Health and social care data linkage

An overview of resources used during my PhD

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30th April 2019

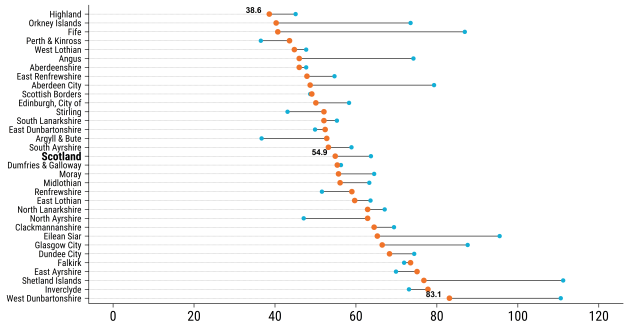# Project funding and supervision

- Scottish Government/ESRC

- Nick Bailey, Colin McCowan, Stewart Mercer

- Based in UBDC at Glasgow University

- Now started post-doc with ADRC-S/Edinburgh Napier

Background

Proportion of over 65s receiving home care
2016 & 2007

Highland	38.6
Orkney Islands	
Fife	
Perth & Kinross	
West Lothian	
Angus	
Aberdeenshire	
East Renfrewshire	
Aberdeen City	
Scottish Borders	
Edinburgh, City of	
Stirling	
South Lanarkshire	
East Dunbartonshire	
Argyll & Bute	
South Ayrshire	
Scotland	54.9
Dumfries & Galloway	
Moray	
Midlothian	
Renfrewshire	
East Lothian	
North Lanarkshire	
North Ayrshire	
Clackmannanshire	
Eilean Siar	
Glasgow City	
Dundee City	
Falkirk	
East Ayrshire	
Shetland Islands	
Inverclyde	83.1
West Dunbartonshire	

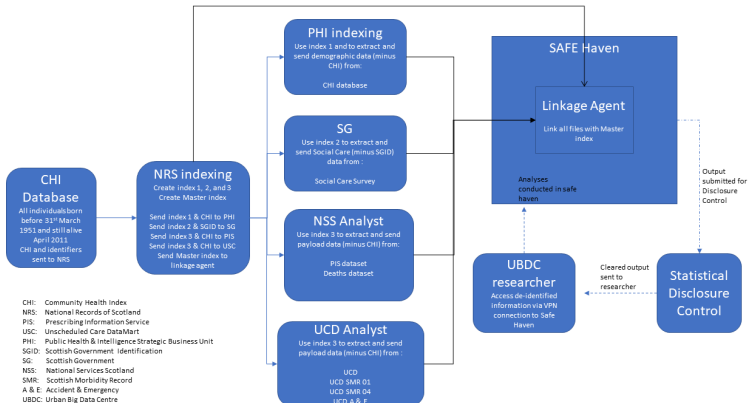Standardised rate per 1000 people over 65

Aims

- Scope what administrative social care data is available for research in Scotland

- Create a linked health and social care dataset

- Assess the effect of multimorbidity and sociodemographic characteristics on social care use

- Social Care Survey

- Renfrewshire council social care data (not linked)

Linkage project

Study period 2011-2016

CHI Database
All individuals born before 31st March 1951 and still alive April 2011. CHI and identifiers sent to NRS

NRS indexing
Create index 1, 2, and 3
Create Master Index
Send index 1 & CHI to PHI
Send index 2 & SGID to SG
Send index 3 & CHI to PIS
Send index 3 & CHI to USC
Send Master index to linkage agent

PHI indexing
Use index 1 and to extract and send demographic data (minus CHI) from:
CHI database

SG
Use index 2 to extract and send Social Care (minus SGID) data from :
Social Care Survey

NSS Analyst
Use index 3 to extract and send payload data (minus CHI) from:
PIS dataset
Deaths dataset

UCD Analyst
Use index 3 to extract and send payload data (minus CHI) from :
UCD
UCD SMR 01
UCD SMR 04
UCD A & E

