Functional Motor and Organic Limitations: Significant Disparities Between the French *Départements*

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Functional motor and organic limitations are defined as a restriction in the ability of individuals to perform certain functions such as locomotion, prehension, flexibility, digestion, continence, and so on. The identification of people with severe functional motor or organic limitations presented in this article was conducted using the "Feasibility of the identification of disabled persons" (*Faisabilité d'Identification des Personnes en Situation de Handicap*, FISH) indicator, constructed from data from the National Health Data System (*Système National des Données de Santé*, SNDS). Obtained from an administrative source that already contains data relating to the reimbursement of medical expenses by the French National Health Insurance System (*Assurance maladie*), and which is free from the declarative bias of surveys, this indicator uses data that is available continuously and over a long period, relating to the entire population, regardless of age or place of residence, thus making it possible to increase knowledge of the populations suffering from impaired personal autonomy. This study is also the first to offer a comparison between the French *départements* – covering all age groups and places of residence – of the risk of disability following these types of limitations.

The population with functional motor or organic limitations identified by the indicator was slightly larger than the declarative sources (14% compared with 12%, representing around 10 million people). Although, on the whole, the population suffering from these limitations mainly consisted of elderly women, this indicator also identified a young, predominantly male population that had not been identified in surveys. This indicator also highlighted departmental disparities that increased with age.

In France, several data sources are available or are being developed, on which the public authorities can rely in order to implement policies for people with disabilities or suffering from loss of autonomy (information systems based on administrative recognitions of disability, public statistics surveys, etc.). The creation of an information system based on medical-administrative sources directly related to personal autonomy (the Joint Information System – Departmental Homes for Disabled Persons (*Système d'Information Commun des Maisons Départementales pour les Personnes Handicapées*, SI-MDPH); individual feedback from the Disability Compensation Benefit scheme (*Remontées Individuelles de la Prestation de Compensation du Handicap*, RI-PCH); and individual feedback from the Personal Independence Allowance scheme (*Remontées Individuelles de l'Allocation Personnalisée d'Autonomie*, RI-APA) is underway. For this study we used another source of information – the National Health Data System (*Système National des Données de Santé*, SNDS) –, because it contains data that can be used to create an indicator that identifies persons at risk of disability, based on their healthcare

consumption. The advantage of this indicator – derived from the FISH-RISH (see the Context and Method insets) research project – is that it is not restricted to individuals who take steps to obtain administrative recognition of a disability, which is the case with other administrative sources. The use of medical-administrative data also provided an opportunity to avoid certain biases inherent in declarative surveys, and to have access to data relating to the entire population regardless

of age or place of residence – that is available continuously and over a long period. However, unlike surveys on the subject of personal autonomy, the SNDS provides very little contextual data. The two sources of information are therefore complementary.

In France, the first survey on disabled persons – the "Handicaps, Incapacités, Dépendance" survey – was conducted in 1998 (HID-Mormiche, 2001, 2003; Ravaud, 2002). The second survey on

disability, the "Handicap-Santé" survey (HS-Bouvier 2011 and 2012), was conducted in 2008; the results of the next survey – the "Autonomie" survey – will be available in 2025 (Rey, 2023). These surveys, which are invaluable in terms of the way in which people with disabilities are identified and in terms of the contextual data they provide, are infrequent because of their complexity. These surveys have a weakness: aside from the "Daily Life and Health" (*Vie Quotidienne et Santé*,

METHOD

··· Construction of the algorithm

The aim of this algorithm was to identify persons who had an impairment, regardless of the type of impairment (muscular, impairment of bones, neurological, cardiac, organic, metabolic, etc.), which had a significant impact on their ability to perform motor or organic activities (locomotion, prehension, flexibility, susceptibility to fatigue, digestion, incontinence, etc.), which are often called functional motor limitations in the surveys. To construct an indicator of the risk of disability following functional motor or organic limitations, a cohort of persons alive on 31 December 2019 was established. The cohort's healthcare consumption from 2012 to 2019 was studied in order to identify the procedures characterising a motor or organic impairment that may pose a risk of a serious limitation in performing daily activities (getting dressed, going shopping, going out, eating, etc.). The data from 2012 to 2019 was combined to obtain a binary indicator of the risk of disability following functional motor or organic limitations in 2019 (Espagnacq, 2023).

All the information available in the National Health Data System (SNDS) – the diagnosis codes from the International Classification of Diseases (ICD) connected with the reasons for exoneration from patient's contributions or hospitalisation, surgical procedures, medical devices, drugs, procedures carried out by healthcare professionals, and stays in follow-up and rehabilitation care (FRC) centreswere classified according to three possibilities: the information made it possible to identify whether a person had a "proven" or "potential" functional limitation, or had "no limitation or the data is not informative". A limitation was considered "proven" if it was specific (whatever the stage of the disease) and "chronic" (for example, an amputation, tetraplegia, etc.). If the information provided did not indicate a risk of limitation or did not make it possible to ascertain whether there was a limitation (most of the assessments, for example), the information was coded in the "no limitation" category. A limitation was considered a "potential" limitation if the tracer indicated that there were consequences – uncertain consequences – on an individual's health, a short-term limitation, or that the condition could be cured or treated in the more or less long term. When a limitation was classified as a "potential" limitation, research was conducted using other tracers to determine whether the element could be considered proven or not. If the algorithm identified a limitation after linking the various tracers, an individual was considered as having a "proven' risk of disability. Inversely, if the tracers did not identify at least one instance of a proven functional limitation, an individual was considered as being without a risk of disability. Additional information was added to the ICD codes and the surgical procedures in order to identify procedures that could "remedy" a condition. Correlation tables were created linking the ICD codes and the codes relating to surgical procedures that could "remedy" a condition, and the codes relating to surgical procedures that enabled the remedying. Similarly, certain indications indicated that a "proven" limitation was definitive (such as the acquisition of an electric wheelchair, motor sequelae from multiple sclerosis (MS), an amputation, etc.) or not definitive (for example, a gastrostomy, the use of a urinary catheter, etc.). If a "proven" limitation was not recognised as definitive in a given year, we used the subsequent years to determine whether it was proven or not.

