The Impact of a Social Programme on the Healthcare Consumption of Elderly Self-Employed Workers in France

Estelle Augé* and Nicolas Sirven**

Abstract – The aim of the *Programme d'Actions pour une Retraite Indépendante* (PARI), launched in 2015 by the *Régime Social des Indépendants* (Social security scheme for self-employed workers – RSI), is to propose a threefold, global, proactive and targeted approach to promote the use of various social assistance by craftsmen and merchants aged 60 to 79 with a view to preventing loss of autonomy. The central assumption is that the elasticity of demand for medical goods and services is sensitive to social assistance. The aim of this work is to assess the causal impact of the PARI programme on the healthcare consumption of elderly self-employed workers using a difference-in-differences method. The identification of the effect is based on the implementation of the PARI programme in volunteers' regions. The results indicate that the programme reduces one-off healthcare behaviours in favour of a more regular relationship with the healthcare system.

JEL: I12, I18, I14
Keywords: demand for healthcare, social assistance, difference-in-differences

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The law relating to the adaptation of society to ageing (*loi relative à l'adaptation de la société au vieillissement* – ASV) of 1 January 2016 aims to respond to the challenges of demographic change in France by mobilising all public policies: transport, urban development, housing and, of course, social protection. The actions undertaken in this framework are based on two main pillars: support for loss of autonomy, which in particular has led to a reform of the *Allocation personnalisée d'autonomie* (Personal autonomy allowance – APA) for home care (Bozio *et al.*, 2016) and the change in rates for EHPADs[1] (Xing-Bongioanni, 2021); and upstream prevention of loss of autonomy which has contributed to the development of numerous programmes aimed at vulnerable people carried out by the various social protection schemes. By way of example, the *Programme d'Actions pour une Retraite Indépendante* (PARI), started by the *Régime Social des Indépendants* (Social security scheme for self-employed workers – RSI) in 2015 among craftsmen and merchants aged 60 to 79, is a model.[2] What are the specific needs of this subpopulation and how does this programme aim to meet them?

Self-employed workers are generally in better health (Sewdas *et al.,* 2018; Algava *et al.*, 2013; Stephan & Roesler, 2010). The health demand model (Grossman, 1972) predicts in this case that greater prevention efforts are made because the time required for prevention activities (when in good health) is higher. However, since self-employment requires more working hours than salaried work (Hyytinen & Ruuskanen, 2007), working time eats into time dedicated to prevention. Nonetheless, self-employment is more stressful (Lewin-Epstein & Yuchtman-Yaar, 1991), causes emotional fatigue (Jamal, 2007) and leads to specific health problems (Park *et al.*, 2019). Self-employment leads to a greater depreciation of health capital, especially among craftsmen and merchants (Crasset, 2022).

In the classic framework of the Karasek model (1979), self-employment is "active employment" (Nikolova, 2019; Hessels *et al.*, 2017; Stephan & Roesler, 2010) that contrasts very demanding working conditions with a high degree of control, given its inherent autonomy, flexibility and use of a variety of skills (Hundley, 2001). Karasek's model of work stress (1979) analyses the relationship between demand (psychological pressure) and control (autonomy to carry out tasks and the opportunity to develop new skills). An imbalance between demand and control leads to four specific situations: low demand and low control (passive employment), high demand and high control (active employment), low demand and high control (low stress job), and low control and high demand (high stress job). A stressful work situation places individuals at risk of health problems (Askenazy *et al.*, 2011; Kuper & Marmot, 2003), while "active employment" has positive effects on health (Tsutsumi *et al.*, 2006; Amick *et al.*, 2002; Rosvall *et al.*, 2002). The faster depreciation of health capital invalidates the assumption that "active employment" has health benefits in favour of an alternative assumption. Herber *et al.* (2020) and Rietveld *et al.* (2015) therefore show that the better health of self-employed workers is the result of a selection effect, i.e. these workers have a better initial health condition when they become self-employed.

Contrary to the predictions of the health demand model, we do not observe an instantaneous increase in the demand for healthcare: studies show that, with the same healthcare need, self-employed workers consume less healthcare than other socio-professional categories (Gruber & Kiesel, 2010; Riphahn *et al.*, 2003), especially during their working lives (Pfeifer, 2013) with a catch-up effect at the time of retirement (Augé & Sirven, 2021; Lucifora & Vigani, 2018; Bíró, 2016; Boaz & Muller, 1989). The assumption is that the higher workload of self-employed people also affects the time they dedicate to healthcare (for an adaptation of the Grossman model in this context, see Galama & Kapteyn, 2011).[3] The catch-up effect that seems to characterise elderly self-employed people is problematic on two levels. First, massive and sudden healthcare consumption in retirement may not have the same impact on health as regular use of health services. Second, the catch-up approach

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1. Établissements d'hébergement pour personnes âgées dépendantes *(Residential establishments for dependent elderly people – EHPADs) are nursing homes with private bedrooms. EHPADs are generally aimed at elderly people who need healthcare and assistance on a daily basis.*

2. The Prix de l'Innovation et du Développement Durable *(Innovation and Sustainable Development Prize), which is now known as the* Grand prix de l'innovation *(Grand Prize for Innovation), is awarded by the* Union des caisses nationales de Sécurité sociale *(Union of National Social Security Funds – UCANSS) every year. In 2017, the PARI programme shared first place in the "Innovation to optimise public performance" category with the* Caisse nationale de l'Assurance Maladie *(National Health Insurance Scheme), which was recognised for setting up regional observatories for vulnerability.*

3. Galama & Kapteyn (2011) propose an adaptation of the Grossman model which makes it possible to understand the health behaviours of self-employed workers in two periods. Self-employed workers consume less healthcare during the first years of their working lives thanks to their better initial health condition, which reflects the non-instantaneous adjustment of health capital to its optimal value. Once a minimum health threshold is reached, their healthcare consumption increases with age due to the accelerating depreciation of health capital and the increasing opportunity cost of working time. In France, the work of Augé & Sirven (2021) showed that at the end of their careers, in particular at the time of retirement, self-employed workers increase their healthcare consumption and catch up with employees.

leads self-employed workers to seek acute, one-off healthcare, which is far removed from early detection and prevention.

This public health issue raises questions among economists regarding incentives that could be implemented to modify the health behaviours of self-employed workers upon retirement, particularly with regard to more regular use of health services. The PARI programme takes an ambitious approach based on facilitating access to a comprehensive range of social assistance, whether legal (under the national solidarity scheme) or extra-legal (i.e. specific to the RSI), for vulnerable elderly people benefiting from the RSI. The central assumption is that the elasticity of demand for medical goods and services is sensitive to social assistance. First, improving supplementary coverage – by means of the *Aide pour une complémentaire santé* (Assistance for supplementary health insurance – ACS) and *Couverture maladie universelle complémentaire* (Supplementary universal health coverage – CMU-C) (which merged to become the *Complémentaire santé solidaire*, CSS, in 2019) – generates a price effect such that the demand for health increases (Jusot *et al.*, 2019; Jess, 2015) in a health system where the absence of health coverage exposes individuals to high financial risks (Geoffard, 2016). This effect could be even more significant at the time of retirement when health insurance policies are often renegotiated. Second, social grants such as the *Revenu de solidarité active* (Active solidarity income – RSA), financial assistance and housing benefits generate an income effect favouring the demand for superior goods, such as health. In addition to the quantity effect, the income effect can also improve the relevance of healthcare and modify the structure of healthcare consumption for a better healthcare pathway. For example, Rapp *et al.* (2015) show that social assistance, such as the APA, reduces the use of emergency services in France, and Costa-Font *et al.* (2018) make the same observation in the Spanish context.

