# The Effect of the 2015 Reform of the Personalized Autonomy Allowance on the Care Plans Notified to Beneficiaries

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Abstract – The law on the adaptation of society to ageing, which reformed the home care allowance APA, entered into force on 1 March 2016. This article aims to study the effect of this on the amounts proposed in plans by the medical and welfare teams (EMS), first theoretically and then empirically, on more than 300,000 beneficiaries in 2011 and 2017. The analysis is based on individual data from the statistical services of the Ministry of Health and Social Affairs (DREES). The average amount offered to beneficiaries assessed as belonging to the iso-resource group of dependence (GIR) 3, 2 or 1 saw a respective increase of  $\in 16$ ,  $\in 49$  and  $\in 57$  between 2011 and 2017. The amount offered to most beneficiaries allocated to GIR 4 decreased, other things being equal. Within each GIR, in 2017, the amounts granted are more widely distributed, in both directions, which suggests that constraints on *départements*' council budgets have led EMS to cut allowances for people with relatively more autonomy so as to provide more funding for the most severely dependent people.

JEL Classification: H75, J14, J18 Keywords: loss of autonomy, public assistance, reform, censored quantile regressions

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The Personalized Autonomy Allowance (APA) has been the main form of aid granted to address the loss of autonomy among France's elderly population since 2002. At the end of 2017, nearly 769,000 homebound senior citizens were receiving the allowance and it accounted for nearly 98% of all home care benefits paid by the *départements*' councils to people aged 60 and above (Abdouni, 2018). The APA is a form of aid in kind that is managed at the *département* level (the administrative level between the region and the municipality, hereafter department) and mainly serves to compensate carers for their time spent providing assistance (Couvert, 2017): housework, shopping, meal preparation, or personal care. Each home care APA beneficiary is notified of a personal care plan. The full amount is capped by law and this limit increases in value in proportion to the beneficiary's loss of autonomy. The "beneficiary co-payment" is a means tested part of the costs under the care plan that is paid by the beneficiary and which takes the amount under the plan into account, while the remaining part is paid by the department's council.

On 1 March 2016, the reform of the home care APA enacted by the Loi d'adaptation de la société au vieillissement (a law aimed at the adaptation of society to ageing, hereafter ASV Law) entered into force, reforming the allowance scheme so as to reduce the excess required from senior citizens with the lowest level of independence. All of the statutory limits – or ceilings – for benefits under the notified care plans were raised – particularly the limits for the most dependent beneficiaries. The scale used to calculate the "beneficiary co-payment" was also revised to lower the excess due from beneficiaries requiring a significant amount of assistance. The change to how the beneficiary co-payment was calculated, which applied to all home care APA beneficiaries, potentially lowered their out-of-pocket expenditures (Arnault, 2019; Latourelle, 2019). A number of authors study the way in which lower marginal hourly costs, such as those brought about by the revised law, could result in beneficiaries receiving more care. These authors analyse the elasticity between the demand for professional care for APA beneficiaries and their out-of-pocket expenditures (Bourreau-Dubois et al., 2014; Roquebert & Tenand, 2017) and observe that they are particularly responsive to it. On average, beneficiaries should therefore have upwardly revised the volume of care they received in response to their lower contribution rates brought about by the change to the scale used to calculate beneficiary co-payments.

However, it is not just beneficiaries whose behavioural responses are liable to influence the effects of the reform. Medical and welfare teams (EMS) also play a key role, given that they prepare the care plan offered to each beneficiary. The way in which they do this differs (Fondation Médéric Alzheimer, 2019), including on the basis of their initial training (Gramain et al., 2015) or the organisational structure in which these departments council officers work (Gramain et al., 2012). Other than a DREES study highlighting the fact that EMS seem to offer the cheapest care services whenever the care plan amount approaches the limit (Couvert, 2017), little is known about how EMS cope with the statutory constraints placed on their practices.

The scale of the knock-on effects resulting from the higher ceilings for all GIR (an administrative grouping of beneficiaries by level of lost autonomy) is therefore contingent on the behavioural response of the EMS (Tenand & Gramain, 2019). At first glance, the general expectation might be that the higher ceilings affected only those beneficiaries whose allowances would have been restricted by the ceilings before the law was reformed. Therefore, more than three quarters of beneficiaries - senior citizens notified of amounts strictly below the ceiling before the reform - would have been unaffected and the effects of the increased limits on department council spending would be moderate (Fontaine & Gramain, 2017). However, it cannot be ruled out that the overall distribution of the notified amounts included in the plans changes as a result of the increased ceilings. This is because, first, the ceilings can act as implicit benchmark standards for the EMS and lead them to shift the entire distribution of notified amounts to the right, i.e. upwards. The second reason is the budgetary constraints placed on the departments that could be highly restrictive and influence EMS practices. While the regulations on APA operation are set at national level, it is the department councils that implement and manage the allowance scheme. Although these councils have been receiving additional funds from the Caisse Nationale de Solidarité pour l'Autonomie (CNSA, a dedicated national fund) following the reform, they still contribute 60% of all expenditure and therefore still bear most of the costs associated with decisions taken by the EMS when preparing the plans.

This article aims to evaluate the effect of the reform on the amounts of assistance notified to home care APA beneficiaries. It offers new insight into how the departments' councils and teams determine the amounts notified under the plans while incorporating legislative amendments. The rest of the paper is organised as follows: the first section recalls the functioning of the APA home care. Section 2 presents the theoretical model constructed for the study, the empirical specification is detailed in section 3 and the data are presented in section 4. Section 5 presents the results; then we conclude.

# 1. The Personalized Autonomy Allowance

# 1.1. How the Home Care APA Works

When a senior citizen applies for home care APA, a medical and welfare team (EMS) visits the person at home and evaluate their level of dependence based on a national assessment grid (Autonomie, gérontologie, groupes iso-ressources, AGGIR). The grid includes six "iso-resources groups" (GIR) that classify the various levels of lost autonomy, whereby senior citizens in GIR 6 are the most independent and those in GIR 1 are the most severely dependent. To be eligible for APA, applicants must be aged 60 or above and belong to GIR 1 to 4, i.e. they must find it difficult to carry out certain daily activities such as washing or feeding themselves without any assistance. If the applicant is eligible, they will be notified of a personal care plan. The amount indicated in the plan (in euros) corresponds to the value of the technical and human assistance it will grant technical and human assistance. Human assistance will be recorded as a monthly volume of subsidised care, valued in accordance with a rate set by the department. Ultimately, the total care plan amount notified may not exceed a statutory ceiling, in euros, the value of which increases in proportion to the beneficiary's loss of autonomy. For example, in 2015, the pre-reform monthly ceiling was €562.57 for GIR 4 beneficiaries and €1,312.67 for GIR 1 beneficiaries.

The notified plan corresponds to the maximum subsidised care allowance. It does not always equal the amount of care consumed by the beneficiary, who may choose not to use some subsidised hours. Some of the amount (the "beneficiary co-payment") is paid by the beneficiary, depending on the beneficiary's income.<sup>1</sup> The beneficiary's contribution rate is defined as the ratio between the sum of the beneficiary co-payment and the total care plan amount. Up until 2016 when the ASV Law was implemented, contribution rates increased linearly with the beneficiary's means where their (personal) monthly income fell between €740 and €2,945. The contribution rate was zero if the beneficiary's monthly income was below €740, and 90%, the maximum rate permissible, if their monthly income exceeded  $\notin 2,945$ . In 2015, GIR 4 beneficiaries were paying 22.3% of the full amount of their care plan on average, compared to 21.1% of GIR 1 beneficiaries (Arnault, 2019).

