Unequal care, unequal health care? Gender differences in health care use after adult care access☆

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ABSTRACT

Access to care among older adults can help identify unmet health needs and increase the use of health care, though in some cases it may substitute some forms of health care. We argue that the balance between these two effects is largely gender dependent: female spouses are more likely to act as informal caregivers and, as a result, are more likely to have neglected their own health needs. To examine this hypothesis, we exploit the variation introduced by Scotland's Free Personal Care (FPC) programme, a government initiative implemented in 2002 that provides free personal care access to all eligible individuals regardless of their income. Using a Difference-in-Differences (DiD) framework comparing Scotland with the rest of the United Kingdom and a rich longitudinal dataset of men and women aged 65 and over, we first find that FPC significantly increased the uptake of home help services among women, with little change among men. Among women, adult care expansion led to a 3.5–percentage-point rise in inpatient admissions, whereas among men, we find evidence suggesting a modest substitution effect of care for health care. The effects are stronger among older adults who live alone, and those facing socioeconomic disadvantage, or high care needs.

1. Introduction

The expansion of adult social care access can significantly influence health care utilisation patterns. Access to social care can potentially enhance individual independence and facilitate the early detection of unmet health needs, thereby reducing hospital readmissions, shortening lengths of stay, and at times, even lowering expenditures on secondary health care services (Spiers et al., 2019). This is because when individuals face barriers in the access to adult care, it can lead to poorer health outcomes, delays in treatment, and greater dependence on acute health care services (Crawford et al., 2021; Forder et al., 2019). However, to date, we know little about how the health care utilisation effects of access to care differ by gender. Women tend to live longer on average, are more likely to live alone in later life, and often have fewer informal care resources available to them (Emandi et al., 2023). Women's later-life health and financial independence may be adversely affected by their greater likelihood of providing care to parents and spouses. These patterns lead us to hypothesise that the health care effect of an expansion in the access to adult social care can have heterogeneous effects for men and women. This is an issue

that remains relatively underexplored. The purpose of this paper is to examine this question.

The United Kingdom (UK) provides an ideal context to examine this question. In England and Wales, publicly funded adult social care is both rationed and means-tested, creating financial barriers that can prevent even low-income older adults from accessing care that matches their needs (Muir, 2017). Such barriers include a reduced likelihood of receiving essential formal support, which in turn leads to unmet care needs and poorer health outcomes (Gibson et al., 2019), and subsequently to increased use of health care. In contrast, after devolution, Scotland was the only country to follow the recommendation of the Royal Commission in 1999 of a state-funded personal care system. Such a system resulted from the implementation of the Community Care and Health (Scotland) Act in July 2002. The Act introduced Free Personal Care (FPC) and abolished means testing for older adults receiving personal care at home or in residential settings. By removing financial barriers, the reform created a quasi-natural experiment to examine how universal access to formal personal care influences subsequent health care use by gender.[1]

This paper studies the effect of the expansion of access to adult care on healthcare use by gender, leveraging the introduction of the 2002 FPC reform. We focus on three types of health care utilisation: general practitioner (GP) visits, outpatient visits, and inpatient admissions. To evaluate the effects of the reform, we employ a Difference-in-Differences (DiD) design, comparing changes in health care use in Scotland with those in the rest of the United Kingdom before and after the policy implementation, a well-established methodology in the literature. Our analysis relies on longitudinal data from the British Household Panel Survey (BHPS), spanning 1999 to 2008 and concentrating on individuals aged 65 and older.

Our findings indicate, as hypothesised, robust evidence of large gender differences in the adoption and use of social care. Among women, the reform first led to a large and significant increase in home help acceptance by 5.5 percentage points, a 58% rise from the pre-reform mean, explained by the removal of means testing. Such expansion in the use of home help was followed by an increase of about 3.5 percentage points in the likelihood of inpatient admissions (21% increase relative to the pre-reform mean), which is suggestive of complementary effects of health and adult social care. Such a complementary effect is more pronounced among older women, those living alone, those divorced, widowed, or never married, and especially women from lower socioeconomic statuses, as well as those facing greater need in Activities of Daily Living (ADL). However, for men, we observe limited changes in the use of care services, with the exception of some weak evidence of a decline in healthcare use consistent with a substitution effect. These results are robust to a series of sensitivity and placebo tests, which further confirm that our results are consistent across alternative model specifications, samples, and control groups.

We contribute to the literature as follows. First, we add to the literature of the causal estimates of the effects of FPC by examining an outcome that has received limited attention so far. In the Scottish context, most existing studies have focused on the outcomes of informal caregiving. Hollingsworth et al. (2022) and Karlsberg Schaffer (2015) find that the policy altered the supply of informal care and affected labour force participation. Costa-Font et al. (2023) shows that the reform improved the well-being of informal carers. However, so far no previous research has examined the direct impact on care recipients' healthcare use. Understanding the relationship is crucial as healthcare consequences form a key part of the overall benefits and costs analysis associated with expanding public support for social care.

Second, we contribute to the literature on gender inequalities in care use, which often overlooks that women, as frequent care providers, are more likely to neglect their own health needs. The gendered use of social care and healthcare has a smaller body of literature. Indeed, men and women respond differently to healthcare needs in terms of needs identification, recovery time, and treatment (Vlassoff, 2007). Existing research on gender differences in healthcare access often highlights factors such as health-seeking behaviours, socioeconomic conditions, and systemic biases (Manuel, 2018; Koopmans and Lamers, 2007; Redondo-Sendino et al., 2006). In contrast, the literature on social care use is less developed, particularly regarding how gender influences access to and experiences with care services. Emerging evidence suggests that gender norms and expectations may shape care-seeking behaviours and the allocation of care resources, with women more likely to seek help from professionals, sheltered homes, or institutionalisation (Carvalho et al., 2019). We provide evidence of gender differences in care use and its wider influences in this regard.

Third, we contribute to a growing literature on the interplay between the use of formal adult care and the healthcare system. Much of the existing work finds evidence of substitution effects, where increased availability of long-term care reduces pressure on health services. Within the UK, reductions in local authority social care spending have been linked to increases in emergency hospital admissions (Crawford et al., 2021). Similarly, greater formal care supply has been associated with fewer delayed hospital discharges (Allan et al., 2021;

Gaughan et al., 2017; Fernandez and Forder, 2008), reductions in GP visits (Forder et al., 2019), and lower hospital expenditures (Forder, 2009). International evidence further supports the notion that strengthening social care provision can reduce various forms of healthcare use. Studies have found reduced inpatient admissions, hospital stays, and emergency care use followed by more access to social care (Han et al., 2024; Walsh et al., 2020; Bakx et al., 2020; Spiers et al., 2019; Costa-Font et al., 2018; Holmås et al., 2013). Others report declines in unscheduled primary care visits (Serrano-Alarcón et al., 2022) and improved health system efficiency (Longo et al., 2023; Moura, 2022). A smaller body of literature has identified more complex or mixed effects, suggesting that the relationship between formal care and healthcare use may vary across settings or population groups (Gonçalves and Weaver, 2017; Kim and Mitra, 2022; Liu et al., 2021; Seamer et al., 2019). We add to the discussion by providing evidence that substitution and complementarity effects may work in parallel for different populations and can be gender-specific.

Finally, while many papers in the long-term care literature study financial transfers or cash benefits (De Bresser et al., 2022; Costa-Font et al., 2017), there is limited evidence on the in-kind care provision. Cash benefits may be diverted to other household needs, whereas publicly arranged or commissioned personal care guarantees the delivery of formal services. By studying the FPC introduction, where local authorities directly provide or fund personal care, we expand the literature on the effectiveness of non-means-tested, in-kind care provision.

The remainder of this paper is organised as follows. Section 2 provides an overview of the institutional setting. Section 3 describes the empirical methods and Section 4 describes the data. Section 5 presents the results and Section 6 concludes.

2. Background

2.1. Institutional background

2.1.1. Health and social care systems in the UK

In the UK, healthcare services are mainly provided by the National Health Service (NHS), established in 1948 on the foundational principles that healthcare should be funded through general taxation, be free at the point of use, and be universally accessible (Green et al., 2014). While the devolved administrations of Scotland, Wales, and Northern Ireland gained increasing autonomy over health and social care policy-making following devolution in 1999, the NHS systems continue to share key characteristics across the four countries, such as tax-funded financing, universal eligibility, and a predominance of publicly delivered services. Each country continues to provide a range of core health services, including such as GP consultations, hospital care, maternity services, and emergency treatment. Alongside the publicly funded NHS, the UK maintains a parallel private healthcare sector, which only plays a limited role in the overall system and functions as a supplement to NHS services (Emmerson et al., 2001; Doyle et al., 2000).

Fig. A.1 in the Appendix illustrate the financing of healthcare provision by showing the health spending across the UK countries. Real per capita healthcare spending increased steadily and in parallel across the four UK countries between 1999 and 2009[2] (see Fig. A.1(a)). When adjusted for differences in population age structure (see Fig. A.1(b)), spending levels across countries converge more closely. The absence of significant disparities in healthcare funding suggests that differences in healthcare demand and utilisation among UK countries are more likely driven by other factors rather than systematic financing inequalities.

Adult social care in the UK refers to the provision of services such as social work, personal care, and social support to adults with needs

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[2] Scotland consistently shows slightly higher per capita health spending, which reflects variations in healthcare needs and political decisions.

Table 1
Services covered by the means test during 1999–2008.

Care services	Time	England	Scotland	Wales	Northern Ireland
Personal Care	Before 2002	Yes	Yes	Yes	Yes
	After 2002	Yes	No[a]	Yes	Yes
Nursing Care	Before 2001/02	Yes	Yes	Yes	Yes
	After 2001/02	No[b]	No[c]	No[b]	No[d]
Accommodation	Before 2002	Yes	Yes	Yes	Yes
	After 2002	Yes	Yes	Yes	Yes

Note: This table summarises whether three core components of long-term care services, including personal care, nursing care, and accommodation costs, were subject to means testing in England, Scotland, Wales, and Northern Ireland during the period 1999–2008. Personal care refers to support with basic activities of daily living such as washing, dressing, eating and drinking, using the toilet, and managing prescribed treatments, mobility problems, or behavioural issues. Nursing care involves services that require the skills of a qualified nurse. Accommodation costs include accommodation fees, meals, and other services provided in care homes. "Yes" indicates the service was subject to a means test; "No" indicates it was provided non-means-tested at the point of use. Scotland abolished means testing for personal care in 2002 through the FPC reform.

[a] not means tested for aged 65+, needs-tested.
[b] since Oct 2001.
[c] since July 2002.
[d] since Oct 2002.

from illness, disability, old age or poverty. Although separate from healthcare, social care services are often required by the same groups of the population. Responsibility for adult social care lies mainly with local authorities in England, Scotland, and Wales, and in Northern Ireland, health and social care services are integrated and delivered through five Health and Social Care Trusts.

Before around 2002, eligibility for publicly funded social care across the UK was determined through both a needs assessment (to evaluate the level of care required based on health and support needs) and a financial means test (to assess income, savings, and assets). For instance, in England, individuals with assets above £19,000 were ineligible for public support in 2002/03 (Bancalari and Zaranko, 2024; Foster, 2021). Local authorities had discretion to charge for personal care provided at home, often based on local policies and the individual's income after certain disregards. For residential care home residents, those above the asset threshold were typically required to self-fund their care entirely using personal income, savings, and potentially the sale of assets like their homes.

This approach began to diverge across the UK around 2002 following the 1999 Royal Commission on Long Term Care, which recommended making personal care free for all. Table 1 summarises whether the major components of care services were subject to means-testing in each UK country. Until the early 2000s, all major care services, including personal care, nursing care, and accommodation, were means-tested across the UK. Access to publicly funded care depended both on assessed need and financial eligibility. In response to the recommendations, all four UK countries introduced free nursing care during the early 2000s. England and Wales implemented free nursing care in October 2001, while Northern Ireland followed in October 2002. Scotland, however, went further by fully adopting the Royal Commission's recommendations. From July 2002, universal FPC was introduced for people aged 65 and over, removing the financial means test for accessing personal care services. That is, charges for care at home were removed, and a flat-rate subsidy for personal and nursing care to people in care homes was established. In the meantime, personal care remained subject to means testing in England, Wales, and Northern Ireland.