An annual review (2012–2019) of the data was carried out to identify persons at risk of disability; the annual results were then combined in order to identify an individual's health status in 2019. Hence, all the individuals present in the cohort were used in the algorithm: 19% of the individuals did not use healthcare associated with a risk of functional limitations between 2012 and 2019 (Espagnacq, 2023).

The surveys on disability

The public statistical surveys of personal autonomy are conducted in respondents' homes or in care homes: the *Handicaps, Incapacités, Dépendance* (HID, 1998–99) survey, the *Handicap Santé* (HS, 2008–09) survey, the *Capacités Aides et Ressources des Seniors* (CARE, 2015) survey, and the "Autonomie" survey (2022–2023) have all been based on the same principle. The survey conducted in respondents' homes was a filter survey called *Vie Quotidienne et Santé* ("Daily Life and Health", VQS); it was a short survey (around fifteen questions) of a large number of households (more than 200,000) to identify different categories of persons with limitations, based on the use of technical equipment and administrative recognitions of disability. The 2021 VQS survey (results available in June 2023), whose sampling frame was constructed from the Fidéli (*Fichiers Démographiques sur les Logements et les Individus*) database on housing and individuals, is representative on a departmental level, whereas the aforementioned surveys were only representative on a national level.

Since the HS survey, respondents have been asked a series of questions on functional limitations. The questions relating to functional motor or organic limitations are: 1. Can you walk 500 metres? 2. Can you walk up/walk down a staircase to the next floor? 3. Can you raise your arms? 4. Can you take hold of an object? 5. Can you use your hands and fingers? 6. Can you crouch or kneel? 7. Can you carry a 5-kilo bag over a distance of 10 metres? 8. Do you have bladder or bowel incontinence? Depending on the number of issues identified (at least one, two severe limitations or a selection of certain issues, etc.), this series of questions made it possible to create more or less restrictive indicators of functional motor limitations. These questions were used to compare the results obtained with the FISH algorithm and the declarations of the respondents in the 2008 HS survey (all age groups and places of residence in the two sources). The comparison between the FISH algorithm and the data from the HS survey presented in this study was carried out with the broadest indicator of functional motor limitation, based on having reported great difficulty in performing – or a complete inability to perform – at least one of the eight activities (Espagnacq, to be published).

When comparisons are made with the more recent surveys (VQS and EHIS), the numbers of persons identified with limitations were lower in the surveys (3 million in the EHIS survey and 4.4 million in the VQS survey), because their scope was reduced: in the two surveys the scope was solely restricted to persons living at home: persons aged over 15 in the EHIS survey and over five in the VQS survey. In addition, the number of questions available to define persons with functional motor limitations was lower. The European Health Interview Survey (EHIS) contained two questions on functional motor limitations (questions 1 and 2 above) and the 2021 VQS survey contained 3 questions (the ability to walk or walk up a staircase and questions 3 and 5 from the HS survey).

VQS) surveys, conducted in 2014 and 2021, few are representative on a regional or infra-regional level, which restricts the geographical studies in this field. The administrative recognitions of disability via the Departmental Homes for Disabled Persons (MDPH) as well as certain sources of funding (the Disability Compensation Benefit scheme (PCH), the Personal Independence Allowance scheme (*Allocation Personnalisée d'autonomie*, APA), etc.) are managed at departmental level.

After comparing our results with those from the existing surveys, the departmental differences with respect to persons with functional motor and organic limitations are presented.