In order to improve the effectiveness of the PARI programme, the RSI devised a threefold approach, which is global, proactive, and targets people at risk. Targeting means limiting the self-selection effect, which results in an over-representation of healthy individuals in prevention programmes (Buchmueller, 2009), and only offering the intervention to a sample of people who are exposed to known, previously defined risks. Therefore, it is possible for the RSI to contact those targeted directly, without waiting for them to approach the scheme themselves. This is a proactive approach, which aims to maximise the use of social assistance by those potentially in greatest need, by reducing the cost associated with the complex administrative procedures that must be followed in order to find and apply for the different social benefits available. Even if craftsmen and merchants are protected by the RSI, their recourse to different social benefits may be limited for various reasons: *(i)* a lack of information, particularly regarding eligibility; *(ii)* the benefits of the assistance don't outweigh the cost to the beneficiary (stigma, transaction costs – including opportunity cost mainly present among self-employed workers (Janssen, 1992; Boaz & Muller, 1989)); and *(iii)* preferences (specifically among self-employed workers, see Ekelund *et al.*, 2005) and psychological barriers such as procrastination and psychological aversion to administrative procedures. Finally, the PARI programme takes a global approach (Lautman, 2013) based on a personalised offer of all existing (legal and extra-legal) benefits, which is made possible through the coordination of a multitude of health and social care stakeholders within the RSI and the region. This method of coordination, which is made possible by different social protection schemes working together, is a major challenge for the efficiency of health systems in developed countries like France (Fraser *et al.*, 2018; Nolte & Pichforth, 2014). The literature shows two main ways in which the RSI's PARI programme can address the lack of recourse to social benefits: dissemination of information and assistance. First, providing information, in a letter for example (here, the PARI self-questionnaire), can change the way people assess the advantages and disadvantages of the assistance available (Chareyron *et al.*, 2018). Second, the personalised assistance provided by the programme could influence the choices of individuals by making the programme more attractive.

The aim of this work is to assess the causal impact of the PARI programme on the healthcare consumption of elderly self-employed workers. The effect is identified based on the implementation of the PARI programme in a few pilot regions governed by voluntary (experimental) local RSI agencies in 2015, before it was generalised in France in January 2017. We used RSI administrative data from 2014 to 2016 to avoid the effect linked to the nationwide generalisation. We rely on a difference-in-differences approach to estimate the effect of the PARI programme, using fixed-effects panel models. Since the estimate of individual risk for targeting purposes was carried out on the entire population, the control group was made up of individuals at

risk from the eighteen non-experimental regional agencies, and the treatment group was made up of individuals with the same level of risk from the ten experimental regional agencies.

The PARI programme makes it possible to reduce one-off healthcare behaviours in favour of a more regular relationship with the healthcare system. PARI is designed to help vulnerable elderly people stay in their own homes in so far as the structure of healthcare consumed by the treatment group is modified in favour of an increase in consumption of pharmaceuticals and medical equipment, which could be linked to preventing or compensating for loss of autonomy. PARI appears to be a promising example of a loss of autonomy prevention programme as envisaged by the ASV law of 2016.

Our research contributes to the existing literature in several ways: *(i)* it supplements the rapidly growing literature on the health and healthcare consumption of self-employed workers in Europe; *(ii)* it is aligned with the growing literature which shows that social assistance improves the healthcare pathway; *(iii)* it suggests that a prevention programme based on a threefold, global, proactive and targeted approach has a greater chance of success with populations reluctant to engage in preventative behaviours. Section 1 of this study provides a detailed presentation of the targeting and treatment phases of the PARI programme. Section 2 discusses methodological issues related to the econometric models and data used. The results are presented in Section 3, then we conclude.

1. The PARI Programme

1.1. Targeting the Reference Population

The *Régime Social des Indépendants* (Social security scheme for self-employed workers – RSI) set up the *Programme d'Actions pour une Retraite Indépendante* (PARI) in 2015 to promote the prevention of loss of autonomy. It is innovative because it does not follow the traditional principles of disease-related prevention. The reference population is defined using two selection criteria. First, these are individuals aged 60 to 79 – who are retired, active, or active retirees – who are health's beneficiaries of the scheme (only the insured persons) and have paid the majority of their contributions to the RSI for a certain number of quarters. Since retirees from liberal professions are managed by another scheme, the *Caisse Nationale d'Assurance Vieillesse des Professions Libérales* (CNAVPL), the scope of the PARI programme is restricted to the professions of craftsmen and merchants. Second, targeting was carried out among these individuals in order to identify those with a high, but unproven, risk of loss of autonomy. The risk score was developed by a multidisciplinary team on the basis of expert opinion, using data from the RSI's medical-administrative databases.[4]

The variables used to determine an individual risk score are grouped into three main areas:

- "Individual": age, activity (active, active retired, retired), impairment (inability to work and disability);
- "Medical": (1) medical consumption (hospitalisations lasting more than eight days, at least one nursing or physiotherapy act, at least two GP consultations, the number of dental and ophthalmological services, the consumption of psychotropic drugs and the difference in consumption between two 6-month periods) (2) *Affections de Longue Durée* (Long-term illness – ALD) situations (3) sick pay. These criteria are taken into account over a prior period of 12 to 36 months;
- "Social": (1) the extra-legal subsidies grant by the *Action Sanitaire et Sociale* (Health and social welfare – ASS) of the RSI, comprising aids for social contributions, financial assistance, and assistance for dependency, and (2) the legal subsidies , based on economic criteria, which any French resident can claim, including the *Couverture Maladie Universelle* (Universal health coverage – CMU), *Allocation de Solidarité aux Personnes Agées* (Solidarity allowance for the elderly – ASPA), *Revenu de Solidarité Active* (Active solidarity income – RSA) and exemption from the *contribution sociale généralisée* (Generalised social contribution – CSG) / *Contribution au remboursement sur la dette sociale* (the Contribution for the reimbursement of the social debt – CRDS).

The variables described above in each of these three IMS (Individual, Medical, Social) data groups are "primary indicators" which are combined according to a "scoring" method: each criterion gives a certain number of points which are then added together. A technical committee chose these weightings based on a review of the scientific literature on the determinants of vulnerability among the elderly. It is therefore an "expert opinion" method. We then apply the chosen decision rule in order to obtain "intermediate composite indicators" in each of the areas I,

4. It should be noted that the RSI was a single organisation that managed all personal insurance contributions for health, maternity, disability, death, retirement, etc. This structure promotes targeted and global healthcare.

M and S, which classify the individuals into four risk categories: (1) low (2) medium (3) high and (4) proven. At this stage, three areas (I, M and S) are associated with each individual.

In order to summarise the information from the three "composite indicators" and obtain a single criterion, the PARI score, the following decision rule is applied: PARI 1 – each of the three composite indicators (IMS) is below 3; PARI 2 – only one of the three composite indicators (IMS) is below 3; PARI 3 – at least two composite indicators (IMS) are equal to 3; PARI 4 – at least one composite indicator (IMS) is equal to 4. This decision rule makes it possible to obtain an individual PARI score of 1, 2, 3 or 4, whereby the higher the score, the greater the risk of loss of autonomy. In addition to this decision rule, there is an exceptional "forcing" rule that enables individuals who would initially be classified elsewhere to be classified in PARI 3, on the basis of certain specific criteria, for example due to certain medical conditions (stroke, cystic fibrosis, serious chronic respiratory disease, etc.), disabilities or functional limitations (as determined using the Iso-Resource Group, GIR), or because they benefit from social assistance (RSA, ASPA, APA) but are unknown to the ASS. Ultimately, individuals with a PARI 3 score constitute the population targeted by the programme.[5] Figure I details the targeting procedure. A detailed presentation of the PARI class targeting method was proposed and an initial evaluation of the effectiveness of the targeting was also provided (Sirven, 2017).

1.2. Procedure of the Intervention

The overall approach of the PARI programme involves: *(i)* identifying, within the population benefiting from health coverage under the RSI, elderly people who meet one or more vulnerability criteria that contribute to a risk of reversible loss of autonomy, i.e. the PARI 3s; *(ii)* assessing their health and/or medicosocial needs; *(iii)* implementing, depending on the proven risk of loss of autonomy, appropriate monitoring and support activities, responsibility for which is shared between the RSI and the attending physicians and/or other healthcare and support stakeholders; and *(iv)* finally, working in partnership with the attending physicians to offer the individuals concerned personalised solutions, which are provided either by the RSI or by other providers that operate in the geographical area near their homes and are able to meet their individual needs.

