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## Use of Outpatient Care and Distances Travelled by Patients: Significant Differences in Regional Access to Healthcare

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In France, the provision of medical care is on a par with the OECD (Organisation for Economic Cooperation and Development) countries' average, but it is unequally distributed across the territory. Doctors are mainly concentrated in urban areas, metropolises, and coastal regions. Inequalities in the provision of outpatient care are very pronounced when measured by the Local Potential Accessibility indicator (indicateur d'Accessibilité Potentielle Localisée, or APL), which assesses the adequacy between care provision and demand, at the municipal level.

Based on the 2010 Health, Health Care and Insurance Survey (Enquête Santé et Protection Sociale, or ESPS), conducted by the French Institute for Research and Information in Health Economics (Irdes), and matched with the administrative healthcare consumption data, this study highlights differences in outpatient care use, in terms of rates of utilisation, access to the closest doctor, and additional distances travelled by patients. The analysis takes into account patients' individual characteristics and three indicators related to territorial access to healthcare.

The results show that reduced outpatient care availability leads patients to make more frequent journeys, that is to say to use the closest form of healthcare less often. However, they are less prone to travel additional distances further than the closest doctors when they are located far from their places of residence, which limits their freedom of choice.

In France, the density of doctors is on a par with the OECD countries' average (3.3 doctors per 1,000 inhabitants, including general practitioners and specialists, versus 3.2), but healthcare provision is unequally distributed across the territory. Medical practitioners are mainly found in urban areas, metropolises, and coastal regions. Imbalances also exist among regions and départements as well as at the intra-

département level, between urban and rural areas, within cities, and between affluent and deprived districts.

The density of healthcare provision at département level varies greatly, with rates of 1 to 2 in the case of self-employed General Practitioners (GP), and from 1 to 7 in the case of self-employed specialists. Healthcare provision inequalities are even more pronounced when assessed by the

Local Potential Accessibility (APL) indicator, which measures adequacy between supply and demand at municipal level by taking into account population ages and healthcare needs (Barlet et al., 2012a; Lucas-Gabrielli and Nestrigue, 2016). Moreover, while almost all the population lives close to a general practitioner, this is not the case where specialists are concerned, even though proximity is an important factor that patients look for

## METHOD

Three indicators are used to assess territorial healthcare accessibility and to study its related differences in outpatient healthcare utilisation and patients' travel distances:

- **Access time by road, in minutes**, between the patient's place of residence and the municipality of the closest doctor: this distance shows the required minimal time to access healthcare. It stands at 0 minute when the closest doctor is in the patient's municipality.
- **The Local Potential Accessibility indicator (APL)** measures the healthcare provision at the municipal level. It is to be read as a rate of density by comparing the number of doctors, in full-time equivalent, with the population (per 100,000 inhabitants). On the provision side, this indicator takes into account doctors' levels of activity in the municipality of residence or in neighbouring municipalities; on the demand side, it takes into account the population's structure by age in doctors' practice radiuses (for more details, see Barlet et al., 2012a).

In this research, the APL is studied according to four levels: the first concerns municipalities where the APL is the lowest (lower or equal to half the national average); the second level comprises low APL municipalities (between half the national average and the national average, included); the third concerns high APL municipalities (higher than the national average but lower than or equal to twice the average rate); and the fourth concerns municipalities where APL is the highest (more than twice the national average).

- **Urban area zoning (Zonage en Aires Urbaines, or ZAU)**, as defined by the French National Institute of Statistics and Economic Studies (Institut National de la Statistique et des Études Économiques, or INSEE), describes the territory according to the degree of cities' influence. It is based on occupations and commuting between work and the home and divides the territory into broad types of areas. Six types of municipalities based on urban units and ZAU are used for the study: large urban centres, urban suburban municipalities of large urban centres, rural suburban municipalities of large urban centres, average or small urban centres, suburban municipalities of average or small urban centres, and isolated municipalities located outside the sphere of influence of a centre.

**These three indicators** assess territorial healthcare accessibility in another way, as well. The APL makes it possible to measure healthcare availability. The type of municipalities makes it possible to take into account the specificities of healthcare provision in each area (such as healthcare provision in rural areas, which may include high distances to access to the second closest doctor). Distance to the closest doctor measures provision proximity. The correlation between these different indicators varies between 0.16 and 0.58. For example, there can be doctors with a heavy workload (i.e. low availability) in a municipality, which is located close to a large centre with good healthcare provision.

**An 'all things being equal' analysis** was conducted to study the specific effects of these indicators and remove potential confusion biases linked to individual characteristics in healthcare utilisation and patients' mobility (such as age, health status, etc.). A three-step model was developed. The first step models the probability of using care at least once in 2010. The second step models, for those who have used care, the probability of having visited the closest doctor, whether the doctor's clinic is or is not located in the same municipality of the patients' home. The third step models, among those who did not visit the closest doctor, additional distances travelled on top of the minimal distances required to visit the closest doctor. These three steps consider each of the healthcare utilisation dimensions by taking into account the large number of visits to the closest doctor.

**Three models were devised**: the first concerns general medicine; the second concerns dental surgery, and the third concerns care by specialists, which is considered for each specialty according to its own APL level and access time to the closest suitable specialist.

The individual explanatory variables introduced into the models are age, gender, social and occupational group, income per consumption unit, employment status, perceived health status, functional limitations, and, for general medicine, the fact of visiting a GP. Variables characterising territorial healthcare provision correspond to the three indicators defined above.

We assume that residuals are independent of explanatory variables and normally distributed. For each step, clusters were introduced to allow a correlation between residuals of the same patient. The first two steps are estimated by probit models, and the third is estimated by a linear model.

when choosing a doctor (Victoor et al., 2012). For example, if we look at specialists who are accessible without a prescription from a GP, 23% of the population lives more than fifteen minutes away (by car) from an ophthalmologist and 27% from a gynaecologist-obstetrician (Barlet et al., 2012b). In view of recent demographic projections (Barlet et al., 2016), this situation is likely to remain the same or even deteriorate, as doctors' numbers are expected to decrease slightly by 2021, while the population's healthcare needs continue to rise.

