

Financial Strain or Changing Preferences? Out-of-Pocket Medical Payments, Hospitalization, and Household Consumption in France

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Research Article

Keywords: Out-of-pocket payments, Household consumption, France, Health-state dependence

Posted Date: October 16th, 2026

DOI: <https://doi.org/10.21203/rs.3.rs-11202002/v1>

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Additional Declarations: No competing interests reported.

Financial Strain or Changing Preferences? Out-of-Pocket Medical Payments, Hospitalization, and Household Consumption in France

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Abstract:

This paper examines how households adjust their non-medical consumption following major health deterioration, and the associated changes in healthcare utilization and out-of-pocket medical payments. It further investigates whether these responses are driven by financial constraints or by health-state dependence. Using pooled cross-sectional data on 21,007 households from the 2011 and 2017 waves of the French Household Budget Survey, a nationally representative survey covering nearly 900 consumption items linked to administrative income records, we examine how household budget allocations vary with out-of-pocket medical expenditures and hospitalization episodes, the latter serving as a proxy for major health deterioration. Higher out-of-pocket payments are associated with significant reductions in food, housing, transport and alcohol expenditure, whereas hospitalization is associated with limited consumption reallocations and does not modify the relationship between medical expenditures and consumption. Overall, the evidence is more consistent with a financial-constraint mechanism than with systematic preference changes induced by deteriorating health. Subgroup analyses show that consumption adjustments are particularly pronounced among low-income households and households composed exclusively of older individuals. These findings suggest that even in a system characterized by near-universal health insurance coverage, remaining out-of-pocket payments may generate meaningful welfare losses for financially vulnerable households, with potential implications for nutrition, mobility, and long-run living standards.

Keywords: Out-of-pocket payments; Household consumption; France; Health-state dependence

JEL: D12; I14

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I. Introduction:

France ranks among the OECD countries with the highest levels of public and private health insurance coverage (Or et al., 2023). Together, public and private schemes finance around 92% of total healthcare expenditure, leaving the remaining 8% to households out-of-pocket payments (OOP) (Mathilde and Geoffrey, 2024). Although this proportion appears modest on average, OOP can impose substantial financial pressure on specific population groups, particularly households facing chronic or high-cost conditions, those with limited coverage, or without complementary private insurance (Francesconi et al., 2006; Geoffard and de Lagasnerie, 2012; Mathilde and Geoffrey, 2024). Although only 4% of the French population lacks complementary coverage, this share rises to 11% among low-income households and 13% among the unemployed, with disparities in coverage quality among those who are insured. (Fouquet and Pollak, 2022). Among individuals without complementary insurance, around 66,700 are estimated to face annual OOP exceeding €10,000, and nearly ten times more incur OOP above €3,700 (Adjerad and Courtejoie, 2021).

Understanding how households adjust their consumption when confronted with large, unexpected expenditure fluctuations is a longstanding question in economics. The life-cycle permanent income model predicts that anticipated fluctuations should leave consumption unchanged, whereas unanticipated changes should translate into immediate adjustments (Modigliani and Brumberg, 1954; Jappelli and Pistaferri, 2010). Empirical evidence strongly supports this asymmetry: unexpected positive fluctuations—such as tax rebates or lottery winnings—raise consumption (Parker, 1999; Johnson et al., 2006; Agarwal et al., 2007; Parker et al., 2013), while unexpected negative variations, such as plant closures or abrupt tax changes, reduce it (Souleles, 1999; 2002; Misra and Surico, 2014; Baker and Yannelis, 2017; Gelman et al., 2020; Meghir and Pistaferri, 2004; Commault, 2022; Krueger et al., 2024; Blundell et al., 2024). However, most of this literature focuses on aggregate consumption, leaving open the question of how households adjust the composition of their expenditure baskets. This matters because households may respond very differently to OOP across consumption categories. Moreover, the consequences of these changes are also likely to differ accordingly. Cuts in food quality or education spending can have lasting consequences for human capital accumulation and future welfare (Kornrich and Furstenberg, 2013), and existing evidence confirms that food consumption declines significantly following income losses (Gruber, 1997; Browning and Crossley, 2001; Stephens Jr, 2001), with health-related events potentially inducing even sharper adjustments (Meyer and Mok, 2019).

Beyond income effects, health-related events may also affect consumption through changes in preferences. Deteriorating health can alter the marginal utility of different goods: individuals in poor health may derive less utility from goods complementary to good health—such as travel or sports—and greater utility from goods that substitute for declining health—such as home delivery or personal assistance. Whether marginal utility falls (negative health-state dependence), rises (positive health-state dependence), or remains stable with deteriorating health remains empirically contested. U.S. evidence generally supports negative dependence (Viscusi and Evans, 1990; Sloan et al., 1998; Finkelstein et al., 2009; Brown et al., 2016; Blundell et al., 2024), while European studies tend to find a positive dependence (Gyrd-Hansen, 2017; Kools and Knoef, 2019; Bassoli, 2023). Recent work has begun examining consumption composition more directly: Amo-Agyei (2025) finds that Russian households experiencing health events increase spending on superior goods such as tourism, leisure, alcohol, and tobacco, while necessities respond less. Zilio et al. (2025) find that Australian households shift

toward household and medical goods while reducing holiday and alcohol expenditure after health-related events.

Distinguishing between these two mechanisms, financial constraint versus preference change, is both empirically challenging and conceptually important. It is challenging because OOP are not randomly distributed across households. Rather, they reflect long-run processes shaped by health trajectories, insurance coverage, expectations of healthcare utilization, risk preferences, wealth, and broader socioeconomic characteristics, so that cross-sectional correlations between OOP and consumption conflate any causal effect with underlying selection. It is important because the two mechanisms carry fundamentally different interpretations: consumption adjustments driven by tighter budget constraints may signal liquidity pressure and a potential need for stronger financial protection, whereas adjustments driven by changed health-related preferences may instead reflect optimal reallocation given new needs, with no welfare case for intervention.

To empirically address this question, we focus on hospitalization as a salient health event around which medical expenditures and OOP tend to concentrate. Hospitalizations are rarely isolated occurrences: they are typically embedded in broader episodes of care involving diagnostic tests, physician services, follow-up treatments, and, in some cases, balance billing, generating sizeable cumulative increases in OOP even in a high-coverage system. Rather than treating hospitalization as an exogenous event, we view it as an indicator of major health deterioration and intensified healthcare utilization. Hospitalization may affect household behavior through several channels simultaneously: changes in health status may alter the marginal utility of different goods; higher medical expenditures reduce disposable income through a financial constraint mechanism; and households may draw on financial buffers to absorb the associated strain.

Building on a theoretical framework, this paper investigates how household consumption patterns are associated with OOP and hospitalization episodes in France. We treat these two variables as complementary dimensions of health-related exposure. OOP capture the financial burden associated with healthcare utilization, whereas hospitalization serves as a proxy for major changes in health status. This distinction allows us to assess whether observed consumption reallocations are more consistent with budgetary pressure induced by medical spending or with health-state-dependent shifts in preferences. The interaction between hospitalization and OOP is introduced to test whether the association between medical expenditures and consumption differs when healthcare spending occurs in the context of a salient health event.

By doing so, we contribute to the existing literature in three respects. First, rather than examining aggregate non-medical consumption, we identify which specific expenditure categories such as food, housing, leisure or education, drive the observed adjustments, shedding light on whether households reduce spending on goods with potentially long-term consequences such as food quality or education. Second, we provide evidence on the relative importance of financial-constraint and health-state-dependence mechanisms, a distinction that remains largely unresolved in the literature. Third, we contribute to the French literature by combining, for the first time, a comprehensive measure of out-of-pocket payments with a nationally representative sample. Existing French studies either rely on measures of remaining expenditure net of compulsory insurance reimbursement only, without accounting for complementary insurance reimbursements (Perronnin, 2009; Tanguy-Melac et al., 2019; Heinzle et al., 2020; Jusot and Lemoine, 2024), or use measures that account for both reimbursement tiers but are derived from administrative datasets covering selective or non-representative populations (Pierre et al., 2012;

Franc and Pierre, 2015; Adjerd and Courtejoie, 2021). As a result, prior studies either overstate the financial burden borne by insured households or provide estimates with limited external validity.

