

# Variations in domiciliary free personal care across Scottish Local Authorities

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## **ABSTRACT**

Equity, or equal access for equal need, is frequently an objective of social care systems. However, responsibility for social care provision often lies with local government. This can mean that, despite central government commitment to universal coverage, geographic variation in the provision of services may occur. We investigate variation in free personal care in Scotland, a service provided to those aged 65 and over who need help with personal care tasks such as washing, dressing etc. To do this, we use a mixture of publicly available and administrative data sources over the period 2013-2016. We employ both descriptive and econometric methods to investigate the extent of geographic inequity in free personal care provision. Our results suggest that the variation in free personal care provision is not fully explained by variation in measured need, implying that inequity exists between local authorities, suggesting that needy individuals may be more or less likely to receive free personal care, depending on where they live. Further, these variations are quite dramatic.

## **KEYWORDS**

Social Care; Long-Term Care; Unmet Need; Equity; Social Care Survey; Scotland.

## **EDITORIAL NOTE**

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# VARIATIONS IN DOMICILIARY FREE PERSONAL CARE ACROSS SCOTTISH LOCAL AUTHORITIES

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## 1. INTRODUCTION

The notion of universal coverage is generally understood to imply equal provision for equal need, irrespective of other factors such as geography, income, ethnicity etc. Equity is recognised by the World Health Organisation (WHO) as a desirable goal for all health systems (WHO, 2000). In 2017, the Commonwealth Fund ranked the NHS in the UK as first in terms of equity of provision, in a comparison with ten developed health systems (Schneider, 2017). However, despite best efforts of most European countries, barriers to equal access to care still persists. (Doorslaer et al., 2004; Terraneo, 2015).

Understanding the existence and extent of inequity within health and care systems has therefore attracted much attention in the literature. In terms of health care, inequity has been identified with respect to income (d’Uva and Jones, 2009; Doorslaer et al., 2004; d’Uva and Jones, 2009) and various indicators of socioeconomic status such as education, ethnicity and employment status (Terraneo, 2015; Regidor et al., 2008; d’Uva and Jones, 2009).

The existing literature on inequity with respect to healthcare provision can be grouped in two ways. The first focuses on horizontal equity, as described above, which is defined as the equal treatment of individuals with equal need. These studies generally aim to measure the extent of horizontal inequity, typically by using some version of a Concentration Index whereby the actual distribution of health care utilisation (ranked by some socioeconomic indicator) is compared to a needs adjusted distribution of utilisation (d’Uva et al., 2009; Wagstaff and Van Doorslaer, 2000; Van Doorslaer et al., 2000; Doorslaer et al., 2004; García-Gómez et al., 2015; Van de Poel et al., 2012).

The second approach focusses on explaining variation in health care utilisation and attempts to identify the factors that drive this. These studies use regression analysis to explicitly model utilisation as a function of both needs and non-needs factors (Trydegård and Thorslund, 2001; Propper et al., 2005; Regidor et al., 2008; Cookson et al., 2012; Fernandez and Forder, 2015; Otto et al., 2018; Yardim and Uner, 2018; Terraneo, 2015; Morris et al., 2005; d’Uva and Jones, 2009). In such models, the

significance of non-needs variables are interpreted as evidence of inequity in provision (d'Uva and Jones, 2009). Unlike the first approach which is limited in its focus on horizontal equity, the second approach also incorporates the principle of vertical equity (Abasolo et al., 2001). That is, individuals with greater need should receive more treatment.

In this paper, we shift the focus from equity in the provision of healthcare to equity in the provision of long term care (LTC). The starting point for this focus stems from the existence of stark disparities in the provision of free personal care (FPC) between local authorities in Scotland. To be specific, based on our definition of care provision, the rate of provision in some local authorities is up to double that of others. We aim to examine whether these disparities in provision are matched by local levels of need. We use data aggregated to different geographical levels. In particular, the local authority and lower "datazone" levels. This permits us firstly to check whether equity is achieved at a local authority level, and secondly, to identify those factors associated with inequity in provision. We also estimate spatially autoregressive models to investigate whether levels of inequity in one are spill over to neighbouring areas.

We contribute to the equity literature in four unique ways. Firstly, we focus on equity with respect to social care or LTC, which has received little attention in the literature (García- Gómez et al., 2015; Fernandez and Forder, 2015). Secondly, we investigate geographical equity, which has also been largely neglected in the literature. Thirdly, the Scottish context for LTC services provides a unique backdrop to study equity, since unlike many social care systems, LTC services in Scotland have a universal coverage element. In addition to this, Scotland is soon to be devolved powers over disability benefits from Westminster, increasing the importance of understanding the demand for such benefits, which are likely correlated with LTC services. Finally, we exploit a unique administrative dataset that follows LTC clients over time.

The remainder of the paper is structured as follows: Section 2 outlines the Scottish context to LTC provision. Section 3 describes the data and key variables. Section 4 outlines the descriptive and multivariate analysis. Section 5 presents the results. Finally, Section 6 discusses the results and concludes.

## **2. THE SCOTTISH CONTEXT**

### **2.1. THE CHANGING LANDSCAPE FOR LTC SERVICE PROVISION**

The Scottish Parliament sets the legal framework for social care provision in Scotland. Social care is provided by local authorities and encompasses a variety of services including social support, housing, support telecare services, meals services, home care, personal care and self-directed support. In turn, these local authorities are largely funded by the Scottish Government and therefore have both legal and financial constraints that inhibit their ability to design their own social care policies. To deal with the changing demands on Scotland's health and care services due to ageing, significant changes to the organisation of LTC services have occurred in recent years.

Firstly, the Scottish government encouraged local authorities to "shift the balance of care" towards providing care in the community. This implied ensuring that older Scots spend less time in care homes or hospital. Instead, the emphasis was aiding frail older people to stay in their own homes or a homely setting, for as long as possible (Scottish Government, 2016). As a result, there have been changes to policy surrounding LTC services delivered in a person's own home. These services, also known as home care or domiciliary care services, are intended to help individuals maintain their independence and enable them to live in their own homes for as long as possible. Home care services cover everything from help with personal care tasks such as washing and dressing, to help with everyday tasks such as laundry, general cleaning and paying bills.

Secondly, the Scottish Government has attempted to increase personalisation in social care by introducing the Social Care (Self-Directed Support (SDS)) (Scotland) Act 2013 (Scottish Parliament, 2013). The Act aimed to give clients more choice and control over their care packages. There are four SDS options available to eligible social care clients and local authorities have a legal duty to offer clients these options. The first option is a direct payment. The direct payment option allows individuals to purchase and commission their own social care services. The second option is to direct the available resource. Under this option, the client chooses the services he/she would like to receive with the sum of money they have been assessed as requiring, and the

local authority arranges those services for the client. The third option is for local authority arranged services and is the traditional way of arranging services. Lastly, the fourth option allows clients to choose any combination of the first three options.

Despite the fact that local authorities have a legal duty to offer SDS to eligible social care clients, there is considerable variation in take-up rates between local authorities and some differences in how they have interpreted the legislation (Audit Scotland, 2017).

Lastly, in an attempt to make more efficient use of limited resources, the Public Bodies (Joint Working) (Scotland) Act 2014 set out the legislative framework for the integration of health and social care services in Scotland (Scottish Parliament, 2016). In 2016, 31 Integration Authorities (one for each of the 32 local authorities in Scotland with the exception of Highland) were established with a view to better coordinate communication and working between NHS boards and local authorities. The Integration Authorities are responsible for the governance, planning and resourcing of adult social care services, adult primary care and community health services and some hospital services (Scottish Parliament, 2016). Such decentralisation of services means that local authorities have increased scope to reallocate funding between health and social care, which may lead to some disparities between local authorities, though they are still constrained by the legal framework set by the Scottish Government.

In summary, Scotland's LTC system has been subject to significant legislative change in recent years. Differences in the interpretation of these changes may have led to differences in the implementation of care provision across local authorities as might legacy effects of their own previous care policies. At the same time, the decentralisation of health and care funding means that local authorities can make their own decisions about care provision and even in a system with legislated universal coverage, significant variation between local authorities is possible.

## **2.2. THE INTRODUCTION OF FREE PERSONAL AND NURSING CARE**

In 1999, the Royal Commission on Long-Term Care published its report on the funding of LTC for older people in the UK. One of its main recommendations

(recommendation 6.4) was that "personal care should be available for those individuals who need it, after an assessment" (Royal Commission on Long Term Care, 1999, Chapter 6). The basis for this recommendation stemmed primarily from a desire for equity in relation to the costs faced by, for example, a cancer patient and a dementia patient. For this reason, the report proposed that personal care should be available to those in need free of charge (Royal Commission on Long Term Care, 1999).