The unequal territorial distribution of healthcare provision may create barriers to healthcare for patients who live far away from doctors and for the least mobile. This is a scarcely investigated topic in France, particularly with regard to healthcare provision at the local level. The initial research assessed healthcare accessibility by focusing on indicators computed at département and employment areas' levels (Chaix et al., 2005a; 2005b). A more recent publication studied the rates at which patients consulted the closest doctor according to the APL level, but did not address the population who did not seek care (Barlet et al., 2012b).

Here, we study the use (or non-use) of ambulatory care via office visits (home visits, chiefly performed by GPs, are not considered<sup>1</sup>) as well as the distances patients have to travel for care. Three indicators are used to assess territorial healthcare accessibility (see 'Methods' inset). The first one, the Local Potential Accessibility indicator (indicateur d'Accessibilité Potentielle Localisée, or APL), makes it possible to assess the availability of healthcare provision at the municipal level by comparing the existing healthcare provision of the municipality and the surrounding municipalities with the healthcare needs of the population, measured by its number of inhabitants and its age structure. For example, a municipality without any GP may have a high APL if the surrounding municipalities are adequately equipped, whereas a municipality

<sup>1</sup> Office visits account for nearly 90% of contacts with GPs and almost all contacts with specialists.



This project is part of geographical research conducted by IRDES on potential and realised access to healthcare. The year studied (2010) stands in a pivotal period characterised by an increase in medical care needs, linked to the ageing of the population, and a significant decrease in the number of practitioners in some areas. For this study, IRDES received funding from the French Directorate for of Research, Studies, and Statistics (Direction de la Recherche, des Études, de l'Évaluation et des Statistiques, or DREES) at the Ministry of Social Affairs and Health (Ministère des Affaires Sociales et de la Santé).

where a GP is practising may have a low APL if the presence of this doctor is insufficient to meet the needs of the population. The second indicator measures the proximity to healthcare provision through the time of access to the health professional of the nearest consulted specialty. The third concerns zoning in urban areas (large centres, at the periphery of large centres, isolated municipalities, etc.). In particular, it enables us to understand the specific nature of the available healthcare in these different types of area, such as

healthcare provision in rural areas, which may include high distances to access to the second closest doctor.

This study is based on the 2010 Health, Health Care and Insurance Survey (Enquête Santé et Protection Sociale, or ESPS) matched with administrative data from the National Health Insurance (see 'Source' inset on p. 6). Differences in access to healthcare and in distances travelled according to territorial access to healthcare provision are first analysed using descriptive statistics. Then an 'all things being equal' analysis is realised ('Method' inset) in order to isolate potential confounding biases related to the patients' individual characteristics (such as age, health status, etc.) in terms of healthcare use and mobility.

### The rate of GP utilisation is higher in areas where the APL is the highest

The probability of visiting a GP at least once a year is linked to healthcare availability, as measured by the APL indicator. Indeed, while on average 81% of individuals in the sample visited a GP at least once in 2010 (see Table 1), this proportion reached 83% for inhabitants

in the municipalities where the APL is the highest (level 4, the APL is two times higher than the national average). Comparatively, this proportion was 79% for inhabitants living in a municipality where the APL is the lowest (level 1, the APL is half the national average).

However, the 'all things being equal' analysis as presented in Table 2, which measures the specific effects of each indicator of territorial healthcare accessibility on the probability of visiting a GP, taking into account patients' individual characteristics, shows a rather mixed picture. It shows that there is little difference in the rate of GP utilisation between inhabitants in municipality where GP availability is low (APL level 1) and inhabitants in a municipality where GP availability is at an intermediate level (APL levels 2 and 3). However, the rate of GP utilisation is significantly higher in areas with better healthcare facilities: 2.4–3.4 points higher in comparison with other zones.

Thus, high GP availability (an APL two times higher than the national average, which concerns 9% of the sample) enables more often people to visit their GP at least once a year.

T1

### Rate of healthcare use (at least once) in 2010 by specialty, according to the indicators of territorial care accessibility and types of space

|  | General medicine | Dental surgery | Cardiology | Dermatology | Ophthalmology | Gynecology-obstetrics | ENT        | Psychiatry |
|--|------------------|----------------|------------|-------------|---------------|-----------------------|------------|------------|
| <b>Minimal distance between the closest health professional and the patient's place of residence</b> |                  |                |            |             |               |                       |            |            |
| Municipality with healthcare facilities  | 80.5             | 39.8           | 9.3        | 12.2        | 27.1          | 16.4                  | 8.3        | 3.1        |
| Between 1 and 15 minutes from the Municipality   | 80.6             | 38.1           | 9.2        | 11.2        | 27.5          | 16.2                  | 6.7        | 2.2        |
| Between 16 and 30 minutes from the Municipality  | /                | 30.9           | 8.8        | 8.4         | 24.4          | 14.0                  | 5.9        | 2.1        |
| More than 30 minutes from the Municipality   | /                | /              | 8.8        | 7.3         | 22.4          | 10.1                  | 4.7        | 0.4        |
| <b>Urban area zoning</b>   |                  |                |            |             |               |                       |            |            |
| Municipality of a large urban centre (UC)  | 80.0             | 39.8           | 9.4        | 12.3        | 27.6          | 16.5                  | 7.7        | 2.8        |
| Urban suburban municipality of a large UC  | 80.5             | 42.2           | 9.4        | 10.3        | 26.9          | 16.2                  | 6.1        | 2.4        |
| Rural suburban municipality of a large UC  | 81.1             | 38.5           | 8.3        | 9.1         | 26.4          | 14.6                  | 5.8        | 2.0        |
| Municipality of a small/average UC   | 81.9             | 38.3           | 8.5        | 8.3         | 24.7          | 15.7                  | 7.5        | 1.8        |
| Suburban municipality of a small or average UC   | 82.3             | 38.4           | 9.0        | 7.3         | 22.0          | 12.5                  | 4.7        | 1.5        |
| Isolated municipalities outside the influence of an UC   | 78.5             | 33.0           | 9.2        | 7.2         | 23.7          | 9.9                   | 5.1        | 1.3        |
| <b>Potential localised accessibility (APL)</b>   |                  |                |            |             |               |                       |            |            |
| Level 1 (the lowest)   | 79.1             | 39.9           | 9.8        | 9.1         | 25.7          | 14.1                  | 6.1        | 1.8        |
| Level 2  | 80.6             | 36.6           | 7.6        | 7.6         | 24.7          | 13.3                  | 5.9        | 2.0        |
| Level 3  | 80.3             | 39.0           | 8.9        | 9.6         | 26.3          | 15.6                  | 6.9        | 1.9        |
| Level 4 (the highest)  | 82.7             | 40.1           | 9.8        | 13.6        | 27.9          | 16.7                  | 7.6        | 3.1        |
| <b>Total</b>   | <b>80.5</b>      | <b>39.3</b>    | <b>9.1</b> | <b>10.6</b> | <b>26.4</b>   | <b>15.4</b>           | <b>6.8</b> | <b>2.4</b> |