Using a working sample of 21,007 households derived from two pooled cross-sections of the French Household Budget Survey a representative survey covering nearly 900 consumption items linked to administrative measures of income and expenditure—we document three main findings. First, higher OOP are associated with lower expenditure on food, alcohol, housing, transport, and leisure, while clothing, communication, and education remain largely unaffected. Second, hospitalization is associated with only a limited number of category-specific reallocations, notably lower expenditure on education and higher expenditure on miscellaneous goods and services. Third, we find no evidence that the association between OOP and consumption differs according to hospitalization status. Taken together, these findings suggest that observed consumption adjustments are primarily associated with the financial burden of medical spending rather than with systematic changes in preferences induced by deteriorating health. These associations are strongest among low-income households and among households composed exclusively of individuals aged 60 and above. Overall, our results suggest that even in a context of near-universal health insurance coverage, remaining out-of-pocket payments may generate substantial reallocations of household budgets and disproportionately affect financially vulnerable households.

II. Theoretical framework

1. Benchmark allocation

For expositional purposes, consider first a benchmark situation in which households face neither out-of-pocket medical expenditures nor major health deterioration. Disposable resources are therefore equal to total household resources:

$$Y_0 = R$$

where R denotes total household resources.

The household allocates resources between non-medical consumption goods and savings. Let x_i denote quantities of n non-medical goods with prices p_i , and define expenditure on good i as

$$c_i = p_i \cdot x_i$$

The household solves

$$\max_{x_1, \dots, x_n, s_0} U_C(x_1, \dots, x_n, H_0) + \beta \cdot v(s_0)$$

subject to

$$\sum_{i=1}^n p_i \cdot x_i + s_0 = R$$

where H_0 denotes baseline health status.

Preferences are represented by a Cobb-Douglas utility function:

$$U_C(x_1, \dots, x_n, H_0) = \prod_{i=1}^n x_i^{\alpha_i(H_0)}$$

with

$$\sum_{i=1}^n \alpha_i(H_0) = 1$$

Solving the intratemporal allocation problem yields

$$c_{i,0} = \alpha_i(H_0) \cdot (R - s_0)$$

Expressed as a share of total resources:

$$\frac{c_{i,0}}{R} = \alpha_i(H_0) \cdot \frac{R - s_0}{R}$$

This benchmark allocation serves as a theoretical reference against which the effects of medical expenditures and health deterioration can be assessed.

2. Medical expenditures and hospitalization

In practice, households may incur positive out-of-pocket medical expenditures even in the absence of major health deterioration. Let $OOP > 0$ denote annual out-of-pocket medical payments. We distinguish two departures from the benchmark.

State 1: Medical expenditures without major health deterioration

The household incurs positive medical expenditures but health status remains unchanged:

$$H = H_0$$

Consumption becomes

$$\frac{c_{i,1}}{R} = \alpha_i(H_0) \cdot \frac{R - OOP - s_1}{R}$$

Relative to the benchmark, medical expenditures reduce the resources available for non-medical consumption and may induce adjustments in saving behaviour.

State 2: Medical expenditures with health deterioration

Some healthcare episodes are accompanied by a deterioration in health status.

We model hospitalization as a discrete event:

$$HS = \begin{cases} 1 & \text{if at least one household member experiences a hospitalization episode} \\ 0 & \text{otherwise.} \end{cases}$$

Hospitalization is not the sole source of health deterioration but represents a salient event around which healthcare utilization and medical expenditures tend to concentrate. When hospitalization occurs, health status changes from H_0 to H_1 , generating a change in expenditure weights:

$$\Delta\alpha_i = \alpha_i(H_1) - \alpha_i(H_0)$$

Households may also modify their saving behaviour. Let

$$\Delta s = s_2 - s_0$$

denote the additional saving adjustment associated with the health event.

3. Consumption decomposition

Under hospitalization, consumption is given by

$$\frac{c_{i,2}}{R} = \alpha_i(H_1) \cdot \frac{R - OOP - s_2}{R}$$

Using $\frac{c_{i,0}}{R}$ and rearranging terms gives

$$\frac{c_{i,2}}{R} = \frac{c_{i,0}}{R} - \alpha_i(H_0) \cdot \frac{OOP}{R} - \alpha_i(H_0) \cdot \frac{\Delta s}{R} + \Delta\alpha_i \cdot \frac{R - s_0}{R} - \Delta\alpha_i \cdot \frac{OOP}{R} - \Delta\alpha_i \cdot \frac{\Delta s}{R}$$

This expression identifies five mechanisms

$$\Delta\alpha_i$$

Health-state dependence

captures the direct effect of deteriorating health through changes in expenditure weights.

$$\frac{OOP}{R}$$

captures the direct effect of medical expenditures.

Financial burden

$$\frac{\Delta s}{R}$$

captures consumption smoothing via savings.

Saving adjustment

Two interaction mechanisms also emerge naturally: $\Delta\alpha_i \times \frac{OOP}{R}$ and

Health×Financial burden

$$\Delta\alpha_i \times \frac{\Delta s}{R}$$

Health×Saving adjustment

These terms reflect the possibility that the impact of medical expenditures and savings depends on health status. Because neither expenditure weights nor counterfactual allocations are observed in the data, the empirical analysis relies on observable proxies. Hospitalization serves as a proxy for preference change, out-of-pocket payments capture the financial burden associated with healthcare utilization, and household financial situation captures the saving margin. Under this interpretation, the theoretical decomposition maps into an empirical specification containing:

- a hospitalization term (HS);
- an OOP term (OOP/R);
- a saving term (S/R);
- an interaction term $HS \times OOP/R$;
- an interaction term $HS \times S/R$.

The interaction coefficients therefore have a direct theoretical interpretation: they test whether the associations between medical expenditures, savings, and consumption differ when expenditures occur in the context of a major health deterioration.

III. Data

1. Data source and survey design

We use pooled cross-sectional data from the 2011 and 2017 waves of the French *Enquête Budget des Familles* (Household Budget Survey, HBS), conducted by the French National Institute of Statistics and Economic Studies (Insee). Each wave provides a nationally representative sample of ordinary households residing in metropolitan France and overseas territories. The survey excludes institutional and collective households, such as individuals living in nursing homes, religious communities, university dormitories, worker housing, or prisons. Households are drawn as subsamples from the national population censuses conducted in 2009 and 2015, respectively. Data collection is spread evenly over the calendar year, allowing seasonal variation in consumption to be taken into account. The analysis focuses on these two waves because, since 2011, household income is no longer self-reported but instead linked to administrative tax and social security records referring to the calendar year preceding the survey, which substantially improves the quality and reliability of income measurement relative to earlier waves.

The HBS is designed to reconstruct comprehensive annual household accounts from detailed information on both consumption and resources. Household consumption is recorded through a combination of interviewer-administered questionnaires and an expenditure diary. During a first face-to-face interview conducted by computer-assisted personal interviewing (CAPI), the household reference person—defined as the oldest household member—answers a detailed questionnaire. At the end of this interview, the household receives an expenditure booklet to be completed over a consecutive seven-day period, with supporting documentation required whenever possible. At the end of the recording period, the interviewer returns to collect the diary and administers a second questionnaire.

Annual household consumption is reconstructed from these data and classified according to a detailed nomenclature comprising nearly 900 items, which are subsequently aggregated into standard consumption categories as described in Section III.3. Household income combines taxable and non-taxable earnings, pensions, unemployment benefits, social transfers, and income from assets, as recorded in administrative sources.

2. Out-of-pocket payments and hospitalization

Information on OOP is drawn from the medical expenditure module of the HBS. This module covers a wide range of OOP associated with physician visits (general practitioners and specialists), laboratory tests, pharmaceutical expenditures, hospital and clinic stays, and medical equipment such as glasses, hearing aids, dental devices, wheelchairs, or crutches. For confidentiality and reporting purposes, Insee aggregates these expenditures into four broad categories: medical equipment, outpatient care, hospital care, and other types of care. Our measure of annual OOP corresponds to the sum of these four components. A key advantage of this measure is that it captures final OOP—net of both public and complementary insurance reimbursements—providing a more comprehensive assessment of the financial burden borne by households than measures based solely on gross medical spending or statutory reimbursement rules.

Table 1 reports descriptive statistics for OOP in levels and as a share of household net income, for the full sample and separately for households in the bottom and top income quintiles. On average, annual OOP amount to €480, representing approximately 1.5 percent of household net income. OOP are largely driven by medical equipment (€238 on average) and outpatient care (€215), a pattern consistent with prior evidence for France (Lardellier et al., 2011; Pierre et al., 2012; Franc and Pierre, 2015; de Lagasnerie, 2016; Penneau et al., 2020; Adjerad and Courtejoie, 2021). Hospital care and other types of care contribute relatively little to total OOP. OOP are unevenly distributed across households. While 14.6 percent of households report zero OOP over the year, the distribution is strongly right-skewed: the 95th percentile reaches €1,918, with a maximum observed value exceeding €17,300, corresponding respectively to 5.8 percent and 73.0 percent of annual household net income. This indicates that OOP can generate substantial financial pressure for a minority of households even within a system of near-universal coverage.