# 1.2. The Measures of the ASV Law

Five years after the national debate held on elderly dependency in 2010-2011, France adopted the ASV Law (loi 2015-1776 of 28 December 2015). The section of the Law that reformed the home care APA entered into force on 1 March 2016.

Under that section, the minimum threshold for beneficiary contributions was raised from €740 to  $\in$ 800 (monthly) so that individuals receiving the solidarity allowance for the elderly (ASPA, or minimum old-age pension) can be exempt from paying any contributions whatsoever. Prior to 2016, the APA scheme also provided benefits that many deemed insufficient to cover the cost of home care support, particularly for the most severely dependent beneficiaries (those in GIR 1 or 2). Before the reform, they were much more likely to be notified of a "saturated" care plan with a value restricted by the ceiling in force (Arnault, 2020; Bérardier, 2012; Fizzala, 2016). Therefore, it was likely that certain hours of required care went unsubsidised, which meant that those hours may have been more costly for the beneficiaries. The reform introduced higher statutory plan amount limits for each GIR, with an increase of 31% for GIR 1 beneficiaries, 22% for GIR 2 beneficiaries, and 18% for GIR 3 and 4 beneficiaries<sup>2</sup> (Figure I). As the average contribution rate of the middle classes was higher than that of lower or higher income beneficiaries before the reform, they were also deemed to be put at a disadvantage by policy addressing the loss of autonomy in France (Fizzala, 2016). The scale used to calculate the beneficiary co-payment was therefore also revised: the financial contribution of the beneficiaries in the mid-level income bracket, with monthly income of between €800 and €2,945, now takes the full value of their plan into account as opposed to being based exclusively on the beneficiary's

Three categories of resources are considered for calculating the beneficiary's financial contribution: declared income, income subject to withholding tax, and inactive assets. Joint resources are considered for couples, where applicable. To derive personal income, joint resources are divided by 1.7 for co-habiting couples and by 2 for couples who do not live together.
Prior to the reform, the value of the ceiling was obtained by multiplying the constant attendance allowance (Majoration pour Tierce Personne, MTP) by a factor of 0.51 for GIR 4, 0.765 for GIR 3, 1.02 for GIR 2, and

<sup>1.19</sup> for GIR 1, respectively. The MTP is re-evaluated each year by decree, in line with inflation. The revaluation of the ceilings involved increasing the value of the multiplying factors applied to the MTP, for each GIR. The new, post-reform factors are 0.601 for GIR 4 (+18%), 0.901 for GIR 3 (+18%), 1.247 for GIR 2 (+22%), and 1.553 for GIR 1 (+31%).



Figure I – Change in the amount of the statutory ceiling in force on 1 January by GIR

Notes: The vertical dotted line corresponds to 1 March 2016, the date on which the part of the ASV Law reforming home care APA entered into force.

Reading Note: On 1 January 2011, the applicable ceiling was €530 for a GIR 4 beneficiary, €794 for a GIR 3 beneficiary, €1,059 for a GIR 2 beneficiary, and €1,236 for a GIR 1 beneficiary. Sources: CNAV (*Caisse Nationale d'Assurance Vieillesse*) circulars for the amounts of the constant attendance allowance (MTP) on 1 January.

level of income. This provides them with an additional allowance for care hours received in excess of the amounts in the plans equal to  $\notin$ 350 and  $\notin$ 550, respectively. Lastly, until it was reformed, the home care APA intrinsically failed to account for family caregivers providing care to senior citizens requiring support.

# 2. Theoretical Model

A theoretical model has been developed to predict the effect of higher ceilings on the amounts included in the plans that EMS are offering to home care APA beneficiaries. This model is based on another, developed to study the effect of financial incentives on general practitioner practices and patient expectations of them (Jelovac & Polomé, 2017). To simplify the analysis, let us assume that the EMS visits two senior citizens  $(i = \{1, 2\})$  eligible for the home care APA who the EMS assesses as belonging to the same GIR.<sup>3</sup> The EMS must therefore prepare a subsidised care plan, in euros, based on the requirements of each person *i*. The amount  $M_i$  under the care plan proposed to the senior citizen *i* corresponds to a particular volume of care, with the department valuing each care unit at a rate t based on its nature and the type of provider. To simplify matters, we will assume that the care plans consist only of human assistance. In practice, this accounts for 87% of the totals notified for the home care APA (Arnault & Roy, 2020). Let us also assume that the EMS offers an amount  $M_i$  to a senior citizen and we disregard the way

in which this amount breaks down in terms of the volume of care and the hourly rate.<sup>4</sup> Three simplifying assumptions are made:

- A1: the professional care received by a beneficiary is through the APA only. This hypothesis may seem strong, given the relatively high proportions of beneficiaries already notified of the maximum subsidised care plan amounts, equal to the ceilings, and whose care needs may therefore go unfulfilled. 25% of the 1,616 APA beneficiaries included in a study conducted using "customer" data from a home care service also received professional care not covered by the APA. Nevertheless, non-subsidised hours are negligible for the most part because they account for 2.6% of the total hours of care received by beneficiaries, on average (Tenand, 2018).

- A2: the volume of informal care received by a beneficiary is exogenous.

- A3: the contribution rate of a beneficiary increases linearly with their income and does not depend on the full amount of the care

<sup>3.</sup> The process of determining APA eligibility has already been completed by the EMS at the homes of both senior citizens. The only thing the two beneficiaries have in common is their GIR, and not necessarily any specific disability. Beneficiaries in a given GIR might actually suffer from different disabilities, which would result in different care arrangements.

<sup>4.</sup> For human assistance, by way of example, the EMS can make a trade-off between the number of hours and the associated hourly rate, which is mainly based on the type of provider selected. This allows it to choose to notify the beneficiary of either few hours, albeit at a high rate (for example, weekend hours provided by a care service provider), or many hours at a low rate (for example, over-the-counter hours provided by a professional careativer during weekdays).

plan, as was the case before the ASV Law was implemented.  $^{5}$ 

We assume that the EMS already visited beneficiary 2 and offered them an amount equal to the limit  $\overline{M}$ , even if the EMS had intended to provide them with more than this amount. This would be the case if beneficiary 2 was severely disabled or if they received very little informal care. As a result, the EMS now seeks the amount  $M_1^*$  to be offered to beneficiary 1, which maximises its utility, considering that  $M_1$  cannot exceed  $\overline{M}$ . The EMS' utility function is assumed to depend on the utility  $V_1$  of beneficiary 1, as perceived by the EMS (the EMS is assumed to be altruistic), and the utility W of the department's council, as assimilated by the EMS:

$$\max_{M_{1}} \beta V_{1}(M_{1}, IC_{1}, A_{1}, Z_{1}) + (1 - \beta) W(D_{1})$$

where:

 $\beta$  is the level of altruism of the EMS ( $\beta \in [0,1]$ );

 $V_1(.)$  is the utility of beneficiary 1, as perceived by the EMS;

 $M_1$  is the amount offered to beneficiary 1 by the EMS under the care plan as part of the home care APA;

 $IC_1$  is the amount of informal care received by beneficiary 1, which is assumed to be at no cost;

 $A_1$  is the level of autonomy of beneficiary 1;

 $Z_1$  is the care received by beneficiary 1 (cost = unit) after their needs related to loss of autonomy have been met;

 $I_1$  is the disposable income of beneficiary 1 (before the deduction of home care costs).