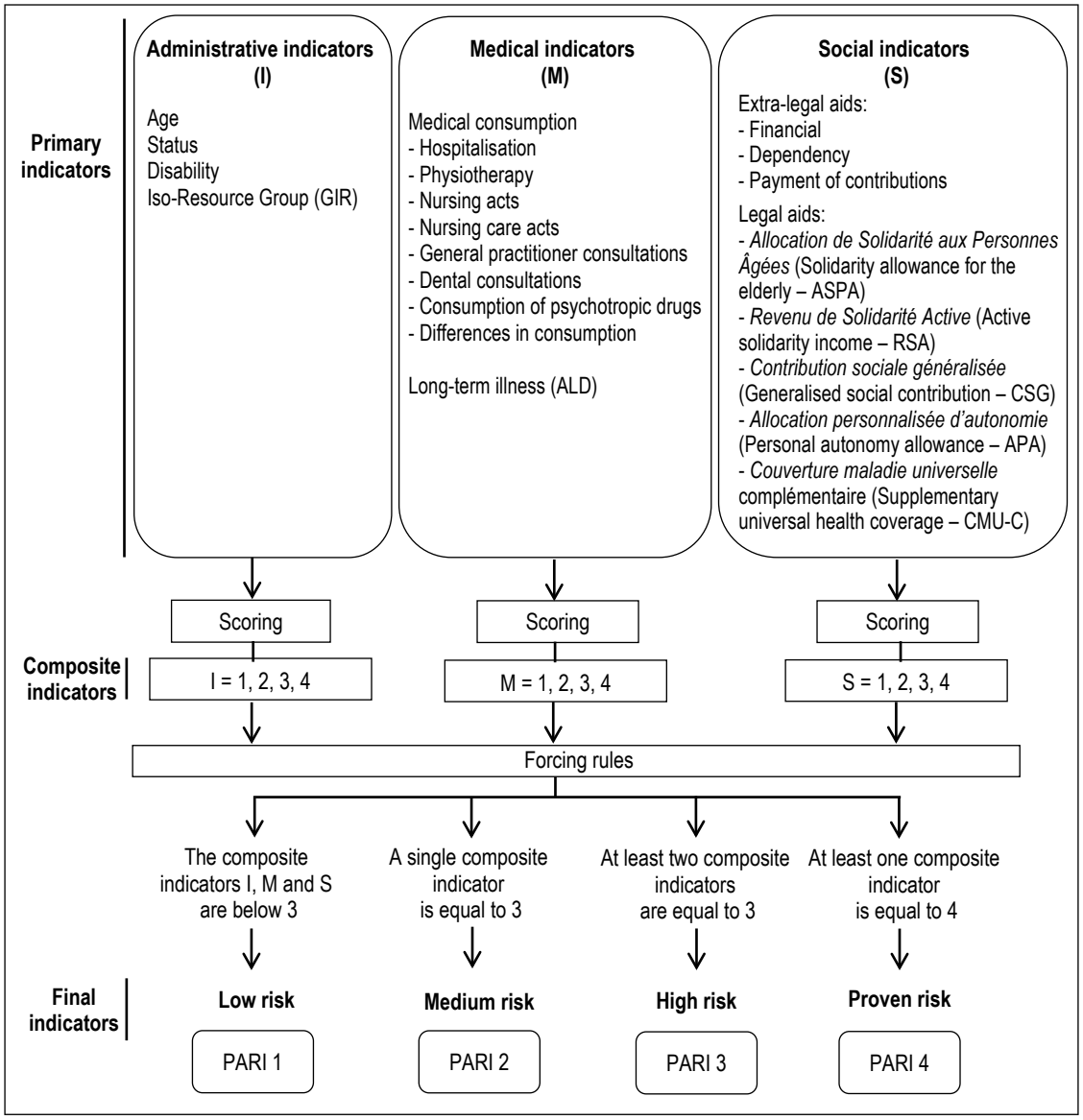
Once the PARI 3 population has been identified at national level, a two-stage approach based on a selection relating to managing the loss of autonomy is taken. Individuals in PARI 3 are excluded from the treatment group if they have died or if they already benefit from *(i)* a range of services offered by the RSI within the framework of measures to prevent the loss of autonomy (Retirement Health Check, *préparation des doses à administrer* – preparation of doses to be administered, PDA) or *(ii)* an *évaluation globale des besoins à domicile* (comprehensive assessment of home needs – EGBD) carried out recently (within the past 24 months) by a provider at the request of the RSI.

First, an individual self-questionnaire is sent by post to people at risk of loss of autonomy identified as PARI 3, who are covered by the ten volunteer experimental agencies, along with a freepost envelope. The self-questionnaire informs individuals of the aims of the programme and obtains their consent to participate. The self-questionnaires are sent back to the respective agencies of the insured parties, and generally to the prevention department. Data is entered locally, as it is received, in a tool called ARIAN. The questionnaire provides more detailed information on the economic, social and health characteristics of individuals. This data supplements the IMS administrative data from the RSI's databases. Completing the self-questionnaire is optional. Respondents will be subject to an analysis of their individual situation based on the answers provided. If necessary, additional information may be obtained as part of an *évaluation globale des besoins à domicile*. People who do not respond will be contacted again, but if they do not return the questionnaire before the deadline or do not make themselves known to the services offered by the RSI, no specific assistance proposal, as envisaged within the framework of the PARI programme, will be offered to them. However, they will be able to continue to benefit from legal and extra-legal assistance should they request it, as is the case for everyone covered by the RSI.

Second, only the PARI 3 individuals who have returned the self-questionnaire will be offered

5. A priori, the populations which benefit from the allocation personnalisée d'autonomie *(Personal autonomy allowance – APA) are by definition in GIR <5 and their PARI score is 4. However, certain people included in the initial sample were able to benefit from the APA without that information being reported to the RSI before the PARI scores were created. This information was subsequently collected by means of a self-administered questionnaire. This self-questionnaire is offered to individuals with a PARI 3 score; the answers provided supplement the data already collected for the individual concerned and thus make it possible to better identify personal needs in order to offer a personalised healthcare pathway. However, no action is taken for individuals who do not respond to the questionnaire, except in a few rare cases. In addition, disparities between French departments in terms of accessing the APA could place people who do not have a GIR below 5 into PARI 4 in departments where there is more APA funding.*

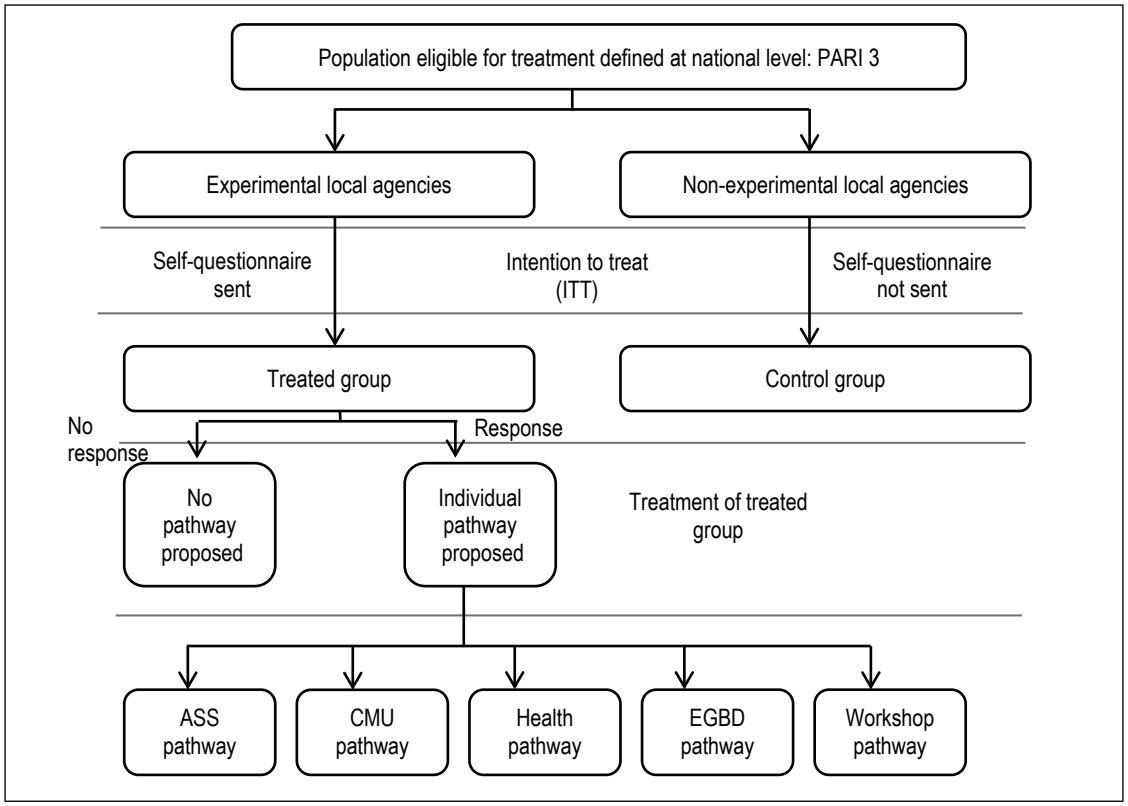
Figure I – **The construction of individual scores of the PARI programme**