Low-income households face lower absolute OOP than high-income households (€244 versus €783 on average), but bear a higher relative burden: households in the lowest income quintile devote 1.8 percent of their income to OOP, compared with 1.2 percent in the top quintile. At the upper tail of the distribution, the 95th percentile of OOP represents 7.4 percent of income for low-income households, against 4.2 percent for high-income households. Finally, the share of households reporting zero OOP is higher among low-income households (5.0 percent) than among high-income households (1.7 percent). This pattern may stem from the financial protection provided by CMUC coverage, which specifically targets this population. CMUC covers percentage copayments and prohibits physicians from charging balance billings (extra fees). On the other hand, this pattern may also reflect differences in both the healthcare supply environment and patterns of healthcare utilisation across income groups. The low take-up rate among eligible individuals may indicate unmet healthcare needs, while individuals whose income lies just above the eligibility threshold may face difficulties in accessing affordable care (Jusot and Wittwer, 2009; Guthmuller et al., 2014; Dourgnon et al., 2023). In addition, individuals in the highest income quintile may face a different healthcare supply environment, with greater availability of sector 2 physicians. They may also be more likely to seek care from sector 2 providers even when the local supply of such providers is similar. Differences in both the availability of sector 2 providers and patterns of provider choice could therefore contribute to the higher use of sector 2 providers observed among individuals in the highest income quintile.

Our hospitalization measure is derived from the following survey question: "Over the last 12 months, how many times were you or a member of your household hospitalized?" We construct a binary indicator equal to one if at least one household member experienced at least one hospitalization over the year, and zero otherwise. In the empirical analysis, hospitalization is primarily viewed as an indicator of major health deterioration and intensified healthcare utilization rather than as an exogenous shock. As discussed in the theoretical framework, it serves as an observable proxy for health-related changes that may independently affect household consumption patterns. In our estimation sample, 19.6 percent of households report at least one hospitalization. Additionally, there is a difference in OOP between hospitalized and non-hospitalized households: these costs amount to €721.3 (2.25% of income) for hospitalized ones, compared with €401.2 (1.32% of income) for non-hospitalized individuals—almost twice as much.

Table 1: Amount and Share of OOP by Income Quintile Per Consumption Category

Variables	Mean (Standard Deviation)					
	Full Sample		1st Quintile		5th Quintile	
	Amount	Share	Amount	Share	Amount	Share
Out-of-Pocket Payments	480.1	1.5	243.7	1.8	782.9	1.2
	(909.7)	(3.1)	(572.8)	(4.1)	(1,278.2)	(1.9)
Medical Equipment	237.5	0.8	134.1	1.0	379.1	0.6
	(558.5)	(2.0)	(418.3)	(3.0)	(827.4)	(1.2)
Outpatient Care	215.3	0.6	97.4	0.7	358.4	0.5
	(600.3)	(2.0)	(326.9)	(2.2)	(797.2)	(1.2)
Hospital Care	26.5	0.1	11.9	0.1	43.4	0.1
	(243.5)	(0.7)	(146.4)	(1.1)	(372.7)	(0.5)
Other Care	0.8	0.0	0.3	0.0	2.0	0.0
	(43.7)	(0.1)	(16.6)	(1.7)	(91.4)	(0.1)
95th percentile	1,918	5.8	1,006	7.4	2,790	4.2
Maximum	17,322.8	73.0	11,912	73.0	17,322.8	29.8
% households with no OOP	14.6		5.0		1.7	
Observations	21,019		4,203		4,203	

Note: The differences between the 1st and 5th income quintile per consumption unit are statistically significant at the 1% level ($p = 0.000$) for each OOP component. The average annual net incomes for the 1st and 5th income quintile per consumption unit are €15,912.2 and €74,693.9, respectively. All amounts are in euros. The share is the amount of OOP divided by annual net household income per consumption unit, where the consumption unit is defined as the square root of the number of household members.

Interpretation: On average, households spend €480.1 per year on out-of-pocket payments, representing 1.5% of their annual net income.

3. Household consumption categories

The HBS reports annual household consumption across twelve broad categories: food and non-alcoholic beverages; alcoholic beverages, tobacco, and narcotics; clothing and footwear; housing, water, gas, electricity, and other fuels; furniture, household equipment, and routine maintenance; transport; communication; leisure; education; restaurants and hotels; medical expenditures; and miscellaneous goods and services.

We further reorganize the remaining categories into economically meaningful aggregates. Housing-related expenditures (housing utilities and household equipment) are grouped into a single Housing category, and leisure-related expenditures (leisure activities and restaurants) into a single Leisure category. We additionally construct a Financial situation variable, defined as the difference between total annual household income and total annual consumption. It captures the households' net saving (dissaving are capped at 0 to follow our theoretical specification) over the year and serves as an empirical proxy for the saving adjustment margin—allowing us to assess whether households absorb medical expenditure shocks by drawing on financial buffers rather than reducing consumption in specific categories. Several studies show that households facing OOP are more likely to experience worse financial situations than others (Gertler and Gruber, 2002; Himmelstein et al., 2005; Himmelstein and al., 2009; Mahoney, 2015; Dobkin et al., 2018; Chantzaras and Yfantopoulos, 2018; Himmelstein, 2019; Bonekamp and Wouterse, 2023; Blundel and al., 2024). The final classification therefore comprises ten outcome variables: Food, Alcohol, Clothing, Housing, Transport, Leisure, Communication, Education, Miscellaneous goods and services, and Financial situation. Detailed descriptions of each category's composition are provided in Tables S1 and S2 in the appendix.

Table 2 presents average budget shares by income group. French households devote the largest share of income to housing (19.8 percent), followed by food (14.2 percent) and leisure (12.9 percent), while education (0.4 percent) and alcohol (2.7 percent) represent the smallest shares. Households in the lowest income quintile allocate systematically larger shares to essential goods—particularly housing (29.0 percent) and food (16.9 percent)—than those in the highest quintile (11.8 percent and 10.6 percent, respectively). Higher-income households allocate relatively more resources to leisure and transport, and exhibit a more favorable financial situation, with consumption representing a substantially lower share of income.

Table 2: Distribution of Households' Non-Medical Consumption Categories

Variables	Mean (Standard Deviation)					
	Full Sample		1st Quintile		5th Quintile	
	Amount	Share	Amount	Share	Amount	Share
Housing	5,613.3 (4,495.6)	19.8 (14.6)	3,940.6 (2,473.4)	29.0 (17.6)	7,938.7 (7,024.8)	11.8 (9.0)
Leisure	4,613.2 (5,649.6)	12.9 (12.1)	1,517.5 (1,786.8)	11.1 (13.1)	10,141.3 (8,722.1)	14.9 (11.5)
Food	4,340.8 (3,567.1)	14.2 (11.2)	2,295.1 (1,962.8)	16.9 (14.3)	6,882.8 (4,417.9)	10.6 (6.9)
Transport	4,205.6 (6,578.9)	11.9 (15.6)	1,267.9 (2,048.4)	9.2 (14.3)	8,543.8 (10,320.8)	13.0 (15.2)
Miscellaneous G & S	4,118.9 (4,018.6)	12.8 (9.4)	1,936.4 (1,496.9)	14.1 (10.7)	7,394.3 (6,289.1)	11.2 (9.1)
Clothing	1,262.7 (1,704.7)	3.8 (5.0)	524.0 (888.6)	3.9 (6.7)	2,379.2 (2,415.2)	3.6 (3.6)
Communication	798.2 (569.1)	2.8 (2.3)	538.7 (490.3)	4.1 (3.4)	1,090.3 (731.2)	1.7 (1.2)
Alcohol	778.2 (1,528.4)	2.7 (5.4)	487.9 (946.4)	3.7 (7.6)	1,062.8 (2,167.3)	1.6 (3.1)
Education	155.4 (928.1)	0.4 (2.4)	42.9 (388.9)	0.4 (3.2)	465.5 (1,757.8)	0.6 (2.2)
Financial Situation	7,851.8 (20,089.9)	17.1 (35.1)	987.4 (5,259.1)	5.6 (38.7)	23,044.9 (38,347.4)	29.8 (28.8)
Observations	21,019		4,204		4,198	

Note: The differences between the 1st and 5th income quintiles are statistically significant at the 1% level ($p = 0.000$) for each category. The average annual net incomes for the 1st and 5th income quintiles are €13,782.6 and €69,724.2, respectively. All amounts are in euros. The share is the amount of each consumption category divided by the household's annual net income. Interpretation: On average, households spend €5,613.3 annually on housing, representing 19.8% of their annual net income.

