Chapter 1

Results - Descriptive statistics

This chapter outlines the characteristics of the cohort and distributions of pertinent variables in three sections. The first section contains tabulation and visualisation of counts and percentages of individuals in the cohort overall, by age & sex, by mortality, and by geography. The next section focusses on the proxy measurement of multimorbidity, repeat medicine counts, and its distribution by sociodemographic variables. The final section focusses on deprivation. A table with counts and percentages split by SIMD deprivation quintile is provided plus visualisations of the distribution of SIMD deciles by age & sex and local authority. Where distributions were found to be similar across all years of data a reference year, financial year 2013/14, is used for visualisation purposes. This is the middle year of the study period.

Descriptive statistics of social care and unscheduled care measures are not presented in this chapter but in chapters **??** and **??** respectively where the focus is on these variables specifically.

1.1 Age, sex, mortality, and geography

1.1.1 Participants

Table 1.1 describes the cohort with regard to sociodemographic and service use characteristics. In total the cohort consisted of 1,100,668 individuals. The table shows how the absolute number of individuals present in the cohort in each financial year gradually increased over the study period. There are 53,429 more individuals included in the cohort in 2015/16 compared to 2011/12. The percentage of individuals who died in each financial year varied from 4.1% - 4.7% whilst the percentage of the cohort that were female showed a very slight gradual decrease from 56.1% in 2011/12 to 55.0% in 2015/15. The average age of individuals was steady over time at 74.7 years old. Five-year age groups showed the highest proportion of individuals in the 65-69 group

Variable	Value	2011/12	2012/13	2013/14	2014/15	2015/16
N in cohort		870896	895100	908295	920639	924325
N died		35870 (4.1)	41701 (4.7)	39348 (4.3)	42365 (4.6)	37992 (4.1)
Sex	Male	382585 (43.9)	395922 (44.2)	404480 (44.5)	412115 (44.8)	415953 (45.0)
	Female	488311 (56.1)	499178 (55.8)	503815 (55.5)	508524 (55.2)	508372 (55.0)
Age (years)	Mean (SD)	74.8 (7.4)	74.7 (7.4)	74.7 (7.4)	74.7 (7.4)	74.7 (7.4)
Age group (years)	65-69	256761 (29.5)	269042 (30.1)	274946 (30.3)	278705 (30.3)	282554 (30.6)
	70-74	206129 (23.7)	208829 (23.3)	211466 (23.3)	214387 (23.3)	215897 (23.4)
	75-79	170452 (19.6)	173474 (19.4)	175400 (19.3)	176745 (19.2)	175279 (19.0)
	80-84	124677 (14.3)	127606 (14.3)	128500 (14.1)	130151 (14.1)	130131 (14.1)
	85-89	73698 (8.5)	74937 (8.4)	75990 (8.4)	77619 (8.4)	77699 (8.4)
	90-94	30732 (3.5)	32711 (3.7)	33710 (3.7)	34150 (3.7)	33432 (3.6)
	95 plus	8447 (1.0)	8501 (0.9)	8283 (0.9)	8882 (1.0)	9333 (1.0)
N with >=1 repeat medicine		775627 (89.1)	795495 (88.9)	807924 (88.9)	818667 (88.9)	821813 (88.9)
Receiving social care		89769 (10.3)	99111 (11.1)	98361 (10.8)	125619 (13.6)	125367 (13.6)
Receiving home care		41642 (4.8)	42149 (4.7)	42746 (4.7)	42232 (4.6)	41172 (4.5)
Resident in care home		36513 (4.4)	33292 (4.0)	31397 (3.7)	29089 (3.3)	28136 (3.2)
>= 1 USC episode		259137 (29.8)	272574 (30.5)	270872 (29.8)	289504 (31.4)	285013 (30.8)
>=1 hospital admission		133153 (15.3)	141868 (15.8)	141745 (15.6)	147757 (16.0)	145741 (15.8)
>=1 A & E attendance		172747 (19.8)	181728 (20.3)	184100 (20.3)	190563 (20.7)	185736 (20.1)

All values n(%) unless otherwise stated

Column-wise percentages within grouped variables

Table 1.1: Characteristics of study population

(29.5%-30.6%) with a gradual decrease to the 95 plus group (0.9% - 1.0%). Across years, between 88.9% and 89.1% of individuals had at least one repeat medicine prescribed.

There is a noticeable increase in the absolute and percentage values of individuals receiving social care in financial years 2014/15 and 2015/16 compared to earlier years. This likely reflects the change in the method of data collection for telecare and community alarm services described in section **??** (earlier years including those receiving these services during a census week only compared to at any time during the financial year in later years). The later years of data show an increase of approximately 3% from 2013/14. The percentage of individuals receiving home care shows a very small decrease from 4.8% to 4.5% over the whole study period (with absolute numbers showing little variation), whilst the number of individuals resident in a care home shows a steady decline from 36,513 to 28,136 (4.4% to 3.2%).