Around 10 million people with functional motor or organic limitations

The algorithm made it possible to identify 9.8 million persons with a functional motor or organic limitation in 2019, that is 14% of the entire French population (all age groups and places of residence). The average age of this population was 60.2 years. The likelihood of having a functional motor or organic limitation increased significantly with age, increasing from 2% amongst persons under 16 to 36% amongst persons aged 75–84, and more than 50% amongst persons aged over 84 (see Table). The proportion of individuals by age with severe functional motor limitations in the "Daily Life and Health" (VQS) survey was lower (Rey, 2023). This is explained by the different scope (the VQS survey only covers persons living in private
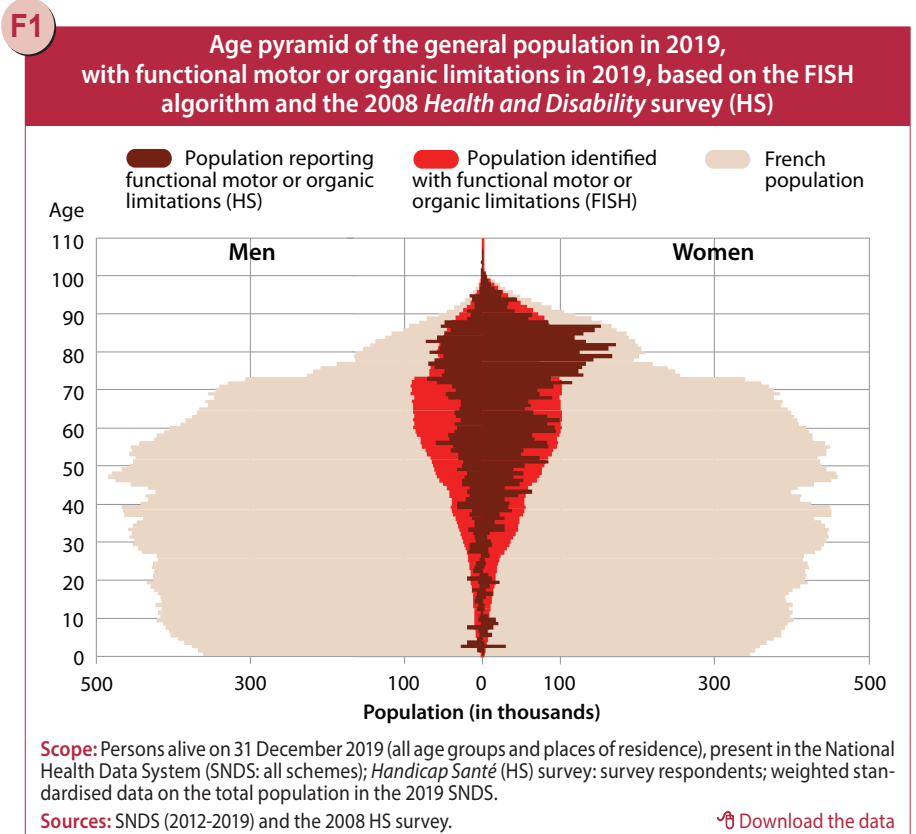
households and aged over five), and, above all, by the indicator available in the "Daily Life and Health" (VQS) survey. Only three questions on functional motor limitations can be taken into account (see the Method Inset), which, in effect, reduces the population affected by functional motor limitations: 4.4 million people based on the VQS survey compared with 7.1 million people based on the 2008 HS survey, which took into account all the questions on functional motor limitations (all age groups and places of residence) [Espagnacq, 2023].

The identification method based on the FISH algorithm is more effective than that used in declarative surveys.

Indeed, in the HS survey (the last available survey with all the questions on functional motor limitations, and which included persons in care homes), which standardised the population distribution in France in 2019, 12% of the French population reported that on at least one occasion they had had great difficulty in performing – or had been unable to perform – one of the eight activities selected. The additional identification performed by the algorithm focused on younger and predominantly male persons (see Figure 1). On the one hand, the algorithm identifying "hypothetical" situations without taking into account an individual's environment (the social and material elements) identified persons who,
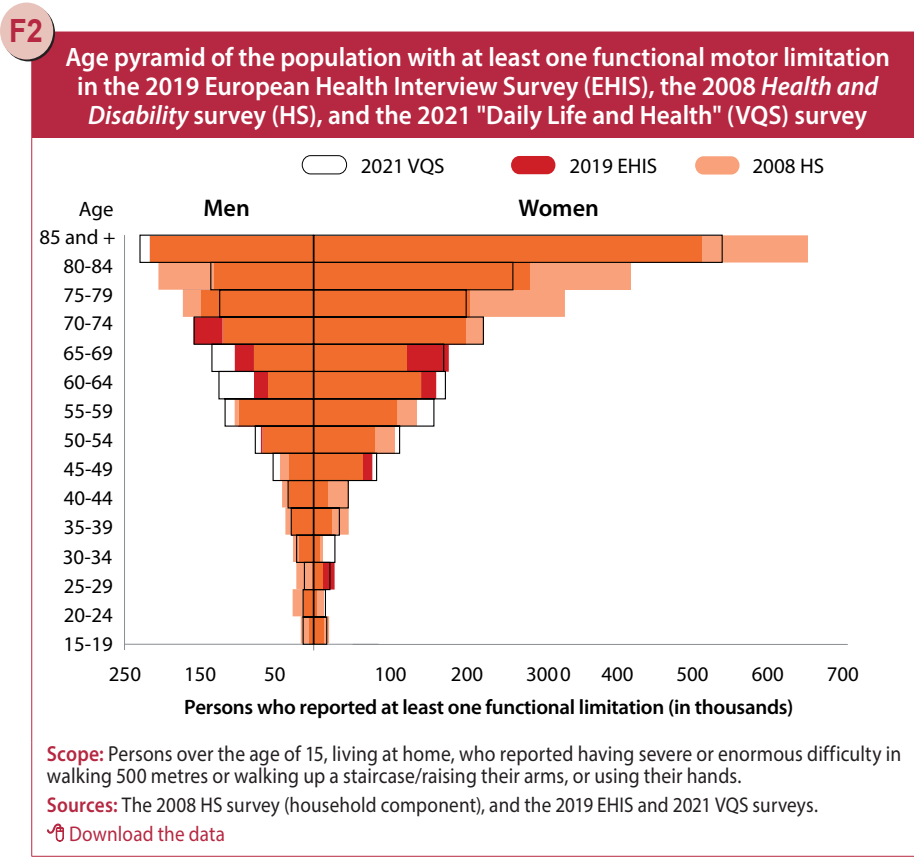
F1

Age pyramid of the general population in 2019, with functional motor or organic limitations in 2019, based on the FISH algorithm and the 2008 *Health and Disability* survey (HS)

Legend:
- Population reporting functional motor or organic limitations (HS)
- Population identified with functional motor or organic limitations (FISH)
- French population

Scope: Persons alive on 31 December 2019 (all age groups and places of residence), present in the National Health Data System (SNDS: all schemes); *Handicap Santé* (HS) survey: survey respondents; weighted standardised data on the total population in the 2019 SNDS.
Sources: SNDS (2012-2019) and the 2008 HS survey.
⇩ Download the data

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Distribution of the persons identified with functional motor or organic limitations according to age and gender