**Reading:** 79.1% of people in Municipalities where general medicine APL is very low (level 1, less than half of the national average) consulted at least one general practitioner in 2010. This rate rises to 82.7% for the residents of Municipalities where general medicine APL is very high (level 4, more than twice as high as the national average).

**Source:** ESPS 2010, IRDES – SNIIRAM, CNAMTS.

[Download the data](#)

T2

**Model of the likelihood of using ambulatory healthcare in 2010  
when visiting the closest health professional and additional distance travelled beyond**

|   | Using available care |       |                |       |                   |       | Resorting to the closest |       |                |       |                   |       | Additional distances travelled further down from the closest |       |                |       |                   |       |
|---|----------------------|-------|----------------|-------|-------------------|-------|--------------------------|-------|----------------|-------|-------------------|-------|--|-------|----------------|-------|-------------------|-------|
|   | General practitioner |       | Dental surgeon |       | Specialist doctor |       | General practitioner     |       | Dental surgeon |       | Specialist doctor |       | General practitioner   |       | Dental surgeon |       | Specialist doctor |       |
|   | ME (pts)             | Pr.   | ME (pts)       | Pr.   | ME (pts)          | Pr.   | ME (pts)                 | Pr.   | ME (pts)       | Pr.   | ME (pts)          | Pr.   | ME (min)   | Pr.   | ME (min)       | Pr.   | ME (min)          | Pr.   |
| <b>Gender - Ref. : Men</b>  |                      |       |                |       |                   |       |                          |       |                |       |                   |       |  |       |                |       |                   |       |
| Women   | 4.5                  | ***   | 6.0            | ***   | 4.9               | ***   | -1.3                     | 0.291 | 4.1            | *     | -0.4              | 0.864 | -0.9   | 0.137 | 0.9            | 0.293 | 2.1               | *     |
| <b>Age</b>  |                      |       |                |       |                   |       |                          |       |                |       |                   |       |  |       |                |       |                   |       |
| Age   | -0.351               | ***   | 1.028          | ***   | 0.200             | ***   | -0.548                   | ***   | -0.086         | 0.698 | 0.216             | 0.256 | 0.192  | ***   | 0.190          | *     | 0.059             | 0.488 |
| Age <sup>2</sup>  | 0.005                | ***   | -0.012         | ***   | -0.001            | **    | 0.007                    | ***   | 0.003          | 0.289 | -0.002            | 0.290 | -0.002   | ***   | -0.003         | *     | 0.000             | 0.687 |
| <b>Perceived health status - Ref. : good and very good</b>  |                      |       |                |       |                   |       |                          |       |                |       |                   |       |  |       |                |       |                   |       |
| Rather good   | 5.2                  | ***   | 0.0            | 0.997 | 1.9               | ***   | -1.1                     | 0.549 | 1.8            | 0.544 | -0.1              | 0.972 | 0.4  | 0.586 | -0.6           | 0.633 | 1.4               | 0.256 |
| Bad and very bad  | 3.4                  | 0.056 | -1.8           | 0.447 | 3.4               | ***   | -0.1                     | 0.962 | -3.0           | 0.549 | 2.0               | 0.642 | 2.1  | *     | -0.2           | 0.956 | 4.3               | *     |
| Left blank  | -0.6                 | 0.836 | 12.8           | **    | 1.1               | 0.337 | -0.3                     | 0.960 | -30.9          | ***   | 5.1               | 0.552 | -0.2   | 0.925 | -2.8           | 0.261 | 3.3               | 0.102 |
| <b>Physical disabilities - Ref. : without</b>   |                      |       |                |       |                   |       |                          |       |                |       |                   |       |  |       |                |       |                   |       |
| With  | 6.2                  | ***   | 1.6            | 0.317 | 0.9               | *     | -4.1                     | *     | 2.8            | 0.389 | -2.6              | 0.330 | 0.7  | 0.350 | 2.5            | 0.106 | 0.8               | 0.485 |
| Left blank  | 0.3                  | 0.923 | -12.7          | **    | -0.7              | 0.535 | -0.4                     | 0.939 | 29.5           | **    | -8.0              | 0.339 | 0.5  | 0.814 | 1.4            | 0.566 | -1.3              | 0.464 |
| <b>Consultation with the general practitioner - Ref. : No</b>   |                      |       |                |       |                   |       |                          |       |                |       |                   |       |  |       |                |       |                   |       |
| Yes   | /                    | /     | /              | /     | /                 | /     | 16.1                     | ***   | /              | /     | /                 | /     | -9.3   | ***   | /              | /     | /                 | /     |
| <b>Social and occupational group - Ref. : Workers</b>   |                      |       |                |       |                   |       |                          |       |                |       |                   |       |  |       |                |       |                   |       |
| Farmers   | -10.6                | ***   | 5.3            | *     | -0.1              | 0.842 | -7.7                     | *     | -10.3          | 0.069 | 6.6               | 0.124 | -1.3   | 0.269 | -1.1           | 0.575 | -1.9              | 0.580 |
| Artisans  | -5.5                 | ***   | 8.3            | ***   | 0.5               | 0.375 | -11.1                    | ***   | -12.6          | **    | -7.8              | 0.113 | 0.3  | 0.712 | 1.1            | 0.428 | -4.3              | *     |
| Executives  | -2.5                 | *     | 8.1            | ***   | 4.0               | ***   | -5.1                     | *     | -12.5          | ***   | -10.9             | ***   | 3.7  | ***   | 4.5            | **    | -1.8              | 0.231 |
| Intermediate professions  | 2.4                  | *     | 8.5            | ***   | 3.9               | ***   | -7.8                     | ***   | -6.8           | *     | -8.2              | **    | 1.0  | 0.167 | 2.2            | 0.065 | -0.7              | 0.583 |
| Employees   | 3.2                  | ***   | 4.9            | ***   | 2.6               | ***   | -2.4                     | 0.176 | -3.8           | 0.155 | -4.1              | 0.107 | 1.7  | *     | 1.1            | 0.326 | -1.0              | 0.442 |
| Left blank  | -3.7                 | **    | -3.7           | *     | 0.4               | 0.477 | -5.2                     | *     | -0.4           | 0.920 | -1.9              | 0.626 | 4.7  | ***   | 2.5            | 0.398 | -0.5              | 0.796 |
| <b>Occupational status - Ref. : Economically active population</b>  |                      |       |                |       |                   |       |                          |       |                |       |                   |       |  |       |                |       |                   |       |
| Unemployed/Non-workers  | 0.2                  | 0.800 | 6.7            | ***   | 0.3               | 0.397 | 5.0                      | **    | 0.4            | 0.870 | 5.5               | *     | -2.0   | **    | 1.5            | 0.182 | -2.0              | 0.095 |
| <b>Monthly income per consumption unit - Ref. : ≤ €950</b>  |                      |       |                |       |                   |       |                          |       |                |       |                   |       |  |       |                |       |                   |       |