 $a_1$  is the contribution rate of beneficiary 1 with respect to paying for one hour of subsidised care. This rate falls between 0 and 0.9 and is assumed to increase linearly with  $I_1$ :  $a_1 = a_1(I_1) = cI_1$ , c > 0

$$Z_1 = I_1 - a_1 M_1.$$

W(.) is the utility of the department's council, as assimilated by the EMS;

 $D_1$  is expenditure covered by the department's council for the plan notified to beneficiary 1:

$$D_1 = (1 - a_1)M_1$$

where W(D) is assumed to be concave and to decrease strictly with the department's council spending:

$$W_D < 0; W_{DD} < 0.$$

The utility of beneficiary 1, as perceived by the EMS  $(V_1)$ , is assumed to be separable:

$$V_1(M, IC, A, Z) = v_1(M, IC, A) + u_1(Z),$$

where  $v_1(.)$  is the utility of beneficiary 1 in terms of their needs related to loss of autonomy being met;  $v_1$  is strictly increasing and concave in each of its arguments:

$$\begin{array}{l} \frac{\partial v_{1}}{\partial M} = v_{1,M} > 0; \quad \frac{\partial v_{1}}{\partial IC} = v_{1,IC} > 0; \\ \frac{\partial v_{1}}{\partial A} = v_{1,A} > 0; \ v_{1,MM} < 0; \ v_{1,ICIC} < 0; \ v_{1,AA} < 0. \end{array}$$

 $u_1(.)$  is the beneficiary's utility resulting from receiving the composite good.  $u_1$  is strictly increasing and concave in terms of the quantity of composite good received:  $u_{1,Z} > 0$ ;  $u_{1,ZZ} < 0$ .

The amount actually offered to beneficiary 1 by the EMS cannot exceed the statutory limit  $\overline{M}$ :  $M_1 \leq \overline{M}$ .

It is also assumed that the notified plans must comply with budgetary constraints and not exceed a certain budget  $B^6$ :

 $D_1(M_1) + D_2(\overline{M}) \le B$ , where  $D_i$  is expenditure covered by the department 's council for the plan notified to beneficiary *i*:

$$D_i(M_i) = (1 - a_i)M_i$$

and *B* is the department's council budget for home care APA expenditure.

The maximisation programme (*P*) of the EMS can therefore be reformulated as follows:

$$\begin{cases} \max_{M_1} \beta \Big[ v_1(M_1, IC_1, A_1) + u_1(Z_1) \Big] + (1 - \beta) \Big[ W(D_1) \Big] \\ s.t. \begin{cases} M_1 \le \overline{M} & (statutory constraints) \\ M_1 \le \frac{B - (1 - a_2)\overline{M}}{(1 - a_1)} (budgetary constraints) \end{cases}$$
(P)

Two scenarios are considered, depending on whether the budgetary constraints placed on the department give the EMS free rein

<sup>5.</sup> Following the implementation of the ASV Law, there is no longer a linear relationship between contribution rate growth and beneficiary income and the rate is now also dependent on the full plan amount. Nevertheless, the function that links the contribution rate to the amount included in the care plan is discontinuous and complex. In this theoretical model, we therefore implicitly assume that the reduced hourly contribution rate for high plan amounts, which results from the reform, has zero effect on the selection of the plan amount that the EMS offers to the beneficiary.

<sup>6.</sup> One of the potential channels through which the department's budgetary constraints could influence the practices of the EMS is touched on in the CNSA report (2015), which states that, despite the strong trend towards greater decentralisation of medical and welfare teams at infradepartmental level (territorialisation), the departments are actively working towards "harmonising" the assessment practices of those teams. The aim would be to limit the number of appeals and conflicts involving beneficiaries, which are very time-consuming, and to offer them equal treatment throughout France. But it would also serve to "avoid discrepancies" in the notified care plans, i.e. to contain them: "the watchword was more or less identical from one department to another: better control of the care plans allocated". Departmental council budgetary constraints weigh all the more heavily as the EMS do not have the final decision on the notification of the plan: they only propose a plan notified to the departmental council, which makes the final decision.

("flexible budgetary constraints") or restrict it ("strict budgetary constraints").

In Scenario 1, it is assumed that the constraints placed on the departmental budget are flexible. The EMS acts as though the departmental budget *B* were high enough. In this case, the legal constraints on the limit are the most restrictive and the EMS internalise the budgetary constraints only through the disutility of the expenditure  $W(D_1)$ . If the EMS are not constrained by budget, the notified plans are set only on the basis of the marginal utility of the care and the disutility of the expenditure are therefore independent of the ceiling if the optimal notified care plan is below the ceiling.

Scenario 2 corresponds to the case where the EMS has internalised the need to comply with strict budgetary constraints. The departmental

budgetary constraints are more restrictive than the legal constraints on the limit. An increased ceiling  $\overline{M}$  (with the budget being maintained) would lead the EMS to lower the amount that it offers to a beneficiary 1, even more if this beneficiary 1 has a high contribution rate. The EMS therefore intends to bring beneficiary 2 more in line with the optimal situation that was not possible previously due to the initial ceiling, while respecting the budgetary constraints. Since the marginal utility of the assistance offered to beneficiary 2 is strictly positive, the EMS makes it more satisfactory by offering less to beneficiary 1 so as to provide more to beneficiary 2, with the budget being maintained.

The formalised EMS programme for each scenario is presented in the Box below.

(P')

#### Box - The EMS programme with a flexible or a strict budgetary constraint

### Scenario 1: Flexible Budgetary Constraints

The EMS programme can be reformulated as follows:

$$\begin{bmatrix} \max_{M_1} \beta \left[ v_1(M_1, IC_1, A_1) + u_1(Z_1) \right] + (1 - \beta) \left[ W(D_1) \right] \\ \text{s.t.} \quad M_1 \le \overline{M} \end{bmatrix}$$

The following Lagrangian equation applies:

$$L = \beta \left[ v_1(M_1, IC_1, A_1) + u_1(Z_1) \right] + (1 - \beta) \left[ W(D_1) \right] + \lambda \left( \overline{M} - M_1 \right)$$

If the EMS wishes to offer beneficiary 1 an amount strictly below the ceiling ( $\lambda = 0$ ), then it can be shown, using the primary conditions and by applying the implicit function theorem, that for beneficiary 1:

$$\frac{\partial M_1}{\partial IC_1}\Big|_{M_1^*} = -\frac{\frac{\partial F}{\partial IC_1}}{\frac{\partial F}{\partial M_1}}\Big|_{M_1^*} = -\frac{v_{1,MIC}(M_1^*, IC_1, A_1)}{v_{1,MM}(M_1^*, IC_1, A_1) + a_1^2 u_{1,ZZ}(Z_1(M_1^*)) + \left(\frac{1-\beta}{\beta}\right)(1-a_1)^2 W_{DD}(D_1(M_1^*))}$$

The amount offered by the EMS under the care plan will decrease with the amount of informal care received by the beneficiary if the marginal utility of formal care decreases with the amount of informal care ( $v_{1,MIC} < 0$ ), i.e. if formal care and informal care are substitutes or considered to be substitutes by the EMS. The fact that care plans are means tested with respect to informal care is a hot topic because the law is not entirely clear on this matter. We will be able to empirically verify the behaviour that the EMS seems to have adopted.