	< 16 years	16-24 years	25-34 years	35-44 years	45-54 years	55-64 years	65-74 years	75-84 years	85-94 years	≥ 95 years	Total
Identified by the algorithm (number in thousands)											
Men	147	138	250	399	633	861	888	589	320	30	4,255
Women	122	149	348	534	788	1,001	988	782	705	119	5,536
Total	**269**	**287**	**598**	**933**	**1,421**	**1,862**	**1,876**	**1,371**	**1,025**	**149**	**9,791**
Proportion of persons with a limitation according to the age	2%	4%	7%	11%	16%	22%	27%	36%	53%	64%	14%
Proportion of women amongst persons with a limitation	45%	52%	58%	57%	55%	54%	53%	57%	69%	80%	57%

Scope: Persons alive on 31 December 2019 (all age groups and places of residence), present in the National Health Data System (SNDS: all schemes).
**Source:** SNDS (2012-2019). ⇩ Download the data

despite having an impairment, did not consider that they had functional limitations because they received assistance or lived in an adapted environment. On the other hand, the choice and number of questions asked had a considerable effect on the estimates in the surveys: depending on the number of limitations chosen, the number of people reporting limitations can double. However, the questions on functional limitations asked in the HS survey did not include all the possible functional motor and organic limitations, in particular susceptibility to fatigue and the consequences of chronic diseases with phases of quiescence, for example. It is therefore possible that the algorithm also identified limitations that were not identified in the surveys, thereby covering a larger number of individuals. However, the very high concentration of elderly women (over the age of 75) reporting functional motor limitations in the HS survey was not found to be as pronounced with the algorithm. This is explained by the fact that, in the 2008 HS survey, the persons in the older generations were born before the Second World War, which exacerbated the gender imbalance. Indeed, these generations were "depleted generations" due to low natality because of the First World War and the higher mortality rate of the male population (two wars in less than thirty years). Furthermore, the very specific living conditions may have had an adverse impact on their state of health, including their long-term health, resulting

F2

Age pyramid of the population with at least one functional motor limitation in the 2019 European Health Interview Survey (EHIS), the 2008 *Health and Disability* survey (HS), and the 2021 "Daily Life and Health" (VQS) survey

Scope: Persons over the age of 15, living at home, who reported having severe or enormous difficulty in walking 500 metres or walking up a staircase/raising their arms, or using their hands.
Sources: The 2008 HS survey (household component), and the 2019 EHIS and 2021 VQS surveys.
⤓ Download the data

in a more deteriorated functional state than that of subsequent generations. Indeed, life expectancy without disability after the age of 65 is increasing (Deroyon, 2023). Based on data from the 2019 European Health Interview Survey (EHIS) and the 2021 Daily Life and Health (VQS) survey, in which there were fewer questions and which (the EHIS survey) did not include persons in care homes or persons aged under 15, and in which the popula-

tions and questions were identical, the over-representation of elderly women with functional motor limitations was much less pronounced (Figure 2). The smaller proportion of elderly women in 2019 and in 2021 seems to confirm the hypothesis of a generational effect in 2008 and explains why less elderly women were identified by the 2019 algorithm.

Women – particularly elderly women – are more likely to suffer from functional motor and organic limitations

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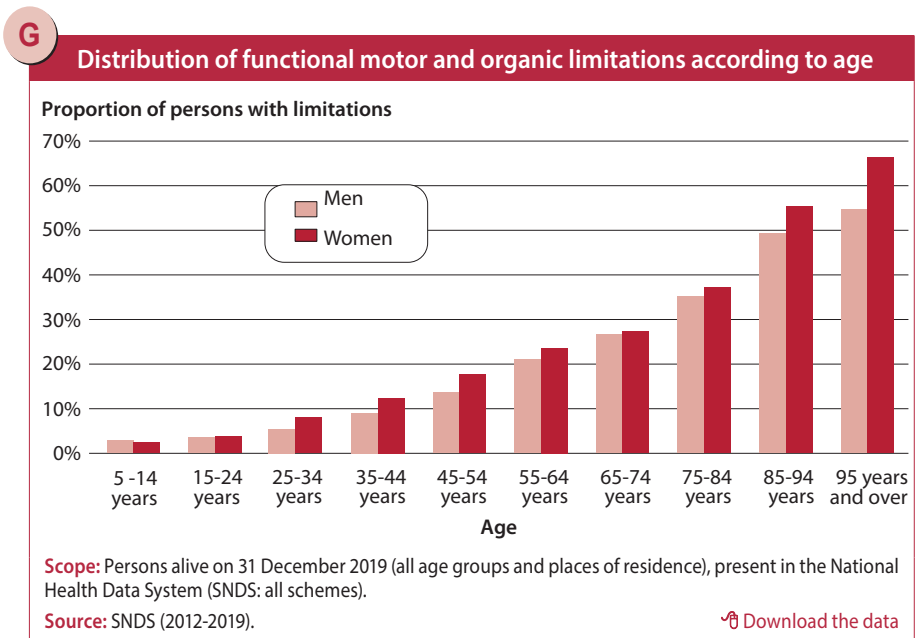
Up to the age of 25, the proportion of persons with functional motor or organic limitations was very low and the differences between men and women were insignificant. Between the ages of 25 and 60, the proportion of women with functional motor or organic limitations was higher (maximum difference of 4 points) than that of men in the same age group, a difference that decreased between the ages of 65 and 75 and increased after the age of 75: a difference of more than 10 points (see Graph). In addition, although more males than females are born in France, the excess male mortality at each age means that the proportion

G

Distribution of functional motor and organic limitations according to age

Scope: Persons alive on 31 December 2019 (all age groups and places of residence), present in the National Health Data System (SNDS: all schemes).
Source: SNDS (2012-2019).
⤓ Download the data

of women becomes greater than that of men at the age of 25 and the difference continues to increase, increasing from a proportion of 48% at birth to 60% over the age of 75. Because functional limitations tend to emerge with age, particularly in old age, an age group in which the proportion of women is higher, their representation in the population with functional motor or organic limitations is accentuated: 57% of the entire population with functional motor or organic limitations were women.