Although nursing and personal care are no longer subject to means tests in Scotland, other residential care services (e.g., accommodation or 'hotel' costs) continue to be means tested in all UK countries. The policy divergence on personal care created a clear distinction between Scotland and the rest of the UK, which provides a quasi-natural experiment setting for studying the care provision expansion.

2.1.2. Free personal care in Scotland

The Free Personal and Nursing Care (FPNC) in Scotland was introduced through the Community Care and Health (Scotland) Act 2002 and formally implemented on 1 July 2002. It marked a significant policy shift by providing free personal care (e.g., assistance with washing, dressing, or eating) and nursing care in care homes to all individuals aged 65 and over who are assessed by local authorities as needing these services, regardless of their income, assets, marital status, or access to informal care.

Old age individuals across the UK can also receive Attendance Allowance, a non-means-tested benefit for those of State Pension age with care needs due to disability or illness. To support the implementation and delivery of FPNC, the Scottish Executive allocated substantial funding to local authorities, who hold statutory responsibility for adult social care. An initial allocation of £250 million was provided for the first two years (2002/03 to 2003/04), followed by a further £300 million for the subsequent two years (2004/05 to 2005/06). Annual funding to local authorities continues to support FPNC, which evidence suggests has not led to unsustainable costs and particularly benefits those on modest incomes.[3] Local authorities coordinated service delivery in collaboration with health services, housing, and a range of private and voluntary sector providers. By 2003–04, FPNC expenditure accounted for approximately 0.2% of Scotland's GDP and contributed to a ten per cent rise in public spending on elderly care (Bell and Bowes, 2006).

FPC applied to two key groups of beneficiaries: older adults receiving care at home and those residing in care homes. For individuals receiving care at home, local authorities are responsible for arranging or commissioning services directly. By March 2007, around 72,000 older people were receiving free personal care in Scotland, and uptake varied across council areas, ranging from seven per cent to 12.5% of the older population. For care home residents, FPC was provided by means of weekly payments covering the personal care component of costs, initially set at £145 per week from July 2002, and paid directly to care providers by local authorities. The personal care services include personal hygiene, mealtime assistance, mobility support, medication management, and general well-being.

Fig. 1 presents the official statistical evidence available on personal care recipients. Fig. 1(a) shows that the number of FPC recipients and total expenditure for home-based care steadily increased between 2003

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[3] The financing model has remained popular and politically durable and led to the extension of free personal care to all adults under 65 in April 2019 under "Frank's Law".
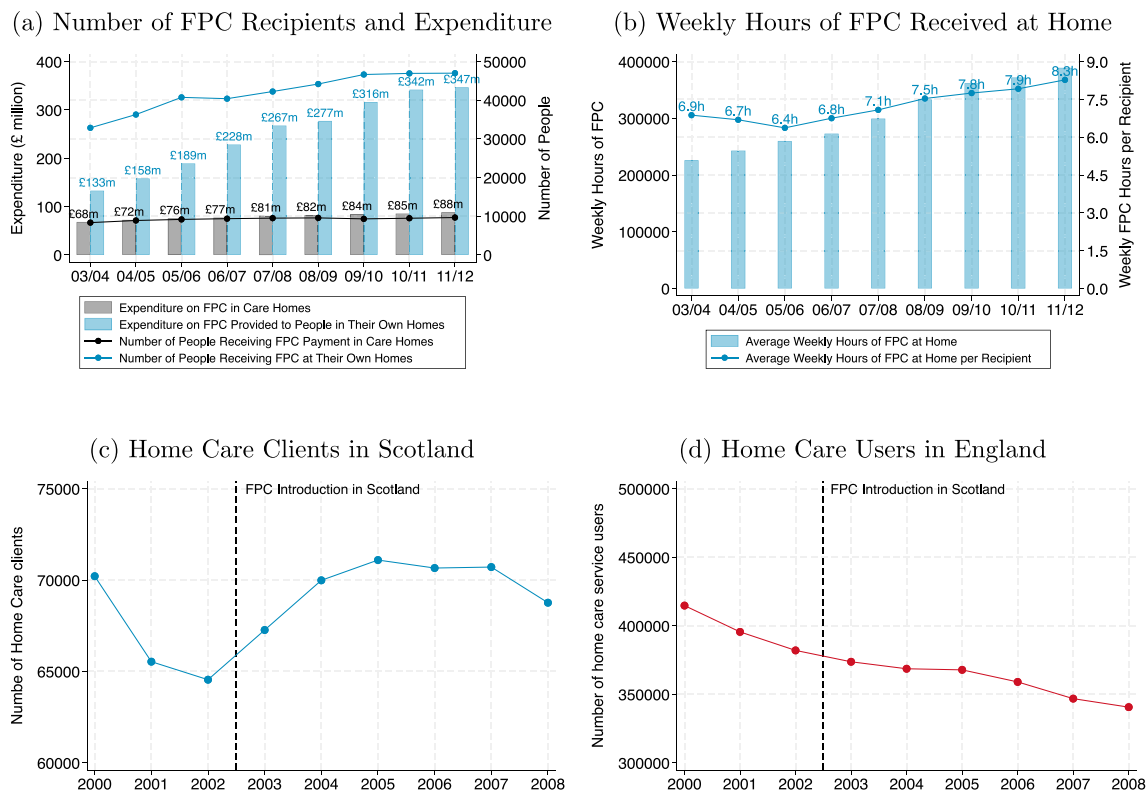
Fig. 1. Trends in social care provision and use in Scotland and England.
Note: This figure presents trends in uptake and provision of home care services in Scotland and England. Using administrative data from the Scottish Government, Fig. 1(a) shows annual FPC expenditure and recipient counts in care homes and at home, while Fig. 1(b) shows total and average weekly hours of FPC received at home. Fig. 1(c) uses data from Statistics of Social Care Services in Scotland, showing the number of home care clients supported by Scottish local authorities. Fig. 1(d) draws on Community Care Statistics: Home Help and Care Services for Adults (England), showing trends in home care service users.

and 2012, while the number of care home residents receiving FPC and related spending remained relatively stable. The trend aligns with a broader shift from residential to community-based care provision in the UK. Similarly, Fig. 1(b) indicates a consistently high volume of home care hours, with recipients averaging 6–8 h of care per week. Further comparison between Scotland and England is provided in Figs. 1(c) and 1(d). In Scotland, the number of local authority-supported home care clients surged around 2002–03, which coincided with the introduction of FPC. England, in contrast, experienced a declining trend in the number of home care users during the same period. It is plausible that, had FPC not been introduced, the number of home care users in Scotland might have followed a similar downward path as observed in England.

Regarding the assessment process, the evaluation is typically conducted by a qualified professional from the local authority's social work department, such as a social worker, occupational therapist, or community care assistant. More specifically, this assessment is carried out under the framework of the Social Work (Scotland) Act 1968 and uses the Single Shared Assessment model to ensure a consistent, holistic approach that considers the individual's overall health, physical and emotional needs. Referrals can be initiated by the individual themselves, a family member, a carer, or a healthcare professional. In urgent cases, like post-hospital discharge, interim services may be provided immediately without a full assessment, though a comprehensive evaluation follows shortly after.

2.2. Related literature and theories

Fig. 2 illustrates how the expansion of care services through FPC in Scotland may influence healthcare use through literature-proposed and hypothesised pathways. Under the FPC policy, local authorities

assess individuals for eligibility and are responsible for arranging or commissioning personal care at home, while payments for care home residents are made directly to providers. These changes are expected to increase the uptake of formal care services and reduce out-of-pocket expenditures, particularly for those with high care needs.

Two main mechanisms link adult or social care provision to subsequent changes in healthcare use: the substitution effect and the complementarity effect (also referred to as needs identification effects). A dominant hypothesis in the literature is that social care substitutes for certain types of healthcare, thereby reducing demand for hospital admissions, emergency visits, and primary care. Several empirical studies support this hypothesis. For example, in England, increased availability of home care has been linked to fewer doctor visits, potentially due to better integration and coordination between health and social care services (Forder et al., 2019). Similarly, studies have associated enhanced home care supply with reduced delayed hospital discharges (Allan et al., 2021; Gaughan et al., 2017, 2015), lower demand for hospital services (Walsh et al., 2020), and decreased hospital expenditure (Forder, 2009). Moreover, Crawford et al. (2021) found that cuts to long-term care funding were linked to increased emergency department use among older adults, with the impacts being the greatest among the very oldest individuals and those living in more economically deprived neighbourhoods.

In contrast, a growing body of literature identifies a complementarity effect, where increased care access may lead to greater healthcare use. For example, in Switzerland, home care has been associated with increased GP visits and inpatient care, as home care providers may detect health conditions and recommend inpatient or doctor care (Gonçalves and Weaver, 2017). Evidence from Korea shows that long-term care insurance (LTCI) benefits are linked to longer inpatient stays, likely because LTCI beneficiaries gain improved access to healthcare through the identification of health needs and facilitated visits to
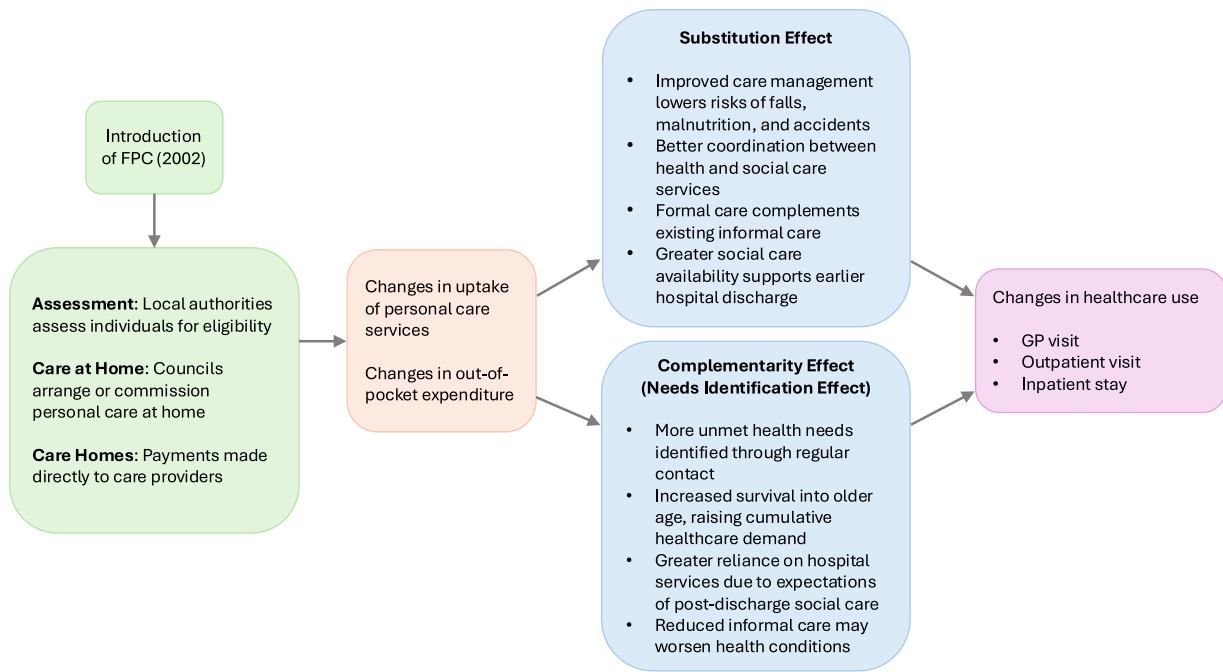
Fig. 2. Simplified theory of change.
Note: This figure shows a simplified diagram of potential effects of the expansion of personal care services through the FPC reform introduced in Scotland in 2002.

healthcare facilities (Kim and Mitra, 2022). Beyond these mechanisms, other pathways such as improved survival rates to older ages or greater reliance on hospital services due to expectations of continued social care support post-discharge could also explain the positive correlation.