In measures of unscheduled health care use, between 29.8% and 31.4% had at least one episode of any unscheduled care, between 15.3% and 16.0% had at least one hospital admission, and between 19.8% and 20.7% had at least one attendance in an Accident & Emergency department. Whilst variation in the percentage of these measures were fairly stable over time, *absolute* numbers showed steady increase from 2011/12 to 2014/15 with a slight drop in the last year of available data. There were 30,367 fewer unscheduled care episodes in 2011/12 compared to 2014/15, 14,604 fewer hospital admissions, and 17,816 fewer A & E episodes over the same time period.

1.1.2 Age and sex

Figure 1.1 shows the breakdown of the study cohort by age and sex in financial year 2013/14 (similar patterns are seen across all years of data). There is a higher percentage
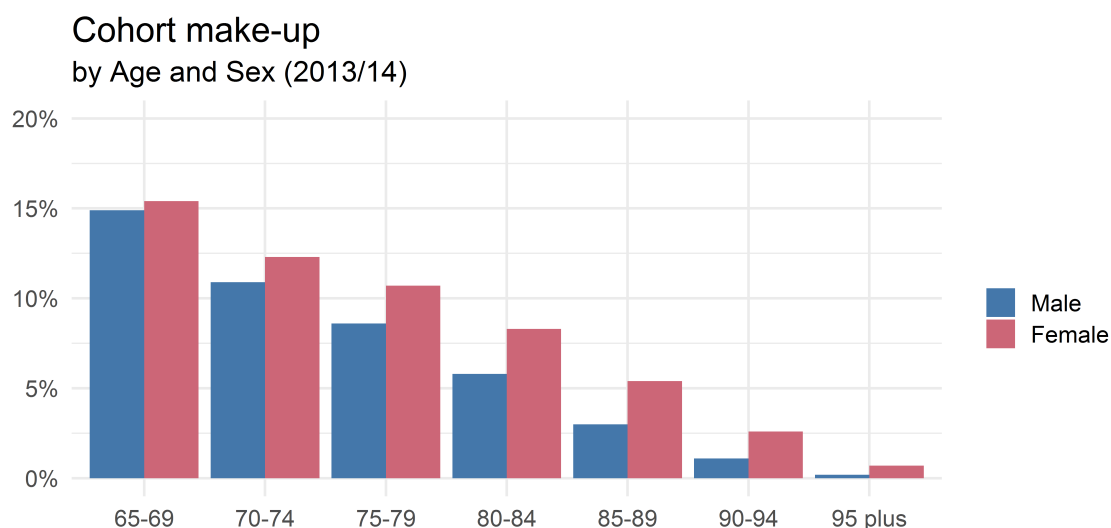
Figure 1.1: Age and sex distribution. N = 908,295

of females in each age group with the difference between sexes widening as age increases. Over half of the cohort are under the age of 74 and over a quarter are between the ages of 75 and 84.
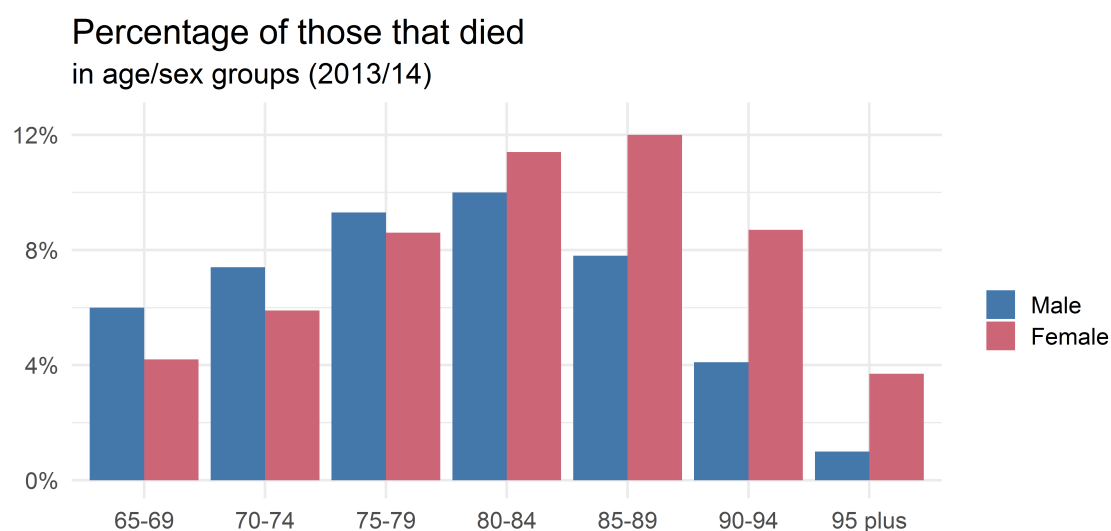
1.1.3 Mortality

Figure 1.2: Mortality. N = 39,348

In 2013/14, 39,348 (4.3%) of the cohort died. Figure 1.2 shows how these deaths were distributed across age and sex groups (with similar patterns seen in other years). The highest percentage of deaths (almost 22%) occurred in the 80-84 age group with females accounting for slightly more than half of these. The difference in the percentage of deaths between males and females increases from this group in older age groups, whereas higher percentages of men died in age groups below 80-84.