| Between €951 and €1,350   | 2.6                  | *     | 2.5            | 0.101 | 0.8               | *     | -7.7                     | ***   | -3.1           | 0.342 | 0.7               | 0.821 | 0.3  | 0.738 | -2.4           | 0.111 | -3.0              | *     |
| Between €1,351 and €1,850   | 2.5                  | *     | 4.3            | **    | 1.8               | ***   | -5.7                     | **    | -7.4           | *     | -3.4              | 0.298 | -0.6   | 0.454 | -3.1           | *     | -2.2              | 0.169 |
| > €1,850  | 2.6                  | *     | 6.2            | ***   | 2.1               | ***   | -3.6                     | 0.108 | -4.6           | 0.190 | -4.8              | 0.141 | -0.4   | 0.639 | -2.2           | 0.203 | -1.4              | 0.408 |
| Left blank  | 2.4                  | *     | 2.2            | 0.141 | 0.9               | *     | -3.3                     | 0.100 | -8.3           | **    | -1.4              | 0.630 | -0.6   | 0.432 | -2.1           | 0.130 | -2.8              | *     |
| <b>Complementary health insurance (Complémentaire santé, or CS) - Ref. : Private CS</b>                               |                      |       |                |       |                   |       |                          |       |                |       |                   |       |  |       |                |       |                   |       |
| CMU-C   | 5.7                  | ***   | -4.2           | **    | -0.6              | 0.125 | 3.6                      | 0.062 | 5.9            | 0.079 | 1.6               | 0.647 | -1.9   | *     | -3.4           | *     | -3.3              | *     |
| Without complementary health insurance  | -16.7                | ***   | -15.0          | ***   | -4.7              | ***   | 4.6                      | 0.275 | 3.8            | 0.505 | -3.7              | 0.485 | -0.1   | 0.929 | 3.2            | 0.315 | 3.2               | 0.371 |
| Other   | 2.4                  | 0.425 | 4.6            | 0.336 | -1.3              | 0.255 | 6.0                      | 0.336 | 12.3           | 0.156 | 11.2              | 0.235 | -3.4   | *     | -0.2           | 0.967 | -1.7              | 0.689 |
| <b>Urban area zoning - Ref. : Municipality of a large urban centre</b>  |                      |       |                |       |                   |       |                          |       |                |       |                   |       |  |       |                |       |                   |       |
| Suburban municipality of a small or average urban centre  | 0.1                  | 0.895 | 1.7            | 0.189 | 0.0               | 0.895 | -14.8                    | ***   | -7.7           | **    | -9.6              | ***   | -1.1   | *     | 1.1            | 0.210 | 2.5               | *     |
| Municipality of a small/average urban centre  | -0.2                 | 0.889 | -1.0           | 0.556 | -0.5              | 0.252 | 0.2                      | 0.929 | -0.4           | 0.916 | -3.6              | 0.352 | 3.3  | *     | 10.7           | ***   | 8.2               | ***   |
| Suburban municipality of a small or average urban centre  | 0.6                  | 0.652 | 1.7            | 0.402 | -1.1              | *     | -7.6                     | **    | 1.6            | 0.695 | -0.9              | 0.809 | -1.4   | 0.094 | 1.9            | 0.164 | 6.9               | ***   |
| Isolated municipalities   | 0.6                  | 0.666 | -4.2           | *     | -0.9              | 0.116 | -4.0                     | 0.129 | -4.1           | 0.386 | -4.5              | 0.323 | 2.3  | *     | 6.3            | **    | 8.8               | **    |
| <b>Potential localised accessibility (Accessibilité potentielle localisée, or APL) - Ref. : level 4 (the highest)</b> |                      |       |                |       |                   |       |                          |       |                |       |                   |       |  |       |                |       |                   |       |
| Level 3   | -2.4                 | *     | -0.9           | 0.397 | -1.0              | ***   | -13.5                    | ***   | -21.2          | ***   | -4.9              | *     | -0.8   | 0.539 | -2.6           | **    | 6.6               | ***   |
| Level 2   | -2.9                 | *     | -2.8           | 0.111 | -1.5              | ***   | -27.0                    | ***   | -30.0          | ***   | -4.9              | 0.154 | -1.6   | 0.203 | -1.2           | 0.390 | 12.7              | ***   |
| Level 1 (the lowest)  | -3.4                 | *     | 0.7            | 0.706 | -0.3              | 0.467 | -27.5                    | ***   | -30.4          | ***   | -17.9             | ***   | 0.5  | 0.768 | 0.8            | 0.708 | 17.1              | ***   |
| <b>Closest health professional - Ref. : In the Municipality of residence</b>  |                      |       |                |       |                   |       |                          |       |                |       |                   |       |  |       |                |       |                   |       |
| Between 1 and 15 minutes  | 0.2                  | 0.840 | -3.1           | *     | 0.1               | 0.778 | -15.0                    | ***   | -2.2           | 0.482 | -11.9             | ***   | -4.8   | ***   | -5.4           | ***   | -8.9              | ***   |
| Between 16 and 30 minutes   | /                    | /     | /              | /     | -0.8              | *     | /                        | /     | /              | /     | -4.7              | 0.138 | /  | /     | /              | /     | -16.8             | ***   |
| In excess of 30 minutes   | /                    | /     | /              | /     | -2.5              | ***   | /                        | /     | /              | /     | -8.4              | 0.154 | /  | /     | /              | /     | -28.0             | ***   |
| <b>Dummies specialists - Ref. : Cardiology</b>  |                      |       |                |       |                   |       |                          |       |                |       |                   |       |  |       |                |       |                   |       |
| Dermatology   | /                    | /     | /              | /     | 2.2               | ***   | /                        | /     | /              | /     | -0.2              | 0.948 | /  | /     | /              | /     | 2.4               | 0.109 |
| Gynecology-obstetrics   | /                    | /     | /              | /     | 5.5               | ***   | /                        | /     | /              | /     | -9.8              | ***   | /  | /     | /              | /     | 1.5               | 0.257 |
| Ear, Nose, and Throat (ENT)   | /                    | /     | /              | /     | -1.6              | ***   | /                        | /     | /              | /     | 1.6               | 0.584 | /  | /     | /              | /     | 3.4               | *     |
| Ophthalmology   | /                    | /     | /              | /     | 17.9              | ***   | /                        | /     | /              | /     | -8.4              | ***   | /  | /     | /              | /     | 2.9               | **    |
| Psychiatry  | /                    | /     | /              | /     | -8.0              | ***   | /                        | /     | /              | /     | -13.4             | **    | /  | /     | /              | /     | 3.9               | *     |
| Pr(Y=1/X=ind. average.) / Constant  | 0.867                |       | 0.410          |       | 0.091             |       | 0.620                    |       | 0.491          |       | 0.474             |       | 19.7   |       | 16.1           |       | 18.9              |       |
| <b>Number of observations</b>   | 12,269               |       | 12,240         |       | 73,671            |       | 10,472                   |       | 13,268         |       | 16,675            |       | 20,559   |       | 6,729          |       | 8,744             |       |

