

All reproduction is prohibited  
but direct link to the document is accepted:

<https://www.irdes.fr/english/issues-in-health-economics/272-identifying-wheelchair-users-in-france-and-calculating-their-patient-contribution-based-on-data-from-the-national-health-data-system-snds.pdf>

## Identifying Wheelchair Users in France and Calculating their Patient Contribution based on Data from the National Health Data System (SNDS) between 2012 and 2019

Maude Espagnacq, Fabien Daniel and Camille Regaert (IRDES)

The creation in 2021 of the fifth branch of the French Social Security system devoted to reduced autonomy and the debate over the need for a major law concerning its funding has highlighted the issues relating to improvements and knowledge in this sector. This study is part of a research programme (entitled FISH), whose goal — based on administrative data (National Health Data System, SNDS) relating to the healthcare reimbursements made by the French National Health Insurance system (hereinafter *Assurance Maladie*) — is to improve knowledge about functional limitations in France. This initial study focuses on wheelchair users in order to assess their number and determine their profile (age and gender), and the type of wheelchair they purchased and its cost, by making a distinction between social security expenditure and patients' contributions.

Based on data from the SNDS, an algorithm was developed to estimate the number of persons regularly using a wheelchair in 2019. To do this, it was necessary to take into account all of the available information about the possession of wheelchairs (the rental or purchase of a wheelchair, accessories, pressure ulcer cushion, maintenance packages, etc.), to identify occasional use and the data was applied over a period of several years (2012-2019). Hence, only 50% of wheelchair users were located by a direct identification of the wheelchair (purchase or rental). The others may have bought their wheelchair before 2012, obtained it in the care home they resided in, or as a gift, loan, or second-hand purchase. In 2019, there were more than one million non-temporary wheelchair users, mostly women over the age of seventy.

Between 2012 and 2019, the National Health Insurance System had a global expenditure of one billion euros. Over the period, the costs of one out of two users were fully reimbursed by the National Health Insurance System, but after reimbursement almost 60,000 people had out-of-pocket healthcare costs amounting to more than 1,000 euros. On average, these out-of-pocket costs were 5,500 euros.

The establishment in December 2021 of the fifth branch of the French National Health Insurance System (NHI, *Assurance maladie*) highlighted the importance of the issues concerning the ageing population and the autonomy of elderly persons in France. While most of the

expenditure relates to the funding of human assistance and medical-social establishments, the issue arose of improving funding for wheelchairs. Indeed, despite technical developments, the increasingly frequent use of wheelchairs, and several recommendations (Haute Autorité de Santé,

2022), the nomenclature of the List of Refundable Products and Services (*Liste des produits et prestations remboursables*, LPPR) concerning the National Health Insurance System's "vehicles for people with physical disabilities" has not been revised for twenty years. The creation of the "Autonomy" branch and

the Denormandie-Chevalier report from 2020 led to the launch of a reform that revised this nomenclature and the means of funding these items of technical equipment. The aim was to increase their funding, obtain assistance that matched needs, simplify procedures, and reduce waiting times for obtaining expensive wheelchairs. Indeed, at the moment, several public and private funders have to be solicited to do this, which vary with the age of the applicants (see Method). Yet, until now, no recent estimation of the number of non-temporary wheelchair users has been carried out and the characteristics of the wheelchairs used have not yet been studied (Denormandie and Chevalier, 2020). The latest data from the Health and Disability survey (*Handicap Santé*, HS) that enabled this estimation dated from 2008 with regard to the survey of households

and 2009 for institutions (Bérardier, 2012; Espagnacq, 2012). The population of manual and electric wheelchair users is estimated at 610,000 persons: 370,000 in households and 240,000 in institutions (estimation by IRDES). The previous *Handicaps, Disabilities, and Dependency (Handicaps, Incapacités Dépendance, HID)* surveys (institutions in 1998 and households in 1999) estimated the number of users at 370,000: 215,000 household users and 155,000 institutional users. This increase can partly be explained by the improvements in the refurbishment of residential premises that has improved access for wheelchairs and caters for an ageing population. As the next survey into the theme is already underway, it would be pertinent to look for other sources of information, to obtain a recent picture — that can be easily updated — of this rapidly increasing population. This is

even more pertinent, because these surveys estimate the number of users, but do not identify the type of wheelchair used or its cost.

To obtain this information, it is possible to use data from the National Health Data System (*Système National des Données de Santé*, SNDS), but identifying permanent wheelchair users means having to circumvent certain biases. Indeed, all of the SNDS data relates to the reimbursements of wheelchairs for permanent and occasional users. As this type of equipment is not renewed every year, it is not possible to estimate the population of users based on the flow data from a single year. Nor is it possible to solely take into account the purchase or rental of a wheelchair: establishments for elderly or disabled persons can provide their residents with a wheelchair via their care provision