1.1.4 Local authorities

Figure 1.10 shows the percentage of individuals in the cohort that lived in each local authority area in financial year 2013/14. The largest percentages of individuals are found in Glasgow and Edinburgh city areas, whilst the smallest number are found in the three island local authorities.

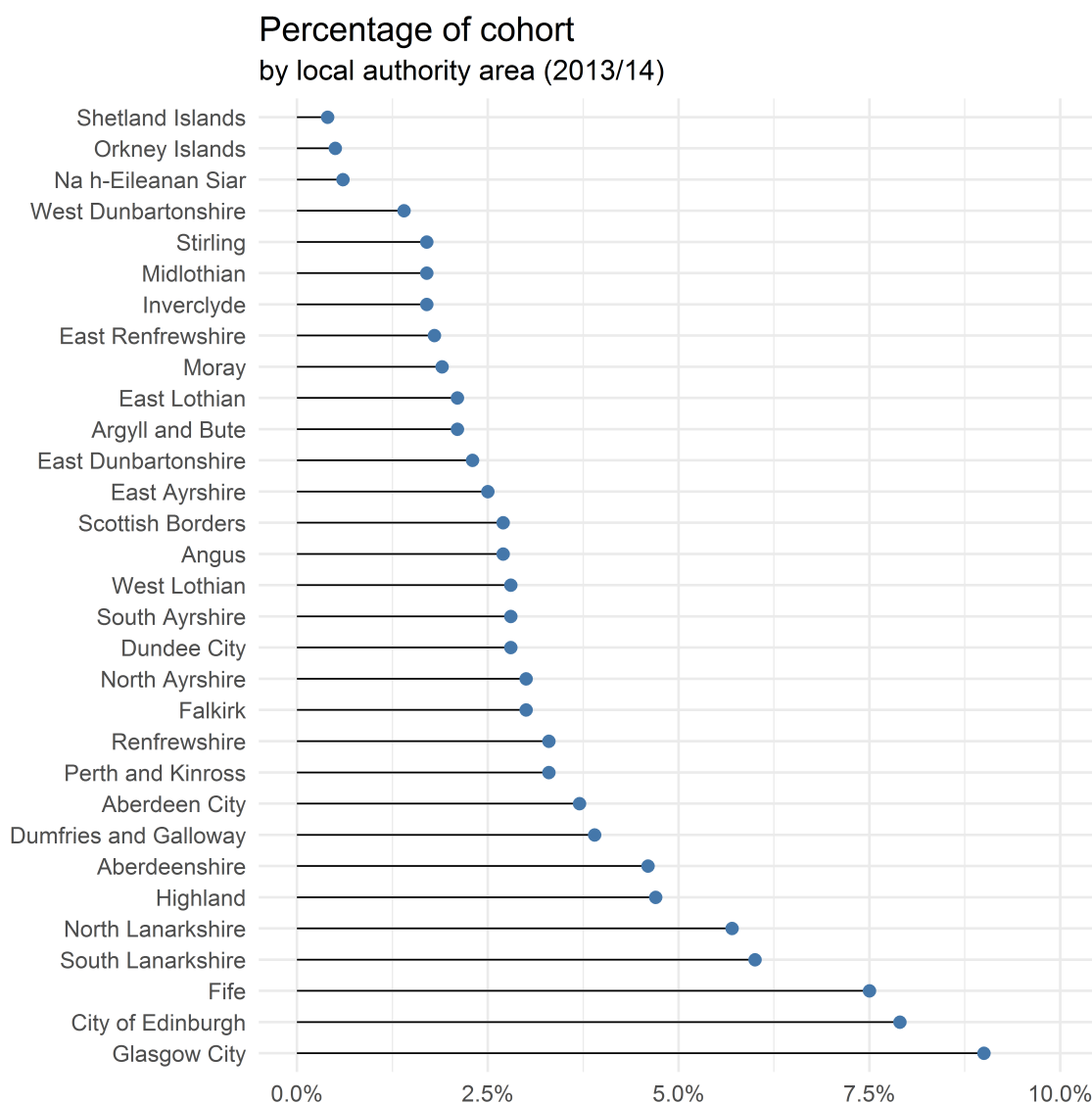Percentage of cohort
by local authority area (2013/14)