The higher proportion of women suffering from functional limitations, in particular functional motor limitations, is also reported in the literature (Ravaud, 2003; Cambois, 2003; Rey, 2023). However, the difference is less significant with the FISH indicator than when declaration data is used: 57% of the persons suffering from functional motor limitations were women according to the results of the algorithm compared with more than 65% in the HS and EHIS surveys (Espagnacq, 2023), and 62% in the VQS survey. There are a number of reasons for this difference. Using declaration data can accentuate the gender gaps. Suffering from equivalent limitations, men reported less discomfort

because they experienced less pain than woman or because they did not wish to mention it (Cambois, 2003; Ravaud, 2003), hence the lower proportion of men in the declaration data. It is also possible that men received better compensation for their observed impairment than women, and that, ultimately, with equivalent impairment, they actually suffered from less residual discomfort. The latter explanation was already advanced in 2003 by E. Cambois and J.-F. Ravaud, who found that there was a more frequent and earlier use of technical aids, home adaptations, and rehabilitation amongst men.

A higher prevalence of functional motor and organic limitations in the Nord and East *départements*, and Corsica

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The data from the National Health Data System (SNDS) had sufficient statistical power to study the risks of functional motor and organic limitations per *département* and per age group. Since the distribution by age

differed from one *département* to another, the rates of functional motor and organic limitations were standardised according to the national distribution by age to control structure effects. The results highlight significant infra-regional disparities, which further justifies a departmental approach made possible by administrative data. The north of France (the Nord, Pas-de-Calais, and Somme *départements*), part of the east (the Ardennes, Meuse, and Haute-Marne *départements*), Corsica, and the lower part of the Rhône corridor (the Haute-Loire and Bouches-du-Rhône *départements*), as well as the Tarn and Tarn-et-Garonne *départements* had larger populations with functional motor or organic limitations than the other *départements*, with standardised rates well above 16% (see Map 1). Inversely, Paris and the *départements* in the west and the Ile-de-France region (the Yvelines and Hauts-de-Seine *départements*) had the lowest rates, lower than 11.5%. In the overseas *départements*, Martinique had the lowest rate and Guadeloupe the highest.
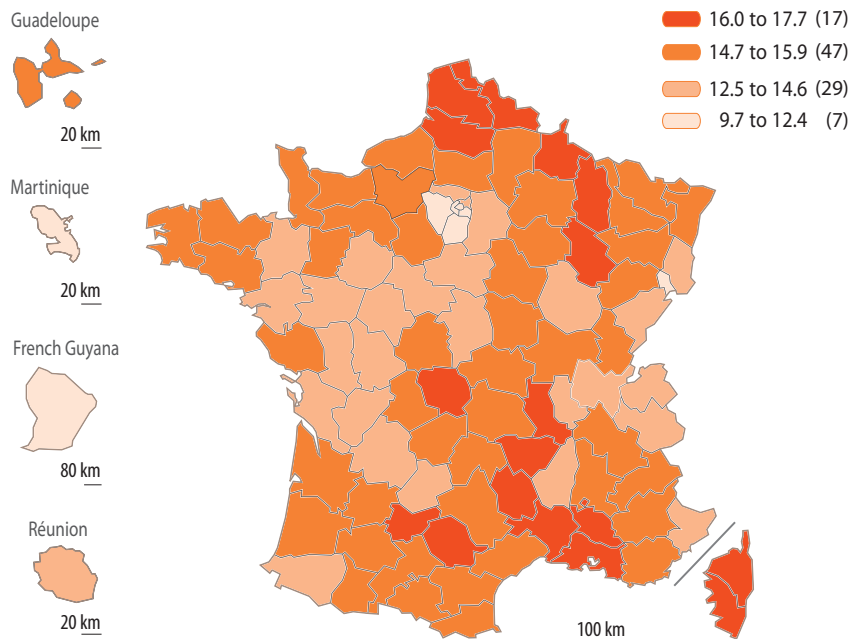
*C*ONTEXT

Since 2016, the Institute for Research and Information in Health Economics (IRDES) has developed four algorithms to identify – based on data from the National Health Data System (SNDS) –persons at risk of disability: the first identifies motor and organic impairments, the second mental, intellectual, and cognitive disorders, the third visual impairments, and the fourth detects hearing impairments. The project "Feasibility of the identification of disabled persons" (FISH) aims to test the feasibility of identifying persons at risk of disability, based on their healthcare consumption. The feasibility stage for motor and organic impairments has been completed. The algorithm and a complement algorithm will be made available by experts as part of the project to identify disabled persons (*Réalisation d'Identification des Personnes en Situation de Handicap*, RISH), with the support of the Health Data Hub (HDH). An initial study on the identification of people in wheelchairs has been published (Espagnacq, 2022) and a comprehensive report presenting the method used is available (Espagnacq, 2023).

a   https://www.irdes.fr/recherche/enquetes/rish-realisation-d-identification-des-personnes-en-situation-de-handicap/actualites.html

M1

Standardised rates of functional motor and organic limitations by *département*

Guadeloupe

20 km

Martinique

20 km

French Guyana

80 km

Réunion

20 km

- ■ 16.0 to 17.7 (17)
- ■ 14.7 to 15.9 (47)
- ■ 12.5 to 14.6 (29)
- ■ 9.7 to 12.4 (7)

100 km

Classes: The natural thresholds method (Jenks's algorithm) made it possible to create homogeneous classes. In fact, this algorithm aimed to find the desired number of classes by minimising intra-class variance and maximising inter-class variance.

