

Modelling social care receipt using linked administrative data

A presentation at interview for Post-Doctoral Research Fellow

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Project funding and supervision

- Scottish Government/ESRC
- Nick Bailey, Colin McCowan, Stewart Mercer



Background

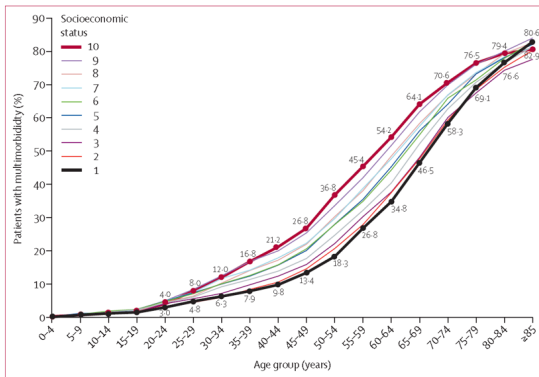
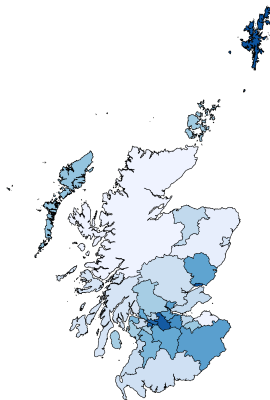


Figure 2: Prevalence of multimorbidity by age and socioeconomic status
On socioeconomic status scale, 1=most affluent and 10=most deprived.

Barnett et al (2012)

Background

Rate of social care for over 65s 2011/12
by Local Authority



Rate per thousand people
over 65 receiving any form
of social care



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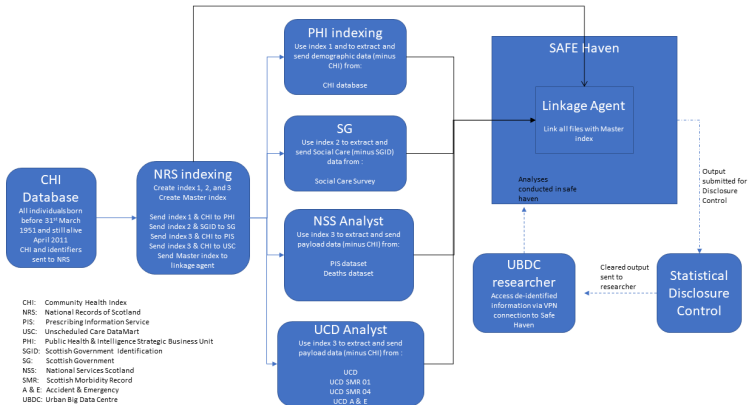
Research Questions

In people over the age of 65 in Scotland:

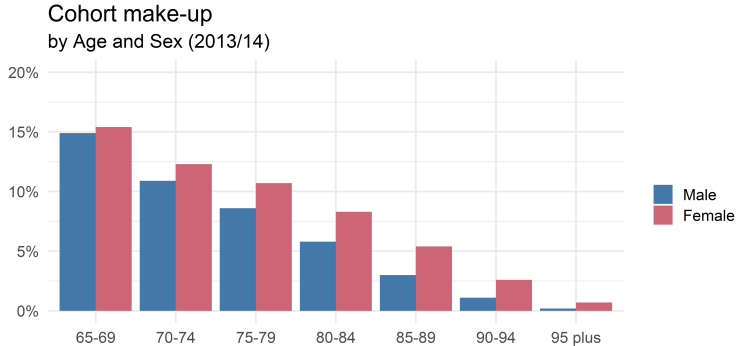
- 1 (a) What are the socioeconomic, demographic, and geographic patterns in the use of social care?
 (b) Is there an association between multimorbidity status and the amount and type of social care use over time? Does this vary by the patterns described in 1(a)?
- 2 Is there an association in the use of social care services, multimorbidity status and unscheduled health care use?