Soon after the Royal Commission's report was published, the Scottish Executive pledged its commitment to introduce Free Personal and Nursing Care (FPNC) and established the Care Development Group (CDG) to report on its introduction in Scotland. The recommendations from the CDG's final report (CDG, 2001) were fully endorsed by the Scottish Executive and incorporated into the Community Care and Health (Scotland) Act 2002, which provides the legislative backdrop for the implementation of FPNC from 1 July 2002 (Scottish Executive, 2002). Personal care, as defined in the Regulation of Care (Scotland) Act 2001, is:

*"care which relates to the day to day physical tasks and needs of the person cared for (as for example, but without prejudice to that generality, to eating and washing) and to mental processes related to those tasks and needs (as for example, but without prejudice to that generality, to remembering to eat and wash)"* (Scottish Executive, 2001a, p.6).

The FPNC policy can be split into two categories: care in care homes (which covers personal and nursing care) and care at home (which covers personal care only). This paper is concerned with FPC only. This part of the policy states that personal care should be free to anyone assessed as needing it who is aged 65 or over, with no means test for the service.

As with any universal coverage of health or social care, the FPC policy is intended to promote geographic equity in personal care (CDG, 2001). Eligibility for FPC is subject to a needs assessment, carried out by the local authority. The Scottish Executive's guidance for local authorities on FPNC set out information on the needs assessment of individuals. Specifically, older persons' needs are assessed according

to the Single Shared Assessment of Community Care Needs (Scottish Executive, 2001b). This process involves a set of minimum standard checklists to be used by local authorities when assessing the care needs of older people within their area. The assessment of care needs will in turn determine a Resource Use Measure (RUM) to indicate what resources are required to meet the individual's needs. RUM was developed especially to promote equity in care provision between local authorities as it was noted at the time that often people with the same needs would get differing levels of service depending on where they live (Scottish Executive, 2001b).

In 2008, Audit Scotland and Lord Sutherland reviewed FPNC in Scotland (Sutherland, 2008; Audit Scotland, 2008). Both reports highlighted equity concerns surrounding the variability in provision of care between local authorities. The Audit Scotland (2008) report also identified that ambiguities in the FPNC guidance and legislation led to varying local authority interpretations, and thus differences across Scotland, in how FPNC has been implemented. Furthermore, the reports noted that local authorities were using eligibility criteria as a means to manage demand for FPC. This resulted in older people receiving different levels of service depending on where they lived. As a result of recommendations from the reviews, the Scottish Government and the Convention of Scottish Local Authorities (COSLA) developed a set of national standard eligibility criteria and waiting times for FPNC (Scottish Government, 2009). The aim of such a framework was to achieve greater consistency across local authorities and transparency with respect to access to services for older people.

However, whilst the framework provides guidance on how to prioritise personal care clients according to their need, it remains the responsibility of individual local authorities to assess the needs of each person, via the single shared assessment, and ultimately decide whether or not their needs warrant care provision at home. Therefore, it is still possible that local variation in FPC provision persists. Since the National Eligibility Criteria were established, there has been no formal review of geographic variation in FPC provision across Scotland.

In the next section, we describe the data that we use to investigate variations in FPC provision across local authorities.

### **3. KEY VARIABLES & DATA**

The data used for the analysis come from a combination of publicly available sources and administrative data held by the Scottish Government, namely the Social Care Survey (SCS)<sup>1</sup>. A description of each variable and its corresponding data source can be found in Table 1.

#### **3.1 KEY VARIABLES**

##### **3.1.1 FREE PERSONAL CARE RATE (FPCR)**

The FPCR within a local authority is the proportion of those aged 65+ receiving FPC<sup>2</sup>. In a traditional market setting, the FPCR is determined by the interaction of demand and supply influences. However, in the market for FPC in Scotland, since the price of FPC is zero, we observe only those clients who actually receive FPC - the realised demand. Nevertheless, in the interest of structuring the arguments, it is helpful to consider demand and supply influences separately, noting that these influences may themselves be affected by FPC provision.

##### **3.1.2 DEMAND SIDE INFLUENCES**

###### *3.1.2.1 NEED*

One would expect that need should be the most important determinant of the FPCR across local authorities, since the legislation requires that care should be provided on the basis of individual need.

We have chosen to use disability benefits data to measure local authority need for personal care. The two main disability benefits available to older people in Scotland are Attendance Allowance (AA) and Personal Independent Payments (PIP). An individual can only receive one of these benefits and both are administered at a UK level by the Department for Work and Pensions (DWP). Receipt of either benefits has no implications for receipt of FPC at home and like FPC, neither benefit is means tested. We argue that since the assessment for disability benefits is uniformly administered across Scotland by DWP, receipt of the benefits should not be affected by geography and it will therefore accurately represent personal care needs across the

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<sup>1</sup> Ethical approval to access this data was granted by the Scottish Government

<sup>2</sup> This includes clients who have been assessed as having personal care needs and have opted to receive Self Directed Support.

whole of Scotland.

AA is a disability benefit that is exclusively available to older people (aged 65+) who have a disability severe enough that they require someone to help look after them. This help is specifically help with personal care such as washing, dressing, eating, using the toilet etc. Thus, the AA provides a good indicator of the level of personal care need of the population aged 65+. AA is paid at two different weekly rates which depend on the level of disability a person has, and therefore the level of help they require. The lower rate is paid if the person requires "frequent help or constant supervision during the day, or supervision at night" (GOV.UK, 2018a). The higher rate is paid for those who require "help or supervision throughout both day and night" or for the terminally ill (GOV.UK, 2018a).

PIP, formerly Disability Living Allowance (DLA), is a disability benefit that is available to those aged 16-64 to help with extra costs that are caused by a long-term ill health or disability. To be eligible for PIP this health condition or disability must cause the individual difficulties with daily living or getting around (or both). Furthermore, an individual must have been experiencing these difficulties for 3 months and expect them to continue to affect them for at least 9 months (GOV.UK, 2018b). An individual who received PIP before the age of 65 will continue to receive it beyond 65 and will not be eligible for AA. PIP is comprised of two parts: a daily living part and a mobility part. An individual can receive one or both of the PIP components, depending on how severely their disability affects them. As with AA, each part has a lower and higher weekly rate.

In order to claim AA or PIP, an individual must complete a detailed form, which describes their level of disability or illness its effects. Both benefits cover detailed questions about personal care needs. The DWP use this information to determine eligibility and at what rate. In some circumstances DWP might contact the applicant's GP for confirmation of medical information or arrange for a health professional to visit the applicant to carry out a face-to-face consultation or medical examination.

We use data on these benefits to calculate the Disability Rate (DR) for each local

authority in Scotland, which is the proportion of the population aged 65+ receiving AA or DLA/PIP. Since the assessment for disability benefits should be uniformly administered across Scotland by DWP, such data should not be affected by geography.

Other individual characteristics, which have been shown to predict health and social care use, include age and gender (Keene and Li, 2005). We therefore also include the number of people aged 80+ and the number of females aged 65+ as a proportion of the population aged 65+, as possible indicators of demand for FPC by local authority. These data comes from the National Records of Scotland.

### *3.1.2.2 AWARENESS*

When thinking about influences on the demand for FPC, individuals' awareness of the policy might also play a role. The Scottish Executive explicitly puts the onus on individuals to apply for help with their care (Scottish Executive, 2003). Thus, if awareness of the FPC policy differs between local authority populations, this could lead to variations in the FPCR. The level of awareness could differ between local authorities due to the quality and accessibility of the information they provide (Dickinson et al., 2007). One factor that might be associated with awareness is education. It is likely that individuals with higher levels of education, are better able to be informed about care services and are therefore more able to access them (Terraneo, 2015). To calculate this, we take the Scottish Index of Multiple Deprivation (SIMD) education rank to calculate the local authority shares of the top 20% most education-deprived datazones.

### *3.1.2.3 INCOME*

Although receipt of FPC is not means tested, the income of the local authority population may still influence the provision of FPC services. For example, when local authorities are assessing the FPC needs of individuals they might implicitly discriminate based on their impression of the resources available to the person they are assessing. This might result in local authorities with a higher income population having a lower FPCR, since assessors assume that those individuals can afford to get care elsewhere. At the same time, a higher income means that an individual will have more choice about where to receive care, and thus might be more likely to substitute towards other providers of personal care, for example, private providers. This would result in

a lower FPCR in higher income local authorities. Further, those with higher incomes might be less willing to claim such benefits because of the stigma that is often associated with benefit dependency. On the other hand, income is likely to be correlated with education, so we might expect that higher income local authorities would have a higher FPCR due to the increased awareness of their population. To measure income we once again utilise data from the SIMD dataset, this time to calculate the proportion of the local authority population that are classed as being income deprived due to their living in a low-income datazone.

