sweden before the age of 18 (1.5 generation (G)) and on descendants of immigrants with two (2G) or one (2.5G) non-Swedish-born parent(s). We use individual-level register data from Sweden over a period of 20 years (1997-2016). To assess the risk of entry to first-time homeownership, marriage, or childbirth, we use Cox-Proportional Hazards modelling whereby everyone is at risk of the three events starting the age of 18. An interaction term is included between the type of event experienced first and immigrant generations and origin. Results showed the importance of owning a house for everyone before moving to marriage or childbirth. After homeownership, native-Swedes, all 2.5G, and certain 1.5G and 2G groups (e.g., Nordic, Western and Southern Europe, and Latin America) showed higher risks of childbirth then marriage, whereas 1.5G and 2G groups from conservative family cultures (e.g., Turkish, Ex-Yugoslavia, Iran, Middle East/North Africa, and South Asia) showed a high marriage risk. Results also supported a gradual assimilation across the generations with 2.5G showing the most similar risks to native-Swedes. However, variation in patterns still existed among 1.5G and 2G groups supporting segmentation, which could be attributed to the socio-cultural and economic heterogeneities across the countries of origin.

26. DATA AND METHODS 2	
CONFERENCE ROOM 2	
Chair: Alex Singleton (University of Liverpool, UK)	
26.1	**Smart population data: Sources and services** **Paul Longley** (Department of Geography, University College London, UK), Alex Singleton (University of Liverpool, UK), James Cheshire (University College London, UK) ‘Smart data’ arise from human interactions with digital devised and can provide timely and pertinent measures of what is going on in modern Britain. Following McGrath-Lone et al’s (2022: 10.23889/ijpds.v7i1.1718) discussion of administrative data, we set out the desirable characteristics of ‘research ready’ Smart Data in terms of breadth, curation, access and documentation. We illustrate these properties with respect to smart data infrastructure created from sources as diverse as consumer surveys, rental listings, energy performance certificates and voter registrations and describe how this resulting smart data infrastructure may be used to produce frequently updated neighbourhood scale data on population residential mobility, social mobility and neighbourhood change. We describe how linkage of multiple sources at the levels of the human individual and residential property unit can prevent what Goodchild (2022: link.springer.com/article/10.1007/s44212-022-00001-5) has described

	as the 'Balkanisation of the quantitative self' in population studies. Finally, we reflect on the data service requirements for serving such data to the widest range of users in terms of data governance, licencing and FAIR (findable, accessible, interoperable and reusable) data principles.
26.2	**Comparing alternative transcriptions of nineteenth century population data: how easy are they to use for population analysis?** **Oliver Duke-Williams** (Department of Information Studies, University College London, UK) Building on earlier work by the author, the paper compares two sources of historical population data: a volunteer transcribed set of 19th century census data for the UK (published by FreeUKGenealogy), and an equivalent commercial transcription (accessible as part of I-CeM project). As with any such data, transcription errors occur in both sets: for example in numeric responses the mis-transcribing of '1' as '7' or vice versa. These may often go unnoticed, although can be apparent in, unlikely observations of age. This paper compares the two sources, and also comments on the practical issues of comparing two equivalent sources which are disseminated under different licenses, and also issues that arise with repurposing data primarily developed for genealogy into a form usable for population analysis. The paper further develops analysis of the volunteer transcribed data in extracting longitudinal observations matched between two or more censuses, and reports on success with different search and linking strategies. Potential linkage keys are more limited than with contemporary longitudinal data, as date of birth was not captured.
26.3	**Surface modeling of human population distribution in China** **Ying-an Wang** (China Population and Development Research Center (CPDRC), China), Tian-xiang Yue (Institute of Geographic Sciences and Natural Resources Research, CAS, China) This article emphasizes simulation of spatial population distribution on multiple scales in China, which is based on the method of Surface Modeling of Population Distribution (SMPD) that has been constructed by means of the information fusion theory and the grid generation method. Elevation, net primary productivity, land use and land cover, city sizes and their spatial distribution, and spatial distribution of transport infrastructures are taken into full account in the SMPD. SMPD not only pays attention to the situation of relative elements at the site of generating grid cell itself but also calculates contributions of other grid cells by searching the surrounding environment of the generating grid cell within a search radius. Another important advantage of SMPD is that when scenarios of land cover, spatial distributions of transport infrastructures and cities are available, scenarios of spatial population distribution can be developed on the basis of total population forecast. In the article, historical retrieve and scenario analysis of population distribution have been done on the city scale, province scale, and national scale. The traditional statistical methods of population density were based on administrative boundary, while SMPD is based on same size grid cells to calculate the population density. It enriches the methods to obtain the population density indexes and increases the accurate degree and application fields of the indexes. SMPD is based on much more essential data than other methodologically. Especially, when scenarios of land cover, spatial distributions of transport infrastructures and cities are available for the SMPD, scenarios of spatial population distribution can be developed on the basis of total population forecast.