ME (pts) : Marginal effect on the likelihood of healthcare use (at least once a year) and using the closest practitioner expressed in percentage points.  
ME (min) : Marginal Effect on additional distances travelled by patients, expressed in minutes.

Pr : Likelihood that marginal effect is 0. \*\*\*: Pr < 0.0001; \*\*: 0.001 ≤ Pr < 0.01; \*: 0.01 ≤ Pr < 0.05.

**Reading:** For models relating to care provided by specialists, healthcare use is considered for every specialty according to its own level of potential localised accessibility (APL) and access time to the closest suitable health professional.

**Source:** ESPS 2010, IRDES – SNIIRAM, CNAMTS.

 [Download the data](#)

**The more distant the provision, the lower the rate of visiting a specialist**

The probability of visiting specialists at least once a year is greater when patients live in municipalities in which the APL is the highest (level 4) or their area of residence is defined as a large centre (see Table 1). For example, the proportion of patients having visited a dermatologist is 14% when the APL is highest (level 4) and is less than 10% when the APL is at levels of 3.2 and 1. Similarly, 12% of patients living within a large centre have visited a dermatologist as opposed to 7% of those residing outside the sphere of influence of a centre. A high gradient in specialist utilisation has been found according to the distance of access to the closest specialist: 12% of people who live in a municipality where at least one dermatologist offers services visit a dermatologist, but only 8% of people who live between 16 and 30 minutes away from the closest dermatologist and 7% of those located more than 30 minutes away visit a dermatologist. Among the specialties studied here, only cardiology presents results that differ among the groups.

The ‘all things being equal’ analysis confirms the major role played by distance from the closest specialist in the probability of visiting specialists (-2.5 points when the patient lives more than 30 minutes away from the closest specialist, compared with a patient whose municipality offers access to specialists (see Table 2)). Compared with level 4 APL municipalities, the probability of visiting a specialist by people in APL municipalities of levels 3 and 2 is also significantly lower (-1 and -1.5 points, respectively). However, the rate of use does not differ significantly among inhabitants of level 1 APL municipalities. This result might reflect waiting lists that are too long and the fact that patients look for an alternative solution, for example, a specialist close to another area.

**Visiting dental surgeons depends on socio-economic factors rather than on provision**

The rate of visiting dental surgeons at least once a year (39% on average) is relatively stable whatever the municipali-

ty’s APL level and the type of area. Only inhabitants living outside the sphere of influence of a centre visit them less frequently (33% versus 40% in comparison to those living within a large centre (see Table 1)). While this lower rate of utilisation has been confirmed by multivariate analysis, it has been found that, all things being equal, provision variables prove to have little influence on visiting a dental surgeons in comparison with the socio-economic variables, which turn out to be decisive (income, social and occupational category, and complementary health insurance cover, among others).

**On average, it takes 8 minutes for a patient to visit a GP and almost 20 minutes to visit a specialist**

On average, visits with a GP are located 8 minutes away from the patient’s place of residence (see Graph 1). Travel times vary significantly: more than half (53%) of visits are performed within the patient’s hometown, while 10% of them are located 20 minutes away and 5% over 28 minutes away.