Figure 1.3: Distribution of cohort by local authority. N = 908,295

1.2 Multimorbidity - repeat medicine groups

1.2.1 Distribution by sex

Figure 1.4 is a bar chart showing a count of individuals receiving specific counts of repeat medicines in financial year 2013/14. The chart shows that the mode of prescribed repeat medicines is actually zero with approximately 100,000 people in the cohort not

requiring regular medication. Of the remaining 800,000 (approx.) individuals, the most frequently prescribed number of repeat medicines is four. The coloured areas indicate there are similar patterns for males and females with slightly higher overall counts for females. *This could alternatively be a stacked bar chart?*
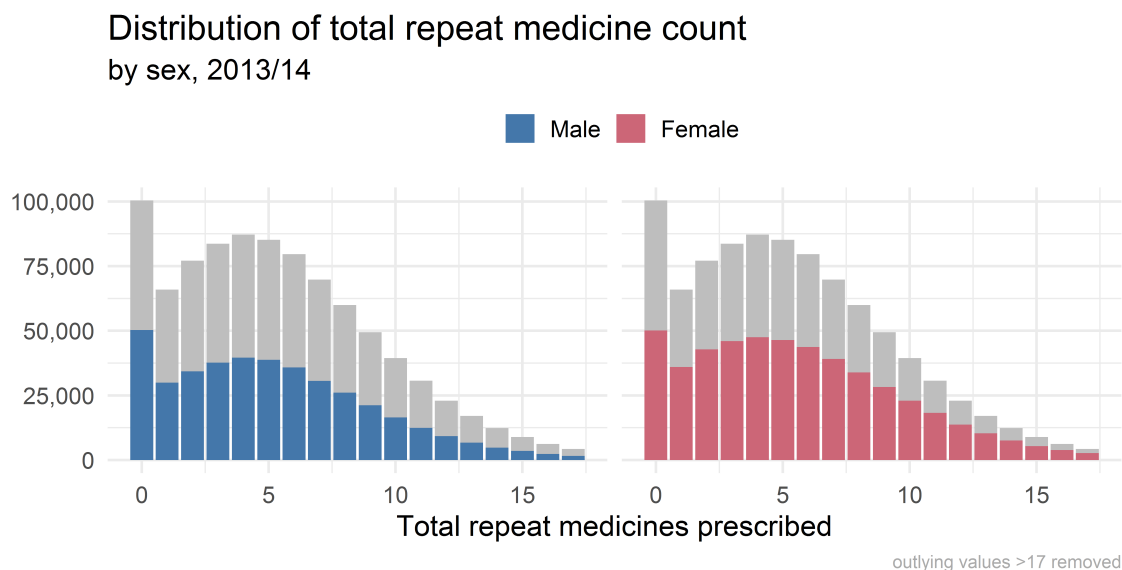
Distribution of total repeat medicine count
by sex, 2013/14

Figure 1.4: Number of individuals receiving specific counts of repeat medicines. N = 908,295

1.2.2 Percentage by age group

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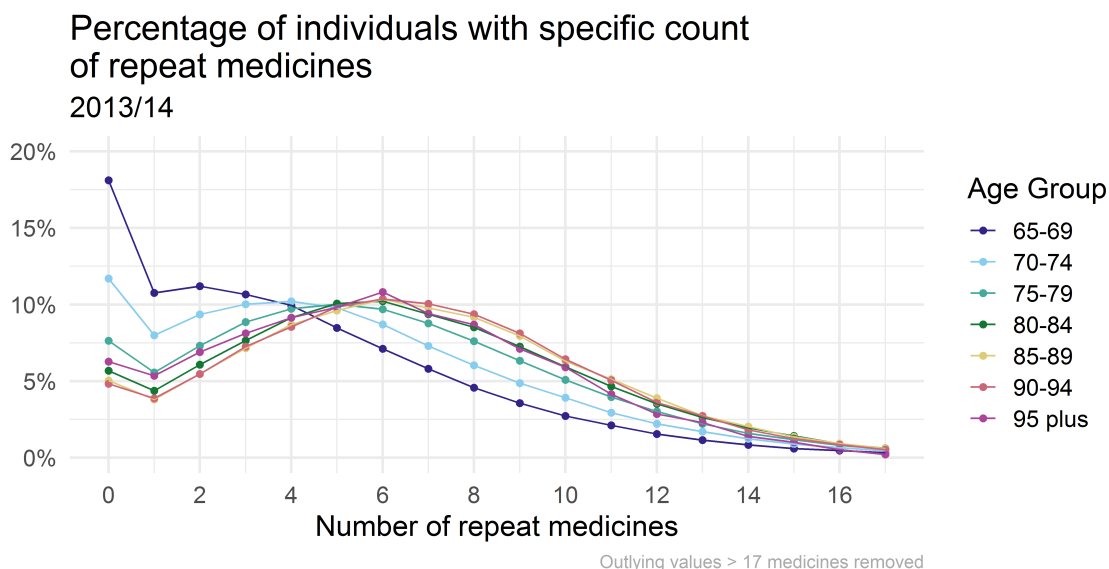2013/14