26.4	**Identifying people with a disability from administrative data** **Sarah Wood** (Office for National Statistics, UK), Charlotte Standeven (Office for National Statistics, UK), Matthew Minifie (Office for National Statistics, UK) As a part of the population and social statistics transformation programme, we are conducting feasibility research looking at identifying disabled people in administrative data. Identifying people who are disabled (defined as per the Disability and the Equality Act 2010) in administrative records is challenging, because disability relates not just to a medical condition but to a subjective assessment of how it limits people's ability to carry out day-to-day activities. We will investigate available administrative data sources and see if we can come up with rules to identify people with a disability. This can be benchmarked against the 2021 Census. We plan to make use of existing admin data linkages within the ONS (e.g., the Demographic Index) as well as creating new linkages. It is important that we carefully map out this process and only bring together relevant information from each source when creating new linkages and mitigate against risk of personal identification. We will also use the admin data to build a predictive model to predict the probability that people are disabled. The model can be trained using the 2021 Census, with the aim to be regularly updated using survey data collecting information on disability linked to admin data. The model can then be used with the admin data to produce prevalence estimates, then broken down by all characteristics collected in admin data.
26.5	**Ethnicity data in vital statistics: Useful or not in the demographic analysis of floating ethnic groups in Serbia?** **Nevena Trnavčević** (Department of Demography, Faculty of Geography, University of Belgrade, Serbia), Aleksandar Knežević (Faculty of Geography, University of Belgrade, Serbia) Vital statistics are one of the most important sources of data on the ethnic characteristics of the population of Serbia. Data on the nationality of parents at birth, deceased persons, newlyweds at marriage and spouses at divorce have been continuously recorded since the middle of the 20th century among other socio-demographic characteristics. The question of nationality is open ended in official statistical forms, it's not obligatory according to the Constitution, and the answers mostly imply a subjective feeling of belonging to a certain ethnic group. From the Serbian census data we learn about the existence of the so-called "floating (statistically variable) ethnic groups", whose members often change their ethnic identification, which makes it difficult to research the demographic characteristics of these groups. The aim is to demonstrate the relative reliability of Serbian vital statistics data for demographic research of population by nationality using a few selected examples of floating ethnic groups. Statistical imbalances between natural growth and indicators of population growth/decline of selected ethnicities will be presented. This article also discusses the effects of vital statistics methodology on the quality of the ethnicity data. The application of subjective criterion in the national declaration leads to ethnostatistical differences in the births and deaths of the population of the same age cohort (e.g. a person is born as a member of one ethnic group and dies as a member of another). Examining the quality of data in official statistics is important for finding optimal responses to the various problems of minority communities.

12TH ICPG POSTER SESSION ABSTRACTS

DAY 3: TUESDAY 2ND JULY

Poster Session	13:05 – 14:05
CONFERENCE ROOM 1	
P1	**Labour market participation and health: contrasting early-life onset disabilities to those acquired in adulthood** **John Hughes** (Northern Ireland Statistics and Research Agency, UK), Carmel Colohan (Northern Ireland Statistics and Research Agency, UK), Deborah Lyness (Northern Ireland Statistics and Research Agency, UK), Aideen Maguire (Queen's University Belfast, UK), Duncan McVicar (Queen's University Belfast, UK) Objectives: The overarching aim is to extend understanding of long term health and employment outcomes for individuals and their families who experience disability whether in childhood or later in adulthood. Background: Individuals with disabilities, both in Northern Ireland and elsewhere, consistently experience less favourable outcomes compared to their non-disabled counterparts. These include higher levels of unemployment , employment in lower-paying jobs, and poorer mental health outcomes . Existing research on disability and the labour market has predominantly relied on cross-sectional studies, identifying key obstacles faced by individuals with disabilities in gaining and sustaining employment. There is a dearth of comprehensive longitudinal studies in Northern Ireland and elsewhere which assess how disabled people fare in the labour market over an extended period. Approach: Using the Northern Ireland Longitudinal study (NILS), incorporating the latest Census data from 2021, our research will examine disability transitions over three distinct time points (2001, 2011 and 2021). Leveraging the high quality socio-demographic, health, employment and household data from the Census, our research will examine outcomes for those with early-onset (<20 years) and adult-acquired (>=20 years) disabilities, exploring variations by sex and disability type. Results: Preliminary research results will be presented, offering novel insights that can benefit employers and policy makers in addressing the disability employment gap. The findings will serve as valuable input for informing interventions aimed at supporting individuals with disabilities in securing, sustaining, and advancing in employment.
P2	**Evolution of the Polish rural population age structure in the demographic transition. Temporal and spatial dynamics** **Łukasz Komorowski** (Institute of Rural and Agricultural Development, Polish Academy of Sciences, Poland), Monika Stanny (Institute of Rural and Agricultural Development, Polish Academy of Sciences, Poland) The transformation of the population age structure during the demographic transition can be described using two general levels: 1/ quantitative change, which takes into account the share of individual age groups in the total population, and 2/ qualitative change, which, refers to the relationship between groups, expresses, as a consequence, changes in the type of structure. The share of various age groups changes during the demographic transition, and the pace and direction of these changes vary in their phases. This study aims to identify changes occurring during the demographic transition in the proportion of the three age groups according to the biological age division for the rural population in Poland. The authors superimpose the spatial