4. Control variables

To account for observed household heterogeneity, the empirical analysis includes a rich set of control variables capturing demographic characteristics, socioeconomic status, labor market attachment, and financial capacity. We control for the occupational status, educational attainment, and gender of the household reference person. Household composition is captured through a categorical household-type indicator alongside a detailed age structure measured by the number of household members in six age groups and total household size. Labor market attachment is proxied by the number of employed household members.

Financial resources and constraints are captured through categorical indicators of household financial assets and income quintile fixed effects. Health insurance coverage is measured by a dummy variable indicating whether at least one household member holds complementary private health insurance, which is likely to affect both the level of OOP and the household's capacity to smooth consumption in response to health-related shocks. Finally, spatial and temporal variation is addressed through indicators for region of residence and the season in which the interview was conducted. A detailed description of all control variables, together with summary statistics, is provided in Tables S3 and S4 in the appendix

5. Estimation sample

The initial sample consists of all households surveyed in the 2011 and 2017 HBS waves, totaling 32,775 households (16,978 in 2011 and 15,797 in 2017). We exclude households residing outside metropolitan France—namely those living in Guadeloupe, Martinique, Guyane, La Réunion, and Mayotte—representing 10,352 observations (31.6 percent of the initial sample). These areas are characterized by specific institutional, economic and health environments that differ from those of metropolitan France (Filipovic-Pierucci and al., 2016; Martin, 2017). To reduce these divergences, we restrict our sample to metropolitan households. We further exclude 1,399 households (4.3 percent) exhibiting at least one budget share exceeding 100 percent, and 17 households with missing information on hospitalization. When covariates exhibit missing values, we include an explicit missing-value indicator, so that no additional observations are lost due to item non-response. The final estimation sample consists of 21,007 households.

IV. Method

Guided by the theoretical framework developed in Section II, we estimate the following reduced-form specification separately for each consumption category k :

$$Y_i^k = \beta_0^k + \beta_1^k \cdot HS_i + \beta_2^k \cdot \frac{OOP_i}{R_i} + \beta_3^k \cdot \frac{S_i}{R_i} + \beta_4^k \cdot \left(HS_i \times \frac{OOP_i}{R_i} \right) + \beta_5^k \cdot \left(HS_i \times \frac{S_i}{R_i} \right) + X_i' \cdot \theta^k + \varepsilon_i^k \quad (1)$$

In equation (1),

$$Y_i^k = \frac{c_i^k}{R_i}$$

denotes the budget share devoted by household i to consumption category k , where c_i^k is expenditure on category k and R_i is annual net household income.

HS_i is a binary indicator equal to one if at least one household member experienced a hospitalization during the year and zero otherwise. As discussed in the theoretical framework, hospitalization is used as an observable proxy for major health deterioration and the associated changes in expenditure weights.

OOP_i denotes annual out-of-pocket medical expenditures. S_i denotes the household's financial situation, defined as the difference between annual income and annual consumption, and serves as an indicator of the household's ability to smooth consumption through savings. X_i is a vector of demographic and socioeconomic controls described in Section III.

The empirical specification is motivated by the decomposition developed in Section II. The theoretical model distinguishes three mechanisms through which medical expenditures may affect household consumption: a health-state dependence channel operating through changes in expenditure weights ($\Delta\alpha_i$), a financial burden channel operating through out-of-pocket expenditures (OOP), and a saving-adjustment channel operating through changes in saving behaviour (Δs).

Because these underlying objects are not directly observed in the data, the empirical analysis relies on observable counterparts. Hospitalization is used as a proxy for changes in expenditure weights, out-of-pocket payments capture the financial burden associated with healthcare utilization, and household financial situation captures the saving margin available to absorb financial shocks.

The theoretical framework further predicts that the consequences of medical expenditures and saving adjustments may depend on health status. This implication arises from the interaction terms $\Delta\alpha_i \times OOP$ and $\Delta\alpha_i \times \Delta s$ appearing in the theoretical decomposition. In the empirical specification, these mechanisms are captured by the interaction terms $HS_i \times (OOP_i/R_i)$ and $HS_i \times (S_i/R_i)$. The interaction coefficients therefore test whether the associations between financial variables and consumption differ when medical expenditures occur in the context of a major health event.

The coefficient β_1^k captures the association between hospitalization and the budget share devoted to category k , holding OOP, savings, and other observable characteristics constant. In the theoretical framework, it corresponds to the health-state dependence channel and reflects the component of consumption reallocation associated with changes in expenditure weights induced by deteriorating health.

The coefficient β_2^k measures the association between out-of-pocket expenditures and the budget share devoted to category k among households that did not experience hospitalization. It corresponds to the direct financial burden component of the theoretical model.

The coefficient β_3^k captures the association between household financial position and the budget share devoted to category k among non-hospitalized households. It reflects the role of saving adjustments and financial buffers in shaping consumption patterns.

The interaction coefficient β_4^k captures the interaction between health deterioration and medical expenditures. In the theoretical framework, it corresponds to the term $\Delta\alpha_i \times OOP$. A statistically significant coefficient indicates that a given level of medical expenditure is associated with different consumption adjustments depending on whether it occurs in the context of a major health deterioration.

Similarly, β_5^k captures the interaction between health deterioration and saving behaviour. It corresponds to the term $\Delta\alpha_i \times \Delta s$ in the theoretical decomposition and tests whether the role of financial buffers differs according to health status.

The marginal association between out-of-pocket expenditures and the budget share devoted to category k is given by

$$\frac{\partial Y_i^k}{\partial (OOP_i/R_i)} = \begin{cases} \beta_2^k & \text{if } HS_i = 0 \\ \beta_2^k + \beta_4^k & \text{if } HS_i = 1. \end{cases}$$

The coefficient β_4^k therefore provides a direct empirical test of a central prediction of the theoretical framework: whether health deterioration modifies the relationship between medical expenditures and household consumption.

Similarly, the marginal association between household financial situation and consumption is given by

$$\frac{\partial Y_i^k}{\partial (S_i/R_i)} = \begin{cases} \beta_3^k & \text{if } HS_i = 0 \\ \beta_3^k + \beta_5^k & \text{if } HS_i = 1. \end{cases}$$

The coefficient β_5^k therefore tests whether the contribution of financial buffers to consumption smoothing differs when households experience a major health event.

Under this interpretation, the econometric specification can be viewed as a reduced-form representation of the mechanisms identified by the theoretical framework: health-state dependence (β_1), financial burden (β_2), saving adjustments (β_3), and the potential interactions between health deterioration and these financial channels (β_4, β_5)

V. Results

1. Main results

Table 3 reports the estimated associations between out-of-pocket payments, hospitalization episodes, and household budget shares across the nine non-medical consumption categories. The most striking result concerns the association between OOP and household consumption. Higher OOP are associated with significantly lower expenditure shares devoted to food, alcohol, housing, transport, and miscellaneous goods and services. By contrast, clothing, communication, education, and leisure do not exhibit statistically significant associations with OOP. Taken together, these results suggest that higher medical expenditures are associated with broad reductions in household consumption across several major spending categories rather than with narrowly targeted reallocations.

In terms of magnitude, transport absorbs the largest adjustment. A one-percentage-point increase in the share of OOP in annual household income is associated with a 0.26 percentage-point reduction in the transport budget share. Food and housing follow, with reductions of 0.09 and 0.07 percentage points respectively. These effects are economically meaningful given the average budget shares reported in Table 2. When evaluated relative to each category's average budget share, alcohol exhibits the largest proportional response, although its absolute reduction remains smaller than those observed for transport, food, and housing.

The reductions observed for food and transport are particularly noteworthy from a welfare perspective. Lower food expenditure may adversely affect nutritional quality and, ultimately, long-run health outcomes. Similarly, reduced transport expenditure may restrict access to employment opportunities, healthcare services, and social participation, particularly in areas where public transportation alternatives are limited.

