Diversity and change in Glasgow’s Social and Built Environment

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Acknowledgements

• Gwilym Pryce, AQMeN
• Nick Bailey, AQMeN
• Ade Kearns, GoWell
Some caveats/warnings

• I tend to work from data to theory
• I won’t try to ‘prove’ anything
• And I will speculate.
Core idea about diversities of space, place and people

• Core idea 1:
  • Only a limited range of urban forms tend to support high socioeconomic and cultural diversity
  • i.e., those supportive of relatively high density
  • Therefore, low diversity of housing stock -> high diversity of socioeconomic attributes?

• Core idea 2:
  • Density brings network effects and more opportunities for socioeconomic diversity

• Core idea 3:
  • Cities have centres, cores, and underlying effective urban functional geographies
  • Distance/diversity relationships

• Core idea 4:
  • The period 2001-2011 saw rapid sociodemographic change in Glasgow and elsewhere in the UK
Background – History of Greater Glasgow

http://www.understandingglasgow.com/indicators/population/trends/historic_population_trend
Background – Recent change in GG, rest of Scotland, rest of the UK

Theories – urbanisation and suburbanisation
Theories – Housing and urban design

https://en.wikipedia.org/wiki/Hutchesontown_Clyde-to-townhead__o_t_t_1281.html
Theories – Housing and urban design

http://carissaevd-urbandesstudies.blogspot.co.uk/2013/10/history-of-urban-design-and-urban.html
Theories – Housing and urban design

http://www.glasgows-motorways.co.uk/timeline/4591549029

http://www.glasgows-motorways.co.uk/the-m8-motorway/4588285335
Theories – Housing and Urban Design

https://en.wikipedia.org/wiki/Housing_in_Glasgow

https://en.wikipedia.org/wiki/High_Street,_Glasgow
Theories – Housing and Urban Design

http://www.mparchitects.com/site/recognition/charter-award-1

https://www.google.co.uk/maps/@55.8668194,-4.2894789,15z
Theories – Network effects and functional geographies
# Theories – Relationship between the physical, the social, and the economic

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Proportion not living in a house/bungalow
Proportion who are not married
Methods – Definition of Greater Glasgow Used

12 Scottish Community Health Partnerships (CHPs)

(Link to Health & Wellbeing Survey?)
Methods – Diversity as entropy

• Shannon’s Diversity Index H

\[ H = - \sum_{i=1}^{R} p_i \log(p_i) \]

R : total number of groups
P_i : Proportion in area who are group i

• Ecology and information theory

• High segregation = low diversity

• Values depend on R

• Calculated for datazones (Scottish LSOAs)
Methods – Data and variables used

• **Data sources:** 2001 and 2011 censuses (mainly)
• **Variable types:**
  • Built environment
    • Council tax band
    • House size (number of bedrooms)
    • Type of building (house, flat etc)
  • Demographic:
    • Age structure (males, female, older, younger etc)
    • Country of origin (English, Scottish, non UK etc)
    • Religion (Catholic, Protestant, other Christian, Non-religious, other religion etc)
  • Economic:
    • Economic Activity status
    • Industry of employment
    • Highest educational qualification
    • Socioeconomic classification
  • Other:
    • Land use (occupied/vacant land parcels)
    • Tenure (Owned, rented, social rented)
    • Building use (residential only, business, mixed) – attempted from PAF but only for one year
Methods – Data and variables used

• Grouping variables
  • Urban Rural Classification
  • Distance from city centre
  • Population density
  • Deprivation using SIMD

• For UR class, median H scores are calculated for 2001 and 2011
• For other (continuous) variables, a non-linear smoother is used
Results

Diversity Change by Urban/Rural Class

- Remote Rural
- Accessible Rural
- Accessible Small Towns
- Other Urban
- Large Urban

Built: Band
Built: Size
Built: Type

Demographic: Age Structure
Demographic: Country of Origin
Demographic: Ethnicity

Urban/Rural Cl.

- Remote Rural
- Accessible Rural
- Accessible Small Towns
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- Remote Rural
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- Remote Rural
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Economic: Religion
Economic: Economic Activity
Economic: Industry of Employment
Economic: Highest Qualification
Economic: Socioeconomic Classification

Land Use: Vacant/occupied land
Tenure

Median diversity score

0.1 0.2 0.3
Results

Diversity by population density

- Vertical dashed: 3.4k/km²
  - Greater Glasgow average
- Vertical solid: 6.0k/km²

- Ethnic, built, (tenure)
Results

Diversity by distance to city centre

- Tenure, built, first 5-8 km
Results

Diversity by SIMD

• Nonlinear relationships
• Tendency to more diversity
• Falling land use ‘diversity’
• Ethnicity: Greatest increase in least deprived areas
Selected maps

• Building type, Ethnicity, Religion
Discussion

• 2001-2011 is a period of large scale demographic change in Scotland as elsewhere in UK

• Cities are magnets for migration

• Large increase in ethnic minority population and diversity in Glasgow

• Large increase in tenure diversity (more renting?)

• Greatest increases in ethnic diversity in areas with lowest housing stock diversity

• Increasing population size through migration
  • Reduced average age, better average health, better qualified?
Discussion

• Important density and distance nonlinearities
• High density, high centrality -> high diversity of people
• ‘Kink’ around 6000 people/km²
  • Network effects/agglomeration economies?
• Distance within 5-8km: different relationship
  • i.e. around 1 hr by foot/cycle/public transport
  • Jesse Ausubel
    • distance defined by time not space (‘20 minutes away’)
    • ‘Fixed’ time-travel preference, regardless of mode of transport

• Functional urban geographies
  • Community Health Partnerships?
  • Travel to work areas? (Dominated by car owners?)
  • Mode-specific TTWAs? (Distance/hour)
  • Amenity-specific TTWAs? (Mixed use & accessibility)
Next steps

• Associations between diversity and:
  • Health (Walsh et al 2016)
  • Economic development
  • Demographic change (including fertility)
  • Educational outcomes
  • Happiness

• ‘Natural Experiments’
  • Effects of regeneration (GoWell)
  • Generalisability to other cities
Thanks for listening!

• Analyses available from:
  • [https://github.com/JonMinton/gowell](https://github.com/JonMinton/gowell)

• Diversity maps from:

• Email: jonathan.Minton@Glasgow.ac.uk