Scope: Persons alive on 31 December 2019 (all age groups and places of residence), present in the National Health Data System (SNDS: all schemes).

Source: SNDS (2012-2019).

⍗ Download the data

Functional motor and organic limitations that increase with age: regional disparities
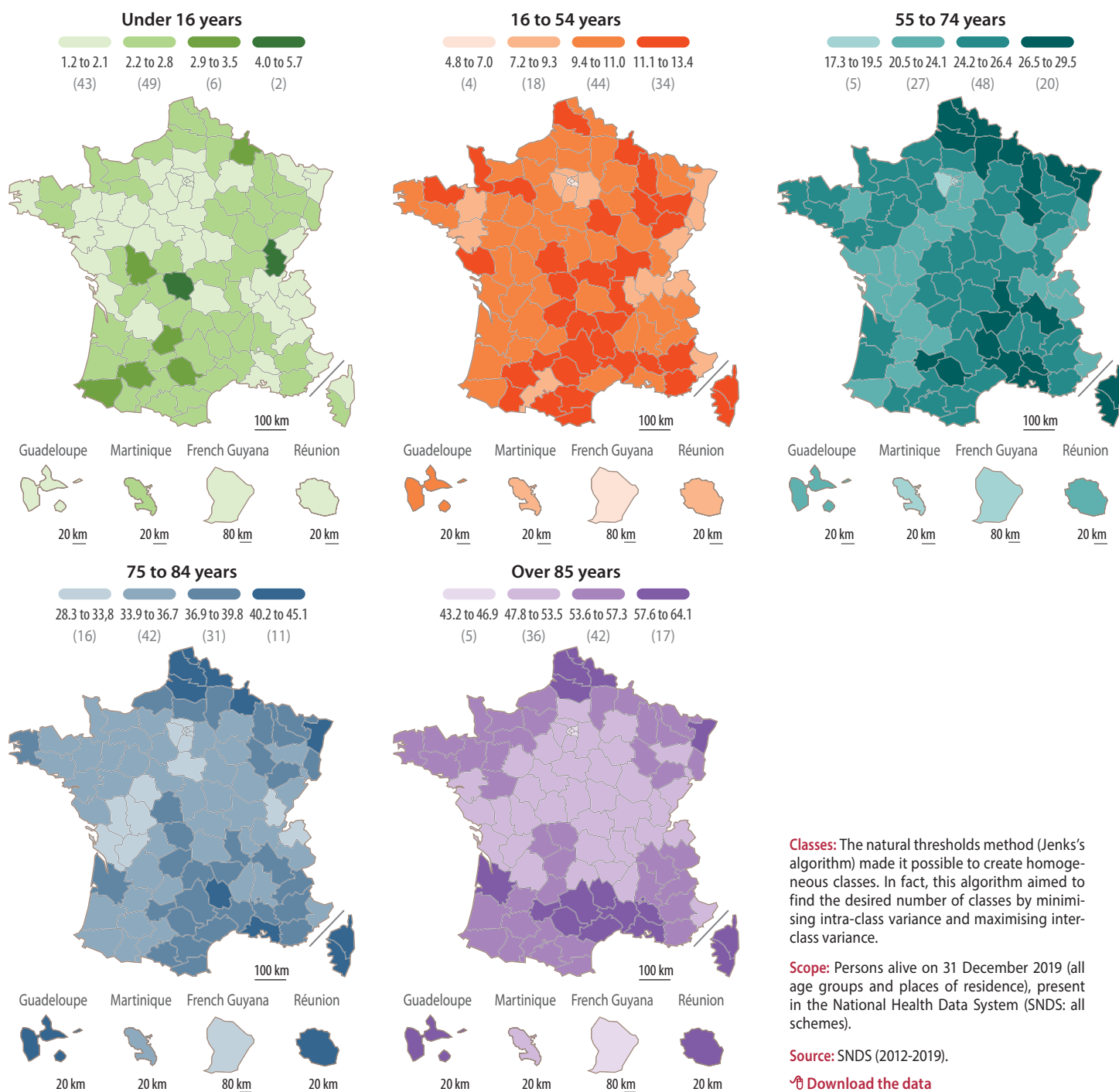
The incidence of functional motor and organic limitations was very low before the age of 16 and the departmental differences were not significant: more than 90 *départements* had a rate between 1.6 and 2.6%. Only the Creuse *département* had a higher rate (5.7%), but there is a significant presence of institutions for persons with disabilities in this *département* (the level of existing facilities in institutions for people under the age of 20 is double the natural average). The higher rate of limitations may be due to the fact that children from other *départements* are treated in this type of institution. Five other *départements* had rates higher than 3%: the Jura, the Ardennes, the Lot, the Tarn, and the Pyrénées-Atlantiques (see Map 2). The proportion of persons with functional motor or organic limitations at an earlier age (between the ages of 16 and 54) increased. The rate varied between 4.8% and 13.4%, but the vast majority

M2

Rates of functional motor and organic limitations according to age

Under 16 years

1.2 to 2.1	2.2 to 2.8	2.9 to 3.5	4.0 to 5.7
(43)	(49)	(6)	(2)

Guadeloupe — 20 km
Martinique — 20 km
French Guyana — 80 km
Réunion — 20 km
100 km

16 to 54 years

4.8 to 7.0	7.2 to 9.3	9.4 to 11.0	11.1 to 13.4
(4)	(18)	(44)	(34)