## METHOD (1/3)

### The funding of wheelchairs in France

Wheelchairs, their accessories, cushions for pressure sore prevention, and maintenance packages are listed on the List of Refundable Products and Services (LPPR) by the French National Health Insurance System (NHI) on the basis of a medical prescription. But if the wheelchair is expensive, several funders need to be approached to cover the additional costs. All of the available wheelchairs are listed in 25 nomenclature codes, with possible reimbursements ranging from 350 to 960 euros for manual wheelchairs without options (verticalisation for example) and 2,700 to 5,200 euros for electric wheelchairs. The NHI's reimbursement rate is 60%, a rate that shifts to 100% of the reimbursement rate in the event of a purchase linked with a recognised chronic condition (*Affection de Longue Durée*, ALD) or a disability pension. When the price of the wheelchair is greater than this rate, various public funders may intervene, depending on the person's age. If the disabled person is under the age of 60, he or she can benefit from the Disability Compensation Benefit (PCH) [whatever the person's age at the time of the purchase of the wheelchair] to cover the rest of their out-of-pocket expenses. For electric wheelchairs and certain specific wheelchairs (manual sports wheelchair or a wheelchair for a child: 8 out of 25 products on the LPPR), the PCH doubles the amount of the payment made by the NHI. If there are still out-of-pocket healthcare costs, an additional reimbursement may be made by the complementary health insurance policies, The French Association for the Promotion of Employment of Handicapped and Disabled Persons (*Association de Gestion du Fonds pour l'Insertion Professionnelle des Personnes Handicapées*, AGEFIPH)... and, as a last resort, by the Departmental Compensation Fund (*Fonds de Compensation du Département*, FDC). The NHI and the Disability Compensation Benefit (PCH) are the first to reimburse the users' out-of-pocket expenses, followed by complementary health insurance and other funders, and, last of all, the FDC, which is an extra-legal aid and varies with the *départements*. Since January 2022, the durations of entitlement for the PCH benefit have been modified. Previously, with regard to technical equipment, the renewal occurred every three years, with an amount allocated of 3,960 euros, which was increased for aids costing more than 3,000 euros. Henceforth, the entitlement lasts for ten years, with a ceiling of 13,200 euros for all of the technical equipment requested by the beneficiary. The increased allocation for expensive aids has been maintained. However, the amount of the reimbursement for products on the LPPR has not been altered: it is capped at double the LPPR rate. Hence, these developments mean that one can poten-

tially purchase simultaneously more items of technical equipment, such as a wheelchair and accessories, but the Disability Compensation Benefit (PCH) does not provide extra funds for the additional costs for a wheelchair. For persons who had no disability before the age of 60, who are now aged over 60 and who require a wheelchair, the Personalised Autonomy Benefit (*Allocation Personnalisée d'Autonomie*, APA) may eventually cover the additional costs without fixed financial criteria. As wheelchairs are obtained via a prescription, the complementary health insurance companies may also intervene, but with highly variable forms of cover. The cost of the accessories and certain options may also be covered by the various funders.

The Disability Compensation Benefit: Long-term Implementation and Out-of-Pocket Payments survey (*Prestation de Compensation du Handicap Exécution dans la Durée et Reste à Charge*, Phedre) — conducted by the IRDES and the DREES and whose initial results will be available in 2023 — set out to estimate the users' out-of-pocket payments for technical equipment for beneficiaries of the Disability Compensation Benefit (PCH) and study the composition of the cover of this equipment, depending on the funders. It will provide more detailed information about out-of-pocket payments after taking into account the reimbursements by all of the funders.

### The FISH algorithm: the 'Feasibility of identification of disabled persons'

As part of the FISH project, four algorithms were developed according to the characteristics of functional limitations: "motor or organic", "visual", "auditory", and "psychic, intellectual, and cognitive". A fifth algorithm took into account the identification of disability in the data from the National Health Data System (SNDS) [Disabled Adult Allowance, AAH, disability pension, etc.] (Context p. 5). The algorithm that identified persons who had a risk of "motor or organic" limitations was used to identify the temporary or non-temporary aspect of the use of wheelchairs and was developed on the basis of data from the National Health Data System (SNDS) over the period 2012-2019. This retrospective information makes it possible to determine whether the persons living in 2019 were or were not at risk of having functional motor limitations on 31 December 2019. Different "tracers" of the disability risk were taken into account: all of the diseases coded by the International Classification of Diseases (ICD-10) present in the data (connected with the exoneration motive, and principal associated or linked reasons, hospitalisations, in Medicine, Surgery, Obstetrics-MSO,... *Continued on page 3.*

funding. Nor does the SNDS identify persons who purchased a second-hand wheelchair, or who received one as a gift or on loan. However, thanks to the creation of a cohort based on the SNDS data this population of permanent users can be estimated. Hence, a cohort of wheelchair users between 2012 and 2019 was established in order to identify people using a wheelchair in 2019, even if the purchase predated that year.

Studies were conducted by the Institute for Research and Information in Health Economics (IRDES) to develop the "Feasibility of the identification of disabled persons" algorithm (*Faisabilité d'Identification des Personnes en Situation de Handicap*, FISH), which identifies persons at risk of functional limitations in the data of the SNDS, and, based on data gathered between 2012 and 2019, identifies people with

motor limitations. Thanks to this algorithm of the persons who purchased or rented a wheelchair, it was possible to distinguish those who had a non-temporary requirement from those who had an occasional need. Given the health crisis, which significantly perturbed access to the healthcare system, in particular for the most fragile persons, the 2020 and 2021 data were not integrated into the FISH algorithm nor into the estimation of the number of wheelchair users presented here.

After counting the number of wheelchair users and describing them, the expenditure of the National Health Insurance System and patients' contributions were analysed (after reimbursement by the NHI) with regard to the use of wheelchairs over the period 2012-2019.

**In 2019, there were more than one million non-temporary wheelchair users**

Using the FISH algorithm, 1,365,000 users were identified in 2019 by observing the 2012-2019 data and only 80%, that is 881,000, were considered as non-temporary users in 2019, to which were added an estimation of the 200,000 to 250,000 persons living in a care home and who were not identified by the algorithm, due to the fact that the care home entirely covered the costs of the wheelchair provision in the establishment. Hence, the estimation of the number of non-temporary wheelchair users in 2019 was between 1.08 and 1.13 million persons — 335,000 to 385,000 of whom lived in a care home (see Inset Method). Of the 881,000 wheelchair users identified by

## METHOD (2/3)

Psychiatry-PSY or post-acute care and rehabilitation, SSR) as well as the information from the LPPR, the list of surgical procedures, nursing procedures, physiotherapy, speech therapy, drugs (in ambulatory care, retroactive and additional, provided by the hospital pharmacy) were coded to find out if the individual's healthcare consumption corresponded or not with a state of health that indicated a risk of permanent interference with his/her daily activities.