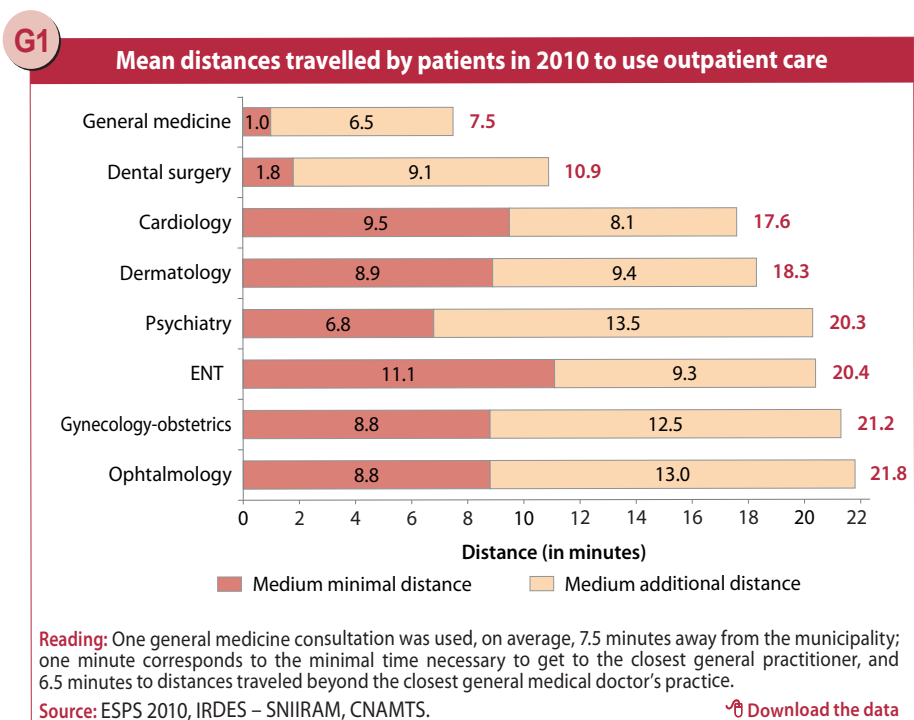
As regards specialist consultations, the mean travel time ranges between 18 and 22 minutes depending on the specialty. Only a quarter of visits occur in the patient’s hometown, while more than

half of patients visit specialists located more than 15 minutes away. Travel time to visit a specialist is more than 40 minutes for 10% of dermatology visits; more than 43 minutes for 10% of gynaecology-obstetrics visits, and even longer for ophthalmology, ENT specialists, and psychiatry. Indeed, while 84% of French people have a GP in their municipality of residence, less than 50% have access to an obstetrician-gynaecologist, ophthalmologist, or psychiatrist (Coldefy et al., 2011).

**Travel time varies greatly according to the APL, the distance from the nearest doctor, and the type of area**

The lengths of patients’ journeys vary according to territorial healthcare accessibility. Patients living in municipalities where APL is the lowest (level 1) travel, on average, 13 minutes more to visit a GP than patients living in municipalities where the APL is the highest (level 4) [17 minutes versus 4 minutes (see Graph 2)]. Inhabitants living outside the sphere of influence of a centre also travel an extra 6 minutes on average to visit a GP, while those in municipalities without a GP travel an extra 7 minutes.

Travel time differences are even greater in the case of specialist visits. The differences between patients in municipalities



## E

**Low-income individuals, Complementary Health Insurance (CMU-C) beneficiaries, the unemployed, and those not in the labour force consult doctors close to their places of residence more often**

All things being equal, the unemployed and those not in the labour force visit the closest GP and specialist more often than employed people (+5 points and +5.5 points, respectively, see Table 2). When they do not visit the closest GP, the additional distances they are willing to travel are 2 minutes lower on average. Executives are the most likely to travel extra distances when they do not visit the closest GP or dental surgeon. They are also the least likely to consult the closest specialist (-10.9 points in comparison with working-class patients).

Income has little impact on patients' mobility, with the exception of visits to the closest GP: those with an income between €951

and €1,850 per consumption unit, corresponding to the intermediate income bracket, consult the closest GP less often than those with lower incomes. This result must be weighed against the fact that Complementary Health Insurance (CMU-C) beneficiaries travel shorter additional distances than others to consult a GP (-1.9 minutes, on average), a dental surgeon (-3.4 minutes), and a specialist (-3.3 minutes). These results could demonstrate that, as they benefit from conventional tariffs (free of extra fees and of non-refundable deductibles) when they consult a doctor in any field, CMU-C beneficiaries do not need to travel far to receive healthcare.

## SOURCE

**The Health, Health Care and Insurance Survey (Enquête Santé et Protection Sociale, or ESPS) matched with administrative healthcare consumption data**

This study is based on the 2010 ESPS survey matched with the National Inter-Scheme Information System on Health Insurance (SNIIRAM) administrative data on outpatient healthcare consumption, and focused on the following specialties: general medicine, dental surgery, ENT, gynaecology-obstetrics, ophthalmology, psychiatry, cardiology, and dermatology. This data makes it possible to identify which individuals did not use healthcare in 2010, where patients visited their doctor, and to incorporate individual characteristics – such as state of health, age, and income – into the 'all things being equal' analysis. All the individuals studied are considered to be representative of the French population living in ordinary households. The geographical area of the survey is mainland France. Only the visits to practices (that require patients to travel to doctors) were studied: home visits are excluded from the analysis.

**Localisation of patients and doctors**

Patients are located according to their place of residence (i.e. at the most detailed geographical level available), and care suppliers according to the municipality in which their practice is located, except for Paris, Lyon and Marseille, for which we use the districts level (arrondissements). In the case of patients, the municipality of residence was selected either from SNIIRAM data (for visits to a regional practitioner's practice and private clinics) or from the ESPS survey (for outpatient consultations in state-run

hospitals and for patients who did not receive healthcare). In the case of health professionals, the municipality of practice was provided by the French National Health Insurance Fund for wage-earning workers (Caisse Nationale de l'Assurance Maladie des Travailleurs Salaries, or Cnamts).