On the other hand, if marginal utility of formal care decreases with the level of autonomy ( $v_{1,MA} < 0$ ), the amount offered by the EMS under the plan will increase, in the manner expected, with the level of dependence of the beneficiary (therefore decreasing with *A*).

$$\frac{\partial M_{1}}{\partial A_{1}}\Big|_{M_{1}^{*}} = -\frac{\frac{\partial F}{\partial A_{1}}}{\frac{\partial F}{\partial M_{1}}}\Big|_{M_{1}^{*}} = -\frac{v_{1,MA}(M_{1}^{*}, IC_{1}, A_{1})}{v_{1,MM}(M_{1}^{*}, IC_{1}, A_{1}) + a_{1}^{2}u_{1,ZZ}(Z_{1}(M_{1}^{*})) + \left(\frac{1-\beta}{\beta}\right)(1-a_{1})^{2}W_{DD}(D_{1}(M_{1}^{*}))} < 0$$

As for the effect of  $\overline{M}$ , a higher ceiling has no impact on the notified amounts unrestricted by the previous ceiling: there is thus no effect on beneficiaries initially "under the ceiling".

If 
$$M_1^* < \overline{M} : \frac{\partial M_1}{\partial \overline{M}} \Big|_{M_1^*} = 0$$

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Scenario 2: Strict Budgetary Constraints

The programme can be reformulated as follows<sup>(a)</sup>:

$$\max_{M_1} \beta \left[ v_1(M_1, IC_1, A_1) + u_1(Z_1) \right] + (1 - \beta) \left[ W(D_1) \right]$$
  
s.t.  $M_1 \le \overline{B}(<\overline{M})$ 

(P")

Box (contd.)

where 
$$\overline{B} = \frac{B - (1 - a_2) \overline{M}}{(1 - a_1)}$$

Optimally, if the budgetary constraints are strict, the EMS will always offer beneficiary 1 an amount strictly below the ceiling  $(M_1^{\prime} < \overline{M})$  and less than or equal to  $\overline{B}$ . Let us assume that the EMS is restricted by the departmental budget, i.e. the team would have intended to offer more to beneficiary 1:

$$M_{1}^{*} = \frac{B - (1 - a_{2})\overline{M}}{(1 - a_{1})}$$

When budgetary constraints are strict, we now see the following for certain types of beneficiaries who are "below the ceiling"<sup>(b)</sup>:

$$\frac{\partial M_1}{\partial \overline{M}} = \frac{-(1-a_2)}{(1-a_1)} < 0$$
$$\frac{\partial^2 M_1}{\partial \overline{M} \partial a_1} = \frac{-(1-a_2)}{(1-a_1)^2} < 0$$

An increased ceiling  $\overline{M}$  (with the budget being maintained) would lead the EMS to lower the amount of the plan offered  $\partial^2 M$ 

to beneficiary 1 ( $\frac{\partial M_1}{\partial \overline{M}} < 0$ ), even more if beneficiary 1 has a high contribution rate ( $\frac{\partial^2 M_1}{\partial \overline{M} \partial a_1} < 0$ ).

<sup>(a)</sup> However, it is assumed that  $B > (1-a_2)\overline{M}$ , such that the départment's budget remains strictly positive after the EMS offers the amount  $\overline{M}$  to beneficiary 2. It is also assumed that the budget is insufficient to fund both plans at the ceiling.

(\*) With this simplified model, we make the implicit assumption that the cover for beneficiary 2 still remains at the level of the ceiling, even after the increase of  $\overline{M}$ . Similar results could be shown without having to make this assumption.

# 3. Empirical Specifications

If we take *i* to be a home care APA beneficiary whose GIR is known, living in department jduring year t, whereby  $M_{iit}$  is the amount that the EMS offers to the beneficiary under the care plan, which cannot exceed the ceiling  $M_t$  in force during year t. The notified plan amount is equal to the limit for almost 25% of the beneficiaries included in the 2011 sample: 18.4% of GIR 4 beneficiaries, 31.6% of GIR 3 beneficiaries, 35.2% of GIR 2 beneficiaries, and 51.6% of GIR 1 beneficiaries. In this instance of using censored data, the ordinary least squares estimate is biased. We must therefore find a suitable method to process the censored data to correctly estimate the change in the amount under the plan between 2011 and 2017, all other things being equal. The censored regression model, or Tobit model (Tobin, 1958), is therefore initially estimated:

$$M_{ijt} = \begin{cases} M_{ijt}^* & \text{if } M_{ijt}^* < \overline{M}_{ijt} \\ \overline{M_t} & \text{if } M_{ijt}^* \ge \overline{M_t} \end{cases}$$

where  $M_{ijt}^* = X_{ijt}\beta + \delta j + \gamma t + \epsilon_{ijt}$  with  $\epsilon_{ijt} \sim N(0, \sigma^2)$ ; where  $M_{ijt}^*$  corresponds to the latent amount selected by the EMS under the care plan, which cannot be seen beyond the ceiling, and the vector  $X_{ijt}$  includes age bracket, gender, and relationship status variables, including income brackets, with *j* being the beneficiary's home department and *t* being the year. This Tobit model is estimated on the basis of four

sub-samples - one for each GIR. However, the Tobit model is restricted to estimating an average effect of the year on the amount proposed by the EMS. As predicted by the theoretical model, the changes in the amounts proposed between 2011 and 2017 can be expected to differ according to the size of the plans (small or large). In a second step, we therefore estimate multiple censored quantile regressions (Fack & Landais, 2009; 2010). Unlike the Tobit models, censored quantile regressions have the advantage that they do not rely on any parametric assumptions concerning error term distribution. Quantile regression estimates conditional quantiles rather than the conditional expectation of the dependent variable. In our example, the  $\tau^e$  conditional quantile for the distribution of the amount M can therefore be formulated as:

$$Q_{M|Z}(\tau) = X_{ijt} \, \beta(\tau) + \delta(\tau) \, j + \gamma(\tau) t,$$

where  $Z = \{X; j; t\}$  represents the set of explanatory factors that can be seen from the quantiles relating to the distribution of the amounts.

Censoring has no impact on the conditional quantiles if they are strictly below the ceiling. The censored quantile regression estimator used here (see Online Appendix C1 – link at the end of the article) is a three-step estimator (Chernozhukov & Hong, 2002; Fack & Landais, 2009). This estimator makes it possible to obtain unbiased estimators with minimal variance for each value considered of  $\tau$ . This enables to estimate the change in the

amounts offered to beneficiaries receiving small plans (lower quantiles) between 2011 and 2017 and the change in the amounts offered to beneficiaries receiving large plans (upper quantiles), the value of which is close to the ceiling, over the same period.

In order to analyse the role of the departmental budgetary constraints on EMS decision-making in greater detail, the Tobit models and censored quantile regressions are re-estimated on the basis of two sub-samples of different departments which have been created based on the proportion of beneficiaries in GIR 1 or 2 among all home care APA beneficiaries during 2015. The departments with the highest proportion of highly dependent beneficiaries targeted by the reform are those with the sharpest potential increase in the department's spending as a result of the Law's implementation, and therefore those which are likely to be subjected to the most heavily tightened budgetary constraints.

Lastly, the Tobit models and three<sup>7</sup> of the four censored quantile regressions are re-estimated on the sub-sample of beneficiaries whose monthly income is strictly below  $\notin$ 739.80: this figure, expressed in euros as at 2017, is the level below which the beneficiary's contribution rate is zero in both 2011 and 2017. The ASV Law therefore does not result in any change to the contribution rate for these beneficiaries. In principle, the effects observed for this sub-sample can therefore be directly attributable to the ceilings being raised between 2011 and 2017.