Using this algorithm, more than 9 million persons were identified as at "risk of developing a disability" provoked by functional motor limitations on 31 December 2019, or 13% of the persons present in the National Health Data System (SNDS).

### The algorithm that identifies wheelchair users through reimbursements as part of the List of Refundable Products and Services (LPPR)

The population that was studied to identify non-temporary wheelchair users comprised living persons on 31 December 2019 present in the National Health Data System (SNDS) between 2012 and 2019 (French Social Security, agricultural, and freelance workers) in the whole of France.

Identification through purchase depending on the category of wheelchairs: all kinds of wheelchairs can be identified as the result of a purchase in the SNDS database, but this does not necessarily imply the lasting use of a wheelchair. Even though a prescription is required for a reimbursement by the National Health Insurance System, this does not exclude the possibility of purchasing a wheelchair for temporary use. The complementary health schemes may, for example, provide greater reimbursements for the purchase of a standard wheelchair than a rental for several months. In addition, the denomination of wheelchairs in the LPPR coding is not precise enough to distinguish wheelchairs intended for permanent use (such as carbon wheelchairs for example) from those for a potentially occasional use. Hence, all the models of wheelchair categorised as "manual, foldable, or non-foldable wheelchair" were considered as wheelchairs, whose long-term use needs to be confirmed. They will be subsequently known as "level 2 wheelchairs". For these purchases, the identification of the individual as having motor limitations by the FISH algorithm confirms the long-term use of the wheelchair.

**Identifying the wheelchairs that are not used temporarily.** The other codes for wheelchairs on the LPPR list have denominations that help

to identify long-standing functional limitations, for example, electric wheelchairs, motorised manual wheelchairs, the presence of verticalizing components on the wheelchair, a sports wheelchair, or a double hand rim. Henceforth, these wheelchairs will be known as "level 1 wheelchairs".

**Rentals:** in France, although the available rentals only concern "basic" wheelchairs, the use of rental items is not necessarily an indicator of temporary use. Hence, rentals are taken into account depending on their duration and the year in question: those rented over a period of 26 weeks were considered in 2019 as non-temporary use that particular year<sup>1</sup>.

**Identifying the users who did not buy a wheelchair over the period:** the purchase of a wheelchair may be reimbursed by the National Health Insurance System every two to five years. But, users do not systematically change their wheelchair at this point. Some people buy second-hand wheelchairs or use loans or gifts from associations and are therefore not identifiable in the National Health Data System (SNDS). All the same, the greatest difficulty in estimating the number of non-temporary users who did not purchase their wheelchairs came from care homes for the elderly and certain establishments for disabled persons, which provide them as part of the care package paid directly to the establishment. These persons were not identified by the purchase of a wheelchair in the data provided by the NHI, as they were not reimbursed to this effect. Hence, some of them were identified on the basis of other products associated with the use of a wheelchair, which can be identified in the list of refundable products: wheelchair accessories, wheelchair maintenance packages (wheels, motor, etc.), and the purchase of cushions for pressure sore prevention.

The persons who only had a wheelchair delivery package (n=40,000), with no other reimbursement of elements associated with a wheelchair over the period, were not included in the analyses presented in this article. Given the replacement times required to receive a pressure ulcer cushion, the persons who bought one between 2012 and 2015 without any other reimbursement associated with a wheelchair, including before 2012 and after 2019, were considered as temporary users (n=3,600), as well as those who purchased a single pressure ulcer cushion between 2012 and 2018, along with the rental of a wheelchair prior to 2019 (n=87,175).

*Continued on page 6.*

the algorithm, 513,000 were identified as a result of the purchase or rental of a wheelchair (see Table 1). The sole use of rentals for non-temporary use was not marginal, as it accounted for 38% of the rentals in 2019. The search for other elements associated with the use of a wheelchair to estimate this population — such as the use of a pressure ulcer cushion, accessories, or a maintenance package — showed that 42% of the population that regularly used a wheelchair was not identified by the rental or purchase of a wheelchair between 2012 and 2019. The purchase of a pressure ulcer cushion was the main element that enabled the identification of 311,000 wheelchair users who neither bought a wheelchair between 2012 and 2019 nor rented one in 2019. Of the 135,000 persons identified in the data provided by the SNDS who resided in a care home, 45,000 were identified by the algorithm because they were renting a wheelchair before moving into the establishment, and the others were identified as a result of a purchase of accessories or a wheelchair before or after moving into the care home.

T1

Distribution of non-temporary users depending on the methods used to identify wheelchair use	
	Numbers of non-temporary wheelchair users
<b>Wheelchair (purchase and rental)</b>	<b>514,000</b>
- including level 1 purchase (and/or rental and level 2 purchase)	90,000
- including level 2 purchase exclusively (and/or rental)	332,000
- including rental (in 2019), without purchase	92,000
<b>Products associated with wheelchair use</b>	
<b>Pressure ulcer cushion</b>	<b>602,000</b>
- including cushion without identification of rental, or purchase (accessory or package)	311,000
- including cushion, exclusively	282,000
<b>Maintenance package</b>	<b>115,000</b>
- including maintenance package, exclusively	10,000
- including package and exclusive accessory	1,000
<b>Exclusive accessory</b>	<b>89,000</b>
<b>Users renting a wheelchair before 2019 entering a medical-social establishment</b>	<b>45,000</b>
<b>Total non-temporary users in 2019 identified by the algorithm</b>	<b>881,000</b>
- including persons identified in care homes	135,000