Nonetheless, some studies document no clear or consistent relationship between care access and healthcare use. Some studies point to the need to reach a certain threshold of availability before it effectively reduces hospital demand. Studies by Liu et al. (2021) and Seamer et al. (2019) provide evidence that social care does not consistently lower healthcare utilisation in England. The literature also suggests that substitution and complementarity effects may operate simultaneously, affecting different types of healthcare use and different population subgroups in varied ways. The interplay between formal social care and informal care provision adds further complexity, as discussions continue around whether one could replace or complement the other. For instance, Karlsberg Schaffer (2015) found that FPC increased the probability of women providing informal care by around six percentage points, whereas Hollingsworth et al. (2022) reported a near one-to-one substitution between formal and informal care. Recent research by Longo et al. (2025) indicates that publicly funded adult social care could benefit informal carers' quality of life, care tasks, health, range of employment choices, and finances. These effects on informal care and caregivers may alter the direct connections between social care and use of health services.

3. Empirical strategy

3.1. Causal identification

We adopt a Difference-in-Differences (DiD) framework as the FPC reform was implemented exclusively in Scotland, while the rest of the UK (England, Wales, and Northern Ireland) retained the pre-existing means-tested system. In the main Specification, the treated unit is defined as elderly individuals living in Scotland throughout the study period. The control unit consists of elderly individuals residing in the rest of the UK. The BHPS provides harmonised data across the UK countries collected under a common survey design, which allows consistent

comparison of outcomes. The approach follows studies that analyse interventions unique to one country within the UK. For instance, Xhurxhi (2020) compares Scotland with England and Wales when studying the impact of minimum unit pricing for alcohol. Green et al. (2014) adopts Scotland as a control group to assess the liberalisation of bar hours implemented in England and Wales. In the context of the FPC implementation, several studies have similarly leveraged comparisons between Scotland and the rest of the UK (Karlsberg Schaffer, 2015; Ohinata and Picchio, 2019; Hollingsworth et al., 2022; Costa-Font et al., 2023).

3.2. Event study

To explore the dynamic effects of the FPC reform and assess the parallel trends assumption more formally for the DiD design, we adopt an event-study specification as follows:

$$Y_{it} = \alpha_i + \lambda_t + \sum_{k \neq -1} \beta_k \cdot \left(\text{Scotland}_i \times \text{Year}_{t=k} \right) + X'_{it}\omega + \varepsilon_{it} \qquad (1)$$

In this specification, Y_{it} denotes the outcome of interest for individual i in year t. α_i and λ_t denote individual and year fixed effects, respectively. The variable Scotland_i indicates residence in Scotland, and $\text{Year}_{t=k}$ is a dummy variable for year k, where k represents years relative to the policy implementation year (2002). The reference year is set to the year 2001 immediately preceding the reform ($k = -1$). The vector X_{it} includes the following individual-level covariates: age, age squared, gender, qualification, marital status, retirement status, household size, number of children in the household, monthly personal income, presence of chronic conditions, and number of chronic conditions. The coefficients β_k show differences in outcomes between Scotland and the rest of the UK for each year relative to the baseline year.

3.3. Difference-in-differences design

The DiD design aligns with canonical two-by-two models widely employed in policy evaluation literature (Angrist and Pischke, 2009; Imbens and Wooldridge, 2009). The empirical specification of a two-way

fixed effect (TWFE) DiD model used is as follows:

$$Y_{it} = \alpha_i + \lambda_t + \beta \cdot Scotland_i \cdot Post_{it} + X'_{it}\omega + \varepsilon_{it} \qquad (2)$$

Here, Y_{it} denotes the healthcare use outcomes (GP visit, outpatient visit, and inpatient stay) for individual i in year t. The model includes individual fixed effects (α_i) to control for time-invariant unobserved heterogeneity, and year fixed effects (λ_t) to account for shocks common across regions. The interaction term $Scotland_i \cdot Post_t$ captures the intention-to-treat effect of the FPC reform, and β is the coefficient of interest that estimates the differential change in healthcare utilisation post-reform attributable to the policy. The vector X_{it} includes the same set of covariates as shown in the event study specification. Standard errors are clustered at the regional level, which is in line with the BHPS sampling design.[4]

The analysis covers the pre-treatment period (1999–2001) and the post-treatment period (2002–2008). The time frame captures several years before and after the reform, which allows us to observe medium-run adjustments in care and healthcare use. The validity of the DiD approach relies on the parallel trends assumption that, absent treatment, the treatment and control groups would exhibit parallel trajectories in healthcare utilisation over time. We assess this assumption both graphically and through an event-study estimate.

We first estimate the effect of the FPC reform on the use of home help separately for men and women subgroups. We then turn to the reduced-form impact on healthcare use by gender, motivated by documented disparities in health-seeking behaviours and social care utilisation between men and women (Redondo-Sendino et al., 2006; Arber and Ginn, 1993). We further conduct a heterogeneity analysis on subgroups as well as mechanisms testing to identify the possible pathways. Robustness checks include alternative model specifications, alternative sample analyses, and sensitivity to different control groups. Finally, we perform placebo and falsification tests to validate the causal interpretation of the main findings.

4. Data

4.1. BHPS data

The British Household Panel Survey (BHPS) is a nationally representative longitudinal study that initially sampled 10,300 individuals from 5,500 private households[5] in 1991. The survey collects detailed individual- and household-level data on income, employment, health, well-being, demographics, neighbourhood characteristics, and personal values and opinions. Respondents have been interviewed annually, typically beginning in September or October of each year, with new household members incorporated into the panel over time. For this analysis, we focus on ten waves from 1999/2000 to 2008/2009 (the last wave in the BHPS data), a period that spans both the policy introduction and coincides with the introduction of boost samples for Scotland and Wales in 1999 (each adding 1,500 households) and for Northern Ireland in 2001 (adding an additional 2,000 households). The region-specific boosts in sample size enhance cross-country comparability and improve the precision of estimates.

An unbalanced panel dataset is constructed by restricting the sample to individuals aged 65 and over in the year 2002 to ensure everyone in the Scottish sample was exposed to FPC. We further restrict the sample to individuals who continuously resided in Scotland

throughout the study period to ensure consistency and reduce contamination from population mobility or exposure to other care regimes. Finally, we have 4213 individuals and 26,793 person-wave observations, with each individual observed for an average of 6.4 waves. The dataset includes three pre-FPC waves (1999/2000, 2000/2001, and 2001/2002) and seven post-FPC waves (2002/2003,[6] 2003/2004, 2004/2005, 2005/2006, 2006/2007, 2007/2008, and 2008/2009).

Table A.1 in the Appendix presents the sample size for each UK country across the study period. It is important to note that while the BHPS attempts to follow respondents who move into institutional accommodation (such as nursing homes) where possible, the information collected on accommodation type is limited. Moreover, the size of such households is very small in the BHPS data. For instance, only 29 households were recorded as living in institutional accommodation in 2002. As a result, our analysis sample primarily consists of older adults living in private households, who are more likely to receive home-based care, rather than those in institutional care settings. In addition, although the BHPS includes boosted samples for Scotland, Wales, and Northern Ireland, the Scottish sample remains relatively small, primarily due to our sample selection criteria and the population size of Scotland within the UK.

Several features make the BHPS well-suited for the research question. First, its longitudinal structure allows for individual-level tracking over time, which supports our estimation strategies that account for time-invariant unobserved heterogeneity. Second, the boosted samples for Scotland, Wales, and Northern Ireland increase statistical power and estimation precision. Moreover, as shown in Table A.2 in the Appendix, we demonstrate that the BHPS sample closely mirrors the 2001 Census in terms of basic demographic characteristics of age, gender, and marital status. Though older individuals (85+) are slightly underrepresented, likely due to attrition and living or movement into institutional care settings, the robustness checks in the later section apply survey weights to correct for differential sample selection. Finally, because the survey covers both health and social care use variables under a unified questionnaire, it provides an integrated dataset which is unavailable in other UK datasets.

4.2. Measures and variables

We use three standard measures of healthcare use: whether the respondent had visited a GP, had an outpatient visit, and had an inpatient stay in the past 12 months. These are binary indicators equal to one if the respondent answered "yes" and zero otherwise. GP visits capture the use of primary care services, including routine check-ups, management of chronic conditions, and initial consultations for new health concerns. Outpatient visits typically refer to scheduled appointments with specialist doctors in hospitals or follow-up care that does not require hospital admission. In the UK, generally, a specialist will only see patients with a letter of referral from the GP. In contrast, inpatient stays indicate more serious or acute health events requiring overnight hospitalisation, such as surgeries, severe illnesses, or complications requiring continuous medical supervision. These indicators have been widely used in the literature to capture different aspects of healthcare demand (Moura, 2022; Walsh et al., 2020), including studies that have primarily relied on BHPS data (Urwin et al., 2019; Kohn and Liu, 2013; Allin et al., 2011).

We also study their use of home help to explore the changes in elderly individuals' care use among various welfare services[7] following the FPC provision. Respondents were asked if they had used home help services within the past 12 months. The variable equals one if

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[4] The BHPS sample was stratified by twelve regions: nine Government Office Regions in England (with London split into inner and outer areas), plus Scotland and Wales, with households within regions sampled according to socio-economic characteristics.

[5] A household is defined as one person living alone or a group of people who either share living accommodation or share one meal a day and who have the address as their only or main residence.

[6] 2002/2003 wave includes data collected from September 2002 onward, after the FPC implementation in July 2002.

[7] In the BHPS survey, welfare service options include home help, meals on wheels, social worker visits, psychotherapy, and speech therapy

Table 2
Summary statistics before and after FPC introduction.

Variables	1999–2002				2003–2008			
	Mean	N	Min	Max	Mean	N	Min	Max
Healthcare Utilisation								
Any GP Visit	0.850	9875	0	1	0.870	15 748	0	1
Any Outpatient Visit	0.518	9877	0	1	0.553	15 753	0	1
Any Inpatient Stay	0.173	10 180	0	1	0.170	16 603	0	1
Home Care								
Home Help	0.073	9887	0	1	0.077	15 797	0	1
Other Characteristics								
Age	73.29	10 187	61	101	76.26	16 606	62	101
Male	0.428	10 187	0	1	0.432	16 606	0	1
Any Qualification	0.440	10 002	0	1	0.483	16 354	0	1
Marital Status: never married	0.069	10 183	0	1	0.064	16 590	0	1
Marital Status: married/partnership	0.539	10 183	0	1	0.515	16 590	0	1
Marital Status: separate/divorced	0.062	10 183	0	1	0.055	16 590	0	1
Marital Status: widowed	0.330	10 183	0	1	0.366	16 590	0	1
Retired	0.877	10 184	0	1	0.911	16 597	0	1
Household Size	1.775	10 187	1	8	1.713	16 606	1	10
No. of Children in Household	0.002	10 187	0	2	0.000	16 606	0	1
Any Chronic Condition	0.860	10 172	0	1	0.892	16 316	0	1
No. of Chronic Conditions	2.044	10 172	0	10	2.222	16 316	0	10
Monthly Personal Income	689.8	9902	0	15 000	862.6	15 797	0	13 060

Note: This table reports the mean and number of observations of summary statistics for the sample before (1999–2002) and after (2003–2008) the introduction of FPC in Scotland. The variables include indicators of healthcare utilisation, home care use, and key sociodemographic characteristics. The healthcare and home care variables capture reported service use in the past 12 months. Monthly personal income is measured in nominal British pounds.

respondents received any home help and zero otherwise. According to NHS guidelines, help at home from a paid carer is commonly referred to as home care, domiciliary care, or home help, and it typically includes support with daily activities such as washing, dressing, and mobility.[8] Since BHPS primarily sampled individuals living in private households and has minimal information on institutionalised individuals, we are unable to identify elderly respondents residing in institutions such as nursing homes. Thus, we rely exclusively on home help variables as proxies for personal care take-up linked to the introduction of the FPC in Scotland.