Figure 1.5: Repeat medicine proportion by age group

In figure 1.5, the distribution of the percentage of individuals receiving specific counts of repeat medicines is shown with each age group overlayed on the others. The sum of the points in each line equals 100% (or marginally less as outlying values are removed). Approximately 18% of individuals in the 65-69 age group (which makes up over 30% of

the cohort - figure 1.1) did not receive any repeat medicines in financial year 2013/14 compared to only 5% of 90-94 year olds. Approximately half of 65-69 year olds were prescribed between zero and three repeat medicines with decreasing percentages from four to seventeen repeat medicines seen in the remaining 50%. As age increases, the distribution pattern shifts further to the right with the exception of the oldest age group, over 95s, where the percentage of those receiving between zero and four medicines is higher than in age groups 80-84, 85-89, and 90-94.
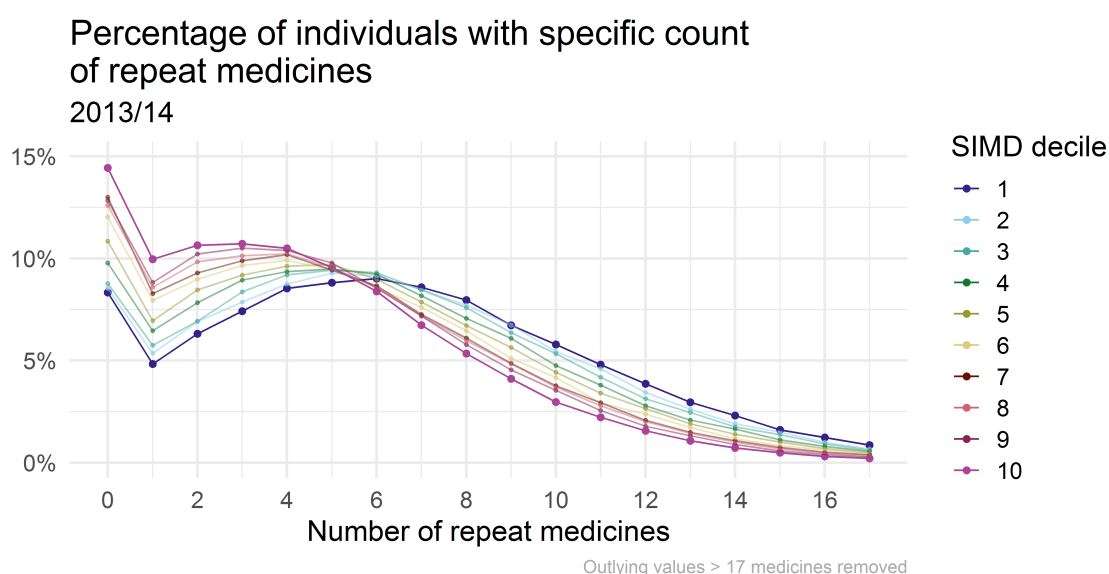
1.2.3   Percentage by deprivation

Figure 1.6: Repeat medicine proportion by SIMD decile

The pattern of distribution of the percentage of people receiving specific counts of repeat medicines broken down by SIMD decile is shown in figure 1.6. The trend is clearly linear with an inflection point at six repeat medicines. For counts of 0-5 repeat prescribed medicines there are lower percentages of individuals from SIMD 1 (most deprived) whereas for counts of seven or above there are higher percentages. The percentage of those with zero repeat medicines is higher (14%) in the most affluent decile 10 than in the most deprived decile 1 (8%).

1.2.4   Multimorbidity (repeat medicine) groups

Figure 1.7 shows the distribution of the percentage of individuals receiving numbers of repeat medicines within defined groups. Each group contains either slightly more or less than 25% of the total cohort with 0-2 and 3-5 groups being slightly larger. The same pattern is seen across all years of data.

Table 1.2 shows the breakdown of the cohort in financial year 2013/14 by multimorbidity groups. There was a higher percentages (23.2% & 23.5%) of females in the groups

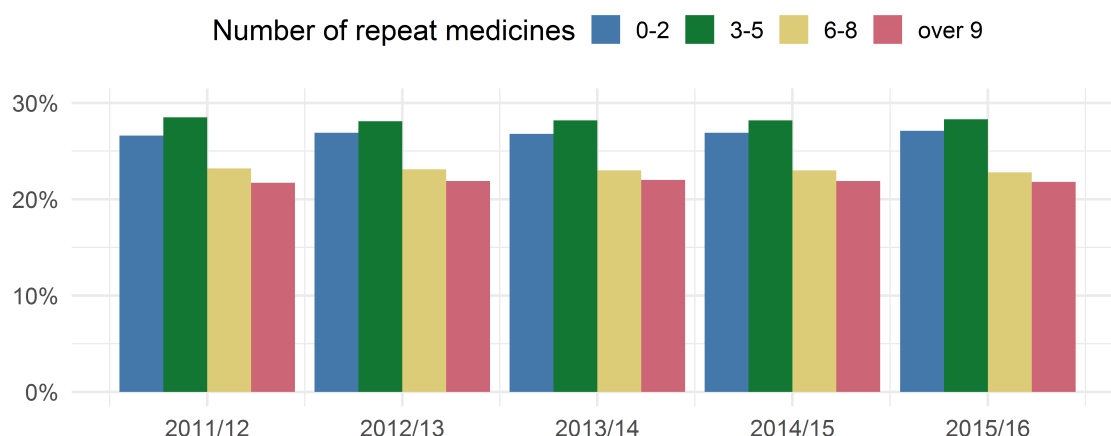**Percentage of population receiving repeat medicines**
by medicine group