# 4. Data

# 4.1. Sample

Individual APA-ASH reporting data are administrative data relating to everybody who receives the APA and the Aide Sociale à l'Hébergement (the ASH, housing benefits). These data cover the years 2007, 2011 and 2017 and are gathered from the departments' councils by the Direction de la recherche, des études, de l'évaluation et des statistiques (DREES) of the Ministry of Health and Social Affairs. The 2007 data are not included in this study because their coverage is restricted to just 34 departments. These data provide information on the main criteria of home care APA beneficiaries (age, gender, relationship status, income, GIR), their APA history (changes in dependency level or change of place of residence), and details of the care plans of which they have been notified (amounts, volumes, and types of care and providers). It is not a panel survey in the sense

that beneficiaries included in the 2011 data cannot be re-identified in 2017.<sup>8</sup>

The data initially consist of 1,590,014 observations concerning home care APA beneficiaries in 102 departments. 967,625 observations correspond to beneficiaries in 2017 (60.9% of the sample) and 622,389 correspond to beneficiaries in 2011 (39.1% of the sample). As individual reporting was mandatory in 2017 but voluntary in 2011, the number of observations is much lower in 2011 because around one third of the departments did not respond. Several steps for selecting individuals and departments are implemented to create the final sample of beneficiaries included in the study (see Appendix). In particular, the sample only includes beneficiaries joining the scheme for the first time, i.e. those eligible to receive the APA from 1 June of year N-1. The aim is to ensure that the beneficiaries in 2017 benefited from the ceilings that entered into force after the ASV Law was implemented on 1 March 2016 while creating a sample of beneficiaries in 2011 that is comparable to the 2017 sample. The final sample includes information on 304,506 beneficiaries from the 56 departments that responded to the two waves of surveys, which includes two overseas departments (Guadeloupe and Martinique): 155,389 observations concerning beneficiaries in 2011 and 149,117 concerning those in 2017.

# 4.2. Descriptive Statistics

The average age of GIR 4 and 3 beneficiaries is higher in 2017 than in 2011, while there is no difference for GIR 2 beneficiaries, and GIR 1 beneficiaries are younger in 2017 (83.5 years on average in 2017 compared to 84.5 years in 2011, see Table 1). The proportion of female beneficiaries is lower in 2017 than in 2011, across all GIR. This difference is in line with the gap between male and female life expectancy contracting by more than 9 months between 2011 and 2017 while male life expectancy without disability fell further behind female life expectancy without disability (Deroyon, 2019). The proportion of beneficiaries in a partnership also tended to increase, from 38.5% in 2011 to 42.4% in 2017.

The sub-sample of GIR 1 beneficiaries whose income is strictly below €739.80 includes only 666 observations: the estimators of the quantile regression parameters cannot be estimated in a convergent manner.
The average length of time in receipt of the APA is three years and seven

<sup>6.</sup> The average length of time in receipt of the APA is three years and seven months and does not exceed six years for around 8 out of 10 beneficiaries (Boneschi & Zakri, 2018). Considering that these periods include any time spent in care homes, most beneficiaries of home care APA in 2011 are no longer receiving the allowance in 2017, in any case.

Variables	All GIR		GIR 4		GIR 3		GIR 2		GIR 1	
	2011	2017	2011	2017	2011	2017	2011	2017	2011	2017
Number of observations	155,389	149,117	92,797	94,068	33,303	30,683	26,125	22,363	3,164	2,003
Age	82.4	82.7	81.9	82.4	83.3	83.7	83.0	83.0	84.5	83.5
% women	0.675	0.648	0.708	0.682	0.643	0.607	0.604	0.572	0.619	0.562
APA resources (€/month) <sup>(1)</sup>	1,373	1,443	1,322	1,418	1,418	1,450	1,483	1,541	1,510	1,441
Contribution rate	0.239	0.251	0.227	0.254	0.249	0.244	0.264	0.252	0.262	0.216
In a couple	0.385	0.424	0.357	0.392	0.376	0.432	0.482	0.532	0.488	0.592
GIR 4 proportion	0.597	0.631								
GIR 3 proportion	0.214	0.206								
GIR 2 proportion	0.168	0.150								
GIR 1 proportion	0.020	0.013								
Ceiling (statutory ceiling) <sup>(1)</sup>	732	853	563	664	839	995	1,126	1,377	1,314	1,715
Proportion of 'saturated' plans (at the ceiling)	0.248	0.129	0.184	0.089	0.316	0.183	0.353	0.210	0.516	0.264
Plan amount <sup>(1)</sup>	507	495	367	358	604	616	811	852	1,070	1,129

Table 1	- Average	characteristics	of beneficiaries	in the sample	bv GIR. ir	n 2011	and 2017
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(1) In euros (2017).

Notes: Unweighted values.

Reading Note: In 2011, the average age of GIR 4 beneficiaries in the sample is 81.9 years, compared to 82.4 in 2017.

Sources and Coverage: DREES, enquêtes Remontées Individuelles, APA-ASH individual data, 2011 and 2017; home care APA beneficiaries in Metropolitan France and French overseas departments and territories (excluding Mayotte) in 2011 and 2017 who are eligible after 1 June of the year N-1 and reside in one of the 56 departments that took part in the individual reporting surveys in 2011 and 2017.

The average monthly income of beneficiaries increased from €1,373 to €1,443 (in constant euros<sup>9</sup>), mainly due to the trend of pensions improving for those generations affected by the APA. In line with expectations, the average rate of beneficiary contributions to care plan funding therefore increased by slightly more than one percentage point (from 23.9% in 2011 to 25.1% in 2017). Nevertheless, we see that the increased contribution rate is restricted to GIR 4 beneficiaries: GIR 3 beneficiaries were unaffected, and the rate even fell for those beneficiaries allocated to GIR 2 and GIR 1. The new calculation scale introduced via the ASV Law causes the rate to fall when the amount under the plan exceeds certain thresholds that are met more frequently by the most heavily dependent beneficiaries. The distribution of beneficiaries joining the scheme, by GIR, also shifted slightly in the sample between 2011 and 2017, with the proportion of beneficiaries allocated to GIR 4 increasing from 59.7% in 2011 to 63.1% in 2017. The ceilings, in constant euros, increased between 2011 and 2017 (18% for GIR 4 beneficiaries, 19% for GIR 3 beneficiaries, 22% for GIR 2 beneficiaries, and 31% for GIR 1 beneficiaries).

Looking at the distribution of plan amounts, by GIR in 2011 and 2017 (figure II), the probability that a beneficiary receives a plan amount equal to the ceiling falls considerably for each GIR between 2011 and 2017. The increased ceilings resulting from the ASV Law have therefore resulted in fewer instances of the ceiling restricting selections made by the EMS. For almost 50% of GIR 4 beneficiaries in 2017, the amount included in the plan is between €200 and €375 and therefore well below the ceiling (€664). The beneficiaries' disability profiles or the amounts proposed by the EMS for a given type of disability would be more variable among beneficiaries allocated to GIR 4 than those in other GIR. Regardless of the GIR, the distribution of plan amounts furthest from the ceiling shifts to the left: GIR 4 beneficiaries are more likely to be notified of an amount below €250 in 2017 than in 2011. Similarly, beneficiaries are more likely to be notified of a plan below €350 (GIR 3), €500 (GIR 2) or €1,000 (GIR 1) in 2017 compared to in 2011.