	criterion (attempting to descend to the lowest possible level of administrative division - municipalities) on the time criterion (taking into account the 100 years – from the first census in 1921 to the most recent statistics). This filter, showing the spatially differentiated proportions of age groups, will allow an analysis of the types of population structure. These, in turn, are a reflection of the most important demographic transformations (changes in fertility and mortality patterns) taking place during the transition. The importance of the spatial approach is underlined by the fact that the structure by age of the rural population varies across regions (constituting, so to speak, the specificity of the Polish countryside) and the differences have far-reaching consequences, not only demographic but above all economic and social.
P3	**Durability of the impact of the COVID-19 pandemic on internal migration in Japan** **Masaki Kotsubo** (Graduate School of Environmental Studies, Tohoku University, Japan), Tomoki Nakaya (Graduate School of Environmental Studies, Tohoku University, Japan) The COVID-19 pandemic has triggered major changes in the migration patterns in many societies: increased out-migration from large core metropolitan areas known as the 'urban exodus'. Most of previous studies have reported the pandemic-induced changes in internal migration using data only in 2020. Therefore, less is known about the durability of the impact of the pandemic and whether the changes are reversible or not. To address these, we aimed to examine an annual series of migration patterns during 2018–2022 in Japan by highlighting relationships between net migration rates and population density at the municipal scale: a country's internal migration system is considered to be on an urbanisation trend if the net population growth rate is higher in more densely populated areas. The results of regression models indicated that the urbanisation trend became weak in 2020 compared to that in 2019; and the weakened trend did not recover to the pre-pandemic level in 2021 and 2022. To focus on the 'urban exodus', we then examined changes in migration flows to/from and within each major metropolitan area, Tokyo, Nagoya, and Osaka in Japan. Out-migration from the metropolitan centre increased and were larger than the pre-pandemic ones in the Tokyo area during 2020–2022, while those remained the pre-pandemic level in the Nagoya area. In the centre of the Osaka metropolitan area, out-migration to suburbs increased, but that to the outside remained the pre-pandemic level. We will discuss the results including the 2023 data.
P4	**Durability of the impact of the COVID-19 pandemic on internal migration in Japan** **Parth Pandya** (School of Geography and Sustainable Development, University of St Andrews, UK), Hill Kulu (University of St Andrews, UK), Julia Mikolai (University of St Andrews, UK), Chia Liu (University of St Andrews, UK) Partnership, employment, and housing are all affected by proximity and spatial contexts hence analysing ethnic concentration is key in further contextualising the life domains. This study highlights the importance of linking spatial processes to demographic processes which emphasises the novelty of our study. The segmented assimilation theory posits that there are persisting differences by ethnic group, migrant origin, and migrant generation. We explore these differences in England and Wales using the Census 2011 microdata (N~ 2.6 million). We distinguish between immigrants and their descendants, not just ethnic groups and contribute to existing assimilation literature by analysing ethnic density in local authorities. We employ multinomial logistic regressions. Generational differences in marriage, being in managerial and routine occupations, and homeownership and renting privately are large. We find large heterogeneity when analysing ethnic density for example for non-native White, Chinese, Black African, and Black Caribbean ethnic groups, the more ethnically dense a local authority is, the more likely that an individual is never married. For managerial occupations, the denser the local