**Scope:** Living persons on 31 December 2019, present in the National Health Data System (SNDS) between 2012 and 2019; wheelchair users (French Social Security, agricultural, and freelance workers) in the whole of France.  
**Source:** National Health Data System (SNDS) 2012-2019. [Download the data](#)

The use of level 2 (manual) wheelchairs was much more frequent than that of level 1 wheelchairs (electric wheelchair, verticalizing wheelchairs, etc.) (see Inset

Method): 80% of the persons who purchased a wheelchair bought a level 2 model. The purchases of level 1 wheelchairs, intended for non-occasional

G1

Age pyramids of non-temporary wheelchair users, according to the principal type of identification, in 2019



\* Each of the pyramids per type of identification is exclusive in the following order of priority: level 1 wheelchair, level 2 wheelchair, rental, and pressure ulcer cushion. Hence, a user present in the level 1 wheelchair pyramid, even if he or she also bought a level 2 wheelchair or rented a wheelchair, is not in the level 2 wheelchair purchase or rental pyramid.

**Scope:** Living persons on 31 December 2019, present in the National Health Data System (SNDS) between 2012 and 2019, wheelchair users (French Social Security, agricultural, and freelance workers), the whole of France.

**Source:** National Health Data System (SNDS) 2012-2019.

[Download the data](#)

users, concerned 90,000 persons. This figure is a "lower limit", as it did not take into account the 367,000 wheelchairs used by persons who were not identified as a result of the purchase or rental of a wheelchair, whose characteristics are unknown. The non-identification of the possession of a wheelchair may have arisen for a number of reasons: either because the wheelchair was purchased before 2012, or because it was acquired as a gift, loan, or second-hand purchase, or it was supplied by the care home in which the person resided.

Hence, the 422,000 persons who purchased a wheelchair bought 113,000 level 1 wheelchairs and 477,000 level 2 wheelchairs over the period. The vast majority (77%) of the persons bought a single wheelchair over the period.

**The principal wheelchair user profile: elderly women**

Although the numbers of wheelchair users, identified as a result of the purchase of a level 2 wheelchair, a rental, or the acquisition of pressure ulcer cushions, were different, their distribution

in terms of gender and age was similar: they were mostly women over the age of seventy (with an average age of 75 and more than 60% of women in each population) [see Graph 1]. The life expectancy of women, which is higher than that of men, explains this fact: as there are more women at an older age, they are more likely to suffer from functional limitations.

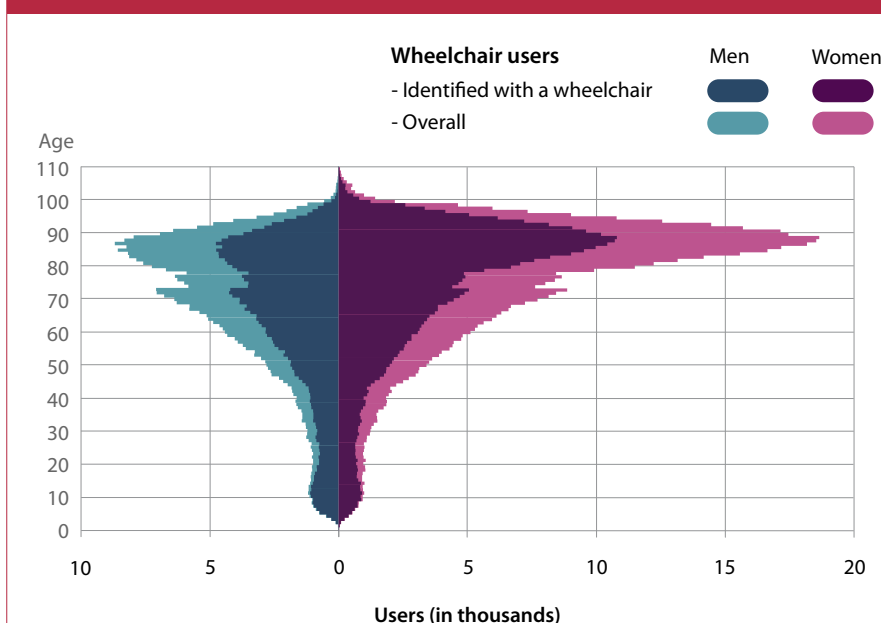
All the pyramids (Graphs 1 and 2) have a narrow base, resulting from a low proportion of young persons in these populations, as the first age quartile is, in fact, over 60. The "total" pyramid of wheelchair users is similar to that of the three categories, represented by a majority of elderly women (Graph 2). Nevertheless, there was a "younger" population of wheelchair users: 253,000 persons were under the age of 65, including 22,500 children under the age of 16. A specific population has in fact been observed amongst level 1 wheelchair users, who were far younger (50 years old on average) and male (Graph 3). This population comprised persons with early-onset disabilities due to congenital or genetic diseases, traumatism, and neurodegenerative diseases (Graph 3).

**CONTEXT**

The "Feasibility of the identification of disabled persons" (*Faisabilité d'identification des Personnes en Situation de Handicap*, FISH) project, based on data from the National Health Data System (*Système National des Données de Santé*, SNDS), was developed by the IRDES to meet the requirement for recent data in the medical-social sector, in particular with regard to disabilities (Espagnacq et al., 2019). Various research studies have been carried out by the IRDES concerning this issue: one into wheelchairs, which led to this initial article, and another into the monitoring of disabled persons' state of health following the Covid-19 pandemic: the 'Handicovid' project (Duchaine et al., 2022). Studies of the beneficiaries of disability pensions and the Disabled Adult Allowance (AAH) are also underway, based on data from the SNDS, which have already led to publications or future publications (Espagnacq and Pichetti, 2020; Pichetti and Espagnacq, 2022; Verboux et al., 2022).