# 5. Results

The results of the Tobit models, by GIR, are shown in Table 2. These models include departments' fixed effects, introduced to eliminate constant departmental characteristics over time that would influence the average amount proposed by the EMS. First, the constant, which represents the order of magnitude of the average plan amount proposed by the EMS, increases strongly with the beneficiary's level of dependence. For a given GIR, the average

<sup>9.</sup> Income, amounts and ceilings for 2011 are corrected to reflect the growth rate of the constant attendance allowance (MTP) between 1 January 2011 and 1 January 2017 (6.4%), which itself follows the price index. This percentage change is slightly lower than that observed in the sample for the median hourly rate for human assistance. The median hourly rate is calculated as the quotient of the costs for human assistance outified in the plan over the number of notified hours of human assistance, and increases here by 9.2% (rising from €18.40 in 2011 to €20.10 in 2017).



Figure II – Distribution of the plan amounts by GIR, in 2011 and 2017, in constant €

Notes: Unweighted values. Amounts in euros (2017). The ceilings are represented by vertical dotted lines. Reading Note: In 2017, the probability that the amount notified to a GIR 3 beneficiary falls between €500 and €750 is approximately equal to 0.001\*(750-500)=0.25 (dark grey area under the curved line between the points 500 and 750 on the x-axis). Sources: DREES, *enguêtes Remontées Individuelles*, APA-ASH individual data, 2011 and 2017.

plan amount proposed also increases with the age of the beneficiary: for a GIR 4 beneficiary, it varies by around  $\notin$ 30 depending on whether the beneficiary is under 75 or between 85 and 90. The increase between these two age groups is  $\notin$ 68 for a GIR 3 beneficiary. The difference rises to  $\notin$ 76 for a GIR 2 beneficiary and  $\notin$ 105 for a GIR 1 beneficiary.

The EMS offers a higher notified plan amount to women in a partnership than to men in a partnership. This is even more the case if the beneficiary is severely dependent. With all other characteristics remaining fixed, the EMS offers an extra  $\notin$ 15 to a female GIR 4 beneficiary living in a partnership compared to a male equivalent. Among beneficiaries in a partnership, the difference between genders is clearly more pronounced among GIR 1, 2 and 3 beneficiaries (+€81 for female GIR 2 and 3 beneficiaries and +€91 for female GIR 1 beneficiaries). These differences between genders could partly be explained by the different types of tasks for which men and women say that they need care, for a given GIR (Soullier & Weber, 2011). Nevertheless, the difference between men and women living alone is clearly less pronounced, regardless of the GIR. Other things equal, the amount under the plan that the EMS offers to a beneficiary living alone is higher than that for a beneficiary co-habiting with a partner. The average difference is around

	GIR 4		GIR 3		GIR 2		GIR 1	
Constant	325.6***	(4.4)	456.0***	(16.3)	673.6***	(30.7)	1,039.8***	(120.2)
Age (Ref. [60 ; 75[)								
[75 ; 80[	7.9***	(1.3)	25.8***	(4.4)	21.6**	(7.2)	-0.2	(31.0)
Age : [80 ; 85[	17.1***	(1.2)	46.4***	(3.9)	53.1***	(6.4)	83.1**	(28.9)
Age : [85 ; 90[	29.6***	(1.2)	67.5***	(3.8)	76.0***	(6.3)	104.6***	(28.2)
Age : 90 or +	45.2***	(1.3)	70.8***	(4.0)	72.1***	(6.7)	42.3	(29.4)
Gender and couple status (R	ef. Man in a pa	rtnership)						
Woman in a parternship	15.1***	(1.2)	81.0***	(3.7)	80.7***	(5.6)	91.0***	(22.9)
Man single	72.5***	(1.4)	189.1***	(4.0)	266.4***	(7.4)	177.7***	(34.0)
Woman single	69.1***	(1.0)	198.8***	(2.9)	278.6***	(5.0)	205.3***	(21.5)
Income in euros / month (Ref. [0; 739.8])								
[739.8 ; 1 000[	-9.0***	(1.5)	-9.8**	(4.5)	-1.1	(7.9)	46.8	(30.1)
[1 000 ; 1 250[	-20.3***	(1.4)	-29.8***	(4.4)	-19.6**	(7.6)	-25.9	(29.5)
[1 250 ; 1 500[	-29.8***	(1.4)	-33.9***	(4.5)	-48.1***	(7.9)	-19.9	(31.1)
[1 500 ; 2 000[	-31.3***	(1.4)	-44.4***	(4.4)	-64.0***	(7.6)	-49.3	(30.3)
[2 000 ; 2 500[	-26.5***	(1.7)	-36.0***	(5.2)	-77.0***	(8.8)	-102.6**	(35.4)
2 500 or +	13.7***	(2.1)	-5.3	(5.6)	-11.3	(9.1)	-26.9	(36.1)
Departmental fixed effect	Yes		Yes		Yes		Yes	
Year 2017 (Ref. 2011)	-9.1***	(0.8)	15.3***	(2.4)	48.8***	(4.1)	55.8**	(18.0)
σ	159.2***	(0.3)	280.3***	(1.0)	414.9***	(1.7)	540.2***	(7.5)
Ν	186,865		63,986		48,488		5,167	

Notes: Unweighted values. Amounts in euros (2017). The standard errors are shown in brackets. \* p < 0.03; \*\*\* p < 0.05; \*\*\* p < 0.001. Reading Note: On average, the EMS offer a notified plan amount that is  $\in$ 29.60 higher to a GIR 4 beneficiary aged between 85 and 90 than to a GIR 4 beneficiary under the age of 75, all other things being equal.

Sources: DREES, enquêtes Remontées Individuelles, APA-ASH individual data, 2011 and 2017.

€70 for a GIR 4 beneficiary, €190 for a GIR 3 beneficiary, and close to €270 for a GIR 2 beneficiary. The smaller difference observed for a GIR 1 beneficiary (close to  $\in 180$ ) than for a GIR 2 beneficiary (around €270) is discussed below. These gender effects among beneficiaries in partnerships, and relationship status effects (men and women combined), therefore also seem to reflect the role of informal care potentially or actually provided by spouses, and specifically wives, on the amounts of assistance offered. Among beneficiaries in partnerships, either women cannot rely on receiving the same level of informal care as men, or the EMS make this assumption when preparing the care plan. Informal care is assigned to women more often than men in society, even today (Weber, 2010). At a given age, women are also in better health than their husbands on average and are therefore potentially more capable of providing care. The effect of living in a partnership tends to decrease among GIR 1 beneficiaries compared to GIR 2 beneficiaries, for both men and women. Beneficiaries in this category require so much care that the need to be notified of a large plan depends less directly on the amount of informal care received than for GIR 2 beneficiaries.

Regardless of the GIR, the amount that the EMS proposes under the plan is considerably higher for

beneficiaries with income strictly below €1,000. Among GIR 4 beneficiaries, the amount proposed is also considerably higher for beneficiaries with income strictly above €2,500. These two groups of beneficiaries (low income and high income) are those for which the contribution rates before the reform are either very low or very high. Returning to the theoretical model presented earlier, this result could reflect the fact that the respective weights given by the EMS to the beneficiary's utility and to the department's spending in its own utility function (i.e., the coefficients  $\beta$ and 1- $\beta$  in the theoretical model) depend on the beneficiary's level of income. When faced with low-income beneficiaries, the EMS would place greater importance on their utility than on departmental spending. The team would therefore offer a higher average amount to beneficiaries in the lowest income bracket because the marginal cost of care for these beneficiaries is low (or even nil), even though the marginal cost for the department is high. As a result, the amount offered to these low-income beneficiaries would be a decreasing function of their contribution rate. Conversely, when faced with higher-income beneficiaries, the EMS would give more weight to minimising the department's spending in its utility function. The team would therefore offer a higher average amount to beneficiaries in the highest income bracket because the marginal cost of care for

the department is low. As a result, the amount offered to these high-income beneficiaries would instead be an increasing function of their contribution rate.