4.3. Summary statistics

Table 2 presents summary statistics for the main variables across the pre- and post-FPC periods. During the period of 1999–2002, approximately 85% of elderly respondents reported at least one visit to a GP in the past year, 51.8% had an outpatient visit, and 17.3% had an inpatient stay. The share of individuals visiting a GP and using outpatient care rose to 87% and 55.3% respectively, while the proportion of individuals reporting inpatient stays decreased a little to 17%. The share of respondents who have used any home help rose slightly from 7.3% to 7.7%. Other key characteristics of the respondents are also presented in the table. The average age was 73.3 years during 1999–2002 and 76.3 years during 2003–2008, and the proportion of male respondents increased slightly from 42.8% to 43.2%. There was a decline in the proportion who were married, never married, or divorced, accompanied by an increase in the proportion of widowed individuals. We also observe an increase in the share of respondents who were retired, reported chronic conditions, and experienced an increase in both the number of chronic conditions and monthly personal income. Meanwhile, the average household size and number of children in households declined over the study period.

Table A.3 in the Appendix provides summary statistics by region and time period. Compared to the rest of the UK, the Scottish sample

experienced a smaller increase in GP and outpatient visits. In contrast to the decline in inpatient care use observed in the rest of the UK, the Scottish sample showed no clear change in inpatient care use. Among Scottish respondents, we observe a significant increase in the use of home help services (from 8.4% to 10.3%). In comparison, the rest of the UK sample shows only minor changes in home help use. On average, Scottish respondents were younger, less likely to hold qualifications, more likely to be married or widowed, and had smaller household sizes, fewer chronic conditions, and lower monthly personal incomes compared to their counterparts in the rest of the UK. To further compare the differences in baseline characteristics between the Scottish sample and the rest of the UK, we present the differences in mean values, t-statistics, p-values, and standardised differences for the pre-FPC period in Table A.4 in Appendix. The absolute values of the standardised differences do not exceed 0.25, suggesting that any imbalance is unlikely to pose a serious concern for identification (Baker et al., 2025). The trends in the use of home help and healthcare among elderly respondents in Scotland and the rest of the UK are also presented (see Fig. A.2 and A.3 in the Appendix). The Scottish sample experienced a much larger rise in home help use and in general there is a decrease in the share that visited the GP and an increase in the share that stayed inpatient.

5. Results

5.1. Changes in home care use

We begin by presenting the event study evidence in Fig. 3 showing the use of home help services, which sharply increased following the FPC reform as expected. While the uptake of home help by both men and women shows an upward trend, the figure reveals a considerably larger and more sustained uptake by women. The effects on men are much smaller, which suggests that the overall increase in uptake of home care services is largely driven by women. Consistent with the hypothesis of parallel pre-trends, the coefficients prior to 2002 are small and statistically insignificant at the 95% confidence level. Given that the home help measure may also capture some privately purchased services, we re-estimate the event study using a narrower measure:

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[8] Although the home help variable in the BHPS survey is the closest proxy for home care receipt, its interpretation may differ by individual. As such, it likely represents an upper bound of home care use and may include both publicly funded and privately purchased services.
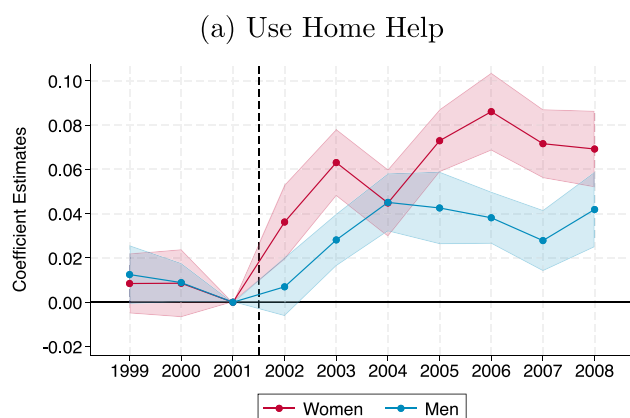
(a) Use Home Help

Fig. 3. Event study of FPC on use of home help services.
Note: This figure presents event study estimates of the impact of the FPC reform in Scotland on use of home help services by gender, based on Eq. (1). Each dot represents the estimated coefficient for a given year relative to the 2001 baseline, with 95% confidence intervals indicated by the shaded areas.

Table 3
Impacts of FPC introduction on use of home help services.

Estimates	Home help		
	Total (1)	Men (2)	Women (3)
Scotland × Post	0.043***	0.023***	0.055***
	(0.003)	(0.003)	(0.004)
Observations	25,012	10,739	14,273
R-squared	0.577	0.557	0.580
Controls	Yes	Yes	Yes
% effect of pre-FPC mean	58.61	52.14	58.42

Note: This table presents estimations of the effects of the FPC introduction in Scotland on use of home help services, based on Eq. (2). The models include individual and year fixed effects and control for age, gender, marital status, qualifications, retirement status, household composition, chronic conditions, and personal income. Standard errors clustered at the regional level are reported in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

receipt of free home help from social services.[9] Respondents were first asked whether they had used home help services in the past 12 months. Those answering "Yes" were then asked follow-up questions on the type of help received (paid, free, or both) and the provider (social services/NHS, private/voluntary, or both). The indicator for receiving free home help from social services equals one if the respondent reported receiving any such services, and zero otherwise. Results presented in Fig. A.4 in the Appendix show that uptake for men remains largely unchanged, with significant increase only in 2004 and 2008. In the meantime, for women, there are consistent and statistically significant increases from 2003 onwards.

The increase in uptake is further reproduced in Table 3, estimated using Eq. (2). We report the key coefficient alone among the total sample, the men subsample, and the women subsample. For the total sample, we observe a 4.3 percentage point increase in home help use. However, the gender-specific estimates reveal a clear difference: women experienced a 5.5 percentage point increase, compared with 2.3 percentage points among men. This corresponds to a 52.14% increase relative to the pre-FPC mean for men and a 58.42% increase for women.

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[9] We do not use this as the primary measure of home care use because respondents may interpret the term free home help from social services differently, which could potentially introduce measurement error. Summary statistics show that 3.8% of our Scottish sample used free home help from social services in 1999–2002. This aligns closely with official Scottish Government figures which report that 4.0% of individuals received funded home care in 2003 (32,870 out of 816,028 individuals).

Table 4
Impacts of FPC introduction on healthcare use.

Estimates	GP visit (1)	Outpatient visit (2)	Inpatient stay (3)
	Panel A: Total Population		
Scotland × Post	−0.020***	−0.008	0.012**
	(0.005)	(0.008)	(0.005)
Observations	24,949	24,956	25,018
R-squared	0.378	0.397	0.298
Controls	Yes	Yes	Yes
% effect of pre-FPC mean	−2.391	−1.463	6.757
	Panel B: Men		
Scotland × Post	−0.035***	−0.026*	−0.023*
	(0.009)	(0.013)	(0.011)
Observations	10,725	10,722	10,739
R-squared	0.386	0.413	0.303
Controls	Yes	Yes	Yes
% effect of pre-FPC mean	−4.243	−4.876	−12.46
	Panel C: Women		
Scotland × Post	−0.009	0.008	0.035***
	(0.007)	(0.008)	(0.008)
Observations	14,224	14,234	14,279
R-squared	0.371	0.386	0.296
Controls	Yes	Yes	Yes
% effect of pre-FPC mean	−0.992	1.570	21.10

Note: This table presents estimations of the effects of the FPC introduction in Scotland on healthcare utilisation, based on Eq. (2). Outcomes are binary indicators for any GP visit, outpatient visit, and inpatient stay in the past 12 months. Results are shown for the total population (Panel A) and separately by gender (Panels B and C). The models include individual and year fixed effects and control for age, gender, marital status, qualifications, retirement status, household composition, chronic conditions, and personal income. Standard errors clustered at the regional level are reported in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

When focusing specifically on the receipt of free home help from social services (Table A.5 in the Appendix), the results show that the overall rise in uptake is driven primarily by women. Among women, the probability of receiving free home help increased by 3.4 percentage points, equivalent to around 83% relative to pre-policy levels, whereas the estimate for men is close to zero. The findings suggest that women were substantially more responsive to the policy expansion in their use of formal home care services.

5.2. Impacts on healthcare utilisation

We next examine how healthcare utilisation was affected by the FPC expansion. The event study results in Fig. 4 provide insight into the dynamic effects of FPC on healthcare use. Fig. 4(a) shows that there is only a limited impact on either the men or the women subsample, and the gap between men and women is small throughout the study period. Fig. 4(b) indicates a modest but statistically insignificant post-reform decline in outpatient visits among men, with little change observed among women. For inpatient stays, Fig. 4(c) shows opposite effects where women experience a significant increase in the likelihood of hospital admission, while men show a negative effect. The sustained rise in inpatient admissions among older women suggests that the increase reflects ongoing and continuous change in health-seeking patterns rather than a short-term response. Detailed coefficient estimates from the event study analysis are presented in Table A.6 in Appendix.

Table 4 presents Difference-in-Differences estimates for the likelihood of using GP services, outpatient visits, and inpatient care. Across the total population, the policy is associated with a statistically significant decrease in the use of GP services (2.0 percentage points) and a small but significant increase in the probability of inpatient stays (1.2 percentage points). The effect on outpatient visits is negative and negligible. Great heterogeneity is observed in the results by gender. Among men, estimates show reductions in GP visits (3.5 percentage points), outpatient visits (2.6 percentage points), and inpatient stays (2.3 percentage points). In contrast, for women, we find a significant
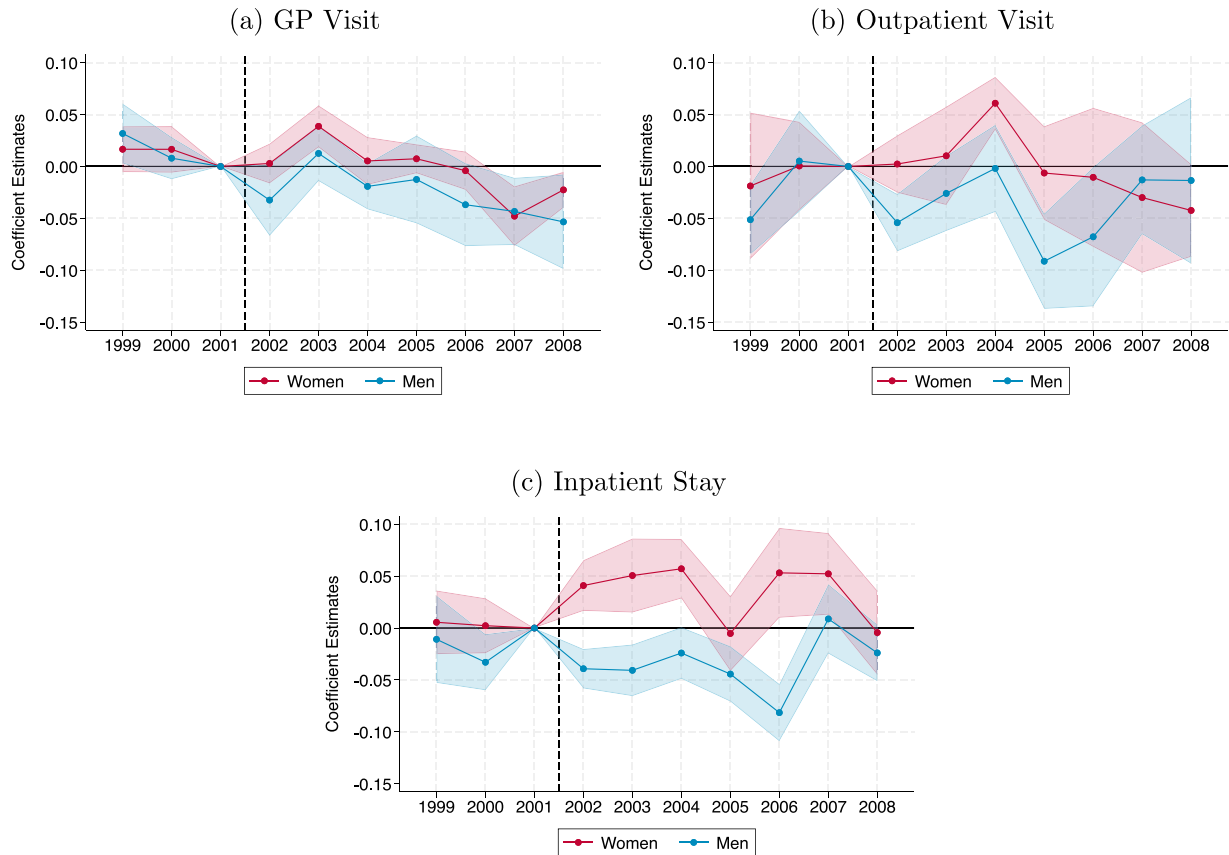
Fig. 4. Event study of FPC on healthcare use.
Note: This figure presents event study estimates of the impact of the FPC reform in Scotland on three measures of healthcare utilisation, based on Eq. (1). The outcomes include binary indicators for any GP visit, any outpatient visit, and any inpatient stay in the past 12 months. Each dot represents the estimated coefficient for a given year relative to the 2001 baseline, with 95% confidence intervals indicated by the shaded areas.