Source: Sirven (2017) and RSI.

a healthcare pathway adapted to the needs they have expressed. The ARIAN tool will first predetermine a pathway. This pathway will then be rejected or confirmed by a multidisciplinary unit. The multidisciplinary unit is made up of three experts who will analyse the questionnaires according to their speciality: an *Action Sanitaire et Sociale* (Health and social welfare – ASS) expert who makes proposals based on financial means and on assistance that may already have been requested; the CMU service which identifies whether individuals not benefiting from the CMU could claim it (an area of social welfare which is generally managed by the ASS); the health service, i.e. the medical advisor, who has access to the questionnaire as well as to the individual's medical records to decide on their needs from a medical point of view, namely a check-up with a general practitioner and/or a dentist. Where applicable, if an insured person's request is not clearly expressed, a comprehensive assessment of home needs (EGBD) may be carried out by an external service provider in order to provide a very detailed analysis of the individual and their environment. In addition, group workshops on ageing may also be offered. Figure II sets out the intervention. Assistance is thus divided into five pathways: an ASS pathway, a CMU pathway, a prevention pathway (GP and dental check-up), an EGBD pathway and a workshop pathway. In principle, GP and dental check-up fees are paid directly by the RSI scheme. Once completed, each check-up report is returned to the RSI scheme's medical advisor responsible for prevention in a freepost envelope. The proposed pathways should therefore not directly increase health spending.

Figure II – **PARI intervention during the experimental phase**



1.3. The Terms of the Intervention

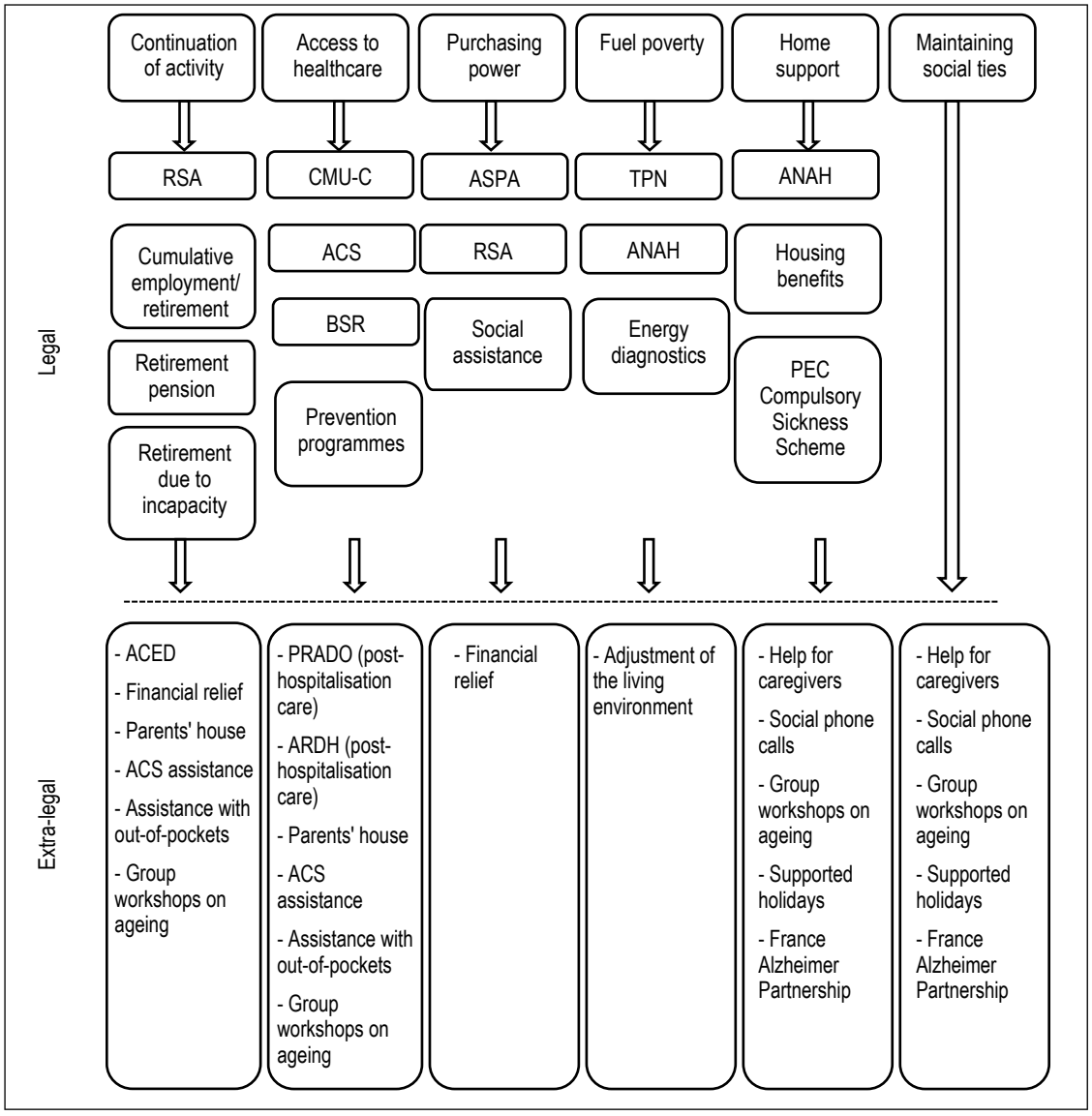
The range of services proposed by the RSI includes two main fields: healthcare and social. It is individually adapted to the needs defined by the multidisciplinary unit. Healthcare services enable beneficiaries to access medical or dental check-ups when they need them. As far as possible, social services are directed towards legal assistance schemes and then towards extra-legal assistance. If the individuals concerned already benefit from social assistance, treatment will result either in the maintenance of the existing support if it is considered adequate, or in a new support proposal if the current support is insufficient. The payment of benefits not covered by the protection scheme for self-employed workers is in the extra-legal field and falls under the ASS. Legal and extra-legal social assistance meets the following needs: continuation of activity, access to healthcare, purchasing power, fuel poverty, home support and maintaining social ties, participation in workshops (on how to avoid falls, for example) (Figure III). This assistance involves different resources, namely technical, human and financial. Among the individuals who returned the self-questionnaire, 49.7% benefited from a health pathway, 40.1% benefited from an ASS pathway, 22% benefited from an EGBD pathway, 12.1% benefited from a CMU pathway and 5.6% benefited from a workshop pathway (an individual may be offered several pathways).

1.4. Experimentation and Generalisation Phases of the Programme

The PARI implementation began in 2015 with an experimentation phase involving ten RSI agencies, which volunteered to test the programme. The other eighteen agencies form the control group, giving a total of twenty-eight regional agencies. In 2014, PARI 3 individuals were identified as the target population for this 2015 campaign, throughout France. The campaign began in June 2015, when the self-questionnaire was sent out to the experimental agencies for pathways to be offered from late 2015 and early 2016. Individual monitoring is carried out until the person has opted for a pathway. However, short-term follow-up takes place when the person benefits from a health pathway as the health professional (dentist or general practitioner) seen returns a check-up report to the medical and/or prevention service of the insured person's regional health insurance scheme. The same applies during an EGBD as the external service provider will provide more precise information on the needs of the individual.[6]

6. Specific ASS assistance measures automatically involve an EGBD, such as household assistance measures.

Figure III – **Assistance under the PARI programme (non-exhaustive)**



Source: RSI.

This programme was then gradually generalised with the implementation, in 2017, of a random experimentation initiative for everyone covered by the RSI. However, on 28 September 2017, the government announced that the RSI would be scrapped in its social security financing bill. As of 1 January 2020, the RSI became part of the General Scheme. This announcement marked the end of the PARI programme managed by the RSI. The 2018 campaign took place. For the 2019 campaign, only agencies that had the necessary human resources participated in the programme.

2. Assessment Methodology

2.1. Sources and Sample

We used medical-administrative data from 2014 to 2016 from the management of the RSI's PARI programme. The sample comprised 20,328 individuals who received health coverage under the RSI, were classified as PARI 3 in 2014, and were monitored in 2015 (when the intervention began) and 2016 (not deceased during targeting). This is a balanced panel of 60,984 observations. Classification as PARI 1, 2, 3 or 4 was carried out on 396,048 individual RSI beneficiaries (not deceased during targeting) on the basis of primary indicators recorded over the preceding 36 months, except for the variables relating to social assistance provided by the RSI under the ASS which related to only 27 months, from 1 January 2013 to 31 March 2015. The extraction of this data, which was required for the PARI classification, was carried out on 31 March 2015.