Other things equal, the average amount offered by the EMS to a GIR 4 beneficiary fell by around  $\notin 9$  between 2011 and 2017 even though the ceiling was raised. The sign of this average effect seems to validate the second scenario under the theoretical model: to be able to compensate for the additional cost of the ASV Law's implementation for the department, and thus comply with the budgetary constraints, the EMS would have therefore reduced the amount proposed to certain GIR 4 beneficiaries. On the other hand, the average amount that the EMS propose to beneficiaries assessed as belonging to GIR 3, 2 and 1 saw a considerable respective increase of  $\in 16, \in 49$  and  $\in 57$  between 2011 and 2017.

The changes in the amounts proposed by the EMS for the different quantiles in the noncensored part of the distribution are derived from quantile regressions for each GIR (Figure III). Regardless of the GIR, the changes in the plans proposed to beneficiaries receiving low amounts differ from the changes in the plans proposed to beneficiaries receiving amounts that are close to the ceiling, as could be seen in the unconditional descriptive statistics (cf. Figure II). For GIR 4 beneficiaries, the EMS lowered the amount proposed to a very large proportion of beneficiaries below the initial ceiling (from -€15 to -€20 on average between the 10<sup>th</sup> and 60<sup>th</sup> percentiles; -€6 for the 70<sup>th</sup> percentile).

Figure III – Changes in the amounts proposed by the EMS between 2011 and 2017, other things equal, by conditional percentile (by GIR)



Reading Note: The solid curves represents the results of the censored quantile regressions (effect of the year 2017 compared to 2011) for each GIR. The dotted curves represent the 95% confidence interval calculated by bootstrap (50 replications). The amount offered by the EMS to GIR 4 beneficiaries falls by €16 between 2011 and 2017 at the conditional 10<sup>th</sup> percentile. Sources: DREES, *enguêtes Remontées Individuelles*, APA-ASH individual data, 2011 and 2017.

For individuals in GIR 3 and GIR 2, the effect increases strictly with the quantile, and the proportion of beneficiaries affected by a decrease in the plan amount proposed between 2011 and 2017 is smaller than among GIR 4 beneficiaries. The decrease in the amount can only be seen for the  $10^{\text{th}}$ ,  $20^{\text{th}}$  and  $30^{\text{th}}$  percentiles among GIR 3 beneficiaries, and only for the 10th percentile among GIR 2 beneficiaries. By contrast, the increase in the proposed amount affects a larger proportion of beneficiaries below the initial ceiling: the increase is significant for the 50<sup>th</sup>, 60<sup>th</sup>, and 70<sup>th</sup> percentiles among GIR 3 beneficiaries (+ $\in$ 16, + $\in$ 28, and + $\in$ 67, respectively). Among those in GIR 2, the increase is significant starting from the 30<sup>th</sup> percentile (from +€20 for the 30<sup>th</sup> percentile to +€100 for the 60<sup>th</sup> percentile). No significant decrease in the amount can be seen between 2011 and 2017 among those in GIR 1. The effect of the year continues to grow and reaches +€85 for the 50<sup>th</sup> percentile. Nevertheless, the effects are not accurately estimated due to the small GIR 1 beneficiary sample sizes.

In order to analyse in greater detail the role played by the departmental budgetary constraints on the changes observed, the Tobit models and censored quantile regressions are re-estimated on the basis of two sub-samples of departments which have been created based on the proportion of beneficiaries in GIR 1 or 2 among all home care APA beneficiaries during 2015 (see Online Appendix C2, Table C2-1). The departments where the proportion of GIR 1 and 2 beneficiaries is higher than the average are those with the sharpest potential increase in spending as a result of the Law's implementation, and therefore those which are likely to be subjected to the most heavily tightened budgetary constraints. The reduction in the amount offered to GIR 4 beneficiaries between 2011 and 2017 is greater in these departments (from - $\in 21$  to - $\in 28$  between the 10<sup>th</sup> and 60<sup>th</sup> percentiles) than in those with a lower proportion of GIR 1 or 2 beneficiaries (from -€3 to -€10 between the 10<sup>th</sup> and 60<sup>th</sup> percentiles). Similarly, among GIR 3 beneficiaries, the amount notified decreases significantly up to the 30th percentile, at the 1% threshold, and up to the 40<sup>th</sup> percentile (at the 10% threshold) in departments where the proportion of GIR 1 or 2 beneficiaries is higher than the average. On the other hand, a significant decrease in the amount notified between 2011 and 2017 can only be seen for the 10<sup>th</sup> percentile in departments where the proportion of highly dependent beneficiaries is below the average.

Up to now, the models have been estimated on the basis of all home care APA beneficiaries. The effects of the year 2017 are re-estimated on the basis of the sub-sample of beneficiaries whose monthly income is strictly below  $\notin$ 739.80 (see Online Appendix C3, Table C3-1). This is the income level below which their contribution rate remained constant and equal to zero between 2011 and 2017. Despite a number of variations for certain quantiles, the estimated effects derived from this sub-sample remain highly consistent with those seen using the full sample. This test rules out the possibility that the effect seen in the sample as a whole is due to the drop in the contribution rate for high plan amounts, and confirms the influence of the increased ceilings, following the ASV Law's implementation, on the amounts proposed by the EMS under plans.

\* \*

This article aimed to evaluate the effect of the 2015 home care APA reform on the amounts proposed by the EMS to beneficiaries as part of plans. A simplified theoretical model was presented in which two possible behavioural responses were considered, depending on the severity of the departmental budgetary constraints, and several censored regression models were then estimated from individual reporting data on home care APA beneficiaries in 2011 and 2017. One of the main objectives of the reform was to improve the level of coverage to meet the needs of the most heavily dependent beneficiaries, and this seems to have been achieved. Between 2011 and 2017, other things equal, we witness an increase in the average plan amounts notified to the most severely dependent beneficiaries, namely those in GIR 1 or 2. We also witness an upward shift (to the right) of the care plan distribution for beneficiaries requiring the most care, within each GIR. The empirical results also show that the reform did not result in a simple "spreading" of the upper distribution of notified amounts for a given GIR. In other words, the effect of the increased ceilings is not just reflected in results close to the ceilings, as a simplistic forecast might have predicted. Nor did the reform result in a shift in the overall distribution towards higher amounts for a given GIR. On the contrary, within each GIR, the amounts notified in 2017 are more widely distributed on the right and on the left. This spreading effect also impacts the lower distribution, which suggests that constraints on departmental council budgets have led EMS to cut allowances for people with relatively less dependency so as to provide more funding for people who are severely affected by a loss of autonomy. This trade-off can also be seen between GIR levels, because, all other things

being equal, the average amount offered by EMS to a GIR 4 beneficiary fell by around €9 between 2011 and 2017, while it increased for GIR 3  $(\pm 16)$ , 2  $(\pm 49)$  and 1  $(\pm 57)$ , respectively. The analyses using department sub-samples also indicate that the trade-off is more pronounced within departments with an above-average proportion of highly dependent beneficiaries (those in GIR 1 or 2), i.e. in departments facing the highest potential additional costs due to the reform. The ASV Law has therefore produced the expected effects on the plan amounts notified to those most severely affected by a loss of autonomy (within a single GIR and between different GIRs) but it has also affected those same amounts for the least dependent beneficiaries. Due to the tighter budgetary constraints placed on the departments, the Law has led to APA resources being transferred from the least dependent senior citizens to the most heavily dependent senior citizens.