Guadeloupe — 20 km
Martinique — 20 km
French Guyana — 80 km
Réunion — 20 km
100 km

55 to 74 years

17.3 to 19.5	20.5 to 24.1	24.2 to 26.4	26.5 to 29.5
(5)	(27)	(48)	(20)

Guadeloupe — 20 km
Martinique — 20 km
French Guyana — 80 km
Réunion — 20 km
100 km

75 to 84 years

28.3 to 33,8	33.9 to 36.7	36.9 to 39.8	40.2 to 45.1
(16)	(42)	(31)	(11)

Guadeloupe — 20 km
Martinique — 20 km
French Guyana — 80 km
Réunion — 20 km
100 km

Over 85 years

43.2 to 46.9	47.8 to 53.5	53.6 to 57.3	57.6 to 64.1
(5)	(36)	(42)	(17)

Guadeloupe — 20 km
Martinique — 20 km
French Guyana — 80 km
Réunion — 20 km
100 km

Classes: The natural thresholds method (Jenks's algorithm) made it possible to create homogeneous classes. In fact, this algorithm aimed to find the desired number of classes by minimising intra-class variance and maximising inter-class variance.

Scope: Persons alive on 31 December 2019 (all age groups and places of residence), present in the National Health Data System (SNDS: all schemes).

Source: SNDS (2012-2019).

⬇ **Download the data**

of the *départements* had similar rates, between 0.5% and 11.5%. Paris and the west of the Parisian region were the *départements* with the lowest rates. Inversely, the Haute-Loire, Ardennes, Haute-Marne, and Tarn-et-Garonne *départements*, and Corsica were distinguished by having the highest rates, higher than 12.5%. The rates of functional motor and organic limitations increased significantly after the age of 55 in all the *départements* (between 17.3% and 20.5% for persons aged 55–74). The north of France (the Nord, Pas-de-Calais, Somme, Ardennes, and Meuse *départements*) and Corsica had the highest rates, higher than 28%. Paris and the west of the Parisian region had consistently low rates. The situations were similar over the age of 75: in the *départements* with the highest rates, the rates were higher than 40% for persons aged 75–84 in the north (the Nord *département*: 44.6%, the Somme *département*: 41.2%, and the Pas-de-Calais *département*: 43.4%), in Corsica (41%), and in the Bouches-du-Rhône *département* (41.8%), whereas they were 28.3% in Paris and 28.9% in the Hauts-de-Seine *département*. The research conducted by the French Directorate for Research, Studies, Assessment and Statistics (*Direction de la Recherche, des Études, de l'Évaluation et des Statistiques*, DREES), based on the 2014 VQS survey of persons over 60 (Brunel, 2019), presented a statistical map of people aged over 75 who were living at home and reported functional motor limitations (based on answers to 3 questions in the VQS survey: see Method Inset). The most contrasting situations were identical: there were high rates in the north and east of France, and low rates in Paris and in the Hauts-de-Seine, Alpes-Maritimes, and Haute-Savoie *départements*. However, the results were less similar, though not contrasting, in the centre of France and in the Mediterranean region: based on the FISH algorithm, the rates were not as low in the south of France and not as high in the centre.

The changes in the proportion of persons with age-related functional motor or organic limitations distinguished certain *départements* with high rates – from young people to people aged up to 75 –, in particular in the Haute-Loire and Ardennes *départements*. In other *départements*, the rates were not

particularly high in young people, but increased significantly from the age of 55, as in the case of the *départements* in the north (the Nord and Pas-de-Calais *départements*) and south Corsica. The increase in functional motor and organic limitations concomitant with aging may result from a premature job-induced deterioration in physical health (Cambois 2008, 2009), behaviours that represent a health risk (smoking, alcohol consumption, obesity, etc.), difficult living conditions, or difficulties in gaining access to preventive care, which cause faster deterioration of health and combine with other difficulties in certain *départements* (Bagein, 2022). In the south of France and the Bas-Rhin *département*, the high rates of functional motor limitations tended to be in older people (over the age of 75) and were particularly high in the Bouches-du-Rhône *département*. Inversely, the most affluent *départements* (Paris, Hauts-de-Seine, Alpes-Maritimes, and Haute-Savoie) remained, regardless of age, those with the lowest rates of limitations.

An identification by the algorithm conditional on effective access to healthcare when needed

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The FISH algorithm classified all the tracers available in the National Health Data System (SNDS) according to the risk of functional motor limitations (a "proven", "potential", or "no" risk), but a significant proportion of the elements present in the SNDS did not indicate any functional motor or organic limitations. Hence, 19% of the persons were individuals with no healthcare consumption that indicated a proven or potential risk of functional motor or organic limitations (Espagnacq, 2023). There were large variations according to age: 37% amongst persons aged under 16, 15% amongst those aged 35–54, and 3% amongst persons aged 85-95. This result is quite logical, as younger people had little risk of suffering from such disorders and therefore a lower risk of healthcare consumption associated with them. In addition to this "expected" situation there may be two elements. An absence of healthcare consumption that indicated the presence of (potential or proven) functional limitations may

be due to a good state of health that reduced the risk of having limitations. Inversely, it could also imply that certain individuals lacked access to health services and, although they had problems, did not use the healthcare they needed and were therefore not identified by the algorithm.