Figure 1.7: Distribution of repeat medicines by group (labelling needs changed)

with highest repeat medicine counts (6-8 & 9 and over) compared to males (22.9% and 20.1%). The average age of individuals in each group rose from 71.9 years in the 0-2 group to 76.9 years in the 9 and over group. The percentage of each age group receiving 0-2 repeat medicines increases as the age group increases. Almost 40% of those aged 65-69 (over 30% of the cohort) were prescribed between 0-2 repeat medicines whereas only 18.4% of those over the age of 95 were in this group. Conversely, Only 14% of those aged 65-69 received 9 or more repeat medicines whereas 25.9% of those over 95 did so.

The opposite pattern is seen in deprivation status. Just 19% of individuals living in decile 1 received 0-2 repeat medicines whereas over one-third 34.9% of those is decile 10 were in the lowest multimorbidity group. The percentage of individuals in the 0-2 group increased through the deprivation deciles from most deprived to most affluent. Almost a third (31.5%) of those in the most deprived SIMD decile were in the highest multimorbidity group (9 and over repeat medicines) whereas only 14% of the most affluent decile were found in this group - also with a negative linear trend in percentages going through SIMD deciles.

There is a noticeable relationship between service use and multimorbidity groups. Only 7.6% of those receiving social care and 14.9% of those having at least one unscheduled care episode received between 0-2 repeat medicines. This compared to 44.9% of those receiving social care and 36.9% of those using unscheduled care services who were in the 9 and over repeat medicine group.

Figure 1.8 illustrates use of social care by multimorbidity group described in table 1.2. Whilst the overall number of people receiving social care is small in comparison to the whole cohort, the linear trend in numbers receiving care as multimorbidity status increases is obvious.

Variable	Value	Repeat meds: 0-2	Repeat meds: 3-5	Repeat meds: 6-8	Repeat meds: 9 and over	Total
Sex	Male	114587 (28.3)	116021 (28.7)	92542 (22.9)	81330 (20.1)	404480
	Female	128812 (25.6)	139958 (27.8)	116708 (23.2)	118337 (23.5)	503815
Age	Mean (SD)	71.9 (6.5)	74.4 (7.3)	76.2 (7.6)	76.9 (7.5)	
Age group	65-69	109385 (39.8)	79387 (28.9)	47733 (17.4)	38441 (14.0)	274946
	70-74	60865 (28.8)	62884 (29.7)	46143 (21.8)	41574 (19.7)	211466
	75-79	35600 (20.3)	49618 (28.3)	45250 (25.8)	44932 (25.6)	175400
	80-84	20506 (16.0)	34127 (26.6)	35731 (27.8)	38136 (29.7)	128500
	85-89	10772 (14.2)	19150 (25.2)	22039 (29.0)	24029 (31.6)	75990
	90-94	4745 (14.1)	8582 (25.5)	9972 (29.6)	10411 (30.9)	33710
	95 plus	1526 (18.4)	2231 (26.9)	2382 (28.8)	2144 (25.9)	8283
SIMD decile	1 - most deprived	15032 (19.1)	19109 (24.3)	19726 (25.1)	24730 (31.5)	78597
	2	17560 (20.5)	21864 (25.5)	21378 (24.9)	24919 (29.1)	85721
	3	20158 (21.2)	25362 (26.7)	23823 (25.0)	25786 (27.1)	95129
	4	22929 (23.8)	26458 (27.5)	23302 (24.2)	23519 (24.4)	96208
	5	25318 (26.0)	27504 (28.3)	22736 (23.4)	21673 (22.3)	97231
	6	28038 (28.8)	28081 (28.8)	21909 (22.5)	19462 (20.0)	97490
	7	28107 (30.4)	27125 (29.3)	20247 (21.9)	17025 (18.4)	92504
	8	27318 (30.9)	26338 (29.8)	19155 (21.6)	15718 (17.8)	88529
	9	28098 (31.7)	27041 (30.5)	18956 (21.4)	14465 (16.3)	88560
	10 - most affluent	30841 (34.9)	27097 (30.7)	18018 (20.4)	12370 (14.0)	88326
Any form of social care	No Social Care	235947 (29.1)	236930 (29.3)	181564 (22.4)	155493 (19.2)	809934
	Social Care	7452 (7.6)	19049 (19.4)	27686 (28.1)	44174 (44.9)	98361
Any USC episode	No USC	203026 (31.9)	195075 (30.6)	139718 (21.9)	99604 (15.6)	637423
	USC	40373 (14.9)	60904 (22.5)	69532 (25.7)	100063 (36.9)	270872

All values n(%) unless otherwise stated
Row-wise percentages within grouped variables

Table 1.2: Cohort 2013/14 by Multimorbidity (repeat medicine) groups **This table needs mortality added!!**

Figure 1.9 illustrates the use of unscheduled care use by multimorbidity group, also described in table 1.2. The trend in increased service use as multimorbidity status increases is also seen here. A larger proportion of the cohort uses unscheduled care services compared to social care.