increase of 3.5 percentage points in the probability of an inpatient stay, which corresponds to a 21.1% rise relative to the pre-FPC mean, while the effects on GP and outpatient visits are small and not significant. The evidence points to clear gender-specific patterns in healthcare use. Whereas men show reductions in all three measures of healthcare use following the reform, women exhibit a marked rise in inpatient care. We study the mechanisms in the later section.

5.3. Heterogeneous effects

To explore further whether the impact of FPC varies across population subgroups, we estimate heterogeneous treatment effects by interacting $Scotland_i \cdot Post_{it}$ with indicators of subgroups based on the main specification Eq. (2).[10] We estimate the total effects for each subgroup sample and present them in Fig. 5. It shows the coefficients on the likelihood of GP visits, outpatient visits, and inpatient stays, separately for men and women and by subgroups defined by age, living arrangements, marital status, presence of children, benefit income level, housing tenure, and number of ADL limitations. The subgroup samples are constructed based on the individual information collected in the pre-FPC baseline wave.

Among men, the estimated policy effects are mostly neutral or slightly negative across healthcare outcomes. The exception being for men who had no children, for whom we find an increase in outpatient

visits. However, among women, results vary across subgroups. For GP visits, we find an increase in health care use among women aged 75+, and those who were renters. For outpatient visits, an increase is observed among women who are older, living alone, widowed/divorced/never married, and renting their homes. However, the largest increase is observed among women living alone. Conversely, we find a reduction in the outpatient care visits among women who are not living alone, married or having a partnership, or with no children. These results suggest that the average null effect in the outpatient regression results is a result of offsetting changes across groups. That is, outpatient visits increased among more socioeconomically disadvantaged or unsupported women, while they declined among more advantaged groups.

When we turn to inpatient care, results are especially pronounced among women with greater care needs and fewer informal resources — older women, those living alone, widows/divorced/never married with no children, those who are renters, and those receiving more benefit income. Notice that elderly women who could not perform some ADLs and those who were not using home help at baseline show a larger increase in inpatient admissions. The effect sizes are substantial, with the highest of 8.6 percentage points observed among women with more than two ADLs requiring help. The only negative effect is observed among women who were already using home help at baseline, which is as expected. The results suggest that FPC disproportionately benefited women with greater vulnerability who had lower socioeconomic status, fewer informal support options, and higher care needs. These estimates are consistent with existing literature showing that home care users tend to be older, live alone, and have more ADL limitations and fewer informal caregivers (Kadushin, 2004).

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[10] The equation used is as follows: $Y_{it} = \alpha_i + \lambda_t + \beta \cdot Scotland_i \cdot Post_{it} \cdot Subgroup_i + X'_{it}\omega + \varepsilon_{it}$
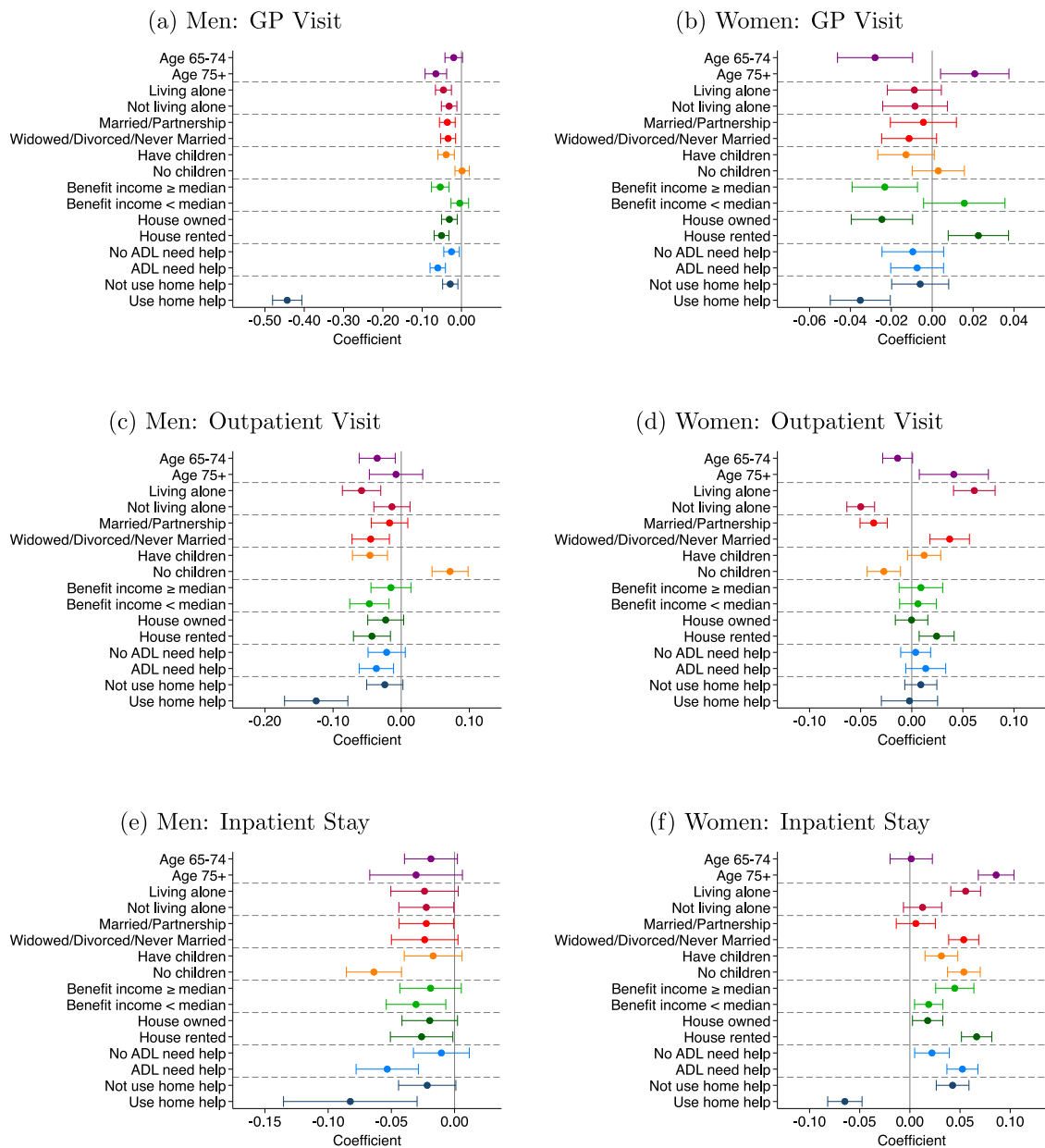
Fig. 5. Heterogeneity in the impacts on healthcare use by subgroups.
Note: This figure displays the heterogeneity in estimated effects of the FPC reform on healthcare use across population subgroups, separately for men (left panels) and women (right panels). Outcomes include binary indicators for having had a GP visit, outpatient visit, or inpatient stay in the past 12 months. Each dot represents the subgroup-specific coefficient from estimations adding interaction with subgroup indicators in Eq. (2). Horizontal lines indicate 95% confidence intervals. All models include individual and year fixed effects and standard controls.

A broader literature on healthcare access effects among older people supports these findings. Women generally live longer than men, are more likely to be widowed, and face an increased risk of isolation (Goda et al., 2013; Meulman et al., 2023). Hence, we complement the evidence with results presented in Table A.7 in the Appendix, which displays estimates by living arrangement at baseline for men and women. Consistent with the interaction results in Fig. 5, the gender differential remains pronounced. Women living alone experience significant increases in both outpatient and inpatient care use, whereas women not living alone show a smaller rise in outpatient visits. In contrast, we observe a decrease in GP visits and inpatient stays for men. These results suggest that formal social care may fill a crucial gap in care coordination among women. Given that women are less likely to engage with health services without sustained contact (Hunt-Mccool et al., 1995), the removal of financial barriers to personal care may

have facilitated greater service engagement among women who were previously underserved.

5.4. Mechanisms

In the main results, we have documented that women responded more strongly to the FPC expansion, showing a higher likelihood of using home help and inpatient care services, whereas men generally reduced their healthcare use. In this section, we test and discuss the hypothesised mechanisms. To do so, we replace the dependent variable in Eq. (2) with a set of variables representing possible pathways through which publicly funded social care may have influenced healthcare utilisation by gender.

We first examine the impact on the likelihood of undergoing health check-ups, as these serve as a proxy for engagement with the healthcare

Table 5

Testing mechanisms.

Estimates	Health Check-ups		Welfare Service: Meals on Wheels	
	Men	Women	Men	Women
Scotland × Post	−0.030**	0.017**	−0.002	0.010*
	(0.012)	(0.007)	(0.003)	(0.005)
Observations	10,740	14,274	10,739	14,273
R-squared	0.410	0.398	0.574	0.491

Note: This table examines whether health check-ups and using the welfare service of Meals on Wheels are mechanisms through which the FPC reform may affect healthcare use using the Eq. (2). The dependent variable is a binary indicator for having received any health check-up in the past 12 months or whether receiving Meals on Wheels. Results are shown separately for women and men. The models include individual and year fixed effects and control for age, gender, marital status, qualifications, retirement status, household composition, chronic conditions, and personal income. Standard errors clustered at the regional level are reported in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

system, potentially improving access to necessary medical services. The results presented in Table 5 show a significant 1.7 percentage point increase in the probability of health check-ups among women, contrasted with a 3 percentage point decrease among men. FPC may have promoted greater interaction with healthcare providers for women, leading to more frequent check-ups and the subsequent detection of health conditions, which could explain the observed rise in hospital stays. For men, home help services appear to substitute for routine healthcare visits, thereby reducing their overall engagement with providers.

Next, we assess the probability of receiving additional contacts from social services, using Meals on Wheels as an indicator of expanded interactions and connections within welfare systems. The estimates indicate a one percentage point increase in uptake among women and a small and statistically insignificant decrease for men. It implies a small increase in engagement between women and social welfare services, which supports the hypothesis that regular contacts likely uncover unmet health needs.