G2

Age pyramid of non-temporary wheelchair users in 2019



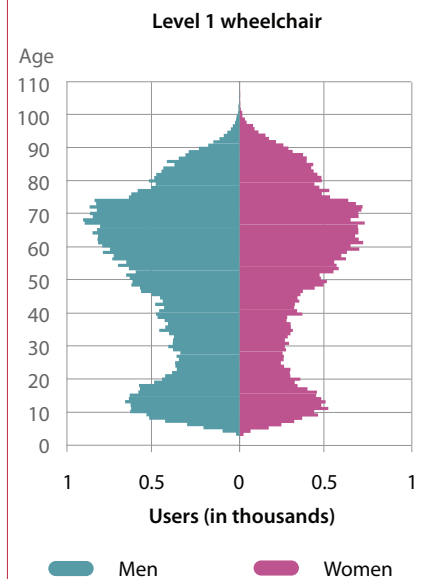
**Scope:** Living persons on 31 December 2019 present in the National Health Data System (SNDS) between 2012 and 2019; wheelchair users (French Social Security, agricultural, and freelance workers) in the whole of France.

**Source:** National Health Data System (SNDS) 2012-2019.

[Download the data](#)

G3

Age pyramid of Level 1 wheelchair users in 2019



**Scope:** Living persons on 31 December 2019 present in the National Health Data System (SNDS) between 2012 and 2019; wheelchair users (French Social Security, agricultural, and freelance workers) in the whole of France.

**Source:** National Health Data System (SNDS) 2012-2019.

[Download the data](#)

## METHOD (3/3)

### The expenditure of the National Health Insurance System (NHI) and the user

**The regulations:** as the data from the National Health Data System (SNDS) are management data that comprise regulations (a negative line associated with a purchase for the same LPPR code) or input errors (such as two purchases of identical wheelchairs the same day), 167,250 lines were removed before the calculations — that is 9,600 persons excluded from the study.

**The National Health Insurance System's expenditure:** the reimbursements made by the NHI are available in the data from the SNDS through the "Unit price of the product or service" (*Prix unitaire du produit ou de la prestation*, *Tip\_act\_pru*) variable. The latter represents the costs covered by the NHI, which may also be increased in certain cases (in the French overseas departments, for example). To determine the actual reimbursement for the individual, it needs to be weighted by the insured person's rate of cover (60% or 100%) and take into account the quantity. If the amount is void or incoherent (amount different from the NHI's rate), the amount of the LPPR tariff provided by the NHI was taken into account (increased in certain cases). In more than 80% of the cases, the "Unit price of the product or service" data was present in the SNDS and was directly used.

**For the user's out-of-pocket expenses,** that is to say the difference between the actual cost and the costs covered by the NHI, two items of information were used: "the LPP unit price" (*le prix unitaire de la LPP*, *Tip\_pub\_prix*), which directly indicates the price paid for the product concerned, hence directly usable to calculate the user's out-of-pocket expenses; and "the amount paid by the insured person" (*Prs\_pai\_mnt*), which includes the amount of all the products bought the same day on the same invoice. This variable may include several products, or solely articles associated with the wheelchair, or other products. The unit price was prioritised, and, if it was missing or incoherent (lower than the reimbursement, for example), the amount paid by the insured person that was used. In the event that only one product appeared, it was used in the same way as the "unit" price to calculate the out-of-pocket payment. When there are several products, information about the amount refunded (*Bse\_rme\_rmt*), which is the sum of the reimbursements made, was taken into account to verify if the sum of the reimbursements of the LPPR articles associated with wheelchairs was or was not identical to the total reimbursements made that day. If this sum was identical, the amount presented for reimbursement was indeed the expenditure on products associated with the wheelchair. The user's out-of-pocket expense were then calculated for all the products bought simultaneously. In this case, the total expenditure was divided by the number of products, from which the refund for each product by the NHI was deducted. In the case of multiple purchases without the details, as the non-reimbursed cost of each product could not be calculated, it was the individual's out-of-pocket payment after the mandatory health insurance reimbursements (AMO) that was calculated<sup>2</sup>. In more than 80% of the cases, the direct value was used.

As these services were not necessarily purchased each year, it was the accumulation of costs not reimbursed by the NHI over several consecutive years that led to very high out-of-pocket healthcare costs for the same individual. Hence, the expenditure of the NHI and the patient's out-of-pocket expenses were calculated over eight years (2012–2019). This period was as close as possible to the new period of cover by the Disability Compensation Benefit (PCH) [henceforth 10 years, see the funding of wheelchairs].

**Estimating the Disability Compensation Benefit (PCH):** the data relating to PCH payments, which may be made after those made by the NHI, are not directly available in the SNDS. Also, an estimation of the "maximum" possible cover was carried out. For technical equipment that has a LPPR code, the amount of the costs covered by the

PCH is published by decree. For each product with a complementary PCH reimbursement — when the out-of-pocket healthcare costs were not null — the amount allocated by the PCH was taken into account. Given the conditions required to access the benefit, this was only done for persons under the age of 65. Hence, this is not the real amount of cover, as not all the people receive the PCH benefit and eligibility for the benefit cannot be estimated using data from the SNDS. The aim of this calculation was to have a "maximal" estimation of the total "legal" public cover.