#### *3.1.2.4 TRANSACTION COSTS*

A further factor that might influence realised demand and subsequently the FPCR is the costs associated with accessing personal care. First, an individual might have to search for information on FPC before applying. This could involve time searching online, speaking to their GP, phoning the local authority etc. Second, the individual has to complete the application process i.e. fill in the relevant form, send it away, wait for an assessment and have the assessment carried out. The higher are such transaction costs, the lower will be the FPCR, because we would expect that some individuals are not able or willing to complete the application process. This effect may be moderated if the affected individual has access to support from paid or unpaid carers or from health or social care professionals. Rurality could therefore be a factor that affects access. We might imagine more rural areas to have a lower FPCR because it is more costly to access care services.

We therefore use the Scottish Government's Urban Rural Classification to determine the proportion of the local authority geography that is classed as being rural as a potential correlate of the FPCR rate. Specifically, we use the 8-fold classification to calculate the share of local authority datazones that are classified as being either remote and rural or very remote and rural.

#### *3.1.3 SUPPLY SIDE INFLUENCES*

The provision of FPC depends upon supply side influences that are mainly associated with the resources available to local authorities and their priorities for allocating those resources.

### 3.1.3.1 FUNDING AND SPENDING

Local authorities funding comes largely from the Scottish Government, though they also raise revenues through council tax, fees and charges. The Scottish Government allocates revenue funding to each of Scotland's 32 Local Authorities through a needs based methodology called Grant Aided Expenditure (GAE). The total GAE is split into 89 individual Local Authority sub- services and each sub-service has its own allocation methodology (The Scottish Government, 2017-18).

GAE allocations are largely proportional to the size of the relevant population in each local authority. Adjustments are made to take into account of differing levels of demand and costs of service provision within these populations. Primary and secondary indicators, i.e. those factors that significantly influence the expenditure for a particular service, are used to make these adjustments<sup>3</sup>. One of the social work sub-services is 'Personal and Nursing Care for Older People'. This is the GAE line which distributes resources for FPC at home and Free Nursing Care payments to self-funders in Care Homes. The primary indicator used for allocation comes from the Scottish Government Health Directorate Distribution<sup>4</sup>. This distribution uses a composite index made up of five other indicators: Limiting Long Term Illness, Single Owner Occupiers, Council Tax Bands, Pensioners Living Alone, and Standard Mortality Rate. This composite index is then multiplied by the number of people in the age group and further by an historic caseload age band weight. The sum of these age groups gives the final GAE allocation for each local authority.

We use GAE data on local authority allocations for 'Personal and Nursing Care for Older People' to calculate each local authority's FPC income per person aged 65+. This measure indicates the relative size of each local authority's allocation for FPC. We also use local authority expenditure data and local financial statistics data to calculate expenditure on FPC per FPC client.

Whilst Local Authorities must meet their statutory duties, one of which is to

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<sup>3</sup> For a full description of how indicators are identified please see The Scottish Office (1992)

<sup>4</sup> The methodology was agreed in 2006 by the Scottish Government's Residential Care Funding Distribution Working Group. This group was set up by the Settlement and Distribution Group (SDG). The methodology papers were not published.

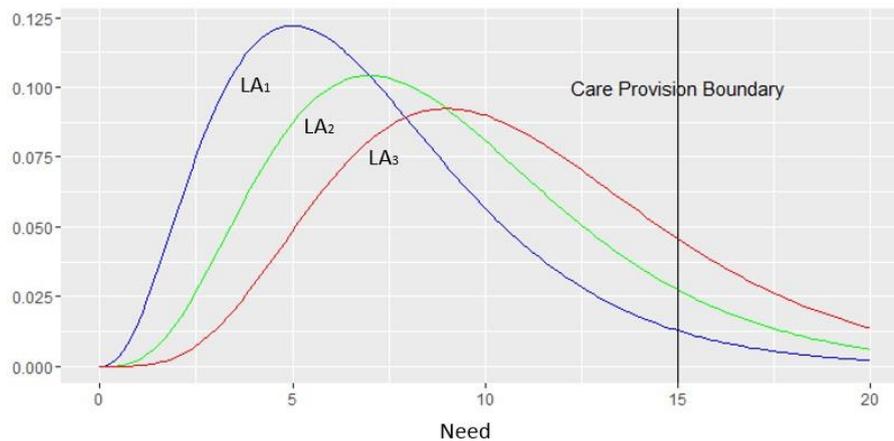
provide personal care for free to those aged 65+, GAE is simply an allocation methodology. The allocations are not budgets or spending targets and they are not intended to be used by local authorities to allocate resources. Therefore, the decision about spending on specific services like FPC is left entirely up to individual local authorities. As long as they meet their statutory duties, they have latitude to reallocate funding either into or out of FPC support for older people.

Moreover, expenditure per FPC client might provide some indication of the needs distribution of clients within the local authority, since we would expect higher spending per person to be associated with higher needs, and thus a lower FPCR. This is demonstrated in Fig. 1 below. Three local authorities are shown in the figure, each with a different distribution of personal care need within their respective populations. For example, the first local authority,  $LA_1$ , has needs which are slightly more skewed to the left compared to the two other local authorities. The care provision boundary, or the minimum provision requirement of local authorities, is shown by the vertical line on the right hand side of the figure. In practice, this represents the minimum requirement on local authorities to provide FPC to those assessed as having 'critical' or 'substantial' risk, according to the National Eligibility Framework (Scottish Government, 2009). Clearly,  $LA_3$  has a higher proportion of its population who fall above this cut off compared to  $LA_2$  and  $LA_1$ . Thus,  $LA_3$ , might expend all of its resources in order to meet its statutory duty, whilst  $LA_1$  could actually increase provision to individuals who fall below the cut off. It is therefore possible that a local authority incurs higher expenditure per FPC person while having a lower FPCR overall.

### 3.1.3.2 *POLITICAL PREFERENCES*

The political preferences within a local authority might influence the FPCR. In their paper, Fernandez and Forder (2015) hypothesise that areas with more Conservative political preferences, which typically favour smaller government, will provide less services compared to other parties. This is a result of their larger disutility from increased taxation and smaller marginal utility for service provision. Indeed, their results show that areas with Conservative party control spend less on LTC provision compared to Labour-controlled areas (Fernandez and Forder, 2015). To capture this

effect, we decided to use data on the share of Conservative first preference votes within Scottish local authority elections. One caveat is that older people are more likely to vote conservative and possibly then ensure support for provision of services for older people. We decided to let the data determine whether conservative first preference votes are associated with a higher provision of FPC.



**Figure 1:** Local Authority Distributions of Need

### 3.1.3.3 AVAILABILITY OF OTHER FORMS OF CARE

Another supply side factor that might influence the FPCR in a local authority is the availability of other sources of personal care. Given that someone is able to choose where to receive personal care services from, a greater supply of other sources of care increases the personal care choice set available to older people and this will decrease the likelihood of them choosing local authority FPC. The availability of other personal care sources might differ between local authorities.

The most common alternative source of personal care services comes from unpaid carers, usually family members, friends or neighbours. The relationship between FPC and unpaid care is ambiguous. If unpaid care and formal care are substitutes we might expect a higher rate of unpaid care to be associated with a lower FPCR, since unpaid carers provide personal care services instead of the local authority. On the other hand, it might be that unpaid carers complement formal care provision by advocating on behalf of the person that they are caring for and increase the demand for local authority FPC. We use information from the 2011 census to calculate the proportion of unpaid carers and the proportion of married couples within a local

authority.

In addition to unpaid care, the availability of care home places could also impact the FPCR again because individuals requiring personal care have more choice about where to receive their care. Local authorities, private companies and voluntary organisations may operate care homes. We use Scottish Government Care Home Census data on the number of registered care home places available for older people.

Variable	Geography	Description	Data Source	Year(s)
<b>Free Personal Care Rate</b>	Local Authority	Proportion of the over 65s in the local authority who are receiving FPC	Social Care Survey (Scottish Government)	2013-2016
	Datazone	Proportion of the over 65s in the datazone who are receiving FPC		2013-2014
<b>Disability Rate</b>	Local Authority	Proportion of the over 65s in the local authority who are receiving Attendance Allowance or Personal Independent Payments/ Disability Living Allowance	Department for Work and Pensions	2013-2016
	Datazone	Proportion of the over 65s in the datazone who are receiving Attendance Allowance or Personal Independent Payments/ Disability Living Allowance		2013-2014
<b>Age</b>	Local Authority	Proportion of the over 65s in the local authority who are over 85	National Records of Scotland	2013-2016
<b>Gender</b>	Datazone	Proportion of the over 65s in the datazone who are over 85		2013-2014
	Local Authority	Proportion of the over 65s in the local authority who are female	National Records of Scotland	2013-2016
<b>Life Expectancy</b>	Datazone	Proportion of the over 65s in the datazone who are female		2013-2014
	Local Authority	Life expectancy in years at age 65	National Records of Scotland	2009-2013
<b>Education</b>	Local Authority	Proportion of datazones in the Local Authority which are in the top 20% most education deprived datazones	Scottish Index of Multiple Deprivation	2012
<b>Income</b>	Local Authority	Average proportion of datazones within the Local Authority which are income deprived	Scottish Index of Multiple Deprivation	2012
	Datazone	Proportion of people within the datazone who are income deprived		2012
<b>Rurality</b>	Local Authority	Proportion of datazones in the Local Authority which are classified as very remote (UR8FOLD = 8) and rural or remote and rural (UR8FOLD = 7).	Scottish Government 8 fold Urban Rural Classification	2011
	Datazone	1 = Large Urban Areas, 2 = Other Urban Areas, 3 = Accessible small Towns, 4 = Remote Small Towns, 5 = Very Remote Small Towns, 6 = Accessible Rural, 7 = Remote Rural, 8 = Very Remote Rural		
<b>Income for FPC</b>	Local Authority	Grant Aided Expenditure for Personal and Nursing Care for Older People per FPC client	Scottish Government	2013-2016
<b>Expenditure on FPC</b>	Local Authority	Expenditure on FPC at home per FPC (excluding overheads)	Scottish Government	2013-2016
<b>Political Preferences</b>	Local Authority	2012 local elections conservative share of the first preference vote	Scottish Government	2012
<b>Other forms of care</b>	Local Authority	Number of registered care home places per person aged 65+; Proportion of the over 65s who are married	Scottish Government Care Home Census; Census	2013-2016; 2011
	Datazone	Proportion of the over 65s who are married	Census	2011