	authority is, the less likely a South Asian and a Black African individual is to hold a managerial occupation. The reverse of this trend is true for non-native White and Chinese individuals. Finally, in housing, for Indians and Pakistanis, the higher the ethnic density, the more likely they are to be a homeowner. The reverse is observed for Bangladeshi and Chinese individuals. For all Asian groups, the ethnic density differences are the largest which may reflect relative socio-economic stability or area characteristics.
P5	**New statistical output geographies for Census 2021 in Northern Ireland** **Brian Foley** (Northern Ireland Statistics and Research Agency Census Office, UK), Richard Elliott (Northern Ireland Statistics and Research Agency Census Office, UK), Eileen Byrne (Northern Ireland Statistics and Research Agency Census Office, UK), **Daniel McConville** (Northern Ireland Statistics and Research Agency Census Office, UK) Population and housing censuses are the foundation of statistical systems, providing high quality and insightful data on the size and characteristics of a country's population and housing stock, and baseline information to produce other statistics. The most recent census in Northern Ireland took place in March 2021, achieving a response rate of 97%, the highest in recent times. The ability of the census to provide detailed information for small geographic areas is one of its main benefits; as such, small-area output geographies are a key dissemination tool. The development of two new small-area output geographies for disseminating Census 2021 data, called Data Zones and Super Data Zones, is outlined, including the rationale for creating the new geographies, the method used to build them and their beneficial features. Various resources available to users are highlighted, including those providing access to Census 2021 data for and supporting use of the new geographies.
P6	**New flexible dissemination tools for Census 2021 in Northern Ireland** Connor Scullion (Northern Ireland Statistics and Research Agency Census Office, UK), Kevin Latimer (Northern Ireland Statistics and Research Agency Census Office, UK), Helen Irwin (Northern Ireland Statistics and Research Agency Census Office, UK), Stewart Magill (Northern Ireland Statistics and Research Agency Census Office, UK), Stephen Toner (Northern Ireland Statistics and Research Agency Census Office, UK), Richard Elliott (Northern Ireland Statistics and Research Agency Census Office, UK), Eileen Byrne (Northern Ireland Statistics and Research Agency Census Office, UK), **Daniel McConville** (Northern Ireland Statistics and Research Agency Census Office, UK) The Flexible Table Builder (FTB) and Area Explorer (AE) are new free to use online data products from NISRA. They are versatile tools that offer a dynamic approach to the presentation and analysis of census data. FTB allows users to tailor Census 2021 data tables to their specific needs down to the smallest level of geography called Data Zones. Users will notice the speed and efficiency of FTB compared to other online data products. Users can quickly pivot, preview, and manipulate data within the table, streamlining the process of synthesizing information. This efficiency saves valuable time and enhances productivity by providing a simple user-friendly interface for data manipulation. Custom datasets can be downloaded in multiple formats or shared with colleagues via weblinks for improved project collaboration. AE complements the adaptability of the FTB by enabling researchers to examine Census 2011 and Census 2021 data using enhanced visualisation options. AE users can easily create charts and visual elements directly on screen, offering a comprehensive view of the data for a particular geography. This visual aesthetic can help convey complex information more

	effectively, fostering better understanding and decision-making, particularly when comparing smaller geographic areas. The benefits of FTB and AE are customization and enhanced visualization. They allow users to manipulate and examine census data according to their specific needs in ways not previously possible with an online data product thus making them an indispensable tool.
P7	**Practical demonstration: 2021 Northern Ireland Census Flexible Table Builder** **Daniel McConville** (Northern Ireland Statistics and Research Agency Census Office, UK), **Brian Foley** (Northern Ireland Statistics and Research Agency Census Office, UK)

NAVIGATING THE 12TH ICPG

The welcome reception will take place on Sunday 30th June (17.00-19.00) at the Great Hall, Lanyon Building, Queen's University Belfast. All plenary, parallel and poster sessions and lunch breaks will be held at Riddel Hall (Stranmillis Road). The conference meal on Monday 1st July will be at Riddel Hall. The conference meal on Tuesday 2nd July will be at the Titanic Hotel, located in the city's Titanic Quarter.

TRAVEL TO CONFERENCE LOCATIONS

You can use this website to plan your journey:
https://www.translink.co.uk/timetables

There is also a **Translink phone app** (*Translink mLink*), where delegates can purchase on their phone tickets for the Metro bus, NI Railways train and Airport Express 300. You can purchase one-way and day tickets (Metro/ Glider day ticket). Note that day tickets are not valid for the full 24 hours from the time of purchase – they are only valid on the actual day of purchase.

To Great Hall, Lanyon Building, BT7 1NN (Sunday 30th June only)

Walking
Walking from the city centre to the Great Hall will take around 20 minutes.