These explanations align with existing literature on the effects of preventive interventions. For instance, Hackl et al. (2015), using Austrian administrative data, evaluated a general health-screening program and found that participation temporarily increased inpatient and outpatient care by up to 40%. Similarly, Dhingra et al. (2025) demonstrated that health screenings elevate the probability of cancer diagnoses and hospitalisations while reducing mortality, with stronger effects on hospitalisation and survival for women than men. Further evidence comes from Bannenberg et al. (2021), which estimates positive associations between preventive home visits and home-based care, reinforcing the role of such contacts in driving utilisation.

Other mechanisms outlined in our theory of change, although not directly testable in our data, are supported by evidence from prior studies. Several analyses indicate that extended longevity, higher survival rates, and declining mortality can lead to higher long-term healthcare expenditures (Breyer et al., 2015; Heijink et al., 2013; Stearns and Norton, 2004). Thus, the preventive support from FPC may improve survival outcomes for women, which contributes to their cumulative healthcare use. Finally, informal care likely mediates these effects through substitution dynamics. Evidence suggests that formal care can displace informal caregiving (Hollingsworth et al., 2022), potentially leading women who often receive less informal support to rely more on healthcare services. For men, greater availability of informal care may buffer against such shifts, which could leave their healthcare-seeking behaviour largely unaffected (Carmichael and Charles, 2003; Vicente et al., 2022).

5.5. Robustness checks

In this section, we test the robustness of the main findings. Table 6 presents the estimates from alternative specifications, subsample restrictions, and varied control groups reported separately for the total population, men, and women, which are variations of the main specification of Eq. (2).

Panel A explores how estimates vary across different model specifications. First, we estimate a TWFE model without any covariates, which helps assess whether the observed effects are driven by the inclusion of individual-level controls. The second specification extends the baseline model by including in the controls the imputed measures of difficulty with ADLs and the number of ADLs requiring help. The ADL variables capture the care needs of individuals and could verify that the effects are not confounded by omitted differences in care needs. In addition, we include lagged healthcare use in the covariates to further refine the measure of health condition at the individual level, since healthcare is often strongly related to previous use of healthcare. Then, we implement the TWFE model using the BHPS-developed sampling weights. It accounts for non-random sample attrition and the complex survey design. Finally, we remove the policy implementation year (2002) from the sample to account for uncertainty in the timing of treatment exposure during the transition year, and to address the concern that bias might come from the reported healthcare-seeking in the past year. The results remain robust, with women continuing to show a significant increase in inpatient stays, with coefficients ranging from 3.3 to 5.4 percentage points, while men show a similar reduction in healthcare use as in the main results.

Panel B tests robustness to changes in sample composition. We restrict the sample to individuals who were aged 65 or older throughout the entire study period. We try to ensure that the treatment and control groups are not affected by cohort ageing or transitions into eligibility. We also examine whether attrition is systematically related to mobility by restricting the analysis to a balanced sample, consisting of individuals who appear in every survey wave from 1999/2000 to 2004/2005. Panel C examines the sensitivity of the results to the choice of control group. We exclude Northern Ireland from the control group because the boosted sample for Northern Ireland was only added in 2001, and a slight regulatory difference in that free nursing care was introduced one year later than England and Wales and half a year later than Scotland. We then also exclude London to address concerns that its unique socioeconomic characteristics could influence the comparison. In both cases, the results remain highly consistent with the main estimates.

5.6. Placebo and falsification tests

To address the concern that the observed effects are driven by trends affecting other UK countries, we conduct a set of placebo and falsification tests. These tests examine whether the estimated effects could be spuriously driven by other policy changes or confounders unrelated to the FPC reform in Scotland.

Table 7 reports results from placebo tests where we reassign the treatment to countries that did not implement the FPC policy and estimate the effect of the "fake" treatment. In Panel A, England is used as the placebo treatment group and compared against Wales and Northern Ireland. In Panel B, Wales is used as the placebo treatment

Table 6
Robustness of estimates to alternative specifications.

	Men			Women		
	GP (1)	Outpatient (2)	Inpatient (3)	GP (4)	Outpatient (5)	Inpatient (6)
Panel A: Alternative Model Specifications						
	−0.035***	−0.029**	−0.011	−0.008	0.012	0.038***
TWFE Without Covariates	(0.008)	(0.013)	(0.011)	(0.006)	(0.008)	(0.007)
	10,844	10,841	11,329	14,315	14,325	14,997
	−0.053***	−0.041**	−0.032***	−0.002	0.004	0.042***
TWFE with Imputed ADL Covariates	(0.010)	(0.015)	(0.009)	(0.007)	(0.011)	(0.009)
	9,910	9,907	9,924	13,197	13,208	13,248
	−0.044***	−0.064***	−0.029**	0.000	0.001	0.039***
TWFE with Lagged Healthcare Covariates	(0.008)	(0.012)	(0.012)	(0.007)	(0.014)	(0.012)
	8,970	8,965	9,053	11,802	11,815	11,952
	−0.061***	−0.107***	0.015	0.004	0.020	0.054***
TWFE with BHPS Sampling Weights	(0.012)	(0.018)	(0.013)	(0.011)	(0.017)	(0.010)
	4,725	4,720	4,726	6,397	6,408	6,431
	−0.035***	−0.026*	−0.026**	−0.011	0.006	0.033***
TWFE Excluding 2002 Implementation	(0.010)	(0.014)	(0.011)	(0.007)	(0.009)	(0.008)
	9,471	9,466	9,483	12,588	12,597	12,638
Panel B: Alternative Sample Analyses						
	−0.060***	−0.015	−0.046***	−0.001	0.017	0.046***
Subsample: Age > 65 Entire Study Period	(0.008)	(0.014)	(0.012)	(0.007)	(0.012)	(0.008)
	8,899	8,896	8,910	12,011	12,022	12,066
	−0.048***	−0.034**	−0.020	−0.003	0.037***	0.049***
Balanced Sample	(0.008)	(0.013)	(0.016)	(0.009)	(0.012)	(0.010)
	4,815	4,806	4,817	6,497	6,499	6,514
Panel C: Control Group Sensitivity						
	−0.040***	−0.032**	−0.023*	−0.009	0.007	0.038***
Exclude Northern Ireland from Control	(0.008)	(0.012)	(0.012)	(0.007)	(0.008)	(0.008)
	9,228	9,224	9,240	12,422	12,432	12,477
	−0.038***	−0.028**	−0.020*	−0.004	0.009	0.037***
Exclude London from Control	(0.009)	(0.013)	(0.011)	(0.005)	(0.008)	(0.008)
	10,309	10,306	10,325	13,586	13,593	13,632

Note: This table presents robustness checks of the estimated effects of the FPC reform on healthcare use across a range of alternative model specifications (Panel A), alternative samples (Panel B), and control group definitions (Panel C). Each cell reports the coefficient, standard error (in parentheses), and number of observations (third row) from a variation of the baseline Eq. (2). All specifications control for the standard covariates unless otherwise noted. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

group, compared against England and Northern Ireland.[11] If the placebo reforms produce statistically significant effects, it would cast doubt on the validity of the DiD identification strategy, as it would suggest that similar changes occurred outside Scotland. However, across all outcomes, the estimated placebo effects are statistically insignificant and close to zero. This provides reassurance that the healthcare outcomes in the rest of the UK evolved similarly over time and that the divergence observed in Scotland is plausibly attributable to the FPC reform.

In Table 8, we further validate the specificity of the estimated effects by replacing the primary outcomes with alternative health and welfare services and benefits that were not directly targeted by the FPC policy, including the use of psychotherapists, speech therapists, and physiotherapists, as well as alternative medicine. We also assess whether FPC altered the chance of receiving Disability Living Allowance (DLA). DLA is a non-means-tested benefit intended to help people with the extra costs of long-term health conditions. DLA must commence before age 65, but can be continued beyond 65. It should therefore remain unaffected by the introduction of free personal care services. The effects on other welfare services and DLA components are negligible and statistically insignificant. The results support the conclusion that the observed impacts on home help and healthcare use are not part of a generalised increase in welfare provision or uptake but rather a targeted response to the FPC reform.

5.6.1. Addressing devolution as a confounder

A key concern in identifying the causal impacts of the Free Personal Care policy is the potential confounding influence of political devolution, which took place around 1999–2000. Devolution transferred

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[11] Northern Ireland is not used as a placebo treatment group due to its relatively small pre-2002 sample size as a result of a later boost in sampling.

Table 7
Placebo tests with England and Wales as fake treatment countries.

Estimates	GP visit (1)	Outpatient visit (2)	Inpatient stay (3)
	Panel A: England as the fake treatment country		
England × Post	0.001	−0.003	−0.004
	(0.008)	(0.015)	(0.012)
Observations	20,249	20,257	20,308
R-squared	0.382	0.400	0.297
	Panel B: Wales as the fake treatment country		
Wales × Post	0.007	0.015	−0.003
	(0.006)	(0.010)	(0.007)
Observations	20,249	20,257	20,308
R-squared	0.382	0.400	0.297

Note: This table reports placebo estimates where England (Panel A) and Wales (Panel B) are each assigned as if they were the treatment country to test for effects of the FPC reform using the Eq. (2). The dependent variables are binary indicators for any GP visit, outpatient visit, and inpatient stay in the past 12 months. The models include individual and year fixed effects and control for age, gender, marital status, qualifications, retirement status, household composition, chronic conditions, and personal income. Standard errors clustered at the regional level are reported in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

significant powers over health and social care to the Scottish Parliament, which might potentially alter various aspects of the healthcare system that could indirectly affect elderly healthcare use. However, as argued below, the timing, nature, and empirical evidence surrounding devolution suggest that the observed effects in our findings are more attributable to FPC than to these broader systemic changes.

Health care has been a devolved matter in the United Kingdom since the transfer of powers to the Scottish Parliament and Welsh Senedd on July 1, 1999, and to the Northern Ireland Assembly on December 2, 1999 (Bevan et al., 2014) Indeed, devolved authorities

Table 8
Falsification outcomes.

Estimates	Other health and welfare services				Disability living allowance	
	Psychotherapist (1)	Speech therapist (2)	Physiotherapist (3)	Alternative medicine (4)	Care component (5)	Mobility component (6)
Scotland × Post	0.001 (0.002)	0.000 (0.002)	−0.003 (0.003)	0.002 (0.003)	0.001 (0.002)	0.000 (0.002)
Observations	25,012	25,012	25,012	25,012	25,023	25,023
R-squared	0.253	0.311	0.310	0.447	0.491	0.722

Note: This table reports falsification tests using outcomes that were not directly targeted by the FPC reform. Columns (1) to (4) show effects on the reported use of other health and welfare services (psychotherapist, speech therapist, physiotherapist, and alternative medicine), and columns (5) and (6) examine changes in receipt of the Disability Living Allowance (DLA), which includes a care component and a mobility component. DLA is a non-means-tested benefit intended for individuals with a disability or long-term health condition that affects daily living or mobility, but eligibility must begin before age 65. All outcomes are binary indicators for receipt or service use in the past 12 months. The coefficients are estimated using Eq. (2) with individual and year fixed effects. Standard errors clustered at the regional level are shown in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

gained responsibility for key areas, including the organisation and funding of NHS systems, family planning, health service provision, and the prevention, treatment, and alleviation of disease and so on. Post-devolution, Scotland, Wales, and Northern Ireland abolished prescription charges, leaving England as the only nation where patients pay for prescriptions. Scotland also expanded local authority powers to promote well-being and public health initiatives, such as active travel (Atkins et al., 2021). While England relied heavily on performance targets, public accountability, and market-like mechanisms to drive reforms, Scotland prioritised partnerships between health and social care providers. Notable reforms included abolishing NHS trusts and the purchaser–provider split in 2004, integrating acute and primary services into 15 health boards in 2000, and establishing community health partnerships in 2004 to enhance integration between health and social care, which is an approach that foreshadowed later UK-wide priorities in the 2010s (Atkins et al., 2021).