**Table 1:** Variables and Data Sources

The next section focuses on the descriptive and empirical analysis of these data.

## 4. ANALYSIS

Thus far, we have discussed a range of factors that might influence the demand and supply of FPC within a local authority. As a result, we are interested in a relationship of the form:

$$y_{it} = f(d_{it}(n_{it}, m_{it}, a_{it}), s_{it}(g_{it}, p_{it})) \quad (1)$$

Where:

<i>i</i>	geography (local authority; datazone)
<i>t</i>	time period in years
<i>y<sub>it</sub></i>	the free personal care rate
<i>d<sub>it</sub></i>	demand function
<i>s<sub>it</sub></i>	supply function
<i>n<sub>it</sub></i>	needs-related characteristics
<i>m<sub>it</sub></i>	availability of other forms of care
<i>a<sub>it</sub></i>	access to care indicators
<i>g<sub>it</sub></i>	expenditure on FPC
<i>p<sub>it</sub></i>	political preferences

In Eq. 1, we postulate that the FPCR is a function of the demand and supply side influences as discussed in Section 3. In the first stage of analysis, we conduct a descriptive exploration of FPC provision across the thirty-two local authorities in Scotland, to establish whether variation in service provision exists. We look at the relationships between the FPCR and the factors listed in the demand and supply side functions, to determine which factors might be contributing to this variation. This involves both graphical representations of the data and bivariate Pearson correlations, the results of which are presented in Section 5.

In a second stage, we conduct a more thorough econometric analysis to identify the factors that are associated with the FPCR. This analysis also allows us to determine if there is inequity with respect to factors not directly related to need, in particular, geography.

In the first instance, the empirical model to be estimated is as follows:

$$y_{it} = \alpha + X_{it} \beta + D_t + u_{it} \quad (2)$$

Where  $i$  once again indicates geography which is either local authority or datazone and  $t$  indicates the year. The vector  $X_{it}$  includes all factors affecting the FPCR as discussed above, and  $\beta$  captures their corresponding effects. These may vary either across  $i$  or across both  $i$  and  $t$ . We also include time dummies  $D_t$  to capture shifts between years.

At both the local authority and datazone levels, Eq. 2 is estimated in both its pooled form and via fixed effects. In the latter case, the error term  $u_{it}$  can be decomposed into two parts so that  $u_{it} = v_{it} + c_i$ . In this case,  $c_i$  is the time invariant fixed effect for each local authority  $i$ . The fixed effects model is estimated using Stata 15s `xtreg` command. In the datazone level specification of Eq. 2, due to data restrictions<sup>5</sup>, the model is estimated using 2013 and 2014 data only.

One of the concerns with the model as presented in Eq. 1 is that the error term might not be independently identically distributed due to the omission of spatial effects. In their paper investigating variation in LTC expenditures in England, Fernandez and Forder (2015) note that incorporating spatial effects is necessary because local policy decisions create externalities outside of the local authority area. This occurs firstly because local authorities with a high rate of care provision might attract clients from outside their local authority area and as a result local policy makers incorporate the care provision decisions of their neighbouring local authorities when setting their own agenda. Secondly, information spill overs regarding care provision and policies are likely between neighbouring authorities. This might result in similar levels of care provision and policies between neighbouring constituencies since local officials are more able to exchange information with neighbouring officials. Furthermore, they might be expected by their constituents to maintain levels of provision that are similar to surrounding areas (Fernandez and Forder, 2015).

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<sup>5</sup> Specifically, the benefits data used to calculate the disability rate (DR) use 2001 datazones, the SCS data used to calculate the FPCR are only available for 2013-2016 and use 2011 datazones in 2016, lastly the NRS data on population estimates using 2001 datazones are only available for 2013 and 2014

Thus, in a second step, we follow Fernandez and Forder (2015) and explicitly test for possible policy spill overs by estimating a spatial autocorrelation model. This involves adding both a spatial autoregressive FPC term ( $y_{-i}$ ) and a spatial autoregressive error term. The empirical model to be estimated becomes:

$$y_{it} = \rho W y_{-it} \alpha + X_{it} \beta + u_{it} \quad (3)$$

In Eq. 3,  $\rho$  is the autoregressive spatial coefficient of the FPCR and it will indicate the extent to which there are FPC policy spill overs between nearby areas, as defined by the spatial contiguity weighting matrix  $W$ . Now,  $u_{it} = e_{it} + \lambda W E_{it}$ , where  $\lambda$  is the coefficient on the spatial error lag  $E_{it}$  and  $e_{it}$  is an independently identically distributed error term.  $\lambda$  will indicate the extent to which there are spill overs in both shocks to the FPCR and unobserved spatial heterogeneity between nearby areas. The local authority level spatial models are estimated separately for the years 2013 to 2016 and for all years via fixed effects. The datazone level models are estimated for 2013 and 2014. Eq. 3 is estimated in Stata 15 using the `spregress` command.

The following section outlines the results from both parts of the analysis.

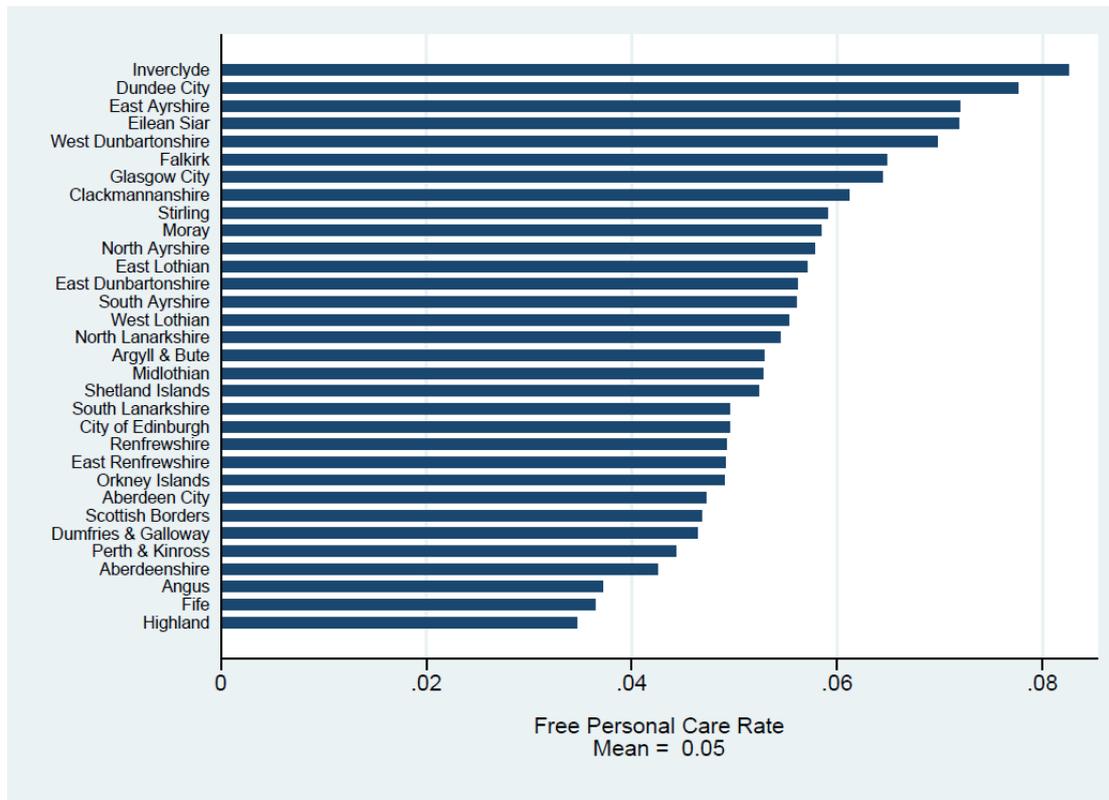
## 5. RESULTS

In this section we will present the results from the local authority level descriptive analysis. As a starting point, we look at how the FPCR differs between local authorities and check if those differences coincide with differences in the disability rates (DRs). We also present the results from a bivariate exploration into the relationships between the key demand and supply side variables identified, and the FPCR.