Turning to hospitalization, the estimated coefficients are statistically significant only for miscellaneous goods and services, for which the association is positive, and for education, for

which the association is negative. The miscellaneous goods and services include personal body care and home care expenses, which might be needed after facing hospital stays. No systematic pattern emerges across the remaining expenditure categories. Although hospitalization is used as a proxy for major health deterioration, these results provide limited evidence that health-related changes in preferences are a major determinant of observed consumption reallocations. The interaction between hospitalization and OOP is not statistically significant for any consumption category. This finding indicates that the relationship between medical expenditures and non-medical consumption is broadly similar among households that experienced a hospitalization episode and those that did not. In other words, hospitalization does not appear to modify the way in which OOP translate into consumption adjustments.

Taken together, the results suggest that the financial burden associated with medical expenditures is the dominant mechanism underlying observed changes in household consumption patterns. By contrast, hospitalization-related reallocations and interaction effects appear comparatively limited.

Table 3: Out-of-Pocket Payments and Households' Non-Medical Consumption

VARIABLES	(1) Food	(2) Alcohol	(3) Clothing	(4) Housing	(5) Transport	(6) Leisure	(7) G&S	(8) Comm.	(9) Educ.
(OOP/I)	- 0.093*** (0.035)	- 0.089*** (0.017)	0.017 (0.016)	-0.070* (0.037)	- 0.260*** (0.039)	-0.028 (0.036)	-0.017 (0.024)	-0.004 (0.009)	0.002 (0.011)
Hospital stay	0.032 (0.377)	0.124 (0.298)	0.347* (0.187)	-0.056 (0.405)	0.039 (0.566)	-0.414 (0.409)	0.761** (0.341)	0.021 (0.075)	- 0.232*** (0.072)
(OOPP/I) × Hospital stay	0.023 (0.070)	-0.017 (0.034)	-0.033 (0.031)	-0.045 (0.068)	-0.070 (0.077)	0.052 (0.068)	-0.019 (0.049)	0.006 (0.013)	0.000 (0.013)
(S/I)	- 0.219*** (0.004)	- 0.057*** (0.002)	- 0.059*** (0.002)	- 0.223*** (0.004)	- 0.347*** (0.006)	- 0.253*** (0.004)	- 0.160*** (0.004)	- 0.018*** (0.001)	- 0.009*** (0.001)
(S/I) × Hospital stay	-0.007 (0.008)	-0.002 (0.006)	-0.004 (0.004)	0.005 (0.009)	-0.013 (0.012)	0.003 (0.009)	-0.016** (0.007)	0.000 (0.002)	0.005*** (0.002)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	21,007	21,007	21,007	21,007	21,007	21,007	21,007	21,007	21,007
R-squared	0.297	0.089	0.142	0.569	0.270	0.309	0.254	0.247	0.072

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

2. Sub-group analysis

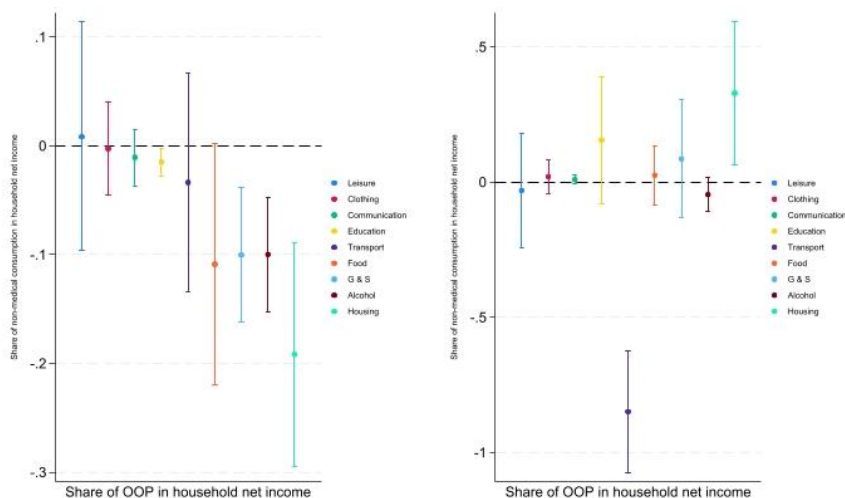
We next investigate whether the association between OOP and consumption differs across household groups. Three dimensions of heterogeneity are considered: income level (lowest versus highest income quintile), household gender composition (households composed exclusively of men versus exclusively of women), and household age composition (households composed exclusively of individuals aged 60 years and above versus households composed exclusively of individuals aged 30 years and below).

Because the hospitalization coefficient and the interaction terms are generally not statistically significant within these subsamples, Figures 1 to 3 focus on the estimated association between OOP and non-medical consumption.

Income heterogeneity: Figure 1 reveals substantial heterogeneity across income groups. Among high-income households, OOP are associated with significant reductions only in transport and leisure expenditures, while the remaining categories are largely unaffected. This pattern is consistent with the presence of stronger financial buffers, including savings, wealth, and easier access to credit, allowing these households to absorb higher medical expenditures without major adjustments to their consumption basket. High-income households increase their housing expenditure by reallocating spending from other categories, such as transport. They may also derive greater utility from spending time at home and therefore be more willing to invest in housing-related goods and services.

The picture differs markedly among low-income households. OOP are associated with lower expenditure on housing, alcohol, miscellaneous goods and services, and education. When effects are normalized by average category shares, education displays the largest proportional adjustment. This result is particularly concerning because educational expenditure represents an investment with potentially long-lasting consequences for income, employment opportunities, and health trajectories. To the extent that medical expenditures crowd out educational spending, OOP may contribute to the persistence of socioeconomic disadvantage beyond their immediate financial consequences.

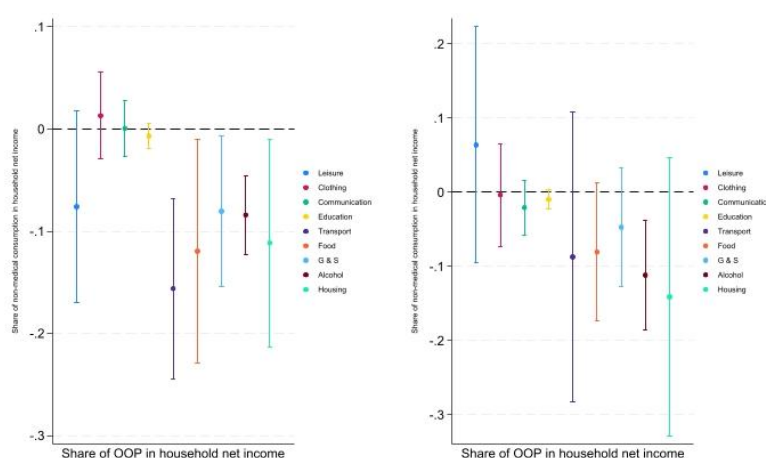
Figure 1: Out-of-Pocket Payments and Households' Non-Medical Consumption (1st versus 5th income quintile)



Gender heterogeneity: Figure 2 compares households composed exclusively of men with households composed exclusively of women. Among male households, OOP are associated with few significant consumption adjustments, with alcohol constituting the main exception. In contrast, female households exhibit reductions across a broader range of spending categories, particularly transport expenditure.

These differences may reflect gender-specific consumption patterns, differences in caregiving responsibilities, or differential exposure to health-related constraints within the household. While the available data do not allow us to disentangle these mechanisms, the results suggest that medical expenditures may have more widespread budgetary implications among female households.

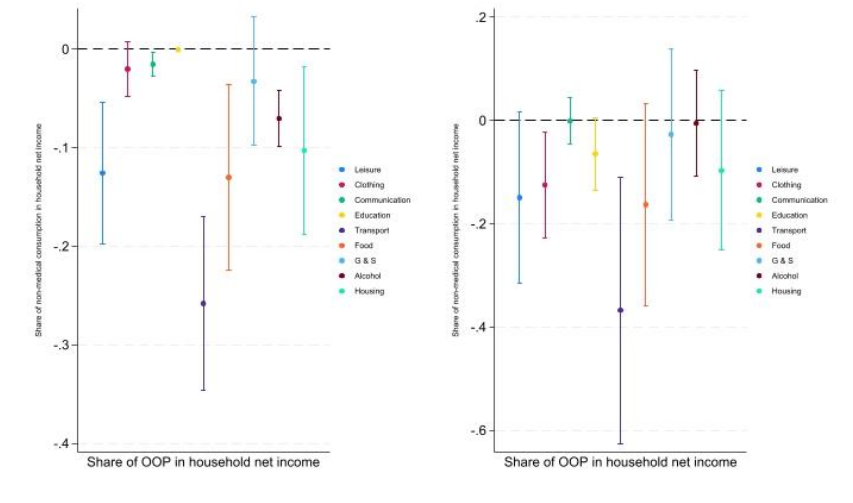
Figure 2: Out-of-Pocket Payments and Households' Non-Medical Consumption (women versus men)



Age heterogeneity: Figure 3 compares younger households, composed exclusively of individuals aged 30 years or less, with older households, composed exclusively of individuals aged 60 years or more.