Several limitations to this work can be identified. First, data from 2011 and 2017 are used, while the ASV Law was adopted on 28 December 2015 with the part of the Law relating to home care APA being implemented on 1 March 2016. Events other than the Law, that took place between 2011 and 2017 and which cannot be seen in the data may have affected the amounts that the EMS offered to home care APA beneficiaries. In particular, it seems that there may have been a general tightening of departmental finances before the ASV Law was implemented, given the drop in the average amount, per beneficiary, of home care APA paid by departmental councils between 2013 and 2015 (Arnault, 2019). The changes observed must therefore be interpreted with some caution: part of the measured effects could also derive from changes in unobserved characteristics of the beneficiaries, such as their health status in a given GIR, or from changes in GIR allocation, for a particular health status or degree of lost autonomy. If the health and autonomy status of the less dependent beneficiaries among those in GIR 4 were to improve between 2011 and 2017 such that they required less subsidised care, this could lead to an overestimation of the trade-offs made between marginally dependent and heavily dependent beneficiaries due to the reform. On the other hand, these trade-offs could be underestimated if the needs of beneficiaries in a given GIR were to increase, i.e. if APA eligibility conditions were to become more restrictive, particularly for the most independent beneficiaries. These questions

cannot be answered on the basis the administrative data used in this study because, GIR aside, they do not collect any detailed information about a beneficiary's health status or the nature of their care requirements. The exclusion of "previous" beneficiaries also means that re-evaluations of the care plans under new conditions, to which the beneficiaries may have been entitled, go unobserved. These re-evaluations may have had an impact on departmental budgetary constraints and, in turn, may have affected the average amounts notified to beneficiaries joining the scheme in 2017. Lastly, this work does not yet allow us to understand precisely whether the changes observed between 2011 and 2017 in the amounts notified by the EMS reflect "quantitative" variations in the volumes of care notified, "qualitative" changes in the types of care providers prescribed with constant volumes of care, or changes in the hourly rates of care set by the departments with the type of care provider remaining the same. The current analysis could be extended by studying the determining factors of notified volume of care or type of intervention rather than the amount notified. However, the information collected for these two factors, particularly in 2011, is of relatively poor quality as a substantial number of departments did not provide this data for all beneficiaries. Working on the basis of notified volumes of care rather than amounts would also make it more difficult to correctly censor the data due to the ceilings.

Few studies have been carried out on medical and welfare teams (EMS) up to now. However, this article provides a better understanding of their practices and their decisive role in the implementation of public policy concerning loss of autonomy. It shows that these teams have responded positively to the ASV Law by increasing the care plan amounts for the most heavily dependent beneficiaries. However, as they are working within a financially restrictive environment, this article also shows that they have reduced these same amounts for the most independent beneficiaries. With the focus having now shifted to preventing the loss of autonomy, questions may arise as to how these trade-offs made by the EMS may impact the likelihood of meeting this objective. The crucial role played by the EMS in the implementation of the Law is highlighted in this work, and we may also wonder to what extent their highly varying practices are a source of unequal treatment among beneficiaries throughout France. 

Link to the Online Appendix: https://www.insee.fr/en/statistiques/5396138/ES-524-525\_Arnault-Wittwer\_Online\_appendix.pdf

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#### APPENDIX .

#### SELECTION OF BENEFICIARIES FOR THE SAMPLE

After pooling the 2011 and 2017 data, they initially include 1,590,014 observations concerning home care APA beneficiaries in 102 departments. Several steps for selecting individuals and departments were required to create the final sample (Diagram). The first step involves selecting only beneficiaries from departments that took part in both data collection exercises, in 2011 and 2017. This leads to the exclusion of 314,923 lines corresponding to the beneficiaries in 2017 from departments that did not take part in 2011. The second step involves retaining only those beneficiaries joining the home care APA scheme for the first time – i.e., those eligible to receive the APA from 1 June of year *N*-1. These beneficiaries account for 33.6%

of all home care APA beneficiaries entitled to the allowance in 2011 and 33.2% of those entitled to it in 2017. These beneficiaries are younger on average and more often tend to be men, with higher income, in a partnership, and less heavily dependent than "previous" beneficiaries, who are excluded from the sample (Table A1). The third selection step involves excluding departments for which most of the key variables (age, GIR, relationship status, income and plan amount) have been completed poorly, as well as individuals for whom at least one of these items of information is missing. The final sample includes information on 304,506 beneficiaries from the 56 departments that took part in both information collection exercises (see Map).





Notes: Unweighted values.

Reading Note: The initial sample consists of 1,590,014 home care APA beneficiaries living in 102 different departments, including 622,389 beneficiaries in 66 departments in 2011 and 967,625 beneficiaries in 102 departments in 2017.

Sources: DREES, enquêtes Remontées Individuelles, APA-ASH individual data, 2011 and 2017.

	20	11	2017			
Variables	"Joining" beneficiaries	"Previous"	"Joining" beneficiaries	"Previous"		
Vallabies	(eligible after	beneficiaries (eligible	(eligible after	beneficiaries (eligible		
	1 June 2010)	before 1 June 2010)	1 June 2016)	before 1 June 2016)		
Number of observations	197,843	424,546	215,199	437,503		
Age	82.3	83.6	82.7	84.7		
Proportion of women	0.671	0.747	0.648	0.740		
Income (€/month) <sup>(1)</sup>	1,398	1,207	1,510	1,350		
Beneficiary's rate of contribution to care plan funding	0.234	0.182	0.248	0.198		
In a couple	0.386	0.321	0.417	0.337		
GIR 4 proportion	0.593	0.535	0.617	0.524		
GIR 3 proportion	0.213	0.228	0.210	0.240		
GIR 2 proportion	0.170	0.202	0.155	0.201		
GIR 1 proportion	0.024	0.036	0.018	0.035		

#### Table A1 - Average characteristics of home care APA beneficiaries in 2011 and 2017, according to their date of eligibility

<sup>(1)</sup> in euros (2017). Notes: Unweighted values. Reading Note: In 2011, beneficiaries who became eligible for APA after 1 June 2010 have an average age of 82.3 compared to 83.6 for those who became eligible before this date.

Sources and Coverage: DREES, enquêtes Remontées Individuelles, APA-ASH individual data, 2011 and 2017; home care APA beneficiaries in Metropolitan France and French overseas departments and territories (excluding Mayotte) eligible for APA in 2011 or 2017 and living in one of the 66 departments that responded to the surveys in 2011 and 2017.

#### Map - Departments from which beneficiaries joining the home care APA scheme in 2011 and 2017 have been included in the final sample



Notes: The departments from which beneficiaries are included in the final sample are shown in grey, while the departments from which beneficia-ries are not included in the final sample are shown in white. Reading Note: Beneficiaries from the department of Pas-de-Calais, shown in grey, are included in the final sample. Sources: DREES, *enquêtes Remontées Individuelles*, APA-ASH individual data, 2011 and 2017.