SAFE Haven

Linkage Agent
Link all files with Master index

Analyses conducted in safe haven

UBDC researcher
Access de-identified information via VPN connection to Safe Haven

Cleared output sent to researcher

Output submitted for Disclosure Control

Statistical Disclosure Control

CHI: Community Health Index
NRS: National Records of Scotland
PIS: Prescribing Information Service
USC: Unscheduled Care DataMart
PHI: Public Health & Intelligence Strategic Business Unit
SGID: Scottish Government Identification
SG: Scottish Government
NSS: National Services Scotland
SMR: Scottish Morbidity Record
A & E: Accident & Emergency
UBDC: Urban Big Data Centre
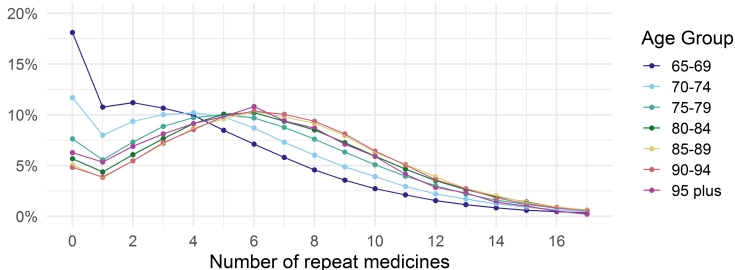
Results - Descriptive statistics

Percentage of individuals in SIMD deciles
by Local Authority (2013/14)

SIMD decile: 1 2 3 4 5 6 7 8 9 10
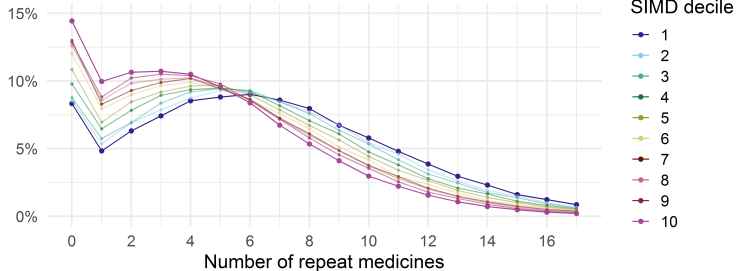
Results - Descriptive statistics

Percentage of individuals with specific count of repeat medicines
2013/14

Age Group
- 65-69
- 70-74
- 75-79
- 80-84
- 85-89
- 90-94
- 95 plus

Number of repeat medicines

Outlying values > 17 medicines removed

Results - Descriptive statistics

Percentage of individuals with specific count
of repeat medicines
2013/14

SIMD decile
1
2
3
4
5
6
7
8
9
10

Outlying values > 17 medicines removed

Results - Descriptive statistics

Percentage of individuals at specific ages receiving any form of social care
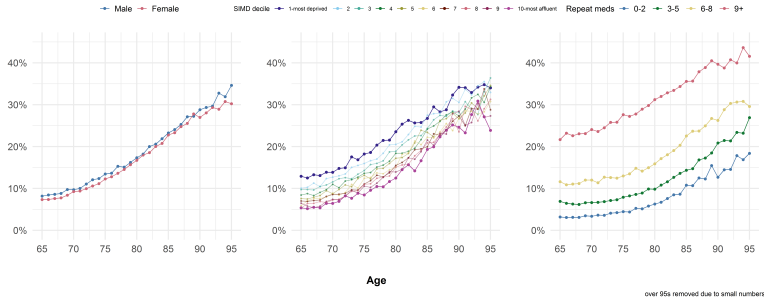by sex, by SIMD decile, and by repeat medicine group. 2015/16
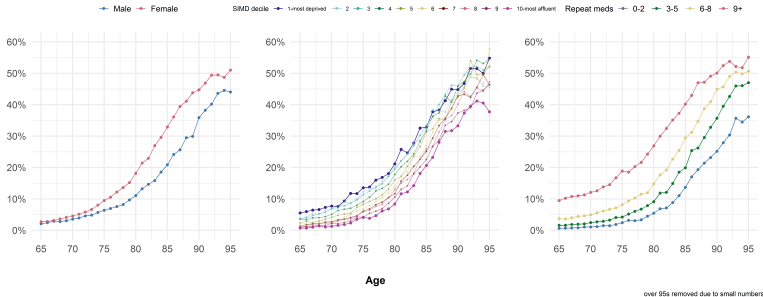
over 95s removed due to small numbers