Among younger households, OOP are associated with few statistically significant changes in consumption patterns. By contrast, older households exhibit reductions across a broader set of categories, including food, alcohol, housing, transport, and leisure. This difference likely reflects two complementary mechanisms. First, older households typically face higher healthcare utilization and therefore larger medical expenditures (Tanguy-Melac et al., 2021; Gilligan et al., 2018). Second, they may have fewer opportunities to adjust labor supply in response to financial shocks, making consumption reductions a more important adjustment margin. Taken together, the subgroup analyses identify low-income households and older households as the groups most exposed to the consumption consequences of OOP. These findings suggest that the welfare effects of medical expenditures are concentrated among already vulnerable populations and underscore the importance of targeted financial protection mechanisms.

Figure 3: Out-of-Pocket Payments and Households' Non-Medical Consumption (young versus old)



3. Robustness checks

To assess the robustness of the baseline findings, we perform five additional analyses reported in Appendix Tables S7-S11.

First, we exclude households experiencing both childbirth and hospitalization during the same year. Childbirth-related hospitalizations do not necessarily reflect health deterioration and may be associated with planned demographic changes that independently affect consumption. Second, we exclude households experiencing the death of a household member during the survey year. End-of-life periods are characterized by unusually high healthcare expenditures and may affect household behaviour through bereavement-related channels that are distinct from the mechanisms considered here.

Third, we restrict the analysis to single-person households. This eliminates the possibility that the results are driven by within-household reallocations across members with heterogeneous health conditions.

Fourth, following Quinet and Ferrari (2008) and Cusset et al. (2021), we exclude predetermined expenditure categories such as housing-related commitments, communication contracts, insurance, and loan repayments. These expenditures are unlikely to adjust immediately in response to unexpected financial shocks.

Fifth, we exclude households reporting that they would devote additional income to healthcare expenditures. Such households may face unmet healthcare needs and therefore report low observed OOP despite substantial underlying health-related demand.

Across all five robustness exercises, the estimated associations remain remarkably stable in sign, magnitude, and statistical significance. The negative association between OOP and several major consumption categories is consistently observed, while hospitalization effects remain limited and interaction terms remain statistically insignificant. Collectively, these results strengthen the interpretation that the principal empirical pattern documented in this paper

reflects the financial burden associated with medical expenditures rather than hospitalization-specific mechanisms or health-state-dependent consumption responses.

VI. Discussion and conclusion

This paper examines how OOP are associated with the composition of household consumption in France and whether the observed reallocations are more consistent with financial pressure arising from medical expenditures or with changes in consumption patterns associated with deteriorating health.

Our results point primarily toward a financial mechanism. Higher OOP are consistently associated with lower expenditure shares devoted to food, alcohol, housing, transport, and miscellaneous goods and services. By contrast, hospitalization, used here as a proxy for major health deterioration, is associated with only a limited number of category-specific reallocations. Moreover, we find no evidence that the association between OOP and consumption differs according to hospitalization status. A given amount of OOP is associated with broadly similar consumption adjustments among hospitalized and non-hospitalized households.

Taken together, these findings suggest that the main driver of observed expenditure reallocations is the financial burden associated with medical spending rather than systematic shifts in preferences induced by deteriorating health. The subgroup analyses further show that these associations are concentrated among low-income households and among households composed exclusively of individuals aged 60 years and above, indicating that financial vulnerability amplifies the budgetary consequences of medical expenditures.

Our results contribute to at least three strands of the literature. First, they contribute to the growing literature on the consumption consequences of health-related shocks (Gruber, 1997; Browning and Crossley, 2001; Meyer and Mok, 2019; Blundell et al., 2024) by shifting attention from aggregate consumption to consumption composition. While previous studies have largely documented whether overall consumption declines following health or income shocks, less is known about which expenditure categories absorb the adjustment. Our findings show that the response is highly heterogeneous across categories, with food, housing, and transport among the most affected components of the household budget.

Second, our results complement recent evidence on the economic consequences of health events in other institutional settings. Zilio et al. (2025) document reductions in holidays and alcohol consumption following health events in Australia, while Amo-Agyei (2025) reports a greater resilience of superior goods expenditure in Russia. Our findings suggest that, in the French context, much of the observed adjustment is associated with the financial burden of medical expenditures rather than with broad changes in health-related preferences. This reinforces the importance of insurance coverage and financial protection mechanisms in shaping household responses to healthcare costs.

Third, our findings also relate to the literature on home production, caregiving, and time allocation. Zilio et al. (2025) show that health shocks can reallocate time toward household production and caregiving activities. Podor and Halliday (2012) similarly emphasize the interaction between health and home-production decisions. The positive association between hospitalization and expenditure on miscellaneous goods and services may be consistent with such mechanisms, although our data do not allow us to examine time use directly.

The findings have important policy implications. Although OOP represent only a relatively small share of total healthcare expenditure in France, they remain highly concentrated among a minority of households. For these households, medical expenditures are associated with measurable reductions in non-medical consumption. Particularly concerning is the fact that some of the affected categories, such as food and housing, are closely linked to long-run health and wellbeing. To the extent that medical expenditures crowd out spending in these domains, OOP may contribute to cumulative disadvantage and reinforce existing socioeconomic inequalities.

Policies aimed at reducing the financial burden of medical expenditures among vulnerable households could therefore generate benefits extending beyond healthcare itself. Strengthening means-tested complementary insurance schemes, reducing residual copayments for high-need populations, or expanding zero-cost coverage arrangements may help protect not only access to care but also broader living standards.

Several limitations should nevertheless be acknowledged. First, hospitalization is an imperfect proxy for health deterioration. Some hospital stays are planned and anticipated, allowing households to prepare financially in advance. Conversely, households that do not experience hospitalization may still face substantial health deterioration through chronic or outpatient conditions. As a result, hospitalization cannot be interpreted as a pure measure of health-state dependence, and some overlap between financial and health-related mechanisms is inevitable. Second, low observed OOP may sometimes reflect unmet healthcare needs rather than good health. This issue is particularly relevant among low-income households, for whom financial barriers may reduce healthcare utilization. To the extent that constrained households forgo care and therefore report lower OOP, the estimated association between OOP and consumption may understate the true financial consequences of healthcare needs.

Third, the data do not capture the full range of coping strategies available to households. Informal financial transfers, family support, charitable assistance, and labour-supply adjustments may partially offset the budgetary consequences of medical expenditures. Consequently, the observed consumption adjustments may underestimate the overall financial pressure generated by healthcare costs.

Finally, the cross-sectional nature of the Household Budget Survey precludes within-household identification. Although the analysis controls for a rich set of demographic, socioeconomic, and financial characteristics, unobserved factors such as long-run health trajectories, risk preferences, or insurance selection may still influence both OOP and consumption patterns. The results should therefore be interpreted as conditional associations rather than causal estimates.

Overall, this study shows that the consequences of medical expenditures extend well beyond healthcare spending itself. Even in a system characterized by near-universal health insurance coverage, out-of-pocket payments are associated with substantial reallocations of household budgets, particularly among financially vulnerable households. The evidence presented here suggests that these reallocations are driven primarily by financial pressure rather than by hospitalization-specific changes in preferences. Understanding these mechanisms is essential for designing health and social protection policies that protect households not only from medical risk, but also from the broader economic consequences of illness.