Background

Study period 2011-2016

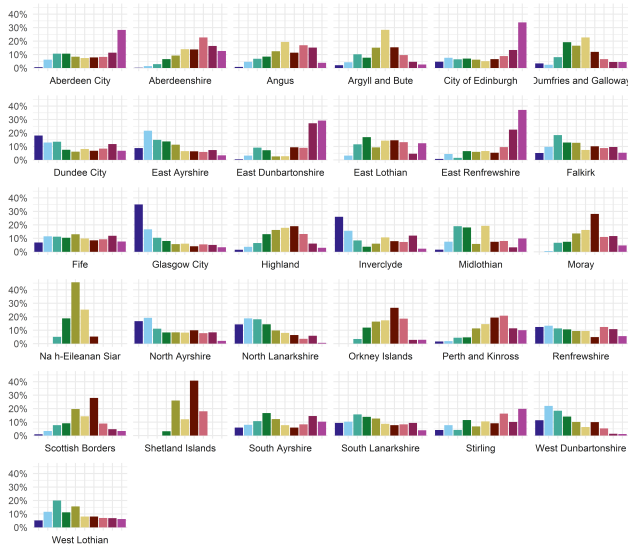


Results - Descriptive statistics



Results - Descriptive statistics

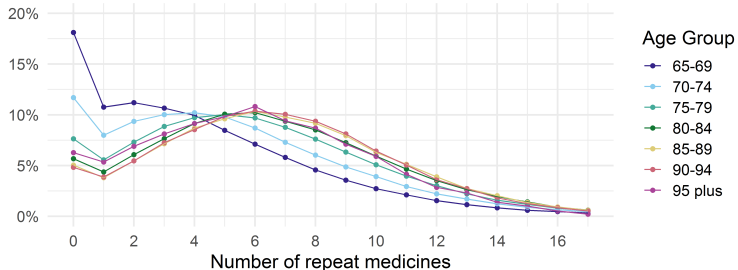
Percentage of individuals in SIMD deciles
by Local Authority (2013/14)



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

Results - Descriptive statistics

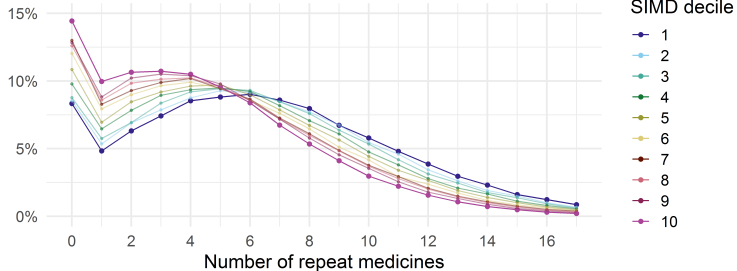
Percentage of individuals with specific count of repeat medicines
2013/14



Outlying values > 17 medicines removed

Results - Descriptive statistics

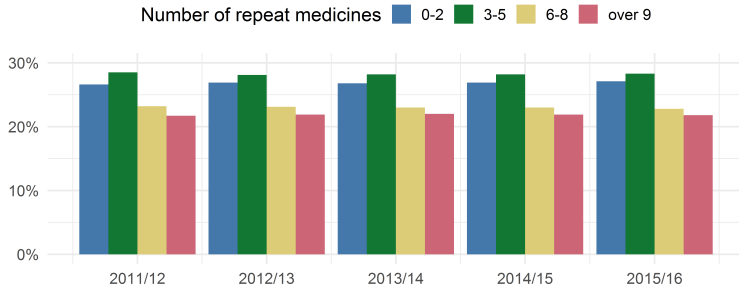
Percentage of individuals with specific count
of repeat medicines
2013/14



Outlying values > 17 medicines removed

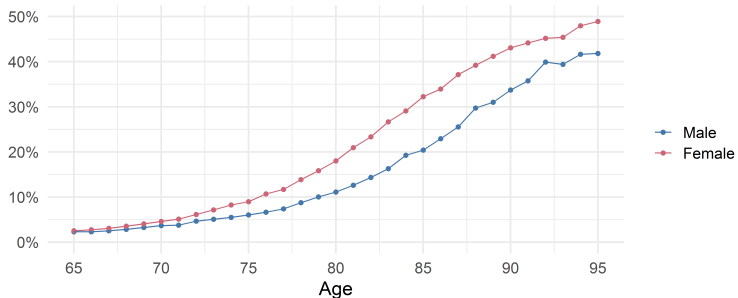
Results - Descriptive statistics

Percentage of population receiving repeat medicines
by medicine group



Results - Descriptive statistics

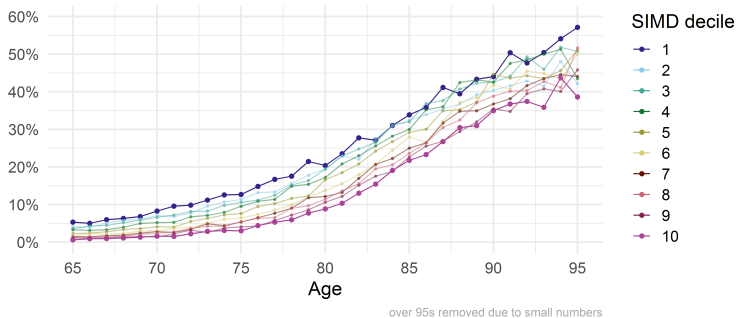
Percentage of individuals with any social care
2013/14