### 5.1 DESCRIPTIVE ANALYSIS

Fig. 2 below charts the average FPCR between 2013 and 2016 for each local authority in Scotland. On average, 5% of the over 65s receive FPC, but this ranges from just 3% to over 8% in some local authorities. We might expect that this variation would be due to differing levels of need in the local authority populations. Furthermore, if the DR, as calculated using disability benefits, reflects the personal care need of the local authority population, and since personal care provision is based

on need, we might expect the FPCR and DR would be similar.



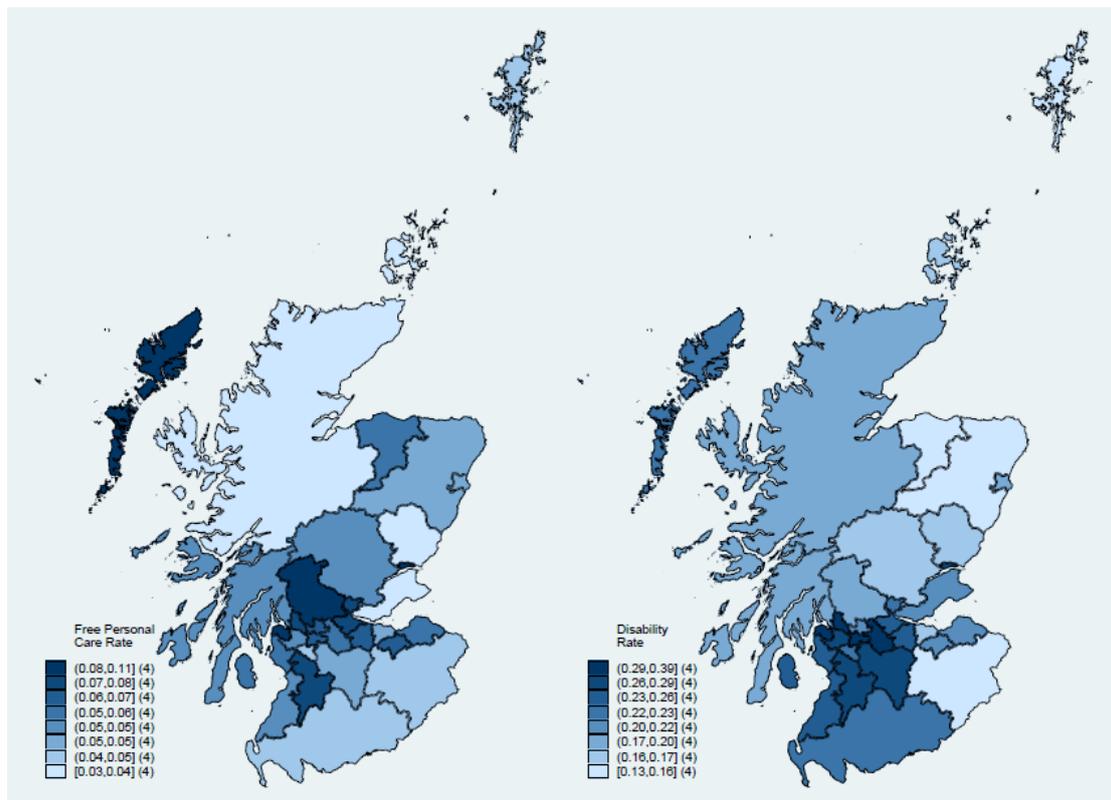
**Figure 2:** 2013-2016 Free Personal Care Rate by Local Authority

However, the maps in Fig. 3 below suggest that neither of these expectations looks plausible. The maps plot the 2016 FPCR and DR for each of the 32 Scottish local authorities. The distributions of each rate are divided into eight quantiles or octiles, meaning that four local authorities fall into each.

With respect to the latter expectation - that the DR and FPCR should be similar - the map legends show that the DR is consistently higher than the FPCR for all local authorities. If it is the case that the DR accurately reflects the personal care need of the population, this finding might suggest that there is some unmet need for personal care. Having said that, social care resources are scarce and thus it might seem acceptable that the FPCR is lower than the DR (Allin et al., 2010).

Despite this disparity, our first expectation would lead us to predict that the relative differences between local authority FPCRs could be explained by the

differences in their respective DRs. If this were the case, the patterns in the two maps would be identical. In other words, we would expect those local authorities in the top DR octile to also be in the top octile of the FPCR distribution and so on. It is immediately clear that more often than not, this does not hold. This variation might indicate that, for one reason or another, there is inequity in FPC provision between local authorities. That is, for a given level of disability, the provision of FPC is different depending on which local authority a person lives.



**Figure 3:** Comparison of the Free personal Care Rate (FPCR) and Disability Rate (DR) in 2016

Fig. 3 points to the need for further investigation into the local authority variation in the FPCR. That is, there must be other factors besides the DR, which are affecting the FPCR.

## 5.2 CORRELATIONS

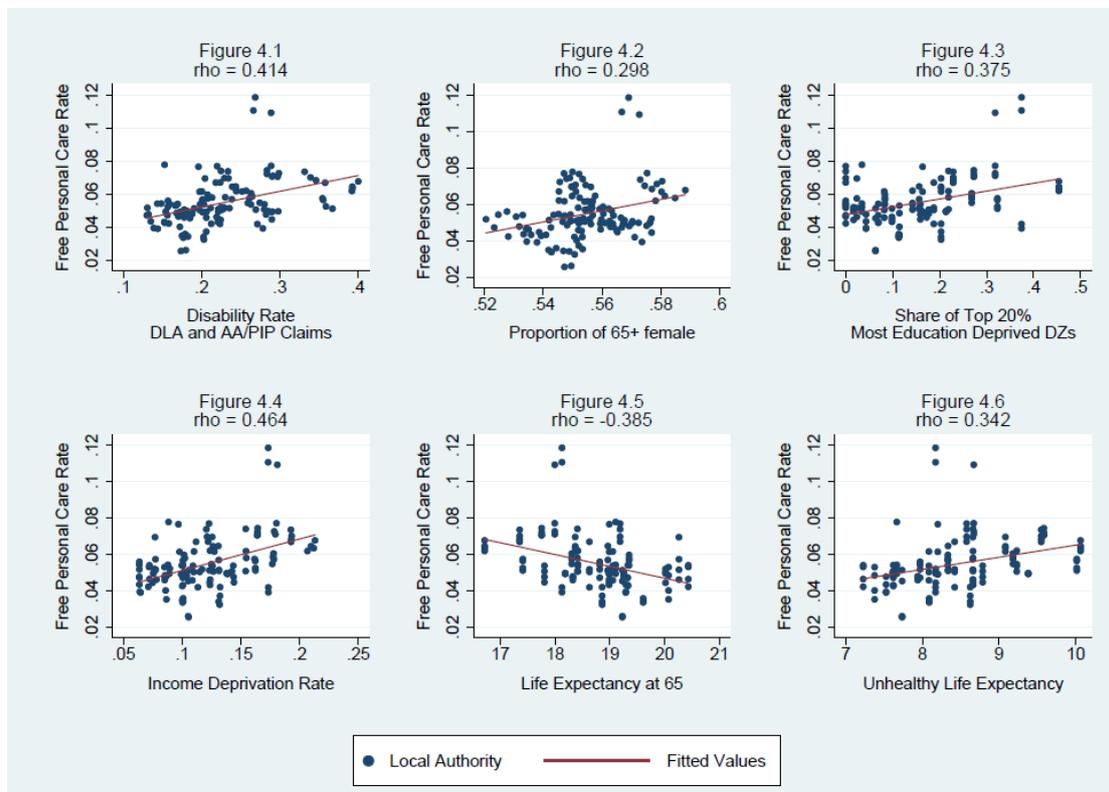
### 5.2.1 DEMAND SIDE

Fig. 4 shows scatter plots of those demand side variables that had a statistically significant, at the 5% level, bivariate correlation with the FPCR. The first scatter shows the relationship between the FPCR and the DR. As expected the Pearson correlation

coefficient is positive. However, surprisingly the correlation is relatively low, suggesting that there must be other factors driving the FPCR.

Figure 4.2 shows that the proportion of the population aged 65+ who are female is positively associated with the FPCR. This positive relationship might reflect the higher life expectancy of females and thus a greater need for care in older ages.