Table 1 shows the distribution of individuals classified as PARI 3 in the regional RSI agencies.

Ten regional RSI agencies, comprising 44% of the sample, volunteered to implement the PARI programme in 2015 (which entailed sending self-questionnaires and treating respondents). These were experimental agencies. It should be noted that the average effect is borne by 38.6% of the PARI 3 individuals in the experimental agencies who returned the self-questionnaire, as we are evaluating the effect of the programme proposal (sending the self-questionnaire) on the use of ambulatory care.

2.2. Strategy for Identifying the Effect

We estimate the causal impact of the PARI programme on access to ambulatory care and the total amount of ambulatory care consumed (in €). We investigated whether the programme proposal had an effect on ambulatory care use, i.e., the intention-to-treat (ITT) effect. Assignment to treatment was based on the voluntary participation of some of the regional agencies, which produced two groups – a treatment group and a control group. Identifying the effect of the treatment consisted in comparing different healthcare expenditure indicators between the experimental local agencies (treatment group) and the non-experimental local agencies (control group) before and after the introduction of the programme in 2015. This difference-in-differences (DD) approach with fixed-effect panel models is regularly used in public policy evaluation to estimate the treatment effect within the theoretical framework of the Neyman-Rubin causal model (Holland, 1986). Formally:

$$y_{it} = \gamma_t T_i \times d_t + c_i + d_t + \varepsilon_{it} \quad (1)$$

where y_{it} represents the consumption of ambulatory care (in terms of access and amount) of the individual i on the date t. d_t represents the temporal fixed effect and c_i represents the individual fixed effect, which disappears during estimation (by difference from the individual average over the period). The term T_i represents a binary treatment variable (whether or not the individual belongs to one of the experimental agencies) and the cross-referencing term $T_i \times d_t$ makes it possible to identify the effect of the PARI treatment in the experimental agencies compared to the non-experimental agencies (control group). The average intention-to-treat (ITT) effect is given by the value of the parameter γ_{2016}, under the fundamental assumption of parallel trends.

The estimate of equation (1) was carried out with linear probability models, which were applied to the binary dependent variable, the probability of exceeding different ambulatory expenditure

Table 1 – **Sample of eligible individuals (classified as PARI 3)**

PARI experimental agencies					Non-experimental agencies		
Local agencies	Number of individuals	%	Number of participants	%	Local agencies	Number of individuals	%
1. Alpes	843	9.41	274	32.50	1. Alsace	379	3.33
2. Auvergne	824	9.20	361	43.81	2. Antilles-Guyane	119	1.05
3. Bretagne	1,194	13.33	440	36.85	3. Aquitaine	1,552	13.65
4. Corse	195	2.18	91	46.67	4. Basse-Normandie	534	4.70
5. Languedoc-Roussillon	1,360	15.18	512	37.65	5. Bourgogne	722	6.35
6. Limousin	388	4.33	234	60.31	6. Centre	774	6.81
7. Midi-Pyrénées	1,072	11.97	324	30.22	7. Champagne-Ardenne	291	2.56
8. Nord-Pas-de-Calais	1,215	13.56	516	42.47	8. Côte d'Azur	974	8.57
9. Pays-de-Loire	1,137	12.69	430	37.82	9. Franche-Comté	428	3.76
10. Poitou-Charentes	730	8.15	276	37.81	10. Haute-Normandie	549	4.83
					11. Île-de-France-Centre	664	5.84
					12. Île-de-France-Est	585	5.15
					13. Île-de-France-Ouest	474	4.17
					14. Lorraine	675	5.94
					15. Picardie	526	4.63
					16. Provence-Alpes	961	8.45
					17. Rhône	1,093	9.61
					18. Réunion	70	0.62
Subtotal	8,958	100	3,458	38.60		11,370	100
Total		44.07					55.93

Notes: Number of participants = number of individuals who returned the PARI questionnaire.
Source: PARI (2014–2016).

thresholds, to measure the effects on access to ambulatory care and amounts of ambulatory care consumed. This estimate uses ordinary least squares after centring the explanatory variables by their individual average over the period (time-demeaning). Robust variance is estimated at individual level. Strictly speaking, a conditional logit model would have been more efficient, but estimation using a linear probability model makes it possible to directly obtain marginal effects and therefore compare estimates more easily.

In our case, we note that treatment has an effect on access to healthcare (see below), it is therefore not possible to estimate equation (1) only for people having access to healthcare (intensive margin): the composition of the treatment group which had access to healthcare can therefore no longer be considered comparable to that of the control group which had access to healthcare (Angrist, 2001; Angrist & Pischke, 2009). In this case, Angrist & Pischke (2009) advise estimating the causal effect on the entire sample by adopting, for the dependent variables, indicators that are higher than the different thresholds. The analysis therefore focuses on the probability of exceeding a certain threshold, which can be defined by percentiles of distribution (see, for example, Gruber *et al.*, 2020), by latent classes, or by symbolic values as we have chosen to do here (e.g. €10, €20, €50, €100, etc.). The comparison of the different estimates should make it possible to attribute the causal effect of PARI primarily to the patient for low threshold values (access) or primarily to the physician for higher values (amount). In order to also identify a possible effect of modifying the composition of the healthcare package at given amounts (primarily attributable to the physician), the analysis will focus on the amount spent per ambulatory expenditure item (general practitioner, specialist, dentist, nurse, physiotherapist, other care providers, biology, pharmaceuticals, medical equipment, optical services, prosthetics and transport).

Finally, we tested the assumption of parallel trends graphically (event analysis) and via a parametric test of pre-existing differences in results trends (placebo test), through the regression specified in equation (1). In this specification, an insignificant coefficient on the interaction term γ_t before 2016 indicates that the average treatment trajectory of individuals before the programme was implemented is identical between the two groups, i.e., the slopes are parallel for unbiased estimates. The validity of this assumption still needs to be qualified given that the pre-treatment period is relatively short.

2.3. Robustness Checks

We carried out several checks to evaluate the robustness of our approach. First, we took into account the serial correlation of regression errors ε_i following the recommendations of Bertrand *et al.* (2004) and Cameron & Miller (2015), and grouped the standard errors at regional agencies level. In addition, due to the small number of groups, we followed Cameron & Miller (2015) and adjusted the degrees of freedom of the t-statistic to G-1, where G denotes the number of groups (28). This gives critical values of t = 1.70 for a 10% confidence level, t = 2.05 for a 5% confidence level, and t = 2.77 for a 1% confidence level.

Second, we explored the assumption of comparability of the treatment group and the control group by employing a difference-in-differences model with kernel propensity score weighting. In this approach, the treatment group and the control group are balanced using a set of decisive determinants (demographic characteristics (age and sex), professional status (craftsmen, active-retired, retiree); variables relating to the medical records (iso-resource group, GIR; long-term illness, ALD); variables relating to the PARI programme management process (forcing rules and not being known to the ASS)). Weightings were constructed using a logistic regression that predicts group assignment; weighting individuals by the inverse probability of treatment creates a synthetic sample in which assignment to treatment is independent of baseline covariates (see Table A1 in the Appendix, which shows the descriptive statistics of the treatment and control groups). Identifying treatment effects that differ significantly from the main model would be problematic since the groups would not be comparable given their compositional differences.

3. Results

3.1. Different Subsamples

Table 2 shows the differences in the characteristics of individuals between the experimental and non-experimental agencies. The individuals in the experimental agencies are older (69.6 years on average, compared to 69.2 years for the control group), are mainly craftsmen (52% compared to 48% for the control group), are retired, and more often have an attending physician. In addition, the experimental agencies used the forcing rules less. These differences in characteristics observed confirm the interest of using a model with individual fixed effects in order to control for constant individual effects over the observation period (whether observed or not).

Figure A1 in the Appendix compares the distribution of health expenditure between the experimental and non-experimental agencies in 2014. The visual adjustment is very similar between the agencies despite the differences in sample composition, as shown in Table 2. Table 3 corroborates this result for 2014 and 2015 with regard to access to healthcare and the total amount consumed, but suggests that, in 2016, the experimental agencies had greater access to healthcare while the amounts consumed remained similar (statistically insignificant despite an average decrease of €183).