over 95s removed due to small numbers

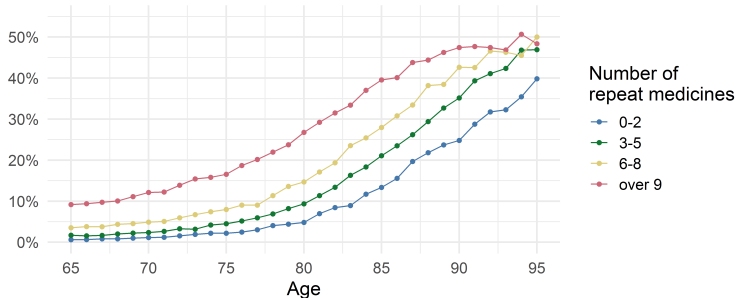
Results - Descriptive statistics

Percentage of individuals with any social care
2013/14



Results - Descriptive statistics

Percentage of individuals with any social care
2013/14



over 95s removed due to small numbers

Modelling

- Logistic regression model applied to each separate year of data
- Model applied to subsets of individuals with similar linkage rates to population spine
- Effects reported as Average Partial Effects (APEs)
- Indicate the marginal effect of each variable on outcome

Regression code

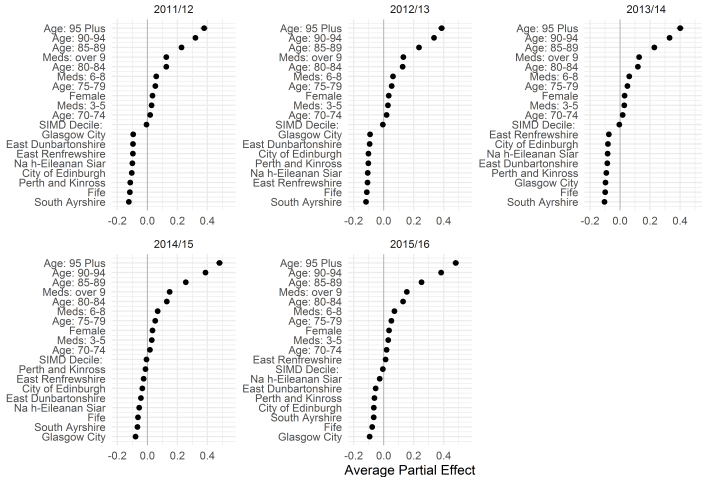
```
glm(social_care ~ sex*age_grp + simd*meds_grp +  
age_grp*meds_grp + council*simd, family = binomial())
```

Results - Modelling

Influence of variables on receiving social care

Average Partial Effects ordered high to low by year

Councils with linkage rate of 92%-95.9% only



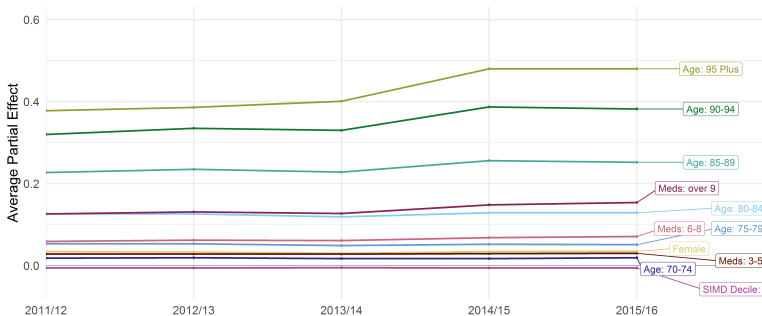
Reference group Age: 65-69
 Reference group Sex: Male
 Reference group SIMD Decile: Decile 1
 Reference group Meds: 0-2 medicines
 Reference group Council: Shetland Islands

Results - Modelling

Influence of variables on receiving social care

Average Partial Effects

All variables excluding Local Authority



Reference group Age: 65-69

Reference group Sex: Male

Reference group SIMD Decile: Decile 1

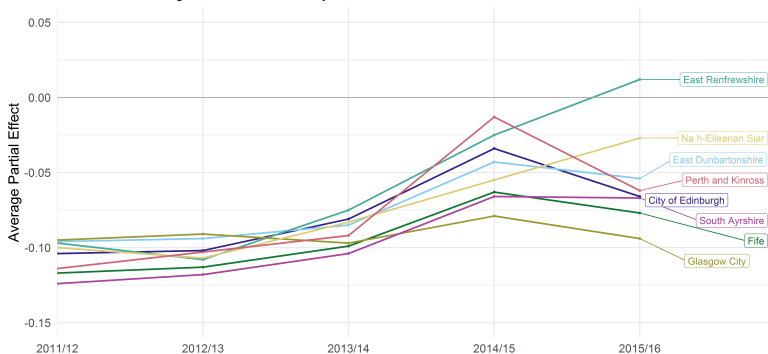
Reference group Meds: 0-2 medicines

Results - Modelling

Influence of variables on receiving social care

Average Partial Effects, by year

Councils with linkage rate 92%-95.9% only



Reference group: Shetland Islands

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
- Untested 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.
- Again, deprivation is shown to to be a driver of service use. The difference in effect between decile 1 and decile 10 is of similar magnitude to the difference between age groups 65-69 and 75-79