**Persons residing in care homes or who are monitored by the medical-social services:** since 2021, a table that identifies persons living in care homes or who are monitored by the medical-social services may be consulted in the SNDS (*resid\_ESMS*). Although this table is capable of identifying persons living in care homes where there is possible use of wheelchairs that are potentially paid for as part of the establishment's care package (Nursing homes (*Etablissements d'Hébergement pour Personnes Âgées*, EHPAD), Specialised Care Homes (*Maisons d'Accueil Spécialisées*, MAS), Medical Care Homes (*Foyers d'Accueil Médicalisés*, FAM), etc.), it is not yet exhaustive. The individuals are identified with certainty, but not all of the persons in the establishment are identified. While the persons living in Medical Care Homes (FAM) are most certainly in a wheelchair, it is more difficult to conclude that all the persons living in nursing homes (EHPAD) or in a Specialised Care Homes (MAS) are also in wheelchairs. Given the numbers, the issue of identifying people using wheelchairs in these establishments mainly concerns those living in an EHPAD. In the "resid\_ESMS" data, in 2019, 500,000 individuals were identified in care homes as potential wheelchair users (FAM, MAS, medical-social facilities (ESMS), and long-term care centres (*Unités de soins de longue durée*, USLD) etc.), of which 450,000 were in an EHPAD. According to the 2019 'Nursing Home Survey (EHPAD) survey, 630,000 persons lived in an EHPAD, and "resid\_ESMS" was able to identify 74% of the persons living in this type of establishment. The algorithm developed for this study only identified 135,000 persons in this database. But some of the people are in the nursing homes (EHPADs) as a result of cognitive problems and do not have difficulties with mobility, and others are bedbound or use a stationary wheelchair. Based on the 2015 "Capacities, aids, and resources of elderly people" (*Capacités, Aides et Ressources des Seniors*, Care) survey, the following estimations were made for the 590,000 persons in EHPADs: 285,000 had a wheelchair and 160,000 were bedbound or in a stationary wheelchair. Hence, 25% of the persons in a care home did not have a severe walking disability and 27% of them were in a state of health too deteriorated to use one. This shows that only some of the 315,000 persons in EHPADs identified in "resid\_ESMS", but not identified by the algorithm, were wheelchair users, but the data did not provide information about the exact proportion. Likewise, it is not possible to know exactly how many of the 160,000 persons in care homes — but not recorded in the "resid\_ESMS" table — used wheelchairs and were identified by the algorithm. Based on information from the Care and EHPA surveys, it is estimated that between 200 000 and 250,000 persons in EHPADs were in wheelchairs and were not identified by the algorithm, due to the fact that the wheelchairs were provided by the establishment. This estimation will subsequently be refined when the "resid\_ESMS" data are completed.

1 The identifications in the FISH algorithm were based on the situation on 31 December, and in order to be considered as a clear risk of functional limitation in 2019 by this tracer, the rental of a wheelchair had to have lasted more than 26 weeks and still be the case in December 2019.

2 The cases with another product were marginal (2% of the cases) and the additional product had a minimal cost that had no bearing on the total amount of the user's out-of-pocket payment.

## An expenditure for the National Health Insurance System of one billion euros in eight years

The NHI had a global expenditure amounting to 1.03 billion euros<sup>1</sup> over the period 2012-2019, or the equivalent of an average expenditure of 1,210 euros per wheelchair user (see Table 2). The amount of expenditure presented in Table 2 concerns all the expenses linked with wheelchairs: the wheelchair itself, its accessories, pressure ulcer cushions, and maintenance packages. Depending on the user categories (persons who bought or rented a category 1 or 2 wheelchair), the cost is extremely variable. For persons who purchased a level 1 wheelchair, the average cost of a wheelchair and associated products was 4,750 euros between 2012 and 2019, compared with an average of 290 euros for users who were not identified as wheelchair users over the same period. The average expenditure for the NHI over the period was greater with regard to users who rented their wheelchair than for those who bought a level 2 wheelchair.

## Half of the users were fully reimbursed by the National Health Insurance System

The user's out-of-pocket payment, after reimbursement by the NHI, that is to say the amount not covered by the latter, for all the wheelchair users, was an average of 420 euros between 2012 and 2019, but this result comprised 53% of users who had no non-reimbursed healthcare costs related to the use of a wheelchair. This total absence of patients' contributions was due to the fact that these users were exonerated from the patient's contribution, either because they are beneficiaries of the long-term illness scheme (*Affections de Longue Durée*, ALD), or a disability pension, and because they selected wheelchairs without additional costs that exceeded the amount reimbursed by the NHI. The user contributions, after reimbursement by the

<sup>1</sup> These figures does not include the amounts allotted for the purchase and maintenance of wheelchairs in care homes funded by the NHI as part of the care package.

T2

## The National Health Insurance System's expenditure with regard to wheelchairs and accessories between 2012 and 2019

	Numbers	Average (in euros)	First quartile	Median	Last quartile
<b>User category</b>					
<b>Total</b>	<b>858,000</b>	<b>1,210</b>	<b>80</b>	<b>600</b>	<b>1 250</b>
Level 1 wheelchair	90,000	4,750	1 620	4 450	6 410
Level 2 wheelchair	332,000	1,010	560	690	1 150
Rental	115,000	2,080	840	1 520	2 680
No wheelchair purchase	345,000	290	70	80	150

**Scope:** Living persons on 31 December 2019, present in the National Health Data System (SNDS) between 2012 and 2019; wheelchair users (French Social Security, agricultural, and freelance workers) in the whole of France.

**Source:** National Health Data System (SNDS) 2012-2019.

[Download the data](#)

T3

## Out-of-pocket payments made by wheelchair users, per category, between 2012 and 2019

	Numbers	Average (in euros)	First quartile	Médiane	Last quartile	Q90%
<b>User category</b>						
<b>Total</b>	<b>858,000</b>	<b>420</b>	<b>0</b>	<b>0</b>	<b>40</b>	<b>440</b>
Level 1 wheelchair	90,000	2,900	0	390	2,850	8,670
Level 2 wheelchair	332,000	190	0	0	30	210
Rental	115,000	280	0	10	220	660
No wheelchair purchase	345,000	60	0	0	30	50

**Scope:** Living persons on 31 December 2019, present in the National Health Data System (SNDS) between 2012 and 2019; wheelchair users (French Social Security, agricultural, and freelance workers) in the whole of France.