From a historical perspective, Scottish health policy post-devolution has been relatively stable, in contrast to the frequent restructuring in England. Major systemic changes in Scotland unfolded gradually, with many occurring well after the FPC introduction in 2002. This disconnect supports the argument that devolution's broader effects are unlikely to explain the rapid shifts observed in elderly healthcare use. Empirically, for example, rates of hospital doctors (in whole-time equivalents per 1,000 population) from 1996 to 2011 show Scotland consistently leading the UK nations, with a stable excess of about 0.4 per 1,000 over England and Wales throughout the period (Bevan et al., 2014). Similarly, comparisons of amenable mortality rates across the UK suggest that divergent NHS policies post-devolution had little measurable impact on health outcomes (Bevan et al., 2014). These patterns indicate that devolution did not produce abrupt or substantial disruptions in healthcare delivery or utilisation that could confound the impacts of FPC.

In our analysis using the BHPS data, which begins in 1999, we are limited in examining pre-devolution trends. However, as illustrated in Fig. 4(c), changes in elderly healthcare utilisation occurred swiftly following 2002, which aligns closely with the timing of FPC rather than the earlier devolution.

6. Conclusion

This paper has examined the different gender effects of the introduction of a publicly funded expansion in adult social care access on the healthcare use of older adults. We exploit evidence from the introduction of FPC in Scotland in July 2002 using longitudinal data from the BHPS. We employ a DiD approach that compares Scotland with the rest of the UK, complemented by dynamic event study estimations. We first find that the publicly funded care provision substantially increased the uptake of home help services, mainly among older women but not men, which aligns with the evidence that women favour professional support more than men (Carvalho et al., 2019). Women are more likely to act as informal caregivers, but also tend to have less access to informal care

themselves. Older women are more often widowed, live alone, or lack spousal support, leaving them with fewer informal care resources. In this context, the expansion of publicly funded personal care may have helped fill this gap, providing support that men, who are more likely to receive care from spouses or partners, were less likely to need.

The results on healthcare use suggest evidence of a significant rise of 3.5 percentage points in inpatient healthcare use among women, particularly those aged 75 and over, living alone, divorced/widowed, with multiple care needs, or from lower socioeconomic backgrounds. Such a rise in hospitalisation persists over time and is consistent with Gonçalves and Weaver (2017), who also find stronger effects among older individuals. By contrast, men show a modest reduction in healthcare use, consistent with the substitution effects between social care and healthcare utilisation commonly documented in the literature. Our mechanism analysis suggests that publicly funded personal care improved engagement with health and care services among more disadvantaged populations, which could enable earlier detection of unmet health needs. Enhanced access to personal care may help women better recognise and act upon their health conditions, leading to greater use of healthcare services that might otherwise have been delayed or overlooked. Receiving care thus appears to play a facilitating role in identifying and addressing unmet needs that would have remained unrecognised without such support.

Our findings have several important policy implications. First, expanding access to publicly funded adult social care can generate broader health system effects, particularly for women. Access to care helps identify previously unmet needs and encourages care-seeking behaviour among underserved groups. Disadvantaged older women – especially those living alone or lacking informal care, as many outlive their partners – benefit most, with increased hospital admissions likely reflecting the identification and treatment of unmet health needs. Policies that provide personal care services universally, without means-testing, can thus act as both social protection measures and indirect health interventions. In contrast, men, who more often receive informal care from spouses or family members, appear less responsive to expansions in formal care.

Second, the presence of non-negligible gendered effects underscores the need for long-term care systems that account for demographic and household structures. Policies that rely heavily on informal support risk exacerbating health inequalities for women, whereas universal or widely accessible personal care provision can help mitigate these structural disparities.

Third, integrated approaches linking social care and healthcare services could further amplify these benefits. Trained social care workers could facilitate regular health check-ups, medication support, and timely medical referrals, promoting earlier detection of health issues, improved chronic disease management, and ultimately healthier ageing.

Finally, whereas some previous studies have focused primarily on the substitution effects of expanding social care on health care use, our findings highlight complementarity effects, particularly for women.
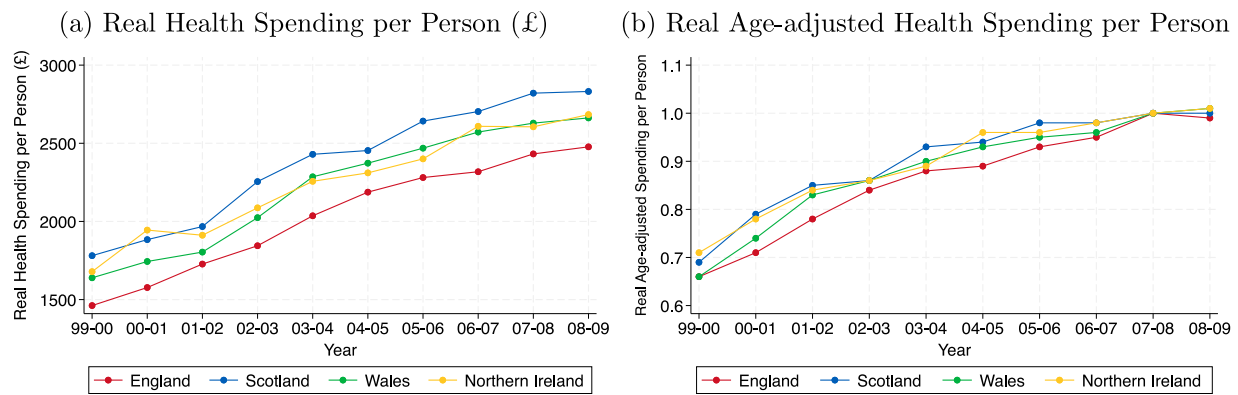
(a) Real Health Spending per Person (£)

(b) Real Age-adjusted Health Spending per Person

Fig. A.1. Trends in real and age-adjusted health spending per person in the UK.

Note: This figure presents trends in real and age-adjusted health spending per person across the four UK countries between 1999–00 and 2008–09, based on data summarised by the report published by the Institute for Fiscal Studies (Stoye et al., 2024). Fig. A.1(a) shows real health spending per person in 2024–25 prices. Fig. A.1(b) shows real age-adjusted health spending per person, using 2007–8 as the reference period.

Table A.1

Sample sizes by country and year.

Year	Scotland	England	Wales	Northern Ireland	*Total*
1999	702	1868	749	55	3374
2000	691	1745	694	47	3177
2001	649	1652	636	695	3632
2002	560	1316	590	540	3006
2003	510	1220	556	473	2759
2004	452	1138	506	425	2521
2005	421	1039	462	393	2315
2006	390	978	447	359	2174
2007	349	912	423	320	2004
2008	311	834	384	292	1821
Total	5035	12702	5447	3599	26783

Note: This table reports the number of observations by country and survey year from the BHPS data. The number of observations reflects unweighted sample sizes used in the main analysis.

Table A.2

Demographic comparison of BHPS and 2001 census data for older adults (65+).

Demographics	Scotland		England, Wales, and Northern Ireland	
	2001 Census	2001 BHPS	2001 Census	2001 BHPS
Age 65–74	55.33%	56.38%	52.55%	55.09%
Age 75–84	33.67%	37.65%	35.30%	36.43%
Age 85+	11.00%	5.970%	12.15%	8.48%
Male	40.48%	40.30%	44.21%	43.62%
Married	49.09%	49.09%	52.17%	54.81%

Note: This table reports the age distribution, gender composition, and marital status of individuals aged 65 and over in Scotland and the rest of the United Kingdom, based on the 2001 Census and the 2001 wave of the BHPS. The BHPS sample includes individuals residing in private households. Census figures refer to the resident population at the time of the 2001 Census.

Access to home help increases the likelihood of identifying previously unmet health needs, thereby promoting greater engagement with the health care system.

Policymakers should be cautious in assuming that expanding social care will always reduce healthcare costs in the short term. In some cases, increased healthcare use, particularly inpatient care, may reflect appropriate and needed access rather than inefficiency. Long-term evaluations are needed to assess whether the initial increases in healthcare use eventually lead to better health outcomes and lower costs. Our findings point to medium-term complementarity between access to social care and healthcare utilisation among women. However, this relationship may evolve over time. As social care provision becomes more widely available and unmet needs are identified earlier, preventive measures could reduce the need for intensive healthcare use among the older population.

While our findings are robust to a range of placebo and falsification tests, several limitations remain. First, healthcare use in our dataset (the BHPS) is self-reported and may be subject to reporting or recall bias. However, such biases are unlikely to differ systematically between the treatment and control groups or over time, so the estimates are likely still valid. Second, we cannot observe the intensity of care (formal or informal) received and are thus unable to assess whether the quantity or quality of care changed. This limits our ability to detect substitution between care types. While it restricts the granularity of our conclusions, the binary indicators of healthcare use still capture meaningful changes in utilisation attributable to the policy. Third, the sample is limited to individuals able to complete the survey; it may exclude individuals with severe illness, institutionalised individuals, or those recently hospitalised, groups for whom healthcare use patterns could differ. Nevertheless, the proportion of such excluded individuals is small, and robustness checks using survey weights suggest that these exclusions do not materially affect our estimates.

Although this study relies on data collected in the early 2000s, the findings remain relevant to current policy debates. The FPC scheme analysed here represents one of the earliest and most comprehensive examples of a universal home care expansion in Europe, and it continues to operate in Scotland today. The policy design and long-term

Table A.3

Summary statistics by region and period.

Variables	1999–2002				2003–2008			
	Scotland		Rest of the UK		Scotland		Rest of the UK	
	Mean	N	Mean	N	Mean	N	Mean	N
Healthcare Utilisation								
Any GP Visit	0.864	1971	0.847	7904	0.865	2754	0.871	12 994
Any Outpatient Visit	0.514	1972	0.519	7905	0.535	2753	0.556	13 000
Any Inpatient Stay	0.182	2008	0.171	8172	0.182	2929	0.167	13 674
Home Care								
Home Help	0.084	1970	0.070	7917	0.103	2762	0.071	13 035
Other Characteristics								
Age	72.71	2008	73.44	8179	76.05	2929	76.31	13 677
Male	0.407	2008	0.432	8179	0.401	2929	0.438	13 677
Any Qualification	0.473	1979	0.432	8023	0.505	2893	0.479	13 461
Marital Status: never married	0.068	2008	0.069	8175	0.049	2929	0.068	13 661
Marital Status: married/partnership	0.504	2008	0.548	8175	0.461	2929	0.526	13 661
Marital Status: separate/divorced	0.064	2008	0.061	8175	0.058	2929	0.055	13 661
Marital Status: widowed	0.363	2008	0.322	8175	0.431	2929	0.352	13 661
Retired	0.887	2008	0.874	8176	0.931	2929	0.907	13 668
Household Size	1.672	2008	1.800	8179	1.589	2929	1.740	13 677
No. of Children in Household	0.003	2008	0.002	8179	0.001	2929	0.000	13 677
Any Chronic Condition	0.840	2007	0.865	8165	0.889	2844	0.892	13 472
No. of Chronic Conditions	1.943	2007	2.069	8165	2.134	2844	2.240	13 472
Monthly Personal Income	670.5	1974	694.6	7928	837.2	2762	868.0	13 035

Note: This table presents the mean and number of observations of summary statistics for the sample in Scotland and the rest of the UK, before (1999–2002) and after (2003–2008) the introduction of FPC in Scotland. Variables include indicators of healthcare utilisation, home care use, and sociodemographic characteristics. Healthcare and home care variables refer to reported service use in the past 12 months. Monthly personal income is measured in nominal British pounds.

Table A.4

Covariate balance between treatment and comparison groups.