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Appendix:**Table S1:** Names and Compositions of Consumption Categories – Outcome Variables (1/2)

Name	Content	Detailed Contents
Food	Food and non-alcoholic beverages	Bread and cereals, meat and fish, dairy products, fats, fruit and vegetables, sugar, jam, honey, chocolate and sweets. Coffee, tea, cocoa, mineral waters, soft drinks, syrups and juices.
Alcohol	Alcohol, tobacco and narcotics	Spirits, wines, ciders, and champagnes. Tobacco and all related products. Narcotics of all kinds.
Clothing	Clothing and footwear	Clothing fabrics and clothing. Shoes (rentals and repairs).
Housing	Housing, water, and fuels	Rents for principal residence tenants. Rent for other residences. Maintenance and repair products and services. Household waste, sanitation, water bills, and collective charges. Electricity and gas, liquefied, liquid, and solid fuels and thermal energy. Furniture and decoration, carpets and floor coverings, furniture repair, bedding, household linen, refrigerators, freezers, wine cellars, washing machines, dryers, dishwashers, cooking appliances, and air conditioners. Glassware, crockery, kitchen utensils. Tools for home and garden. Goods and services for routine home maintenance.
OOP	Healthcare expenditure	Pharmaceutical products for ingestion and treatment, food supplements and vitamins, bandages, parapharmaceuticals, condoms, glasses, and prostheses. General practitioner or specialist consultations, dental care, medical analysis laboratory and radiology services, auxiliary medical services (nurse and physiotherapist), out-of-hospital services (ambulance services). Hospital care and related services.

Table S2: Names and Compositions of Consumption Categories – Outcome Variables (2/2)

Name	Content	Detailed Contents
Transport	Transports	Purchases of automobiles, motorcycles, bicycles or other vehicles. Spare parts and accessories, fuel, maintenance and repair services. Tolls, parking, road-worthiness tests. Transportation by rail, road, air, and inland waterways, subways, and taxis.
Leisure	Leisure and culture	Audiovisual, photographic and computing equipment. Caravans, motor homes, airplanes, boats, horses, windsurfing. Musical instruments and large leisure equipment (billiard and ping-pong tables). Gardening and pet supplies. Sports, recreation and cultural services. Gambling, publishing, press, stationery. Package tours. Catering and restaurant services.
Education	Teaching and schooling	Tuition fees and educational services.
Miscellaneous G & S	Related goods and services	Personal care products and services. Personal belongings. Social protection. Insurance of all types. Financial services.
Communication	Communication	Postal services, telephone and fax equipment purchases. Telegraph and fax, internet, and telephone recharging.

Table S3: Names and Descriptions of Control Variables (1/2)

Variable	Description
Occupational status	Categorical variable distinguishing eight groups: Skilled agricultural, forestry and fishery workers; Craft and related trades workers; Managers; Technicians and associate professionals; Services and sales workers; Elementary occupations; Unemployed individuals; Inactive individuals.
Highest level of educational attainment	Categorical variable distinguishing five groups: Primary education; Lower secondary education; Upper secondary education; Post-secondary non-tertiary education; Tertiary education or above.
Gender	Dummy variable equal to 1 if the reference household member is a woman, and 0 otherwise.
Season	Categorical variable distinguishing four groups: Summer, Spring, Autumn, and Winter.
Living area	Categorical variable distinguishing three groups: Rural areas, Intermediate areas, and Urban areas.
Household composition	Categorical variable distinguishing five groups: Single-person household, Single-parent household, Childless couple's household, Household of a couple with children, and Other compositions.
Number of currently employed individuals	Continuous variable ranging from 0 to 3.
Number of males in the household	Continuous variable ranging from 0 to 4.
Housing status	Categorical variable distinguishing three groups: Tenant, Owner, and Ascendant owner.
Net annual household income	Continuous variable ranging from €2,700 to €1,747,335.

Note: Occupational status, educational attainment, and gender are measured for the reference household member (i.e., the oldest individual of the household).

Table S4: Names and Descriptions of Control Variables (2/2)

Variable	Description
Household's financial assets	Categorical variable distinguishing seven groups: less than €5,000; at least €5,000 but less than €15,000; at least €15,000 but less than €50,000; at least €50,000 but less than €150,000; at least €150,000 but less than €250,000; at least €250,000 but less than €350,000; and more than €350,000 in financial assets.
Number of individuals by age group living in the household	Six continuous variables: number of individuals aged 0–14 years, aged 15–29 years, aged 30–39 years, aged 40–49 years, aged 50–59 years, and aged 60 years or above.

Table S5: Descriptive Statistics of the Control Variables (1/2)

Variables	Full Sample	1st Quintile	5th Quintile
Net annual household income	4,186.6 (25,545.1)	15,392.9 (5,838.2)	64,763.4 (40,201.5)
Educational attainment			
Primary education	25.8%	44.6%	6.3%
Lower secondary education	29.8%	30.2%	18.4%
Upper secondary education	15.3%	13.6%	14.2%
Post-secondary non-tertiary education	15.5%	7.1%	24.4%
Tertiary education and above	13.6%	4.4%	36.2%
Occupational status			
Skilled agricultural, forestry and fishery workers	2.5%	6.0%	1.1%
Craft and related trades workers	8.5%	8.4%	8.6%
Managers	25.6%	4.9%	60.3%
Technicians and associate professionals	15.4%	5.8%	17.0%
Services and sales workers	13.5%	17.7%	5.2%
Elementary occupations	31.6%	41.5%	7.3%
Unemployed individuals	4.5%	15.3%	0.6%
Gender of the reference member			
Woman	40.7%	51.5%	29.7%
Season			
Summer	33.4%	32.5%	32.6%
Spring	16.7%	16.5%	18.2%
Autumn	16.1%	16.4%	17.8%
Winter	33.3%	34.6%	31.5%
Living area			
Rural areas	29.2%	27.0%	25.5%
Intermediate area	29.8%	33.0%	23.3%
Urban area	41.0%	40.0%	51.1%
Household composition			
Single-person	33.7%	45.7%	22.0%
Single-parent	8.4%	16.9%	3.2%
Childless couple	27.3%	14.5%	40.5%
A couple with children	28.1%	20.5%	32.2%
Other	2.4%	2.3%	2.1%
No. of currently employed individuals	0.9	0.4	1.3

(0.9)

(0.6)

(0.9)

Table S6: Descriptive Statistics of the Control Variables (2/2)

Variables	Full Sample	1st Quintile	5th Quintile
Housing status			
Tenant	41.0%	33.0%	51.7%
Owner	39.0%	60.1%	19.0%
Ascendant owner	19.2%	6.9%	29.3%
Household's financial assets			
Less than €5,000	10.6%	28.3%	1.4%
At least €5,000 but less than €15,000	11.6%	19.2%	3.1%
At least €15,000 but less than €50,000	9.4%	10.4%	5.2%
At least €50,000 but less than €150,000	9.1%	9.5%	5.9%
At least €150,000 but less than €250,000	14.0%	9.2%	10.7%
At least €250,000 but less than €350,000	12.4%	4.2%	16.4%
More than €350,000	16.6%	3.5%	44.2%
Number of individuals by age group			
No. aged 0–14 years	0.4 (0.8)	0.5 (0.9)	0.3 (0.7)
No. aged 15–29 years	0.4 (0.7)	0.4 (0.7)	0.3 (0.7)
No. aged 30–39 years	0.3 (0.6)	0.2 (0.5)	0.3 (0.3)
No. aged 40–49 years	0.3 (0.6)	0.2 (0.5)	0.4 (0.7)
No. aged 50–59 years	0.3 (0.6)	0.2 (0.5)	0.4 (0.7)
No. aged 60 years or above	0.5 (0.7)	0.5 (0.6)	0.6 (0.8)
No. of males in the household	1.1 (0.8)	0.9 (0.9)	1.2 (0.7)
Age category of the reference member			
18–35	19.2%	21.9%	14.1%
36–45	18.5%	17.5%	18.1%
46–55	18.6%	17.1%	24.1%

56 or above	43.7%	43.4%	43.6%
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Table S7: Out-of-Pocket Payments and Households' Non-Medical Consumption (exclusion of childbirth)