**Source:** National Health Data System (SNDS) 2012-2019.

[Download the data](#)

NHI, amounted to an average of 364 million euros, or 25% of the total expenditure. For persons without positive out-of-pocket healthcare costs, the latter was 913 euros on average, with a significant variation depending on the user category, ranging from patient contributions of 60 euros for those who did not buy a wheelchair between 2012 and 2019 to 2,900 euros for level 1 wheelchair users. The distribution itself was different within the categories: half of the level 2 wheelchair users — those who rented or did not buy a wheelchair — had no out-of-pocket

healthcare costs and 75% of the users had out-of-pocket healthcare costs under 300 euros. Hence, the specificity of level 1 wheelchair users was still evident, with 25% of the users making out-of-pocket payments of more than 2,850 euros. For 10% of level 1 wheelchair users in 2019, this contribution, after reimbursement by the NHI, assessed over the period 2012-2019, even exceeded 8,670 euros.

G4

... but 88% of the user contributions, after reimbursement by the National Health Insurance System, were borne by just 5% of the users

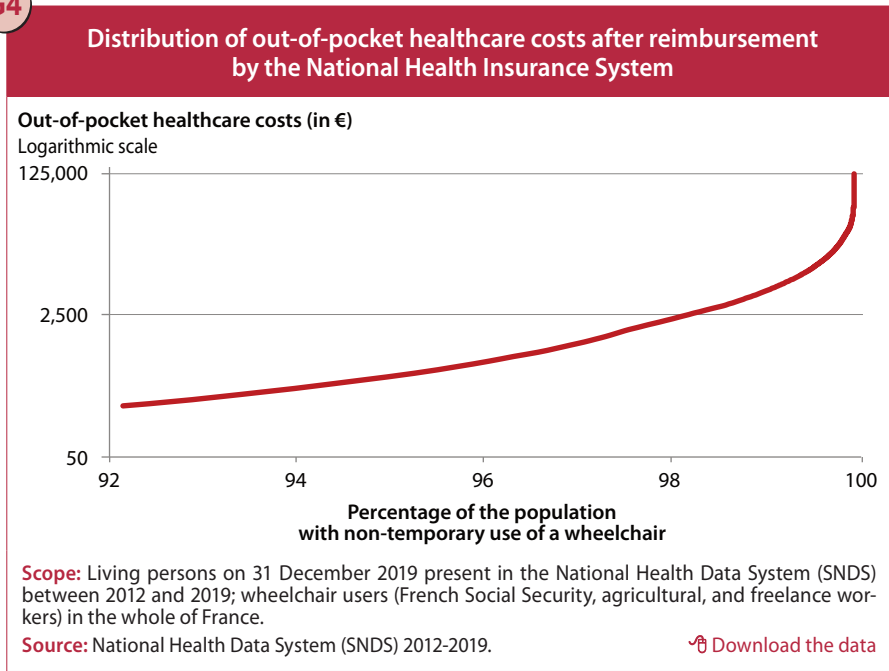
The preceding results led us to focus specifically on users who had significant out-of-pocket healthcare costs. As shown in Graph 4, out-of-pocket healthcare costs, after reimbursement by the NHI, were almost inexistant for most of the users, but extremely high and concentrated for those who paid them. Hence, 58,000 users had out-of-pocket healthcare costs of more than 1,000 euros<sup>2</sup> between 2012 and 2019, which was as high as 5,500 euros on average over the period and more than 7,000 euros for level 1 wheelchair users (see Table 4). These 58,000 users, who account for around 5% of all the users, bore 88% of the total user contributions.

An estimation of the potential expenses covered by the Disability Compensation Benefit (*Prestation de Compensation du Handicap*, PCH) for certain wheelchairs and accessories was conducted on the basis of the hypothesis that all the eligible users went through the procedures to apply for the benefit. The patient contributions would thereby be reduced by 22% (a total of 81 million euros), with a 29% reduction in the contributions for level 1 wheelchair users. For the 58,000 users who had out-of-pocket healthcare costs of over 1,000 euros after being reimbursed by the NHI, but before being refunded by the Disability Compensation Benefit (PCH), their contribution after reimbursement by the NHI would certainly be decreased by the PCH, but would still cost them more than 4,000 euros on average.

\*\*\*

Hence, more than one out of two users who buy a wheelchair is entirely reimbursed by the NHI. In addition to these persons without contributions to pay there are 200,000 to 250,000 persons in care homes who were not identified by the algorithm, due to the fact that the care home entirely covered the cost

<sup>2</sup> 1,000 persons had out-of-pocket healthcare costs higher than 50,000 euros over the period, with a maximum of 125,000 euros.