Next, Figures 4.3 and 4.4 plot the correlation between the FPCR with both the local authority share of the top 20% most education deprived datazones and the proportion of the datazone population who are income deprived, respectively. In contrast to our initial expectations, the positive association found in Figure 4.3 suggests that the FPCR is higher in more education deprived areas. This might partly be explained by the fact that education and income are very highly correlated, and as can be seen in Figure 4.3, local authorities with a high share of income deprivation, tend to have a high FPCR.



**Figure 4:** Demand Side Correlations

Lastly, the final two scatters, Figures 4.5 and 4.6, plots the FPCR against average life expectancy at age 65 and average unhealthy life expectancy at 65. Surprisingly, a higher life expectancy at 65 is associated with a lower FPCR. This might reflect the fact that those living into the oldest ages in fact use less care services. As expected, a positive correlation was found between the FPCR and unhealthy life expectancy at 65, indicating that a longer time spent in poorer health requires more formal care services.

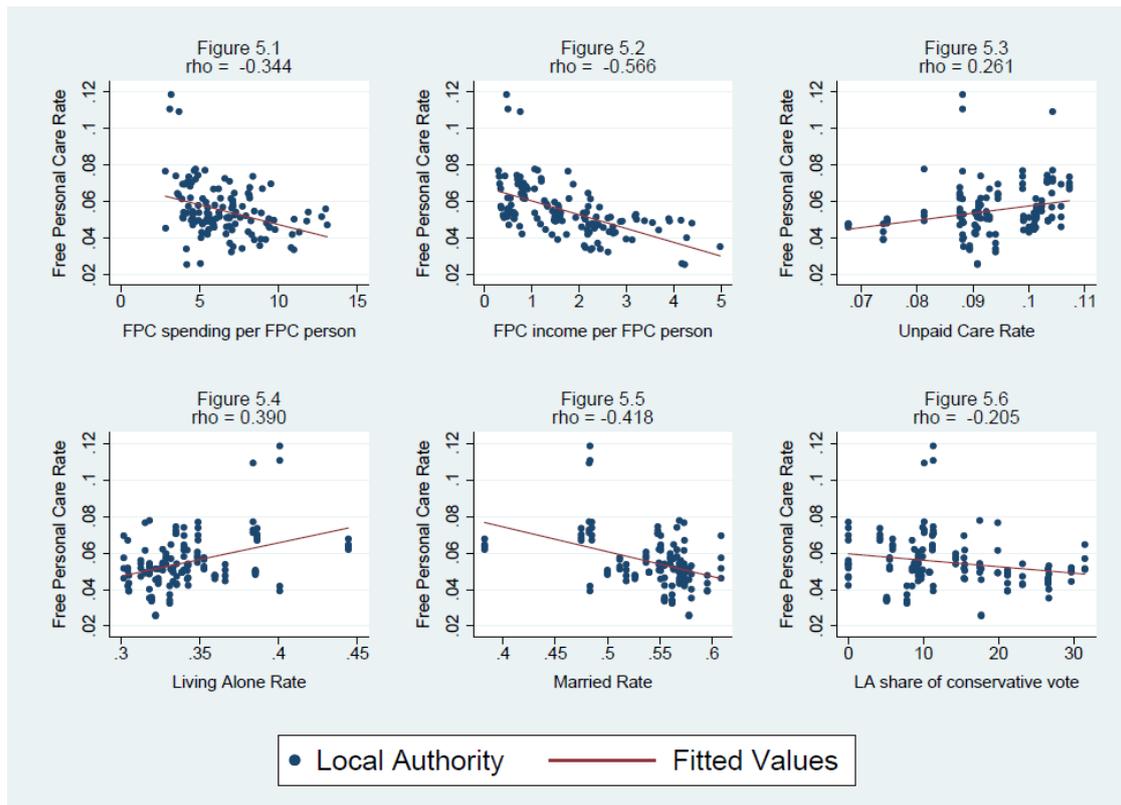
In summary, the demand side bivariate analyses has failed to isolate one or more variables that are strongly correlated with the FPCR. Overall, the correlations were relatively low i.e. none  $> 0.5$ .

### 5.2.2 SUPPLY SIDE

The supply side correlations might offer some insight into local authority structural conditions that might be influencing the provision of FPC. Fig. 5 shows scatter plots of those supply side variables that had a statistically significant bivariate correlation with the FPCR.

Figures 5.1 and 5.2 show that FPC expenditure and income, per FPC client, are negatively correlated with the FPCR. This negative relationship is consistent with the idea that local authorities in which the needs distribution is more negatively skewed i.e. a higher proportion of the population are in the highest needs categories, have to devote more resources to those in the highest need and therefore have a lower FPCR.

The following three plots demonstrate the relationship between the FPCR and other forms of available care. As expected, the living alone rate and FPCR are positively correlated, whilst the married rate is negatively correlated with the FPCR. These variables both indicate the availability of unpaid care, which is often provided by a partner or someone who is living with the person in need. Thus, a higher proportion of single person households, and fewer married couples, means the potential supply of other sources of personal care is lower, and as a result reliance on government care is higher. Interestingly though, the proportion of the population providing unpaid care is positively associated with the FPCR.



**Figure 5:** Supply Side Correlations

Lastly, Figure 5.6 plots the FPCR against the share of the Conservative vote in the 2012 local council elections. As expected, the higher the share of the conservative vote, the lower the provision of FPC.

To summarise, the bivariate correlations on the supply side are mostly consistent with our initial expectations. However, once again the correlations are relatively low i.e. none  $> 0.5$ , and point to the need for further exploration into the variation in FPC provision across Scotland.

The above descriptive exploration has identified several demand and supply side factors that could contribute to the varying FPCRs across Scotland. Specifically, we have shown that although the DR and FPCR are positively related, the local authority differences in the FPCRs do not seem to be matched by differences in the DR. The remainder of this section will outline the results from the multivariate analysis, which attempts to provide more robust evidence on the key drivers contributing to the disparities in the FPCR between local authorities in Scotland.

### 5.3 ECONOMETRIC ANALYSIS

Table 2 below displays the output from the empirical estimations of Eq. 2. The first three columns show the local authority level regressions. In the first column, we estimate the pooled OLS model including only the time dummies and the key explanatory variable of interest, the DR. As expected, the coefficient on the DR is positive and significant. The model R-squared is just 0.21, suggesting that the DR and other common shifts over time, explain around 21% of the variation in the FPCR between local authorities. This finding confirms the results from the descriptive analysis that differences in the DR do not account for all of the differences we see in the FPCR.

The second column introduces other covariates to the pooled model. As expected, the greater the proportion of the oldest old (85+) in the local authority population, the higher is the FPCR. This result is statistically significant at the 5% level. In particular, the model suggests that if the proportion of those aged 85+ were to increase by 1%, the FPCR would increase by 0.23%. Moreover, the model predicts that an increase in the proportion of married couples in the local authority will decrease the FPCR. This is consistent with our prior expectations that the availability of unpaid care could reduce realised demand for FPC. This result is also significant at the 5% level. In addition to this, total expenditure on FPC per person receiving FPC has a significantly negative impact on the FPCR. Specifically, if annual expenditure were to increase by £1000 per person, the FPCR would fall by 0.0023%. This negative relationship is consistent with the idea that local authorities face a trade off when increasing the intensity of FPC provision, most likely because they have a restricted budget when it comes to FPC provision and if they spend more on those who are getting care, they can't increase provision overall.

The remaining covariates in the model are found to have no effect on the FCPR. Interestingly, this is also true for the DR. A joint F-test to check the significance of all covariates excluding the DR suggests that controlling for these observed factors explains a significant amount of variation in the FPCR between local authorities. In particular, the model R-squared increases to 0.37 once we account for the other observable factors besides the DR. Once again, this finding suggests that despite controlling for a number of other factors, there is still unobserved

heterogeneity in FPC provision across Scotland.

The third column displays the results from the fixed effects estimation. The fixed effects model allows us to control for other unobserved time constant heterogeneity within local authorities. As a result, the effects of the marriage rate, life expectancy at age 65 and the conservative vote drop out, because they are constant over time. The model shows that the year has no effect on the FPCR except in 2016 where compared to 2013, the FPCR is slightly higher. The proportion of the population aged 85+ no longer has any effect on the FPCR, whilst expenditure per FPC client remains negative and significant. In contrast to the pooled model, the DR now has a positive and significant impact on the FPCR. Specifically, a 1% increase in the DR is associated with a 0.78% increase in the FPCR. The within model R-squared is considerably higher at 0.56.