Results - Descriptive statistics

**Percentage of individuals at specific ages receiving any form of social care
by SIMD & sex, and SIMD & repeat medicine group. 2015/16**

SIMD decile — 1 (most deprived) — 10 (most affluent)
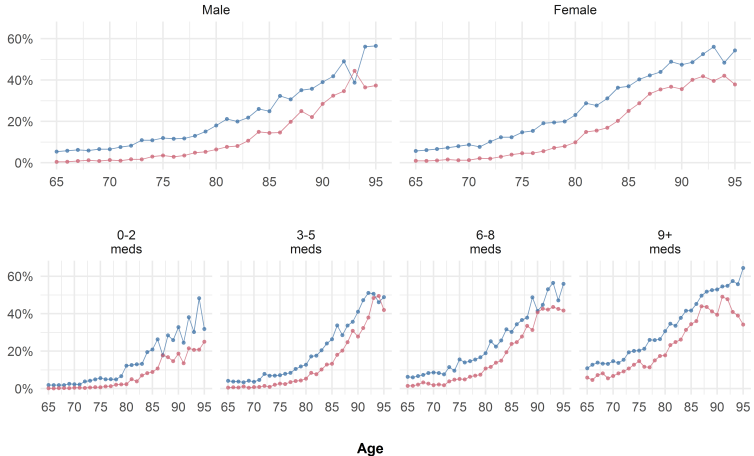
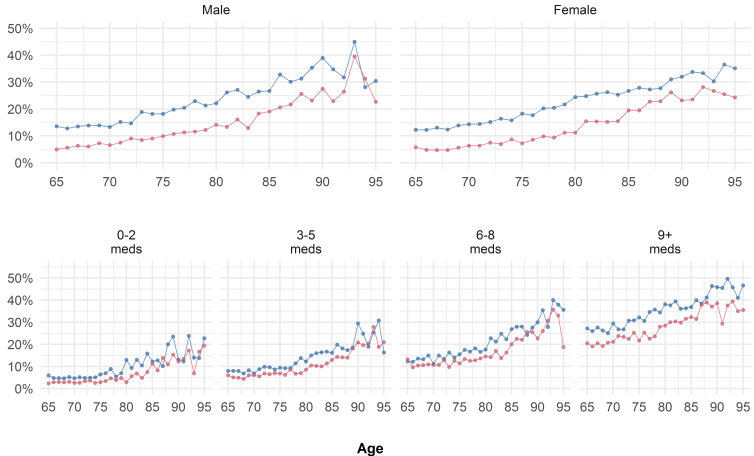over 95s removed due to small numbers

Results - Descriptive statistics

Percentage of individuals at specific ages with at least one unplanned hospital admission
by sex, by SIMD decile, and by repeat medicine group. 2015/16

Results - Descriptive statistics

**Percentage of individuals at specific ages with at least one unplanned hospital admission
by SIMD & sex, and SIMD & repeat medicine group. 2015/16**

SIMD decile → 1 (most deprived) → 10 (most affluent)

Male   Female

0-2 meds   3-5 meds   6-8 meds   9+ meds

Age

over 95s removed due to small numbers

Limitations

- No measure to capture those living alone

- Variation in linkage rate of SCS to population spine at the local authority level

- No longitudinal analysis here

- Proxy multimorbidity measure

Implications

- Age has the biggest effect on receipt of social care - Multimorbidity also important

- Females also more likely to receive care, but a lot of the difference seen in overall numbers is accounted for when adjusting for age and multimorbidity

- After adjusting for age and multimorbidity status, there remains variation in levels of care at the local authority level. Further investigation is warranted.