T4

**The amounts of out-of-pocket payments made by wheelchair users who have more than 1,000 euros of non-reimbursed healthcare costs to pay**

	Number	Average (in euros)	Median
<b>User category</b>			
<b>Total</b>	<b>58,000</b>	<b>5,500</b>	<b>3,050</b>
Level 1 wheelchair	34,500	7,240	4,150
Level 2 wheelchair	16,600	3,130	2,470
rental	6,800	2,860	1,700
No wheelchair purchase	2,990	3,630	2,500

**Scope:** Living persons on 31 December 2019, present in the National Health Data System (SNDS) between 2012 and 2019; wheelchair users (French Social Security, agricultural, and freelance workers) in the whole of France.  
**Source:** National Health Data System (SNDS) 2012-2019. [Download the data](#)

of the wheelchair via the care package. In contrast with other care and healthcare consumptions, it is practically impossible not to meet this requirement and the national healthcare system gives people an opportunity to acquire a wheelchair without having to make a personal contribution. But the results indicate that there is no intermediary situation: either there is no patient contribution or it is a significant one. This observation raises questions about the use of a wheelchair without a user contribution, which does not necessarily meet the needs of the user. For persons who cannot afford to pay several thousand euros, the less expensive alternatives are almost inexistent. For

those who can afford it, complemented by the reimbursements from the NHI, the recent distribution of funding by the Disability Compensation Benefit (PCH) [which has been modified from 3,960 euros every three years to 13,200 every ten years] will help to simultaneously fund a wheelchair and its accessories in a single payment, but with less possibilities for renewal.

An analysis was carried out of the distribution of significant out-of-pocket healthcare costs according to the regional index of social disadvantage. For persons over the age of 60, living in a well-to-do commune increased the proportion of persons with significant



out-of-pocket payments for owners of level 2 wheelchairs. Inversely, the elderly persons in the poorest communes were more often in the category of wheelchair users who did not purchase or rent a wheelchair as part of their healthcare consumption, which points to a loan, gift, or second-hand purchase. For level 1 wheelchairs, the distribution of use, as well as that of out-of-pocket healthcare costs of more than 1,000 euros, was the same whatever the social disadvantage. The Phedre (Disability Compensation Benefit: Long-term Implementation and Out-of-Pocket Payments) survey conducted by the French Directorate for Research, Studies, Assessment and Statistics (DREES) and the Institute for Research and Information in Health Economics (IRDES) — which will soon be available — will enable the study of the composition of the various funders of technical equipment of the beneficiaries of Disability

Compensation Benefit (PCH), by taking into account the beneficiaries' financial resources. This will shed light on the various forms of cover and the patient's total out-of-pocket expenses once the public and private funders have been taken into account.

This study provides an initial quantification of wheelchair users and describes their profiles in terms of gender and age according to the type of wheelchair use. It also estimates the NHI's expenditure in terms of the reimbursements of wheelchairs and accessories, and makes it possible to estimate the users' nonreimbursed healthcare costs, as well as quantify the number of persons with significant out-of-pocket healthcare costs. Indeed, at present, all of the available public aid does not significantly reduce the patient's out-of-pocket expenses when they exist. The large number of users without out-of-pocket expenses (50%) and the low

likelihood of having reasonable out-of-pocket healthcare costs for the persons who do have them, raises questions about the possible "forced" use of wheelchairs without user contributions for a certain number of users. This may concern, in particular, older wheelchair users who have less possibility of complementary funding from public aid and younger users who have non-basic models of manual wheelchairs. When the reform to update the nomenclature of "Vehicles for disabled persons" has been implemented and reimbursements for the long-term rental of non-basic models of wheelchairs have been introduced, it will be interesting to assess the NHI's expenditure and ensure that the patient's out-of-pocket expenses for non-basic models of manual wheelchairs are decreased for the users by enabling them to acquire wheelchairs adapted to their requirements. ♦

## FOR FURTHER INFORMATION

- Bérardier M. (2012). « Vieillir chez soi : usages et besoins des aides techniques et des aménagements du logement ». Drees, Etudes et Résultats, n° 823, décembre.
- Denormandie P., Chevalier C. (2020). « Des aides techniques pour l'autonomie des personnes en situation de handicap ou âgées : une réforme structurelle indispensable. Rapport à la Cour des comptes ». Octobre.
- Duchaine F., Espagnacq M., Regaert C., BenSmail D., Denys P., Levy J. (2022). « Identification des personnes atteintes d'une lésion médullaire dans le Système national des données de santé ». *Revue d'épidémiologie et de santé publique*, (Emois), *Livre des résumés présentés au congrès*, vol. 70, 2022/03 S1
- Espagnacq M. (2012). « Personne ayant des limitations fonctionnelles physiques : panorama des aides et aménagements du logement ». Drees, *Dossier Solidarité Santé*, n° 27.
- Espagnacq M., Penneau A., Regaert C., Sermet C. (2019). « Validation d'un algorithme de repérage des limitations visuelles dans les données du SNDS ». *Revue d'épidémiologie et de santé publique*, II<sup>e</sup> Congrès national Emois, Colloque organisé par l'association Evaluation, management, organisation, santé (Emois), *Livre des résumés présentés au congrès*, vol. 67, suppl. 2, 2019/03, S85.
- Espagnacq M., Pichetti, S. (2020). « Comparaison des méthodes de repérage des personnes reconnues inaptes au travail dans les données du SNDS. » *Revue d'épidémiologie et de santé publique*, (Emois), *Livre des résumés présentés au congrès*, vol. 68, 2020/03 S1
- Mormiche P. (2003). « L'enquête "Handicaps, incapacités, dépendance" : apports et limites ». Drees, *Revue française des affaires sociales*, n° 1-2, p. 11-29.
- Pichetti S., Espagnacq M. (2022). « Profils de consommation de soins et couverture complémentaire des bénéficiaires de l'Allocation aux adultes handicapés (AAH) ». Irdes, *Questions d'économie de la santé*, n° 271. Septembre.
- Verboux D., Thomas M., Colinot N., Espagnacq M., Pichetti S., Chevalier S., Landais C., Fouard A., Gastaldi-Ménager C., Rachas A. (2022). « Allocation aux adultes handicapés : pathologies et recours aux soins des bénéficiaires en 2017 ». *Santé Publique*, vol. 34, n° 3, 345-358.