Table 4 breaks down access to healthcare and consumption levels (in €) by period according to the initial characteristics of the individuals. All things being equal, we observe that before the treatment, the experimental agencies offer the same access to healthcare, but their average expenditure is slightly lower. This changes after the treatment since access to healthcare is greater for the experimental agencies in 2016 while the amounts consumed lose statistical significance. Below we will assess whether these effects are potentially due to the treatment.

3.2. PARI Programme Beneficiaries Have Better Access to Healthcare

Figure IV shows the comparison of the experimental agencies in each period using the logarithm of expenditure +1 (those with no consumption are therefore taken into account). The descriptive statistics results in the figure indicate *(i)* a general downward trend in health expenditure for both groups, which could be explained by the fact that individuals are classified as PARI 3 partly based on high levels of healthcare consumption in 2014, with the result that, after a phase of (acute) care, consumption levels reduce as healthcare needs have been met; *(ii)* a parallel slope between 2014 and 2015 between the control group and the treatment group, which suggests that the treatment group would behave like the control group if untreated; and *(iii)* a difference in the healthcare consumption trend after the treatment, where we observe that individuals from treatment agencies display less of a reduction in consumption (in terms of access and amounts combined). This final observation suggests that treated individuals remain in contact with the health system.

Table 5 measures the causal impact of the PARI programme on ambulatory expenditure in ITT.[7] The results indicate that the PARI programme increases access to healthcare by 1.1%. The impact is concentrated on access to the general practitioner, pharmaceuticals and medical equipment, expenditure items which are quite typical of people losing their autonomy. Following the

7. Despite the short pre-treatment period, the estimates verified that the pre-existing trends in the two groups were identical, which suggests that the effects observed in 2016 are related to the introduction of the programme.

Table 2 – **Characteristics of eligible individuals (classified as PARI 3)**

Variables	Total	By type of agencies		
		Experimental	Non-experimental	Difference
Demographic characteristics				
Age in 2014 (59–78 years)	69.40	69.62	69.22	0.40***
Men	78.97	79.44	78.61	0.83
Women	21.03	20.56	21.39	−0.83
Professional status				
Craftsmen	49.51	51.83	47.69	4.14***
Merchants	50.49	48.17	52.31	−4.14***
In employment	12.65	11.88	13.25	−1.38***
In employment-retired	5.77	4.41	6.83	−2.42***
Retired	81.59	83.71	79.91	3.80***
Medical records				
GIR 5 or 6	4.63	4.87	4.44	0.43
CMU or ACS beneficiary	17.10	17.08	17.12	−0.04
ALD	67.41	67.16	67.61	−0.45
Attending physician	97.40	97.79	97.10	0.69***
Case management				
Forcing rule	29.32	26.89	31.23	−4.34***
Unknown of the ASS	86.87	86.77	86.95	−0.18

Notes: Tests of difference of means. Percentages (unless otherwise specified) Significance threshold: * p< .10; ** p< .05; *** p< .01.
Source: PARI (2014–2016).

Table 3 – **Evolution of healthcare consumption by type of agencies**

Variable/Year	Experimental	Non-experimental	Difference	Stat. (1)	p-value
Access to healthcare (%)					
2014	98.5	98.3	0.175	−0.973	0.330
2015	98.6	98.4	0.205	−1.171	0.242
2016	97.0	95.7	1.283	−4.807	0.000
Average expenditure (€)					
2014	2,898.2	3,124.9	−226.7	1.381	0.167
2015	2,996.1	3,218.8	−222.7	1.406	0.160
2016	3,048.6	3,231.7	−183.0	0.418	0.676

Notes: (1) Access to healthcare: proportions test; Expenditure: Wilcoxon test.
Source: PARI (2014–2016).

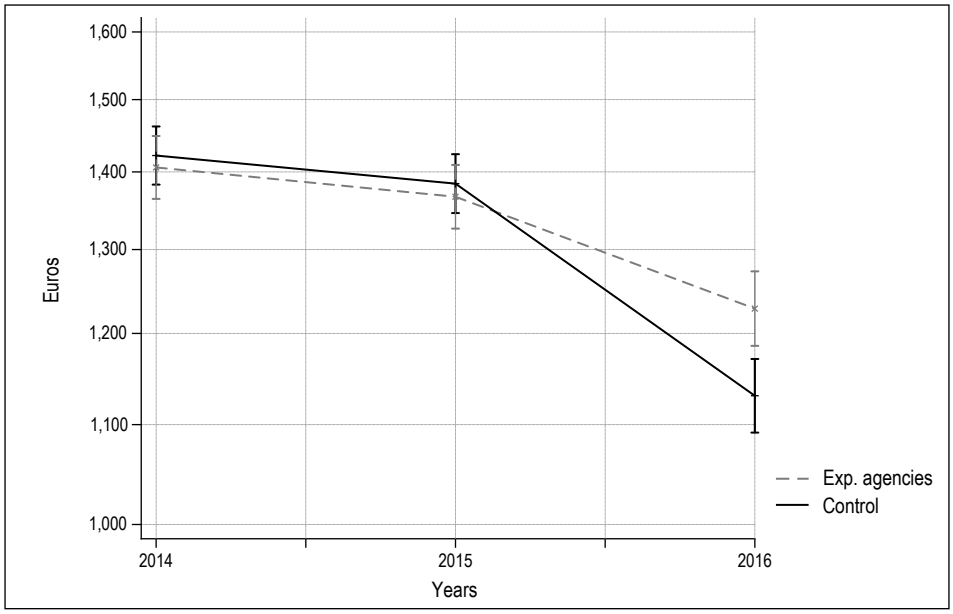
Table 4 – **Determinants of access to healthcare and amounts consumed per period**

Dependent variable	2014		2015		2016	
	Access to healthcare (OR)	Amount (€)	Access to healthcare (OR)	Amount (€)	Access to healthcare (OR)	Amount (€)
Type of regional agencies						
Experimental	0.939	−154.753***	1.074	−177.791***	1.389***	−101.864*
Non-experimental	*Ref.*	*Ref.*	*Ref.*	*Ref.*	*Ref.*	*Ref.*
Demographic characteristics						
Age in 2014 (59–78 years)	0.991	−27.594***	0.972**	−14.220***	0.983**	−9.229
Men	*Ref.*	*Ref.*	*Ref.*	*Ref.*	*Ref.*	*Ref.*
Women	1.166	264.874***	1.003	86.833	1.162	13.114
Professional status						
Merchants	*Ref.*	*Ref.*	*Ref.*	*Ref.*	*Ref.*	*Ref.*
Craftsmen	1.259*	5.496	1.148	−78.628	1.087	−27.425
In employment	*Ref.*	*Ref.*	*Ref.*	*Ref.*	*Ref.*	*Ref.*
In employment-retired	5.071***	586.607***	2.091*	223.635	1.429*	290.954*
Retired	1.415	882.674***	0.888	716.502***	1.127	747.138***
Medical records						
GIR 5 or 6	2.678	370.158**	1.381	397.041**	1.208	500.866***
CMU or ACS beneficiary	3.358***	−572.928***	1.784***	−480.704***	1.058	−465.829***
ALD	8.630***	3,193.625***	5.824***	3,436.425***	1.122	3,078.889***
Attending physician	10.653***	1,086.029***	8.706***	945.774***	4,972***	805.855***
Case management						
Forcing rule	0.142***	−31.055	0.228***	190.348***	0.547***	275.474***
Unknown of the ASS	0.723	−409.039***	0.562*	−556.512***	1.331**	−414.253***
Observations	20,328	20,328	20,328	20,328	20,328	20,328
Pseudo R^2 (McFadden)	0.261		0.176		0.037	
Chi-squared (p-value)	771.2***		563.9***		315.2***	
% correctly classified	98.52		98.45		96.29	
ROC	0.851		0.791		0.628	

Notes: Access to healthcare was estimated using logit models and ambulatory expenditure was estimated using generalised linear models, with: * p< .10; ** p< .05; *** p< .01. OR stands for odds ratio.
Source: PARI (2014–2016).

advice of Angrist & Pischke (2009), we extend the descriptive statistics results in Figure IV by separating: *(i)* the causal effect of the programme resulting from the patient's use of healthcare, and *(ii)* the leverage effect of the physician which modifies the type and amount of healthcare consumed. Two main effects stand out. A primary prevention effect associated with medical consultations which put the individual in contact with the health system. Significant ambulatory expenditure thresholds of between €10 and €150 correspond to expenditure items linked to pharmaceuticals. The programme therefore seems to have particularly affected vulnerable people. It should be noted that the literature often links pharmaceutical consumption to

Figure IV – **Evolution of ambulatory expenses of eligible individuals (classified as PARI 3)**



Notes: This figure shows changes in ambulatory expense trends for eligible individuals classified as PARI 3 by period for both experimental agencies (dotted line) and non-experimental agencies (solid line). Here, ambulatory expenses were expressed as the logarithm of expenses +1 (in order to take into account those with no healthcare consumption) and transformed back into euro.

vulnerability in elderly people, although this is generally associated with a negative effect due to polypharmacy (Herr *et al.*, 2018). A secondary or even tertiary prevention effect appears at ambulatory expenditure thresholds around €600, primarily linked to biology and prosthetics expenses, and €1,500, corresponding mainly to pharmaceutical and prosthetics expenses. The latter assumes that, following the implementation of PARI, the general practitioner will have a positive impact in supporting people found to have vulnerabilities and/or chronic illnesses.