	LA- Baseline	LA- Full	LA- Fixed Effects	DZ- Baseline	DZ-Full	DZ-Fixed Effects
Disability Rate	0.0981*** (0.017)	-0.0521 (0.042)	0.787** (0.306)	0.158*** (0.009)	0.155*** (0.007)	0.0505*** (0.006)
2014	0.000442 (0.002)	0.0000765 (0.002)	0.00278 (0.002)	0.000956 (0.001)	0.000855 (0.001)	0.0000827 (0.001)
2015	0.00414 (0.003)	0.0039 (0.003)	0.00686 (0.004)			
2016	0.00660* (0.003)	0.00592** (0.003)	0.00898* (0.005)			
Expenditure per FPC client		-0.00318*** (0.001)	-0.00600*** (0.002)			
% Female		0.481*** (0.124)	-0.398 (0.593)		0.0431*** -0.00906 (0.013)	-0.00581 (0.013)
% 85+		-0.0494 (0.092)	0.0417 (0.075)		0.113*** -0.0108 (0.011)	0.0978*** (0.011)
Life Exp. At 65		-0.00650** (0.003)				
% Married		0.0332 (0.044)				
% Income deprived		0.151** (0.064)	-0.636 (1.250)		-0.0108** -0.00471 (0.011)	-0.00919 (0.011)
Remote and rural		0.0510*** (0.010)			-0.000333 -0.00026	
Share Conservative Vote		0.000282* (0.000)				
Constant	0.0297*** (0.004)	-0.105 (0.082)	0.207 (0.417)	0.0000759 (0.004)	-0.0337*** -0.00655	0.0302*** (0.008)
Local Authority Dummies	N/A	N/A	N/A	Yes	Yes	N/A
R-squared	0.207	0.456	0.56	0.347	0.406	0.024
Observations	128	128	128	13,000	13,000	13,000

**Table 2:** Regression Results

The remaining three columns in Table 2 show the output from the datazone level regressions of Eq. 1. As with the LA level regression, we first show the baseline results from the pooled model including only the yearly dummies and the explanatory variable of interest, then we include all other covariates, and lastly show the results

from a fixed effects estimation. All datazone level estimations include local authority level dummies. We exclude the Glasgow dummy for comparison.

The datazone level models allow us to check whether or not the inconsistencies we observe in the local authority level models, in terms of the variation in FPC provision between local authorities, also persist within local authorities. All local authority level dummies are statistically significant with the exception of South Lanarkshire. Compared to Glasgow, the FPCR is higher in all other local authorities, apart from Clackmannanshire, Dundee City, North Lanarkshire and Renfrewshire where the FPCR is lower. The significance of the local authority dummies suggests that holding the level of disability fixed, the local authority in which a person resides influences the likelihood of getting FPC. For example, the coefficient on the Aberdeen City indicator suggests that conditional on the level of disability, living in a datazone in Aberdeen City is associated with a FPCR that is 0.013% higher than in Glasgow City. This finding confirms the existence of geographic inequity. Furthermore, the model once again predicts that there is a positive relationship between the DR and FPCR. In particular, an increase in the DR of 1% is associated with a 0.16% increase in the FPCR on average.

The pooled datazone model which includes other covariates finds similar differences between local authorities. Moreover, the model predicts a similar positive influence of the DR on the FPCR. In addition to this, we find that both the proportion of females and those aged 85+ in the population are associated with a significantly higher FPCR. Interestingly, the model finds that an increase in the proportion of those who are income deprived, is associated with a significant reduction in the FPCR, all other things being equal. This potentially raises further equity concerns about FPC provision. The R-squared's of the two pooled models are 0.35 and 0.41 respectively, once again demonstrating that the variation in FPC provision to the over 65s is not explained fully by the included covariates. Furthermore, a joint F-test to check whether the included covariates, excluding the DR, are equal to zero shows that they should be included in the model.

Lastly, the final column shows the fixed effects estimates. The signs of the significant estimates remain consistent with the previous models. Again, the DR is

found to be positive and statistically significant, this time suggesting that a 1% increase in the DR will lead to a 0.05% increase in the FPCR. However, the within R-squared of the model is only 0.02, suggesting that the included explanatory variables and unobserved time invariant heterogeneity do a poor job at explaining the FPCR within the datazone.

In summary, the findings from Table 2 suggest that an increase in the DR is not matched by a similar increase in the FPCR. This of course is consistent with the findings from the descriptive analysis which found that the DR is consistently higher than the FPCR. At the same time, the analysis suggests that there are substantial unexplained differences in the FPCR between local authorities.

Table 3 and Table 4 display the output from the local authority and datazone level spatial autocorrelation models outlined by Eq. 3. As discussed, at the local authority level the models are estimated separately for the four years and a fixed effects model is estimated for 2013-2015. The datazone level models are estimated for the two largest local authorities only (Edinburgh and Glasgow City<sup>6</sup>). This is due to the large number of datazones which make it impossible to generate the spatial contiguity weighting matrix  $W$  for the whole of Scotland. Both tables show the spatial error and spatial dependent variable coefficients,  $\lambda$  and  $\rho$  respectively, from Eq. 3.

Table 3 shows that at the local authority level, neither of the spatial elements are found to be significant, with the exception of the 2016 estimation, suggesting that there are no interdependencies in the FPC policy between contiguous local authorities. The Moran tests for the spatial independence of the error terms also confirm that the errors are not spatially dependent. The final column in Table 3 shows the results from the fixed effects estimation. Once again, the spatial elements are not found to be significant.

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<sup>6</sup> Other local authorities available on request.

	2013	2014	2015	2016	Fixed Effects
% Disabled	-0.0644 (0.099)	0.0131 (0.082)	0.0757 (0.060)	0.0855 (0.065)	0.748*** (0.284)
Expenditure per FPC client	-0.00270** (0.001)	-0.00313*** (0.001)	-0.00113 (0.001)	-0.00105 (0.001)	-0.00637*** (0.001)
% Female	0.206 (0.314)	-0.121 (0.269)	-0.145 (0.165)	-0.139 (0.187)	-1.608** (0.656)
% 85+	-0.1 (0.968)	0.124 (0.198)	0.54 (0.529)	0.863 (0.613)	-0.0483 (0.125)
Life Exp. At 65	0.00125 (0.008)	-0.000153 (0.005)	-0.00121 (0.004)	-0.00481 (0.004)	
% Married	-0.0634 (0.120)	-0.15 (0.105)	-0.0607 (0.064)	-0.0325 (0.069)	
% Income deprived	0.229 (0.175)	0.0951 (0.125)	-0.0175 (0.091)	-0.0138 (0.099)	-1.602 (1.152)
Share Conservative Vote	-0.000172 (0.000)	0.000238 (0.000)	-0.0000578 (0.000)	0.000173 (0.000)	
Constant	-0.0333 (0.243)	0.216 (0.205)	0.173 (0.122)	0.213 (0.136)	
rho	-0.0692 (0.130)	-0.201 (0.123)	-0.0817 (0.092)	-0.176* (0.099)	-0.113 (0.208)
lambda	-0.309 (0.547)	-0.234 (0.715)	0.535 (0.500)	0.278 (0.467)	-0.407 (0.309)
sigma_e Constant					0.00630*** (0.001)
Moran Test for Spatial Dependence (prob > chi2)	0.35	0.35	0.45	0.64	
Wald Test of Spatial Terms (prob > chi2)	0.61	0.2	0.41	0.18	0.24
Pseudo R-squared	0.43	0.463	0.397	0.423	0.067
Observations	32	32	32	32	96

**Table 3:** Local Authority Level Spatial Regression Results

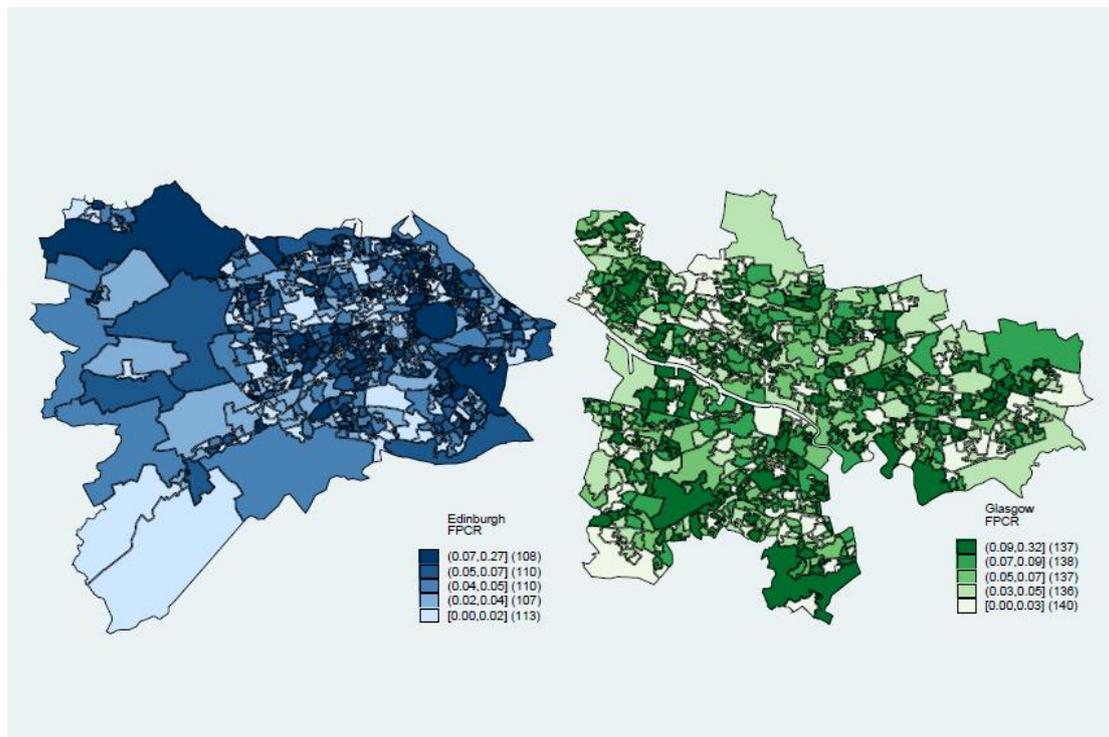
The datazone level spatial autocorrelation models again allow us to check whether or not the differences that we observe between local authorities, also exist within local authorities. Fig. 6 provides a datazone level map of the 2014 FPCR in Edinburgh and Glasgow. If the FPCR is spatially dependent, we would expect to see datazones with high FPCR to be clustered together. From a first glance at the maps, it looks like this could be the case.