By Bus
The Lanyon Building is serviced by Metro bus routes 8A, 8B, 8C and 8D. All depart from Howard Street (note: on 30th June buses will depart from Donegall Square East) behind Belfast City Hall and run via Great Victoria Street (Europa bus centre) and Bradbury Place, before reaching University Road. The bus stop is directly outside the main University building (Lanyon). Cost: £2.30 (one way), £4.00 (Metro/Glider day ticket). Tickets can be purchased on the bus (cash or card both accepted) or on the Translink app (see above).
The Europa bus centre provides links across Northern Ireland, as well as airport coaches and routes from and to Dublin and beyond. It is only a 20-minute walk from the main campus. As you exit the bus station through The Great Northern Mall, head right along Great Victoria Street, continue straight through Shaftesbury Square and Bradbury Place. Take a slight left onto University Road, passing the Crescent Arts Centre. The Lanyon Building is on the left-hand side.

By Train
The nearest train station is Botanic train station, located a short 5 minute walk from the main campus. Upon exiting the station turn left and proceed along Botanic Avenue. As you reach the Union Theological College to your left, turn right along University Square. The main campus is on the left.
By Bike
Belfast bikes are located at numerous stations around the city. The nearest

docking stations on campus are located directly opposite the Lanyon building and in front of the McClay library to the back of the campus. Multiple bike lock stations are located on campus.

By Taxi
A taxi will cost around £6 - £7 from the city centre. Local companies include FonaCab (028 90 333 333 or via app) and ValueCabs (028 90 80 90 80 or via app).

<u>To Riddel Hall, 185 Stranmillis Road, BT9 5EE</u> (Monday 1st – Wednesday 3rd July)

Walking
Walking from the city centre to Riddel hall will take around 40 minutes (1.7 miles) through the city.

By Bus
The Riddel Hall Campus is serviced by Metro bus routes 8A and 8D. Both depart from Howard Street behind City Hall and run via Great Victoria Street (Europa bus centre), past the Lanyon Building and along the Stranmillis Road, before reaching Riddel Hall. The bus stop is directly outside the main Riddel Hall campus entrance; please use the Ridgeway Street stop. The journey should take around 25 minutes, but can take longer during rush hour. Cost: £2.30 (one way), £4.00 (Metro/Glider day ticket). Tickets can be purchased on the bus (cash or card both accepted) or on the Translink app (see above). You can also take the 8B bus and alight at Chlorine Gardens; you will need to walk around 12 minutes to the conference venue from here.

By Bike
Belfast bikes are located at numerous stations around the city. The nearest docking station to the Riddel Hall Campus is in the Stranmillis roundabout car park. Numerous bike lock stations are located around the site.

By Taxi
A taxi will cost around £6 - £7 from the city centre. Local companies include FonaCab (028 90 333 333 or via app) and ValueCabs (028 90 80 90 80 or via app).

<u>To Titanic Hotel, Titanic Quarter, BT3 9DT</u> (Conference meal, Tuesday 2nd July)

From City Centre to Titanic Hotel
Walking
If you would like to walk with one of our conference team members, please meet at the front of the City Hall (main gates) at 18.50. Walking from Belfast City Hall will take around 35 minutes (1.5 miles) towards the east side of the city, a pleasant walk which crosses the River Lagan.