Covariates	1999 BHPS				2000 BHPS				2001 BHPS			
	Diff. Mean	t-stat	p-value	Std. Diff.	Diff. Mean	t-stat	p-value	Std. Diff.	Diff. Mean	t-stat	p-value	Std. Diff.
Age	−0.81	2.63	0.01	−0.11	−0.97	3.20	0.00	−0.14	−0.28	0.92	0.36	−0.04
Male	−0.02	0.96	0.34	−0.04	−0.02	1.07	0.29	−0.05	−0.03	1.47	0.14	−0.06
Any Qualification	0.04	−1.64	0.10	0.07	0.04	−1.66	0.10	0.07	0.05	−2.35	0.02	0.10
Never married	0.00	−0.39	0.70	0.02	0.01	−0.60	0.55	0.03	−0.01	1.00	0.32	−0.04
Married/partner	−0.03	1.56	0.12	−0.07	−0.05	2.36	0.02	−0.10	−0.05	2.17	0.03	−0.09
Separate/divorced	0.00	−0.32	0.75	0.01	0.00	0.35	0.72	−0.02	0.01	−0.78	0.43	0.03
Widowed	0.03	−1.28	0.20	0.05	0.05	−2.37	0.02	0.10	0.05	−2.46	0.01	0.11
Retired	−0.01	0.41	0.68	−0.02	0.03	−1.89	0.06	0.08	0.02	−1.81	0.07	0.08
HH Size	−0.12	3.54	0.00	−0.16	−0.12	3.38	0.00	−0.15	−0.14	4.08	0.00	−0.18
No. of Children	0.00	−0.28	0.78	0.01	0.00	−0.22	0.82	0.01	0.00	−1.02	0.31	0.04
Any Condition	−0.05	2.91	0.00	−0.12	−0.02	1.37	0.17	−0.06	−0.01	0.69	0.49	−0.03
No. of Condition	−0.21	3.33	0.00	−0.14	−0.12	1.84	0.07	−0.08	−0.04	0.63	0.53	−0.03
Personal Income	−5.17	0.20	0.84	−0.01	−27.29	1.08	0.28	−0.05	−34.74	1.30	0.20	−0.06

Note: This table presents covariate balance tests between the treatment group (Scotland) and the comparison group (rest of the UK) for the pre-reform period (1999–2001) using BHPS data. For each year, the table reports the difference in means, corresponding *t*-statistics, p-values, and standardised differences. Standardised differences are calculated as the difference in group means divided by the pooled standard deviation.

Table A.5

Impacts of FPC introduction on use of free home help from social service.

Estimates	*Free* Home Help *from Social Services*		
	Total (1)	Men (2)	Women (3)
Scotland × Post	0.022*** (0.002)	0.003 (0.002)	0.034*** (0.003)
Observations	25,008	10,738	14,270
R-squared	0.510	0.493	0.514

Note: This table presents estimations of the effects of the FPC introduction in Scotland on use of free home help from social services, based on Eq. (2). Results are shown for the total population, men, and women. The models include individual and year fixed effects and control for age, gender, marital status, qualifications, retirement status, household composition, chronic conditions, and personal income. Standard errors clustered at the regional level are reported in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

implementation provide insights for countries considering similar approaches to financing and delivering personal care. Therefore, despite the age of the data used, the analysis offers enduring lessons about the potential spillover effects of care entitlements on healthcare utilisation. The insights can also inform the design of adult social care systems internationally, particularly in countries aiming to integrate social care and healthcare more effectively and in contexts where women and older adults are more likely to rely on formal care services.

CRediT authorship contribution statement

Wanying Wang: Writing – review & editing, Writing – original draft, Visualization, Methodology, Formal analysis, Data curation, Conceptualization. **Joan Costa-Font:** Writing – review & editing, Supervision, Methodology.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgement

Appendix

See Figs. A.1–A.4 and Tables A.1–A.7.

Table A.6
Dynamic effects of FPC on healthcare use.

Year	Men			Women		
	GP visit (1)	Outpatient visit (2)	Inpatient stay (3)	GP visit (4)	Outpatient visit (5)	Inpatient stay (6)
1999	0.032** (0.015)	−0.051*** (0.017)	−0.011 (0.021)	0.017 (0.011)	−0.019 (0.036)	0.006 (0.016)
2000	0.008 (0.010)	0.005 (0.025)	−0.033** (0.014)	0.017 (0.011)	0.001 (0.022)	0.002 (0.014)
2001 - Reference Year						
2002	−0.032* (0.018)	−0.054*** (0.014)	−0.039*** (0.010)	0.003 (0.010)	0.002 (0.014)	0.041*** (0.012)
2003	0.013 (0.014)	−0.026 (0.019)	−0.041*** (0.013)	0.039*** (0.010)	0.010 (0.024)	0.051*** (0.018)
2004	−0.019* (0.011)	−0.002 (0.021)	−0.024* (0.013)	0.005 (0.012)	0.061*** (0.013)	0.057*** (0.015)
2005	−0.013 (0.022)	−0.091*** (0.023)	−0.044*** (0.014)	0.007 (0.007)	−0.006 (0.023)	−0.005 (0.018)
2006	−0.037* (0.020)	−0.068** (0.034)	−0.081*** (0.014)	−0.004 (0.009)	−0.010 (0.034)	0.053** (0.022)
2007	−0.043*** (0.017)	−0.013 (0.027)	0.009 (0.017)	−0.048*** (0.015)	−0.030 (0.037)	0.052*** (0.020)
2008	−0.053** (0.023)	−0.013 (0.041)	−0.024* (0.014)	−0.023** (0.009)	−0.042* (0.023)	−0.004 (0.021)

Note: This table reports event study estimates of the impact of FPC introduction in Scotland on healthcare use, for the total sample and separately by gender, using Eq. (1). The outcomes include binary indicators for any GP visit, outpatient visit, and inpatient stay in the past 12 months. The year 2001 serves as the reference year. Standard errors clustered at the regional level are reported in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.
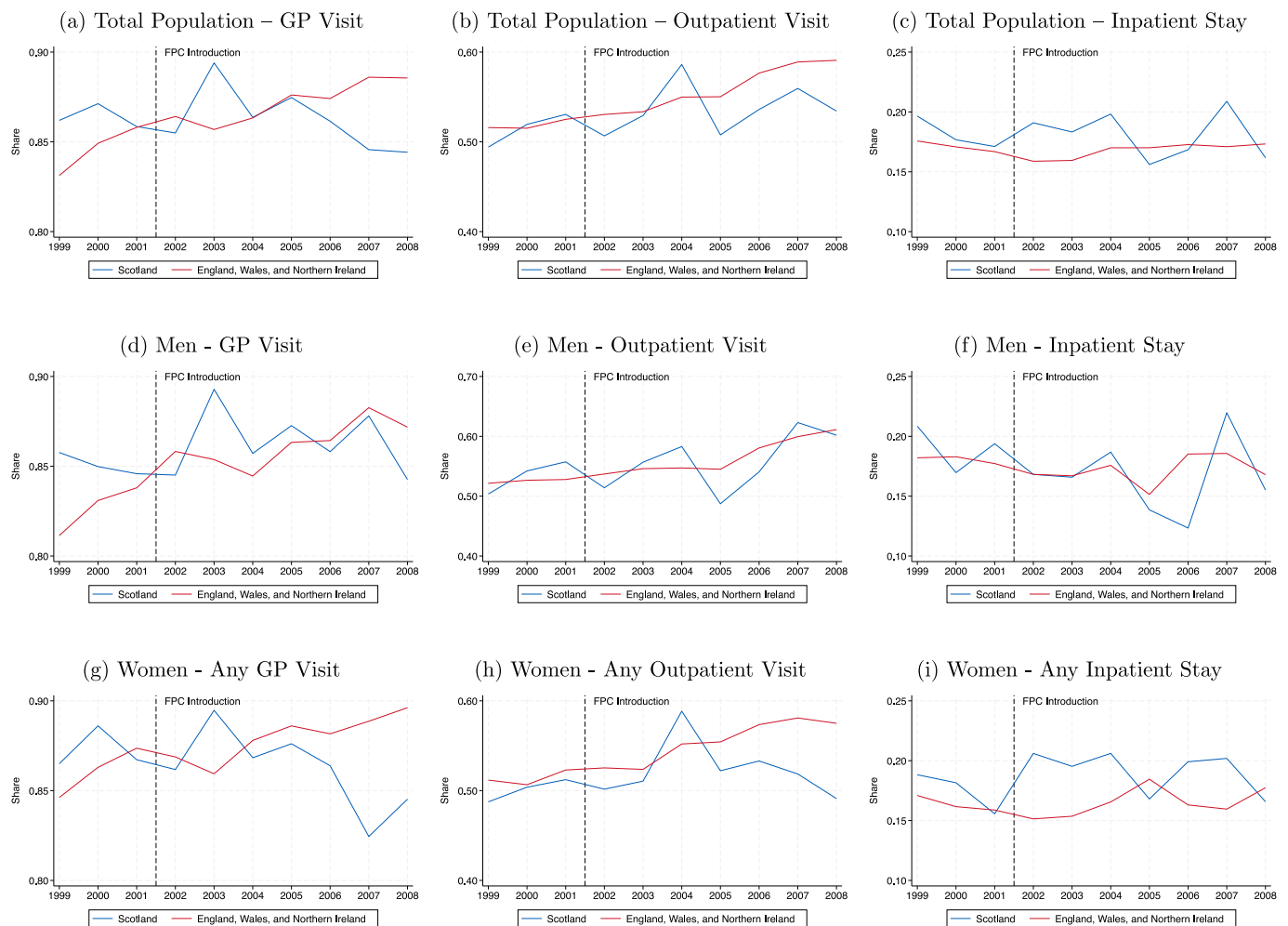

Fig. A.2. Trends in healthcare use by gender.

Table A.7

Heterogeneous Analysis on Elderly Living Alone.

Estimates	Men			Women		
	GP	Outpatient	Inpatient	GP	Outpatient	Inpatient
	Elderly living alone at baseline					
Scotland × Post	−0.053***	−0.046	−0.024	−0.009	0.069***	0.063***
	(0.018)	(0.027)	(0.020)	(0.008)	(0.014)	(0.011)
Observations	2,364	2,359	2,368	6,408	6,415	6,445
R-squared	0.376	0.424	0.344	0.405	0.394	0.301
	Elderly NOT living alone at baseline					
Scotland × Post	−0.030***	−0.017	−0.022**	−0.008	−0.054***	0.007
	(0.009)	(0.014)	(0.011)	(0.011)	(0.009)	(0.011)
Observations	8,361	8,363	8,371	7,816	7,819	7,834
R-squared	0.389	0.409	0.291	0.343	0.381	0.288

Note: This table presents the heterogeneous analysis based on the living arrangement status for men and women. Outcomes are binary indicators for any GP visit, outpatient visit, and inpatient stay in the past 12 months. The models include individual and year fixed effects and control for age, gender, marital status, qualifications, retirement status, household composition, chronic conditions, and personal income. Standard errors clustered at the regional level are reported in parentheses *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

(a) Total − Home Help

(b) Men - Home Help

(c) Women - Home Help

Fig. A.3. Trends in use of home help services by gender.
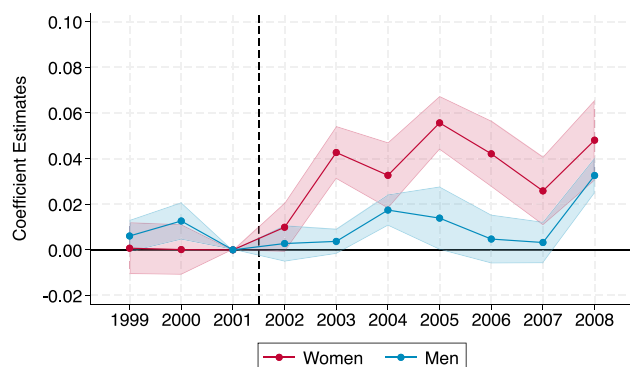
(a) Use Free Help from Social Services

Fig. A.4. Event study of FPC on use of free home help from social services.
Note: This figure presents event study estimates of the impact of the FPC reform in Scotland on the use of free home help services from social services by gender, based on Eq. (1). Each dot represents the estimated coefficient for a given year relative to the 2001 baseline, with 95% confidence intervals indicated by the shaded areas.

Data availability

The authors do not have permission to share data.

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