3.3. The Effect Is Heterogeneous

Since the PARI population was heterogeneous, we measured the effect on different subgroups (Table 6). The heterogeneity by gender shows that the effect is mainly seen in men and we cannot see any effect in women. There are two potential explanations for this: better preventative behaviours of women (Wardle *et al.*, 2004; Dean, 1989) and/or gender-based differences in health condition. The distinction according to the category of worker (craftsmen and merchants) suggests that the average effect of the PARI programme in ITT increases access to healthcare for craftsmen and merchants (coeff = 0.009*** for craftsmen and coeff = 0.014*** for merchants).

The differentiation between retirees and non-retirees shows that the average effect of the PARI programme in ITT results in an improvement in the use of healthcare for these two categories. However, the effect on access to healthcare is greater among working people. This observation reinforces our assumption that the elasticity of demand for medical goods and services is sensitive to social assistance, mainly among active self-employed workers. The PARI programme seems to play an essential role in maintaining the link between these workers and the healthcare system, particularly when self-employed workers increase their consumption to catch-up with employees before retirement. In addition, we observe a greater impact among retirees when it comes to high ambulatory expenses. These expenses could just as easily be attributed to vulnerabilities, chronic illnesses, or even end-of-life needs.

3.4. Results of Robustness Checks

In order to draw conclusions on the internal validity of this assessment, we must perform a robustness analysis on the results. Table A2 in the Appendix provides a sensitivity analysis of the results. Column 2 takes into account the serial correlation of the regression errors and shows that the results are robust due to the absence of differences in the significance of the results after grouping by regional RSI agencies and adjusting the degrees of freedom of the t distribution to G-1. Our second check (column 3), which applies kernel propensity score weighting to the main model, shows similar effects.

Table 5 – **Impact (ITT) of the PARI programme on outpatient expenditure**

Dep. var. / Type of expenditure		Total	GP	Specialist	Dentist	Nurse	Physio.	Other care providers	Biology	Pharma.	Material	Optics	Prosthesis	Transport
Access		0.011***	0.009**	0.006	0.000	0.010	0.004	0.002	0.006	0.013***	0.017**	0.002	0.007	0.013*
Consumption > Threshold														
Amounts (€)	Percentile [1] (%)													
10	2.5	0.011***	0.009**	0.004	0.001	0.007	0.005	0.002	0.007	0.012***	0.013	0.000	0.006	0.012*
20		0.013***	0.007	0.010	0.005	−0.003	0.003	0.001	0.004	0.011***	0.011	0.001	0.006	0.011
35	3	0.013***	0.002	0.009	0.005	0.004	0.002	0.000	0.008	0.013***	0.009	−0.001**	0.008	0.011
50		0.013***	0.003	0.000	0.007	0.004	0.001	0.001	0.008	0.014***	0.009	−0.001**	0.006	0.009
85	4	0.012***	0.007	−0.004	0.004	0.008	−0.003	0.003	0.012	0.011**	0.007	−0.000	0.006	0.006
100		0.010***	0.001	−0.008	0.003	0.009	−0.001	0.003	0.012	0.009**	0.004	−0.000	0.005	0.007
130	5	0.011***	−0.001	−0.001	−0.001	0.012**	0.003	0.003	0.010	0.009**	0.005	−0.000	0.008*	0.009
150		0.008**	−0.005	0.002	−0.001	0.010**	0.005	0.001	0.007	0.009*	0.003	−0.000	0.004	0.009
200		0.004	−0.004	−0.002	−0.000	0.010**	0.005	−0.000	0.002	0.010**	0.002	-	0.003	0.011*
250		0.004	−0.005	−0.004	−0.001	0.007*	0.003	0.001	0.002	0.007	0.002	-	0.003	0.011**
300	10	0.005	−0.003	−0.004	−0.003	0.007*	0.003	0.001	0.004	0.008	0.004	-	0.003	0.009*
600	20	0.013**	−0.001	−0.002	0.001	0.005	0.005	0.001	0.008**	0.000	0.001	-	0.004**	0.008*
900	30	0.008	−0.001*	−0.001	0.001	0.003	0.001	0.002	0.005*	−0.001	0.001	-	0.002	0.003
1,200	40	0.003	−0.001*	−0.000	0.000	0.002	0.001	0.003**	0.001	0.013**	0.001	-	0.002**	0.001
1,500	50	0.011	0.000	−0.000	0.000	0.002	0.002	0.001	0.002	0.012**	0.001	-	0.002**	0.000
2,000	60	0.015**	0.000	0.000	0.000	0.002	0.004**	0.001	0.000	0.003	0.001	-	0.001*	−0.001
2,600	70	0.011*	0.000	−0.000	0.000**	0.001	0.003**	0.001	0.000	0.005	−0.000	-	0.001	0.001
3,700	80	0.011**	-	−0.000	0.000*	−0.001	0.000	0.000	−0.001	0.004	0.001	-	0.001	−0.001
6,500	90	0.004	-	-	-	−0.001	0.000	−0.000	−0.000	0.002	−0.001	-	0.000	0.001
10,000	95	0.002	-	-	-	−0.001	0.000	0.000	−0.000	0.002	−0.000	-	0.000	−0.001
26,000	99	0.000	-	-	-	−0.000	-	-	-	−0.000	−0.000	-	-	0.001

Notes: Linear probability fixed-effect panel models. * p< .10; ** p< .05; *** p< .01. [1] Nearest percentile value for total health expenditure distribution, including zeros. The entire population of 60,984 individuals was considered for the estimates.
Source: PARI (2014–2016).

* *
*

The aim of the *Programme d'Actions pour une Retraite Indépendante* (PARI), launched in 2015, is to offer a threefold, global, proactive and targeted approach aimed at promoting the use of various social assistance by craftsmen and merchants aged 60 to 79 and living in France, with a view to preventing loss of autonomy. The effectiveness of the programme lies in its ability to address a specific population. We recall that self-employed workers have one-off and acute health demands due to increased working time which eats into the time dedicated to prevention and healthcare. During their working lives, they draw on a stock of health capital that is higher at the start of the period (selection effect), but which depreciates more rapidly than that of employees. A catch-up effect in healthcare consumption is, however, observed at the time of retirement, but suggests that the self-employed have a sporadic relationship with the healthcare system, which is far removed from the logic of early detection and prevention.

PARI's targeting strategy makes it possible to identify this catch-up phenomenon when individuals are characterised by high levels of health expenditure. Indeed, in the control group, we observe a rapid decrease in the two years after targeting. On the other hand, the treatment group shows a smaller reduction in healthcare consumption which we interpret as a reflection of continued contact with the healthcare system, which is favourable to the prevention of loss of autonomy, in particular because this allows for early diagnosis of disabling diseases and prevention in general. Specifically, our results indicate that this additional healthcare consumption in the treatment group corresponds to both greater access to healthcare (the probability of positive healthcare consumption increases) and a leverage effect of the general practitioner which modifies both the type of healthcare consumed, namely more medical equipment and pharmaceuticals, which could be linked to preventing or compensating for loss of autonomy, and the total amount of ambulatory care consumed. PARI is thus part of an approach promoting support for vulnerable elderly people.