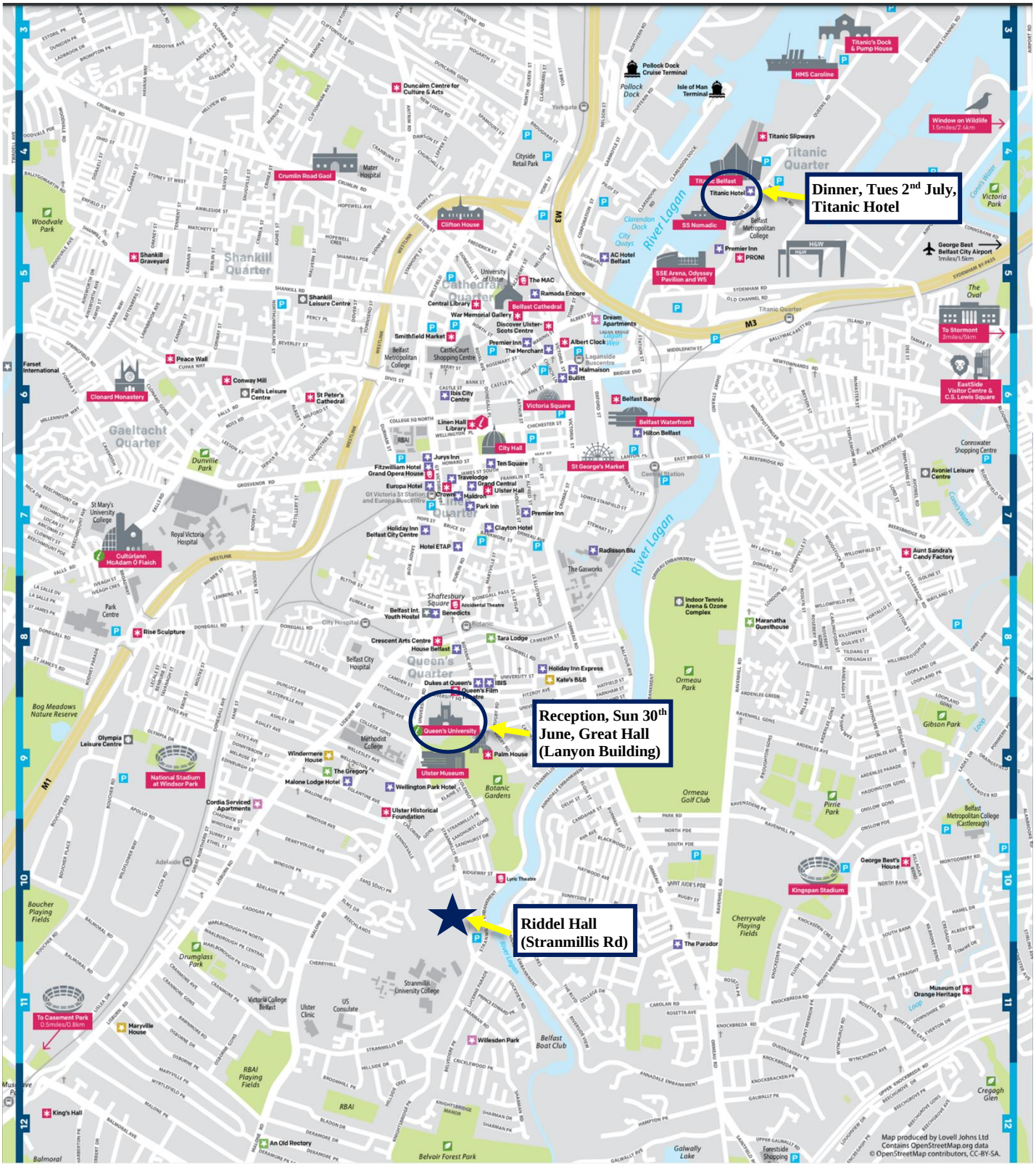
By Bus
From Belfast City Hall (May Street) you can take the G2 Glider (bus) which will take around 15 minutes via St George's Market (May Street), Wellington Place, Chichester Street and Custom House Square, at a cost of £3.60 (one way) or £4.00 (Metro/Glider

day ticket). Tickets can be purchased on the bus (cash or card both accepted) or on the Translink app (see above). Note that the last Glider into the city centre leaves the Titanic Quarter at 23.11.

By Taxi
A taxi will cost around £7 - £8 from the city centre. The Titanic Hotel can order a taxi for your return.