Table 4 presents the datazone level spatial model results. In all models, the signs of the coefficients are consistent with our previous results. Specifically, the overall effect of the DR on the FPCR is positive and statistically significant. The 2014 models also show predict that the amount of income deprivation in a datazone has a significantly negative influence on the FPCR, even after accounting for need. This once again suggests the potential existence of geographic inequity in access to FPC. Unlike the local authority level spatial models, Wald tests of the spatial terms in both Glasgow models and in the 2014 Edinburgh model show that there are spatial spill overs between datazones. This finding is not surprising given that FPC provision occurs at the local authority level, thus we would expect to find spill over effects between

datazones within a local authority.

	Edinburgh 2013	Edinburgh 2014	Glasgow 2013	Glasgow 2014
% Disabled	0.115*** (0.014)	0.185*** (0.015)	0.138*** (0.012)	0.118*** (0.011)
% Female	0.0476** (0.020)	0.0628*** (0.021)	0.0305 (0.020)	0.0276 (0.020)
% 85+	0.0645*** (0.017)	0.029 (0.018)	0.127*** (0.021)	0.107*** (0.020)
% Income deprived	0.0116 (0.017)	-0.0649*** (0.019)	-0.0113 (0.013)	-0.0250* (0.013)
% Married		-0.00213 (0.008)		-0.015 (0.011)
Constant	-0.0168 (0.011)	-0.0228* (0.012)	-0.0225** (0.011)	-0.0105 (0.011)
rho	0.106 (0.071)	0.117 (0.071)	0.0506 (0.056)	0.144** (0.056)
lambda	-0.0597 (0.111)	0.0578 (0.104)	0.114 (0.083)	-0.156* (0.092)
Moran Test for Spatial Dependence (prob > chi2)	0.57	0.04	0.04	1.00
Wald Test of Spatial Terms (prob > chi2)	0.29	0.04	0.04	0.04
Pseudo R-squared	0.269	0.331	0.265	0.243
Observations	548	548	688	688

**Table 4:** Datazone Level Spatial Regression Results: Edinburgh and Glasgow



**Figure 6:** 2014 Edinburgh and Glasgow Datazone Level FPCRs

## 6. DISCUSSION & CONCLUSIONS

The results presented in Section 5 show clearly that the share of FPC differs substantially between Scottish local authorities. These differences are visible in Fig. 2 and Fig. 3. Furthermore, the descriptive analysis suggests that those differences are not fully explained by the level of disability within the population. This suggests the existence of geographic inequity in FPC provision. In particular, for a given level of need, a person might be more or less likely to receive care, depending on which local authority they live in. Given that the intention of the legislation was that personal care for those aged 65+ should be available on a uniform and consistent basis, this result is concerning.

Moreover, the econometric analysis reveals similar geographic disparities between local authorities. Whilst the results suggest that needs factors significantly influence the FPCR, there remains significant unexplained differences in FPC provision between local authorities. In particular, the models only explain around 40% of current differences in the FPCRs between local authorities. Furthermore, the datazone level models show that the inconsistencies that exist between local authorities, are also present within local authorities. The significance of local authority dummy variable coefficients are good indicators of such geographic inequity.

One potential explanation for the unexplained differences between local authorities could be their practices at managing demand for FPC. We only observe realised demand for FPC. We do not therefore observe those individuals who require FPC but who do not receive it. Managing the demand for FPC was identified as a potential explanation for the variation in FPC provision by Lord Sutherland's 2008 review. Specifically, as discussed in Section 2 the review found that local authorities were using eligibility criteria and waiting times as a tool to manage demand.

Following this review, the Scottish Government introduced the National Eligibility Criteria (Scottish Government, 2009). These were to be adopted by all local authorities when assessing individuals' needs for FPC. The intention is to classify individual need as critical, substantial, moderate and low - with their corresponding urgency of intervention response times and provides guidance on risk factors

associated with each category. These categories are used to allocate limited resources to the most needy care clients.

As a minimum, local authorities must provide care to those individuals who are categorised as 'critical' or 'substantial' risk, and within a six-week time frame. However, it is the responsibility of local authorities to determine whether or not those with moderate or low risk require the provision of services. Since local authority resources are generally under pressure, many local authorities set thresholds for FPC provision. For example, many local authorities will only provide FPC to those who have been identified with either critical or substantial needs. At the same time, unlike those with 'critical' or 'substantial' risk, there is no minimum waiting time for those identified with 'moderate' or 'low' risk to receive services. As a result, local authorities might use waiting times for these groups as a means to curtail demand for services, in the hope that some people won't be willing to wait so long to access the services, and will subsequently withdraw their application for support.

Thus, depending on how local authorities decide to implement the National Eligibility Criteria, differences in provision could emerge. Local authority decisions will depend on the needs of the individuals presenting themselves for FPC services. As a result, the distribution of needs within the local authority will play a role in determining who gets FPC.

As outlined in Section 3, if needs are skewed to the right, that is, a large proportion of those applying for FPC have critical needs, a local authority might have to restrict provision to those groups because they cost more to cater for. At the other extreme, if the needs within a local authority are skewed to the left, that is, a large proportion of those applying have low risk needs, and few with critical needs, the local authority might be more able to offer care to all groups. Consistent with this possibility is the result that the spending per FPC client is significantly negatively associated with the FPCR. In other words, this suggests that a higher spend on FPC (which is likely to be associated with higher needs), results in less provision of FPC overall because resources won't stretch so far. Thus, the distribution of those who apply for care could make a substantial difference to the provision of care.

Having said that, it is still the case that the majority of local authorities in Scotland explicitly state that they will only provide care to those with critical or substantial needs<sup>7</sup>. Whether this is to curb demand due to scarce resources or because local authorities differ in their spending priorities, it is not possible to tell without further investigation.

A further concern emerging from the analysis is the evidence that income deprivation plays a role in determining the FPCR. Specifically, the econometric models suggest that areas in which a high proportion of people are income deprived, have a lower FPC rate, even after accounting for disability. Once again, we are limited in our analysis in the sense that we only observe those who receive FPC and not those who might need care but not apply to receive it. Since FPC is not means tested, income should not have any significant impact on the FPCR. Thus, the finding that income does play a role might suggest that individuals in areas with higher income deprivation are less able to access FPC services. This finding is consistent with existing evidence in which suggests that higher income groups access health care services more frequently than poorer groups (d’Uva et al., 2009). Having said that, much of the literature actually finds no effect of income on service use (d’Uva and Jones, 2009) and some even finds a pro-poor distribution (Doorslaer et al., 2004).

Furthermore, the results presented here have also highlighted the importance of the availability of other forms of care. Specifically, the results suggest that the availability of unpaid care might play a role in determining the FPCR. Although the results showed that the number of care home places had no effect on the local authority FPCR, a recent freedom of information request by Robert Kilgour, chairman of Renaissance Care in Scotland, found that there is significant variation in the cost of local authority run care homes. Thus, it might be that local authorities ability to provide FPC to people in their own homes, is also limited by the cost of running their own care homes (Lang Buisson, 2018).

Future research would benefit from carrying out a detailed investigation into

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<sup>7</sup> We collected information on FPC eligibility from 21 local authorities via their websites or via email. Of those, 11 stated that they will only provide care to those in the top two risk categories.

individual local authority practices to understand whether and why differences in eligibility for FPC arise during the assessment process and how these influence subsequent provision of care. Furthermore, it would be useful to find out about those who apply for FPC but do not receive it, to understand more about the distribution of needs within the local authority. For Scotland in particular, understanding local authority distributions of need and how the FPCR is influenced by them, will be of the utmost importance in the coming years as it takes on powers over disability benefits from the UK Government and further ageing of the population takes place.

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