**Calculation of distances**

The distance between the patient's place of residence and the municipality where he or she visited the doctor is the average of the time needed to drive during peak and off-peak hours (Odomatrix, Inra). When the patient visits a doctor in his place of residence, the observed driving time is zero. It has not yet been possible to account for all patients' locations, notably their workplaces or holiday home locations.

**Sample**

The sample is made up of 12,295 individuals—both those who received care and those who did not—who are representative of the French population living in ordinary households. More than 80% of individuals in the sample visited a GP at least once, 9% visited a cardiologist, 10% visited a dermatologist, 7% a practitioner in ENT, 26% an ophthalmologist, 34% a dentist, and 2% a psychiatrist.

More than 50% of individuals in the sample live in a large centre, 28% at the periphery of a large centre, 15% near a small or medium centre or at its periphery, and 6% in an isolated municipality outside the sphere of influence of a centre. Eight individuals in ten (81%) live in a city where there is at least one GP (see table below) and one in ten (9%) in a municipality where the APL in general medicine is the lowest (lower than half the national average).

**Description of the sample according to distance from the closest outpatient care facility and according to potential localised accessibility (APL)**

|  | General medicine |            | Dental surgery |            | ENT           |            | Cardiology    |            | Dermatology   |            | Ophtalmology  |            | Gynecology-obstetrics |            | Psychiatry    |            |      |
|--|------------------|------------|----------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|-----------------------|------------|---------------|------------|------|
|  | Number           | % pond.    | Number         | % pond.    | Number        | % pond.    | Number        | % pond.    | Number        | % pond.    | Number        | % pond.    | Number                | % pond.    | Number        | % pond.    |      |
| <b>Minimal distance between the closest health professional and the patient's place of residence</b> |                  |            |                |            |               |            |               |            |               |            |               |            |                       |            |               |            |      |
| Equipped municipality  | 10,004           | 80.6       | 8,970          | 72.1       | 4,405         | 34.6       | 4,976         | 39.0       | 4,935         | 38.8       | 5,361         | 42.4       | 5,091                 | 40.1       | 4,724         | 37.2       |      |
| Outside the municipality   | 1 to 15 min      | 2,261      | 19.3           | 3,191      | 27.2          | 2,887      | 23.7          | 3,458      | 28.4          | 3,366      | 27.7          | 3,675      | 30.7                  | 3,440      | 28.5          | 3,294      | 27.0 |
|  | 16 to 30 min     | 4          | 0.1            | 79         | 0.6           | 3,746      | 31.5          | 3,205      | 27.3          | 3,226      | 27.3          | 2,810      | 23.5                  | 3,127      | 26.4          | 3,334      | 28.0 |
|  | > 30 min         | 0          | 0.0            | 3          | 0.0           | 1,244      | 10.2          | 6,41       | 5.2           | 750        | 6.2           | 411        | 3.4                   | 628        | 5.1           | 937        | 7.8  |
| <b>Potential localised accessibility (Accessibilité potentielle localisée, or APL)</b>               |                  |            |                |            |               |            |               |            |               |            |               |            |                       |            |               |            |      |
| Level 1 (the lowest)   | 889              | 7.2        | 1,370          | 11.2       | 1,842         | 14.7       | 1,499         | 12.2       | 1,459         | 11.8       | 1,167         | 9.5        | 1,438                 | 11.8       | 2,060         | 16.8       |      |
| Level 2  | 2,203            | 18.6       | 1,521          | 12.9       | 2,350         | 20.0       | 2,088         | 18.0       | 2,175         | 18.6       | 2,260         | 18.7       | 2,172                 | 18.2       | 2,240         | 18.1       |      |
| Level 3  | 8,062            | 65.7       | 4,143          | 33.7       | 4,386         | 35.1       | 4,391         | 35.6       | 4,358         | 34.7       | 5,252         | 42.5       | 4,494                 | 36.3       | 3,390         | 27.2       |      |
| Level 4 (the highest)  | 1,115            | 8.6        | 5,209          | 42.2       | 3,704         | 30.2       | 4,302         | 34.2       | 4,285         | 34.9       | 3,578         | 29.3       | 4,182                 | 33.7       | 4,599         | 37.9       |      |
| <b>Total</b>   | <b>12,269</b>    | <b>100</b> | <b>12,243</b>  | <b>100</b> | <b>12,282</b> | <b>100</b> | <b>12,280</b> | <b>100</b> | <b>12,277</b> | <b>100</b> | <b>12,257</b> | <b>100</b> | <b>12,286</b>         | <b>100</b> | <b>12,289</b> | <b>100</b> |      |

Source: ESPS 2010.

[Download the data](#)

with the highest APL and those in the lowest APL municipalities can be higher than 25 minutes. In ophthalmology, ENT, gynecology-obstetrics, and dermatology, inhabitants living more than 30 minutes away from the closest specialist travel up to five times longer, on average, than patients living in municipalities with specialist healthcare services.

**Patients travel far away from the closest doctor, even to consult a GP**

When the distances are broken down into two indicators – the minimal distance to the closest doctor and additional distance travelled beyond the closest doctor –, the average additional distances are relatively high (see Graph 1). In general medicine, for example, the minimal average time to access the closest GP is 1 minute, and the time travelled beyond this duration is 6.5 minutes. To visit a specialist, the average extra travel time ranges from 8 minutes in cardiology to 13.5 minutes in psychiatry (as compare to the average minimal travel times of 9.5 and 6.8 minutes, respectively).

The need to travel additional distances may reflect limitations in gaining access to the closest doctor (such as a lack of availability, additional fees that are too high, etc.) and a decision to visit a doctor who matches patients’ specific expecta-

tions (in terms of professional skills, etc.). Having to travel additional distances also depends on patients’ individual characteristics (age, health status, employment status, etc. (see inset p. 6)) as well as the minimal time they have already had to travel to consult the closest doctor. To isolate each of these specific effects, we successively modelled – for those who received healthcare –, visits to the closest doctor and the additional distance travelled by those who did not visit the closest doctor, by simultaneously taking into account patients’ individual characteristics and territorial care accessibility indicators (see ‘Method’ inset).