VARIABLES	(1) Alim	(2) Alcool	(3) Clothing	(4) Housing	(5) Transport	(6) Leisure	(7) BS	(8) comm	(9) ensei
(OOP/I)	- 0.096*** (0.035)	- 0.089*** (0.017)	0.017 (0.016)	-0.070* (0.037)	- 0.257*** (0.039)	-0.024 (0.036)	-0.020 (0.024)	-0.003 (0.009)	0.002 (0.011)
Hospital stay	-0.020 (0.387)	0.111 (0.311)	0.401** (0.192)	-0.054 (0.415)	-0.061 (0.580)	-0.182 (0.422)	0.491 (0.338)	0.022 (0.078)	- 0.219*** (0.075)
(OOPP/I) × Hospital stay	0.014 (0.070)	-0.021 (0.034)	-0.038 (0.031)	-0.037 (0.069)	-0.067 (0.077)	0.055 (0.069)	-0.012 (0.049)	0.007 (0.014)	0.002 (0.013)
(S/I)	- 0.220*** (0.004)	- 0.057*** (0.002)	- 0.058*** (0.002)	- 0.224*** (0.004)	- 0.347*** (0.006)	- 0.254*** (0.004)	- 0.158*** (0.004)	- 0.018*** (0.001)	- 0.009*** (0.001)
(S/I) × Hospital stay	-0.007 (0.009)	-0.001 (0.006)	-0.005 (0.004)	0.002 (0.009)	-0.010 (0.012)	-0.001 (0.009)	-0.009 (0.007)	0.000 (0.002)	0.005*** (0.002)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	20,463	20,463	20,463	20,463	20,463	20,463	20,463	20,463	20,463
R-squared	0.297	0.089	0.142	0.571	0.270	0.314	0.255	0.246	0.075

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table S8: Out-of-Pocket Payments and Households' Non-Medical Consumption (exclusion of death)

VARIABLES	(1) Alim	(2) Alcool	(3) Clothing	(4) Housing	(5) Transport	(6) Leisure	(7) BS	(8) comm	(9) ensei
(OOP/I)	-	-	0.017	-0.068*	-	-0.031	-0.011	-0.003	0.002
	0.090***	0.089***			0.257***				
	(0.035)	(0.017)	(0.016)	(0.037)	(0.039)	(0.036)	(0.024)	(0.009)	(0.011)
Hospital stay	-0.009	0.138	0.360*	0.023	0.098	-0.447	0.745**	0.029	-
									0.236***
	(0.374)	(0.301)	(0.188)	(0.408)	(0.570)	(0.410)	(0.334)	(0.076)	(0.073)
(OOPP/I) × Hospital stay	0.032	-0.020	-0.036	-0.048	-0.090	0.056	-0.015	0.006	0.000
	(0.071)	(0.034)	(0.031)	(0.068)	(0.077)	(0.068)	(0.048)	(0.014)	(0.013)
(S/I)	-	-	-	-	-	-	-	-	-
	0.219***	0.057***	0.059***	0.222***	0.349***	0.254***	0.155***	0.018***	0.009***
	(0.004)	(0.002)	(0.002)	(0.004)	(0.006)	(0.004)	(0.004)	(0.001)	(0.001)
(S/I) × Hospital stay	-0.006	-0.002	-0.004	0.003	-0.014	0.004	-0.016**	0.000	0.005***
	(0.008)	(0.006)	(0.004)	(0.009)	(0.012)	(0.009)	(0.007)	(0.002)	(0.002)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	20,794	20,794	20,794	20,794	20,794	20,794	20,794	20,794	20,794
R-squared	0.298	0.089	0.143	0.570	0.272	0.311	0.251	0.247	0.072

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table S9: Out-of-Pocket Payments and Households' Non-Medical Consumption (restricting the sample to single-member households)

VARIABLES	(1) Alim	(2) Alcool	(3) Clothing	(4) Housing	(5) Transport	(6) Leisure	(7) BS	(8) comm	(9) ensei
(OOP/I)	-0.099*	-	-0.017	-	-0.116*	-0.032	-0.068*	0.002	-0.007
		0.115***		0.162***					
Hospital stay	(0.059)	(0.024)	(0.023)	(0.059)	(0.061)	(0.062)	(0.041)	(0.016)	(0.006)
	-0.091	0.855	0.131	-0.062	-0.902	-1.584*	1.470**	0.050	-0.246**
	(0.783)	(0.870)	(0.396)	(0.884)	(1.008)	(0.843)	(0.707)	(0.152)	(0.101)
(OOPP/I) × Hospital stay	0.026	-0.051	0.060	-0.098	-0.161	0.087	-0.003	-0.003	0.014
	(0.140)	(0.073)	(0.060)	(0.141)	(0.099)	(0.143)	(0.077)	(0.024)	(0.010)
(S/I)	-	-	-	-	-	-	-	-	-
	0.226***	0.069***	0.062***	0.292***	0.279***	0.262***	0.167***	0.021***	0.005***
	(0.007)	(0.005)	(0.004)	(0.008)	(0.010)	(0.008)	(0.007)	(0.002)	(0.001)
(S/I) × Hospital stay	-0.016	-0.012	-0.005	-0.002	0.026	0.024	-0.026	-0.002	0.006**
	(0.018)	(0.018)	(0.009)	(0.020)	(0.022)	(0.019)	(0.016)	(0.004)	(0.002)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5,858	5,858	5,858	5,858	5,858	5,858	5,858	5,858	5,858
R-squared	0.269	0.103	0.124	0.546	0.242	0.322	0.284	0.198	0.098

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table S10: Out-of-Pocket Payments and Households' Non-Medical Consumption (exclusion of predetermined consumption categories)

VARIABLES	(1) Alim	(2) Alcool	(3) Clothing	(4) Housing	(5) Transport	(6) Leisure	(7) BS	(8) comm	(9) ensei
(OOP/I)	-	-	0.017	-	-	-0.026	-0.011	-0.004	0.002
	0.093*** (0.035)	0.089*** (0.017)		0.051*** (0.020)	0.260*** (0.039)				
Hospital stay	0.032	0.124	0.347*	0.578**	0.039	-0.285	0.584*	0.059	-
	(0.377)	(0.298)	(0.187)	(0.270)	(0.566)	(0.403)	(0.322)	(0.046)	(0.072)
(OOPP/I) × Hospital stay	0.023	-0.017	-0.033	-0.026	-0.070	0.047	-0.015	0.003	0.000
	(0.070)	(0.034)	(0.031)	(0.038)	(0.077)	(0.067)	(0.041)	(0.010)	(0.013)
(S/I)	-	-	-	-	-	-	-	0.001*	-
	0.219*** (0.004)	0.057*** (0.002)	0.059*** (0.002)	0.108*** (0.003)	0.347*** (0.006)	0.245*** (0.004)	0.128*** (0.004)		0.009*** (0.001)
(S/I) × Hospital stay	-0.007 (0.008)	-0.002 (0.006)	-0.004 (0.004)	-0.012** (0.006)	-0.013 (0.012)	0.002 (0.009)	-0.015** (0.007)	-0.001 (0.001)	0.005*** (0.002)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	21,007	21,007	21,007	21,001	21,007	21,007	21,006	21,007	21,007
R-squared	0.297	0.089	0.142	0.162	0.270	0.296	0.188	0.035	0.072

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table S11: Out-of-Pocket Payments and Households' Non-Medical Consumption (exclusion of households who report that they would allocate additional income to healthcare expenditure)

VARIABLES	(1) Alim	(2) Alcool	(3) Clothing	(4) Housing	(5) Transport	(6) Leisure	(7) BS	(8) comm	(9) ensei
(OOP/I)	- 0.106***	- 0.087***	0.012	-0.065*	- 0.258***	-0.010	-0.029	-0.001	0.004
Hospital stay	(0.033) -0.047	(0.018) 0.139	(0.016) 0.377*	(0.039) -0.182	(0.042) 0.040	(0.039) -0.346	(0.025) 0.752**	(0.010) 0.014	(0.012) - 0.217***
(OOPP/I) × Hospital stay	(0.380) 0.033	(0.309) -0.013	(0.193) -0.032	(0.411) -0.019	(0.584) -0.103	(0.423) 0.037	(0.352) -0.000	(0.077) 0.007	(0.074) -0.005
(S/I)	(0.070) - 0.216***	(0.035) - 0.056***	(0.031) - 0.059***	(0.069) - 0.221***	(0.081) - 0.349***	(0.073) - 0.254***	(0.050) - 0.161***	(0.014) - 0.017***	(0.013) - 0.009***
(S/I) × Hospital stay	(0.004) -0.005 (0.008)	(0.002) -0.003 (0.006)	(0.002) -0.005 (0.004)	(0.004) 0.008 (0.009)	(0.006) -0.013 (0.012)	(0.004) 0.002 (0.009)	(0.004) -0.016** (0.008)	(0.001) 0.000 (0.002)	(0.001) 0.005*** (0.002)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	20,174	20,174	20,174	20,174	20,174	20,174	20,174	20,174	20,174
R-squared	0.297	0.089	0.143	0.568	0.270	0.307	0.252	0.246	0.072

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Funding Statement: The authors declare that no funds, grants, or other support were received during the preparation of this manuscript.

Competing interest: The authors have no relevant financial or non-financial interests to disclose.