Number of individuals receiving specific counts of repeat medicinces

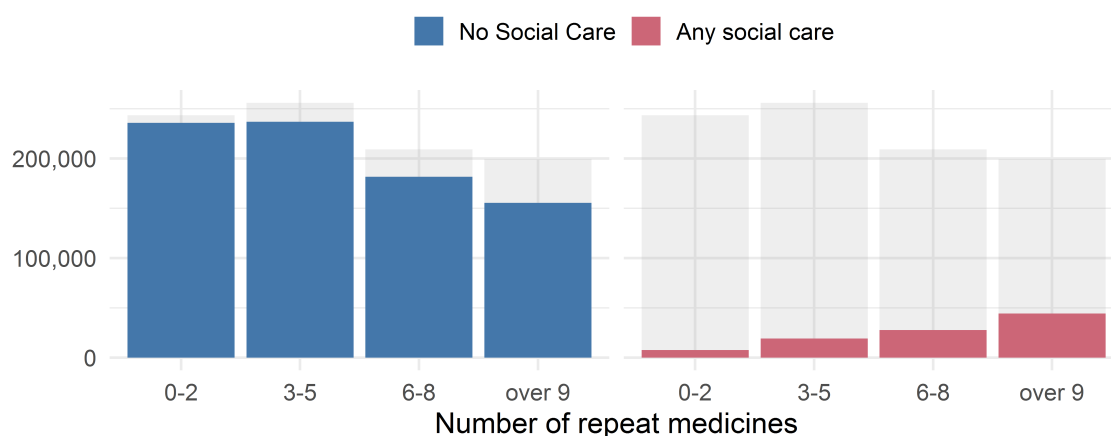grouped by use of social care, 2013/14

Figure 1.8: Count of repeat medicine groups, by receipt of social care. 2013/14

Number of individuals receiving specific counts of repeat medicinces

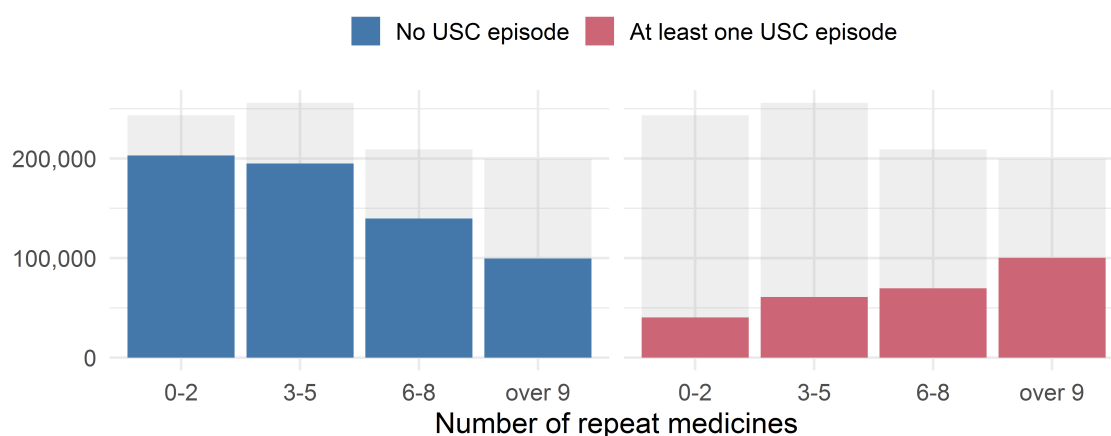grouped by use of unscheduled care services, 2013/14

Figure 1.9: Count of repeat medicine groups, by use of USC. 2013/14

1.3   Deprivation

1.3.1   Participants

Table 1.3 shows the characteristics of the cohort broken down by SIMD deprivation quintiles in financial year 2013/14. Quintile 1 indicated individuals living in the most deprived 20% of Scottish datazones and quintile 5 the most affluent. Of the 39,348 deaths in 2013/14, a higher percentage (22.8%) are found in quintiles 1 & 2. Only 15.3% of deaths were recorded for individuals living in the most affluent 20% of datazones.