Table 6 – **Impact (ITT) of the PARI programme on ambulatory expenditure – heterogeneity**

Dep. var. / Heterogeneity		Gender		Category of workers		Professional status	
		Female	Male	Craftsmen	Merchants	Retired	In employment
Access		0.003	0.013***	0.009**	0.014***	0.009***	0.031***
Consumption > Threshold							
Amounts (€)	Percentile [1] (%)						
10	2.5	0.005	0.013***	0.009**	0.014***	0.009***	0.030***
20		0.008	0.014***	0.009**	0.017***	0.009***	0.037***
35	3	0.005	0.015***	0.010***	0.016***	0.010***	0.037***
50		0.007	0.015***	0.010***	0.016***	0.009***	0.041***
85	4	0.005	0.014***	0.012***	0.012***	0.008***	0.043***
100		0.000	0.013***	0.013***	0.009*	0.007**	0.036**
130	5	0.003	0.014***	0.013***	0.011**	0.008**	0.040**
150		−0.000	0.011***	0.012**	0.006	0.007**	0.027*
200		−0.012	0.008*	0.010*	−0.001	0.003	0.020
250		−0.015*	0.009*	0.010*	−0.002	0.004	0.010
300	10	−0.011	0.010**	0.010	0.002	0.005	0.014
600	20	−0.004	0.017***	0.019**	0.008	0.010*	0.042**
900	30	−0.001	0.01	0.016*	0.002	0.009	0.010
1,200	40	−0.002	0.003	0.011	−0.004	0.001	0.021
1,500	50	0.017	0.009	0.017*	0.005	0.009	0.030*
2,000	60	0.007	0.017**	0.015	0.015*	0.016**	0.012
2,600	70	−0.003	0.014**	0.021**	0.001	0.013**	−0.004
3,700	80	−0.004	0.015**	0.016**	0.006	0.012**	0.002
6,500	90	−0.008	0.007	0.007	0.000	0.005	−0.007
10,000	95	0.001	0.002	0.002	0.001	0.003	−0.010
26,000	99	−0.000	0.000	0.001	−0.001	−0.000	0.004
Observations		12,822	48,162	25,552	35,432	53,271	7,713

Notes: Linear probability fixed-effect panel models. * p< .10; ** p< .05; *** p< .01. [1] Nearest percentile value for the total health expenditure distribution, including zeros.

Our results support the central assumption that social assistance improves the healthcare consumption of elderly self-employed people in a specific manner. However, more research needs to be carried out in at least four areas. First, our study does not offer an in-depth analysis of the specific mechanisms linked to the price and income effect which contribute to being able to meet healthcare demand. However, this area will be explored in more depth in future research. Second, our study only considers the effect of PARI on ambulatory care, which is more conducive to prevention. It only provides a partial picture and omits *(i)* the possible effects of reducing acute hospital use over time, and *(ii)* prevention practices in hospitals, particularly in geriatrics and gerontology departments, with regard to evaluating the vulnerability of the elderly and implementing, in conjunction with the attending physician, individual strategies to prevent loss of autonomy. Third, our study focuses only on a specific population of self-employed workers – craftsmen and merchants – identified as being at risk (PARI 3) and therefore raises the question of external validity on other populations of traditional self-employed workers, such as liberal professionals, and non-traditional self-employed workers whose work relates to the "Uberisation" of society. Fourth, our study is limited to potential effects only one year after the intervention, in order to avoid the effect linked to the generalisation of PARI. Assurance Maladie, the French health insurance scheme, is currently developing approaches that are quite similar to the PARI methodology for its beneficiaries (which now include self-employed workers), which represents a new opportunity for public policy evaluation in the years to come, with a view to making it more comprehensive and long-term. □

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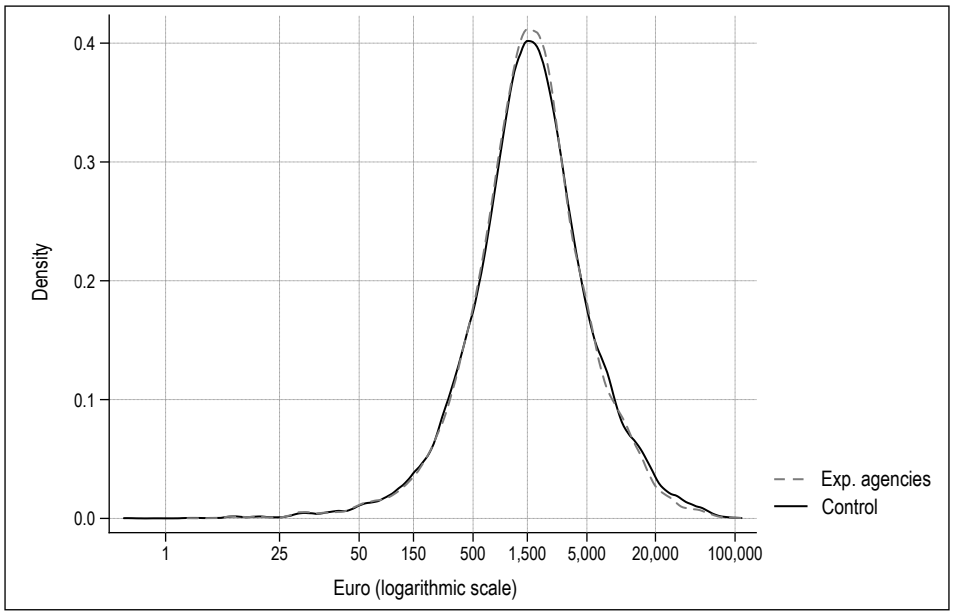
APPENDIX

Figure A1 – **Ambulatory expenses of eligible individuals (classified as PARI 3) in 2014**



Source: PARI (2014–2016).

Table A1 – **Descriptive statistics of treatment and control groups after propensity score matching**

Variables	Average			t-test	
	Treatment	Control	% bias	t	P>|t|
Age	69.618	69.404	3.7	2.48	0.013
Female	0.20563	0.21472	−2.2	−1.49	0.135
Craftsmen	0.51831	0.48607	6.5	4.32	0.000
In employment-retired	0.04409	0.03338	4.7	3.72	0.000
Retired	0.83713	0.83917	−0.5	−0.37	0.711
GIR 5 or 6	0.04867	0.04463	1.9	1.28	0.200
CMU or ACS beneficiary	0.1708	0.16957	0.3	0.22	0.827
ALD	0.67158	0.67549	−0.8	−0.56	0.577
Attending physician	0.9779	0.97874	−0.5	−0.39	0.698
Forcing rule	0.26892	0.29157	−5.0	−3.38	0.001
Unknown of the ASS	0.86772	0.86952	−0.5	−0.36	0.721

Notes: Population of eligible individuals classified as PARI 3.
Source: PARI (2014–2016).

Table A2 – **Estimates with robustness checks**

Dependent variable		Main model	Sensitivity model with robust standard errors clustered	Sensitivity model: DID kernel propensity score weighting
		(1)	(2)	(3)
Access		0.011***	0.011***	0.012***
Consumption > Threshold				
Amounts (€)	Percentile (%)			
10	2.5	0.011***	0.011***	0.012***
20		0.013***	0.013***	0.013***
35	3	0.013***	0.013***	0.014***
50		0.013***	0.013***	0.014***
85	4	0.012***	0.012***	0.013***
100		0.010***	0.010***	0.011***
130	5	0.011***	0.011***	0.013***
150		0.008**	0.008*	0.010***
200		0.004	0.004	0.005
250		0.004	0.004	0.005
300	10	0.005	0.005	0.007
600	20	0.013**	0.013*	0.015***
900	30	0.008	0.008*	0.010
1,200	40	0.003	0.003	0.004
1,500	50	0.011	0.011*	0.012*
2,000	60	0.015**	0.015**	0.015**
2,600	70	0.011*	0.011*	0.011*
3,700	80	0.011**	0.011	0.011**
6,500	90	0.004	0.004	0.003
10,000	95	0.002	0.002	0.001
26,000	99	0.000	0.000	0.000

Notes: Population of eligible individuals classified as PARI 3. (1) Main model: linear probability fixed-effects panel. (2) Sensitivity model: linear probability fixed-effects panel with robust standard errors clustered at the level of ”local agencies” and adjustment of the degrees of freedom of the distribution function t to G-1, where G corresponds to the number of groups (G = 28). (3) Sensitivity model. The control and treatment groups are the same; observations from each group are weighted using propensity scores.
* p< .10; ** p< .05; *** p< .01.
Source: PARI (2014–2016).