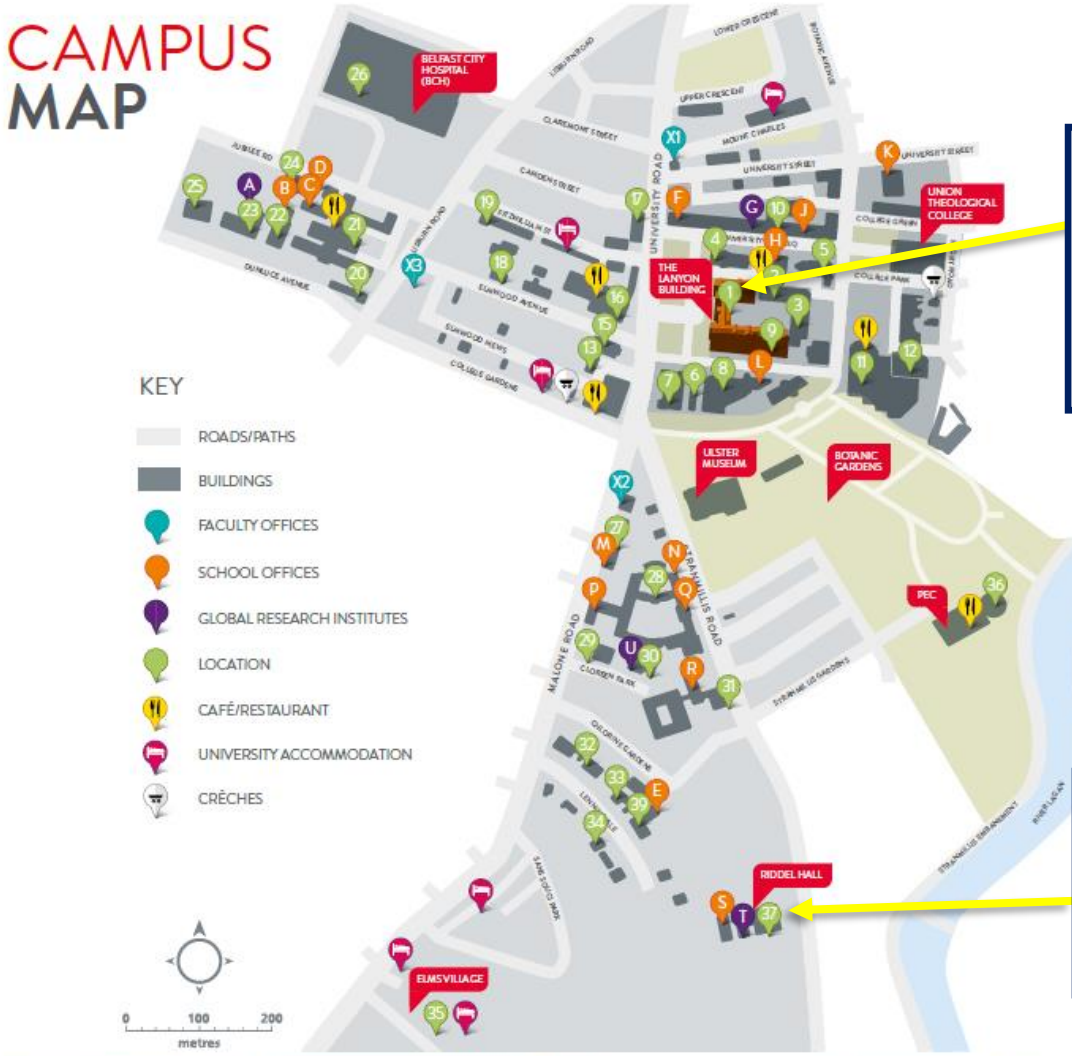
From Riddel Hall to Titanic Hotel
From the conference venue you can take the 8A bus to Belfast City Hall (Wellington Place) then the G2 Glider onto the Titanic Hotel. This will take around 40 minutes and cost £5.90 (one way) or £4.00 (Metro/Glider day ticket). Tickets can be purchased on the bus (cash or card both accepted) or on the Translink app (see above). Walking will take around 70 minutes. A taxi will cost around £10.

MAP OF BELFAST



Source: Visit Belfast

QUEEN'S UNIVERSITY BELFAST CAMPUS MAP



Welcome Reception (Sunday 30th June, 5-7pm) in **The Great Hall** (Lanyon Building)