**A lack of community healthcare provision requires patients to travel ...**

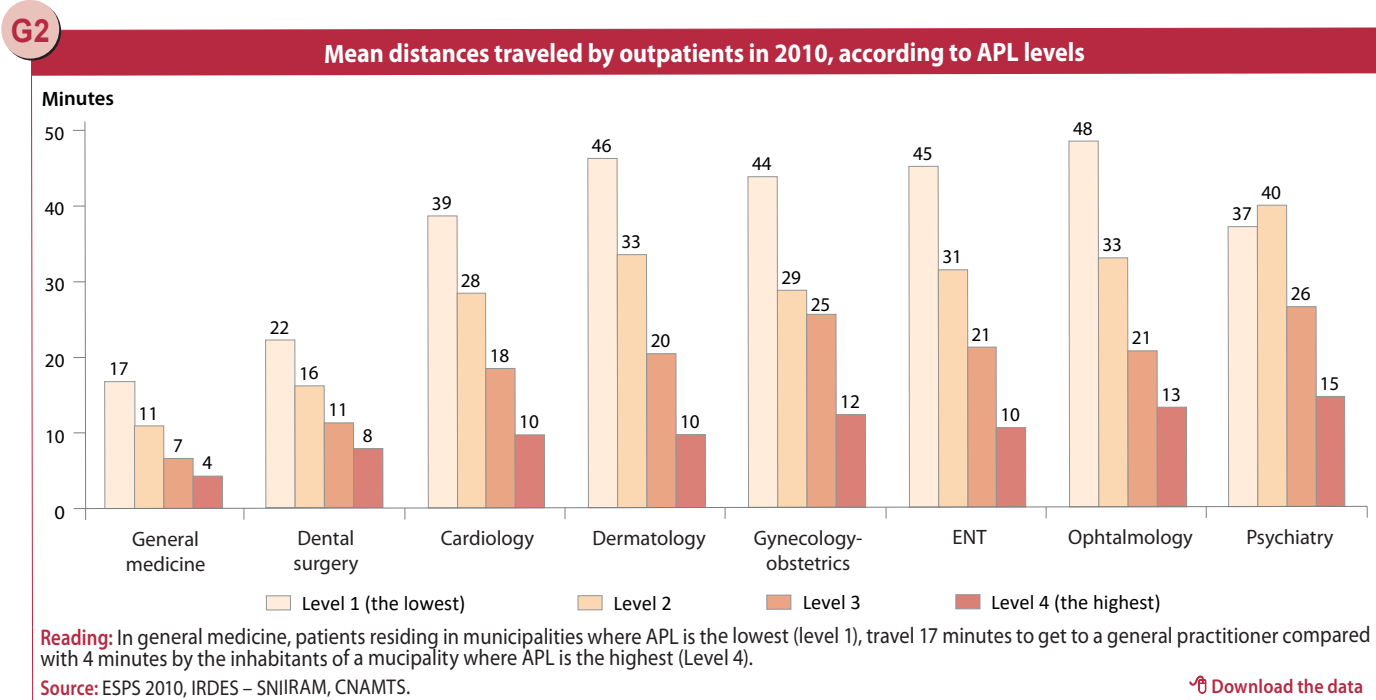
The lower the APL indicator, the lower the probability of visiting the closest GP or dental surgeon. Regarding specialists, this effect is especially significant for patients living in municipalities with the lowest APL (level 1). Moreover, again for specialists, the additional distances travelled by patients who do not consult the closest doctor are significantly higher when the APL level is less than 4 (+6.6 minutes when the APL is at level 3 and +17 minutes at level 1, (see Table 2)). This result confirms that, when provision is not sufficient to meet patients’ needs, patients choose to use care elsewhere,

thereby lowering the occurrence of waiting lists.

**... But the longer the access time to the closest doctor, the less willing patients are to travel extra distances**

Regardless of patients’ individual characteristics and other territorial care accessibility indicators, the further away the closest health professional, the smaller the distances travelled by patients beyond this care provision. Thus, inhabitants whose closest specialist is more than thirty minutes away from their place of residence travel, on average, shorter extra distances than inhabitants who enjoy on-the-spot access to a specialist (-28 minutes, Table 2). This result suggests there is a threshold in the total distance travelled, beyond which patients travel less often, therefore limiting their choice of health professional.

The type of territory also has an impact on patients’ propensity to travel: not living inside a large centre reduces the probability of visiting the closest GP, dental surgeon, or specialist (-14.8 points, for example, for GP utilisation within municipalities located at the periphery of a large centre), or increases the lengths of extra distances (+8.8 minutes regarding the specialist, for example, within municipalities outside the sphere of influence of



a centre). This result could account for healthcare utilisation close to areas other than homes.

\* \* \*

This study, based on the 2010 ESPS survey, analyses the variability of outpatient healthcare utilisation, focusing on GP and dental surgeon consultations. It measures distances travelled to visit these practitioners, taking into account both patients' characteristics and indicators reflecting territorial care accessibility.

The amount of travelling required by patients who live in areas with little and distant healthcare provision influences their utilisation of healthcare. Indeed,

all things being equal, in comparison with patients in the areas with the best healthcare facilities, the former are less likely to visit a GP in a year. A distant care provision has a discouraging effect on patients' visiting of a specialist, especially beyond a 30-minute travelling distance. In addition, when visiting a GP, a specialist, or a dental surgeon, distance from the closest care provision shortens the extra distance patients are willing to travel, thus restricting their freedom of choice. Lastly, the type of territory defined by urban area zoning has its own effects on some dimensions of care use. This is notably true for extra distances, which are on average higher for patients not living within a large centre.

This research highlights the fact that inequalities in outpatient healthcare utilisation are linked to territorial differences in medical professionals' locations. It shows that some patients are more restricted as to their travelling, which questions the existence of potential interactions with social inequalities in health. It also raises questions about other dimensions of care provision and patients' mobility that are not taken into consideration in this study, such as extra fees, waiting lists to obtain an appointment, the workplace, and so on. It would also be necessary to analyse the frequency of healthcare utilisation beyond merely having visited a doctor at least once a year. Issues introduced in the 2012 ESPS survey, notably criteria for patients' choices, should enrich analysis. ♦

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