Overall there were smaller absolute numbers of individuals living in quintile 1 datazones than in other quintiles. This pattern was present for both Males (17.5%) and Females (18.5%) and across all age groups. The average age of participants (between 74 and 75

Variable	Value	Quintile 1 (most deprived)	Quintile 2	Quintile 3	Quintile 4	Quintile 5 (most affluent)	Total
Mortality	Died	8959 (22.8)	8962 (22.8)	8349 (21.2)	7046 (17.9)	6032 (15.3)	39348
Sex	Male	70907 (17.5)	83011 (20.5)	87587 (21.7)	82626 (20.4)	80349 (19.9)	404480
	Female	93411 (18.5)	108326 (21.5)	107134 (21.3)	98407 (19.5)	96537 (19.2)	503815
Age	Mean (SD)	74.7 (7.3)	74.9 (7.4)	74.6 (7.4)	74.5 (7.5)	74.6 (7.5)	
Age group	65-69	47882 (17.4)	55306 (20.1)	59210 (21.5)	57137 (20.8)	55411 (20.2)	274946
	70-74	38889 (18.4)	44234 (20.9)	45917 (21.7)	42256 (20.0)	40170 (19.0)	211466
	75-79	32993 (18.8)	38296 (21.8)	37087 (21.1)	33792 (19.3)	33232 (18.9)	175400
	80-84	24116 (18.8)	28154 (21.9)	27036 (21.0)	24593 (19.1)	24601 (19.1)	128500
	85-89	13441 (17.7)	16486 (21.7)	16187 (21.3)	14771 (19.4)	15105 (19.9)	75990
	90-94	5662 (16.8)	7211 (21.4)	7453 (22.1)	6728 (20.0)	6656 (19.7)	33710
	95 plus	1335 (16.1)	1650 (19.9)	1831 (22.1)	1756 (21.2)	1711 (20.7)	8283
Total repeat medicines	Mean (SD)	6.5 (4.4)	6 (4.2)	5.4 (4.1)	5 (3.9)	4.7 (3.7)	
Medicines group	0-2	32592 (13.4)	43087 (17.7)	53356 (21.9)	55425 (22.8)	58939 (24.2)	243399
	3-5	40973 (16.0)	51820 (20.2)	55585 (21.7)	53463 (20.9)	54138 (21.1)	255979
	6-8	41104 (19.6)	47125 (22.5)	44645 (21.3)	39402 (18.8)	36974 (17.7)	209250
	over 9	49649 (24.9)	49305 (24.7)	41135 (20.6)	32743 (16.4)	26835 (13.4)	199667
Receiving social care		23633 (24.0)	25467 (25.9)	20380 (20.7)	15749 (16.0)	13132 (13.4)	98361
Receiving home care		10206 (23.9)	11145 (26.1)	8843 (20.7)	6920 (16.2)	5632 (13.2)	42746
>=1 episode USC		58410 (21.6)	61517 (22.7)	55668 (20.6)	49048 (18.1)	46229 (17.1)	270872
>=1 hospital admission		32936 (23.2)	33390 (23.6)	29349 (20.7)	24360 (17.2)	21710 (15.3)	141745
>=1 A & E episode		42587 (23.1)	43166 (23.4)	36376 (19.8)	31184 (16.9)	30787 (16.7)	184100

All values n(%) unless otherwise stated
Row-wise percentages within grouped variables

Table 1.3: Characteristics of study population by deprivation quintile 2013/14. N = 908,295

years old) was similar across all deprivation quintiles.

There was a smaller average number of repeat medicines prescribed to those in quintile 5 (4.7, SD 3.7) compared to those in quintile 1 (6.5, SD 4.4). A positive linear trend is observable in the numbers and percentages receiving 0-2 repeat medicines from quintile 1 (32,592, 13.4%) to quintile 5 (58,939, 24.2%). The opposite (i.e. a negative linear trend) is observed for numbers and percentages of those receiving over 9 repeat medicines from quintile 1 (49,649, 24.9%) to quintile 5 (26,835, 13.4%).

The largest percentages of individuals receiving social care and unscheduled care services were found in SIMD quintile 2 with decreasing proportions to quintile 5. Levels of social care and unscheduled care use were higher in quintile 1 compared to quintile 3 although still less than seen in quintile 2.

1.3.2 Deprivation by age and sex

Age sex simd plot as a line-plot here. . . maybe

1.3.3 Deprivation by local authority

The percentage of individuals from the cohort living in each of the SIMD deciles by local authority area of residence in the financial year 2013/14 is shown in figure 1.10. The figure reveals large variation in percentages in each decile according to each local authority. For example approximately one-third of individuals in the City of Edinburgh live in a decile 10 datazone (the most affluent) whilst a similar number live in a decile 1 datazone in the Glasgow City area. Fife and Renfrewshire councils (and to a lesser extent

South Ayrshire and South Lanarkshire) show the most even distribution of population across deprivation deciles albeit with slight discrepancies. Island local authority areas do not contain datazones from all 10 deciles and tend to have populations concentrated in the middle of the spectrum (a pattern also present in the Highland council area with smaller percentages seen at the extremes).

Figure 1.10: Distribution of cohort by local authority and SIMD decile (Decile 1 - most deprived)

Chapter 2

References