The *départements* in the north and east of France had high rates of proven functional motor or organic limitations (standardised rates higher than 16%, compared with 14% on average). These *départements* were also those in which the proportion of persons without healthcare consumption associated with a risk of functional limitations was low. The Ardennes, Haute-Marne, Pas-de-Calais, and Somme *départements* had standardised rates of persons without healthcare consumption associated with a risk of functional motor or organic limitations that were lower than 19% (compared with an average standardised rate of 25%). This suggests that in these *départements*, when people had disabling conditions, they did actually consult a physician and that, in addition, more people were suffering from such difficulties. However, the situation was quite different in the Ile-de-France region. The *départements* in the Parisian region had the highest standardised rates of people without healthcare consumption associated with functional motor or organic limitations (higher than 28% compared with 25%). Up to the age of 65, all the *départements* in the Ile-de-France region had populations with decreased risk of healthcare consumption associated with functional motor or organic limitations. The percentage of persons without such healthcare consumption was higher than average, but similar in these *départements*. After the age of 65, the rates in the Essonne, Yvelines, Val-d'Oise, Hauts-de-Seine, and Val-de-Marne *départements* were close to the national average, whereas Paris and Seine-Saint-Denis still had the highest rates of persons without healthcare consumption associated with functional motor or organic limitations in each age group. The two *départements* continued to stand out with a higher proportion of people without such healthcare consumption (10% compared with 6% in the 65–74 age group, 8% compared with 3% in the 75–94 age group, and 23% of people aged over

95, compared with the national average of 9%). This phenomenon could be the result of two antithetical situations. Paris and the *départements* in the west of the Ile-de-France region have an affluent population that is in better health and therefore less exposed to the risk of having such limitations. The proportion of people with limitations was thus lower. The same phenomenon existed in the Alpes-Maritimes and Haute-Savoie *départements*, which had low rates of functional motor or organic limitations with, in addition, a significant proportion of people who were not receiving healthcare associated with this type of condition. Inversely, the inhabitants of Seine-Saint-Denis and, to a lesser extent, the other *départements* in the east and north of the Ile-de-France region had rates of people with functional motor or organic limitations that were above average, and a larger proportion of people who do not use this type of healthcare. This could be explained by the fact that the populations lacked access to health services and, generally speaking, consumed less healthcare, including healthcare associated with motor and organic problems, and were therefore less well identified by the algorithm. Hence, the situation in Seine-Saint-Denis, where the standardised rate of persons with functional motor or organic limitations was higher than average (12.5%), may be underestimated owing to the absence of identification of populations who do not consult a physician when they had health problems.

Contrasting situations in the overseas *départements*

Apart from Mayotte, which was not studied in this research (the number of people in the SNDS database, relating to this *département*, was two times lower than the real population), the SNDS data is one of the few sources in the field of personal autonomy – that makes it possible to specifically study each overseas *département*. The situation in French Guiana was unique, with a low rate of functional motor and organic limitations (an age-standardised rate of 10.3%). But a higher proportion of the population in this *département* did not consume healthcare associated with functional motor

or organic limitations. Indeed, though the average standardised rate of people who did not use healthcare associated with a potential or proven risk was 25%, it was 41% in Guiana. As in the case of Seine-Saint-Denis, this situation may not reflect a better functional situation of the inhabitants, but would instead imply that there was limited access to healthcare services, undoubtedly due to a less significant healthcare provision. Guadeloupe had the highest standardised rate (15.1%) and the rate was above the average rate in mainland France, whereas the rates in the other overseas *départements* were below the average rate: 13.6% in Réunion and 12% in Martinique (see Map 1). As in the other French *départements*, differences emerged with age (see Map 2). The differences were small in young people, and then increased with age from the age of 16. The highest rates were in Guadeloupe and the gap between Guadeloupe and Martinique is widening; of the four *départements*, Guadeloupe had the highest rate of functional motor and organic limitations. Inversely, the situation in Martinique, which had the highest rate in persons up to the age of 16 and the second highest rate in persons aged 16–54, stabilised in the other age groups, and, hence, the *département* had rather low rates in the other age groups. The situation in Réunion was an intermediate one: the *département* had low rates of functional motor and organic limitations up to the age of 65, which then increased to a level just below those of Guadeloupe, that is the group of *départements* whose rates were higher than the average rate. The contrasting situation between the overseas *départements* would undoubtedly require further investigation to understand the causes, and, in particular, to understand the differences with the declarations of limitations in the VQS survey, which did not reveal any significant difference between Guadeloupe and Martinique.

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This study is the first in France to offer a comparison between the *départements* – covering all age groups and places of residence –, of the risk of disability following functional motor or organic limitations.

The results show that using healthcare consumption to identify persons with functional motor or organic limitations encompasses a slightly larger population (14% compared with 12%), and, above all, a younger, more male population than that derived from estimates based on declarative surveys. The results also highlighted significant infra-regional disparities, which made the departmental approach, made possible by administrative data, even more useful. The research conducted by the French Directorate for Research, Studies, Assessment and Statistics, based on the VQS survey (Rey, 2023), indicated a slight decrease in self-perceived disability between the ages of 60 and 70, explained by a contextual phenomenon: since the transition to retirement enabled individuals to have more time to pursue their daily activities, they reported less self-perceived discomfort. The risk of disability increased continuously with age, as the self-perceived and environmental elements were not taken into account. The absence of declarative bias would make it possible to identify a population less well identified in the declarative surveys. It is also possible that the population better identified by the algorithm may be difficult to identify in the surveys in which a functional difficulty encountered is not detected by one of the eight questions on functional limitations (susceptibility to fatigue, periodic difficulties, etc.). Inversely, the use of the SNDS database to construct an indicator of functional motor or organic limitations did not make it possible, unlike the surveys, to identify persons who lacked access to health services. The data from the forthcoming "Autonomie" survey, cross-referenced with SNDS data, will make it possible to draw further comparisons. ◆

*F*OR FUTHER INFORMATIONS

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