Riddel Hall (Stranmillis Road) - main conference venue


1 The Lanyon Building


4 The Graduate School


2 The Main Site Tower


11 The McClay Library


28 The David Keir Building


27 Computer Science


36 The PEC


31 The Ashby Building


21 The MBC


35 Elms Village

FACULTY OFFICES

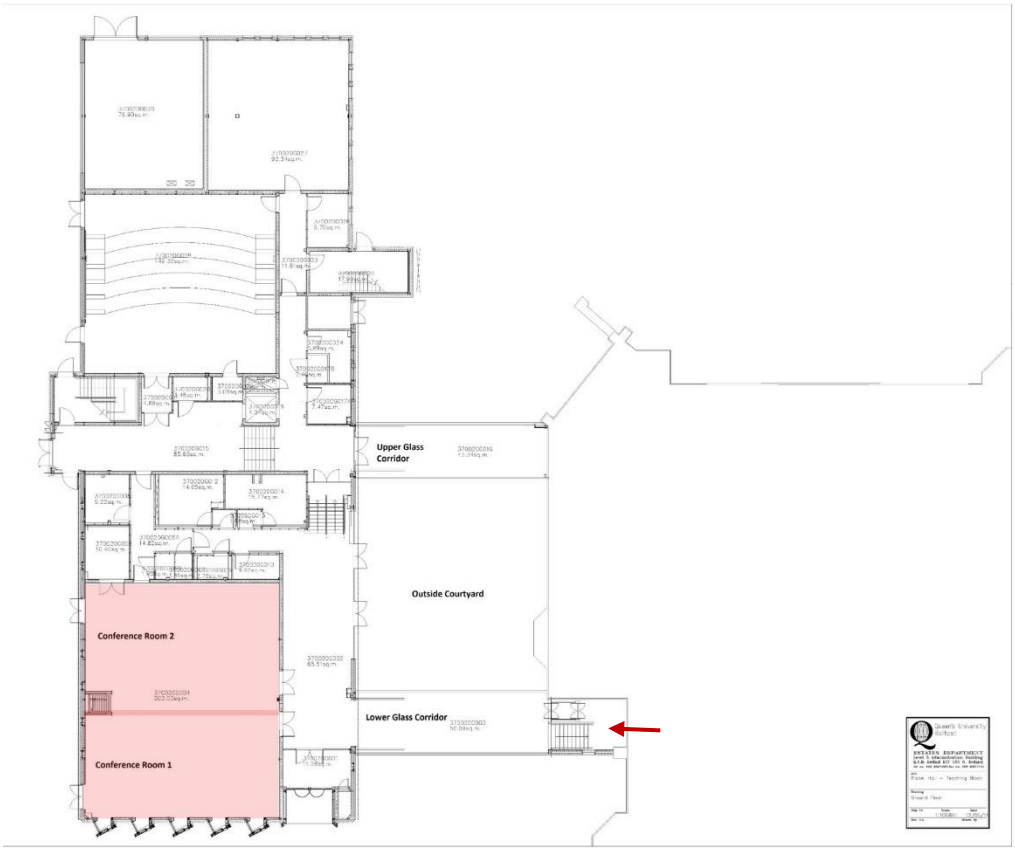
SCHOOL OFFICES

GLOBAL RESEARCH INSTITUTES

LOCATION

RIDDEL HALL FLOOR PLAN

Red arrow shows direction to Conference Rooms 1 and 2 (next page)


Upper Glass Corridor
Outside Courtyard
Conference Room 2
Lower Glass Corridor
Conference Room 1

OTHER INFORMATION

CONFERENCE MEAL ON TUESDAY 2ND JULY

Titanic Hotel Belfast is located in the historic former Headquarters and Drawing Offices of Harland & Wolff shipbuilders, creators of the world-famous RMS Titanic and her sister ships (Olympic and Oceanic). The building itself dates back to 1885 and lay empty for many years following its closure as H&W HQ in 1989. The hotel is located in a recently regenerated area of Belfast called the Titanic Quarter which is dedicated to showcasing Belfast's shipbuilding heritage, and is the authentic home of RMS Titanic and where Titanic's memory lives on. The two former drawing offices where the ships were designed are now home to the hotel's largest event space (our conference meal location) and the hotel's bar area, which features the same tiles that were used in the swimming pools and first-class bathrooms on Titanic. You can find directions to the Titanic Hotel on pages 93-95.

FIELD EXCURSIONS, WEDNESDAY 3RD JULY

BEST OF BELFAST WALKING TOUR

An award-winning social history (and geography!) tour that starts and ends at Belfast City Hall. The tour lasts 2.5 - 3 hours, covering two miles. Delegates to make own way to City Hall.

HILLSBOROUGH CASTLE

NI's Royal Residence, situated in over 100 acres of ornamental lawns, peaceful woodlands and picturesque glens. Excursion includes guided house tour and time to explore the gardens. Coach transportation from Riddel Hall to the site and back to Belfast.

THE GOBBINS GUIDED CLIFF WALK EXPERIENCE

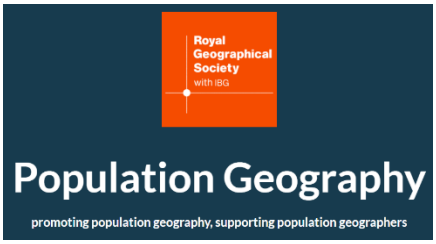
A wild cliff face walk over the waters of the North Channel. "Experience a thrilling world, where bridges will carry you over crashing waves to sunken caves and sheer cliff faces"! Coach transportation from Riddel Hall to the site and back to Belfast. Note: supportive and grippy shoes are required.

TITANIC EXPERIENCE

A world-leading visitor attraction situated where the Titanic was designed, built and launched. The Experience tells the story of the ship's conception, construction, launch, maiden voyage, and subsequent place in history. This is a self-led excursion (delegates to make own way to Titanic Experience) and needs to be booked in advance by delegates. Please enter CONFDELS2024 into the Titanic Experience website's booking section when purchasing tickets. Note that this discount is available to use before and after the conference too - it does not only apply to the excursion session on Wednesday 3rd July.

POPGRG WRITING RETREAT

The Population Geography Research Group (PopGRG) of the Royal Geographical Society with IBG Writing Retreat is open to all delegates (membership of the Research Group not required). There is no formal agenda for the retreat: come along to meet new colleagues interested in Population Geography and do some writing in a supportive environment.



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