

Changes in Inequalities in Access to Ambulatory Care over the Last Decade in France:

How Much and Why?

PRELIMINARY AND INCOMPLETE : Due to technical problems, the data only became available in the past week. The comparability of the data sets for the various years has not been thoroughly assessed. This version aims at presenting the method and some preliminary results. We apologize to the discussant and remain at his/her disposal if some points are not clear.

Keywords: Inequalities, access to care, France

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Theme: inequalities in access to care

Summary:

Inequalities in access to care became a major concern in France during the nineties. Seeking to reduce them, the French government introduced a new means-tested program in 2000 called the Couverture maladie universelle (CMU). This program supplements the health insurance coverage provided by the Social Security system and reduces the out-of-pocket costs incurred by low-income patients.

While the existence of financial barriers to care prior to the introduction of the CMU is undisputed, it is also clear that income-related inequalities in access to care stem from a variety of sources. The distribution of need is an obvious one, but other socio-economic factors such as education, employment status or occupation also have an impact on access to care. When seeking to document changes in the inequity of care distribution over time, new questions arise: are they driven by a change in the underlying distribution of the factor (for instance more inequality in the distribution of income) or in the impact of the factor on access to care? Wagstaff, van Doorslaer, and Watanabe (2001) proposed a method for decomposing the causes of health inequalities that can and has already been applied to inequalities in access to care, though not in a longitudinal perspective.

Following this current of literature, our empirical analysis will determine whether there were changes in the inequalities in access to care in the nineties in France, and if so, shed some light on the reasons for these changes.

Data: *Our data are from the Enquête sur la santé et la protection sociale (ESPS), a French national household survey that has been yearly conducted by CREDES since 1988. Our data will be selected from the 1992, 1995, 1998 and 2000 surveys.*

Method: *Repeated cross sectional analysis of inequalities in access to care based on the computation (and decomposition in explanatory factors) of concentration indexes.*

1. Introduction

Objectives of the paper

The French health care system is based on the principle of horizontal equity, according to which individuals with equal need should have identical access to care regardless of their socio-economic status. Lower socioeconomic groups are known to have higher rates of morbidity and mortality than higher socioeconomic groups. Moreover, health inequalities between groups seem to increase over time. For instance, in France, while over the period 1979-1985, the mortality of blue collar men aged 25-54 was 2.6 higher than that of their white collar counterparts, the ratio increased to 2.9 between 1987 and 1993 (Jougla, 2000). If the horizontal equity principle in access to care held, not only should the resources of the health care disproportionately benefit the poor, because of their health status, but this concentration should also increase over time.

This paper's first objective is to evaluate the changes in inequalities in access to care in France during the nineties.

During that decade, the regulation of the health care system primarily focused on the supply side and co-payment rate increases were limited¹. However, since total medical expenditure was growing faster than the GDP and the consumption structure was concomitantly changing, the consumption of care across income groups could have changed. Indeed, during the nineties, concern about the access to care for the poor grew, in spite of existing protection mechanisms. As a response, the *Couverture maladie universelle* (CMU) was implemented in 2000. This program supplements the health insurance coverage provided by the Social Security system and reduces the out-of-pocket costs incurred by low-income patients.

While the CMU clearly aimed at improving access to care, access to insurance is only one of the many factors that can explain a differential access to care across income groups. Income itself, but also social status and education for instance are among the factors that simultaneously concur to explaining differing consumption patterns for a given health status. As a result, a stable level of inequalities could be the consequence of worsening of education related inequalities, compensated by an increase in the insurance coverage of the population. Following a recent strand of literature (Wagstaff, 2001), our second purpose will then be to understand the underlying factors that contributed to possible changes in inequalities in access to care in France in the nineties.

Literature review

Several empirical studies measuring inequalities in health care have been published in the past years (Gravelle, 2003, van Doorslaer et al. 2002a and 2002b), which focus on a static analysis of inequalities or international comparisons. When it comes to time trends, the bulk of the existing literature focuses on inequalities in health: either mortality differences across socio-economic status (Valkonen et al., 1993) or

¹ Veil reform of 1993: a 5 percentage point increase of the statutory co-insurance rate, increases in the in-patient co-payment in 1993 and 1996 (for more details, see (Couffinhal and Paris 2003)).

income-related inequalities in morbidity (Gerdtham & Sundberg, 1996, Gravelle & Sutton, 2001, Wagstaff et al. 2001). Few papers assess the changes of the level of inequalities in health care utilization overtime. Burstrom (2002) looks into changes in inequalities in health care utilization by calculating odds ratio for income quintiles in 1988/89 then 1996/97, controlling for age, sexe, health status,...Van Ourti also studies changes in health care utilization (physicians visits, hospital nights) over time comparing cross-sectional and panel data. He uses the method introduced by van Doorslaer et al. (2002b), which consists in measuring the horizontal inequity for each period with a concentration index.

Indeed, with the exception of Burstrom, the literature uses concentration indices to measure inequalities across time. Recently, decomposition methods of the concentration index were introduced to explain the level and changes in inequalities in health. These methods enable to assess the role of the socioeconomic determinants that simultaneously contribute to explaining the level of inequality. Wagstaff et al. go one step further: using an Oaxaca decomposition, they analyze thoroughly the trends of the factors underlying changes in inequalities in malnutrition in Vietnam.

2. Method

Drawing on this recent literature (van Doorslaer, 2002a), we use concentration indices to measure the income-related inequality in the utilization of health care.

A first index is computed on the actual utilization of care. It reflects the overall income related inequality in consumption of care. Part of this inequality can be attributed to differences in health status across income groups. In order to estimate which part of the concentration index cannot be explained by these differences, we compute a second concentration index based on estimates of the utilization of care individuals would have been if they were all treated independently of their socio-economic characteristics. The difference between the two concentration indices provides a measure of income related inequalities that do not reflect differences in health status and thus can be thought of as "inequitable". This non-health inequality index (HI) can in turn be decomposed in order to assess the impact of each individual non-need variables.

More formally, (Wagstaff, 2001) show that if \hat{C} is the total concentration index, it can be expressed as a weighted sum of partial concentration indexes: $\hat{C}_r, \hat{C}_h, \hat{C}_p$. Each weight can be interpreted as the partial elasticity of utilization with respect to the variable. These weights are estimated, all else equal, by regression methods.

$$\hat{C} = \xi_r \hat{C}_r + \xi_h \hat{C}_h + \xi_p \hat{C}_p + GC_k$$

Three types of variables are distinguished here: income itself r, health status variables h, and non need variables p (GC_k being simply a residual term). It is thus possible to identify the contributions of need and non need variables to the observed inequality.

By repeating these calculations over time, we can shed light on the factors that underlied changes in inequalities in access to care in the nineties. For instance, if we were to find that private insurance made inequalities in access more pro-rich over time, we could find out whether this can be explained by an increased concentration of health insurance among the rich or an increase of the impact of insurance on consumption.

3. Data

Source and sample

Our data are from a series of health and health insurance surveys merged with national health insurance claims files for utilization of care.

The *Enquête sur la santé et la protection sociale (ESPS)* is a repeated household survey that has been conducted since 1988. ESPS is representative of French ordinary households, and provides information on socio-economic and demographic characteristics, as well as on health status, and health insurance coverage. For at least one individual per household, this information can be merged with an exhaustive record of medical consumption reimbursed by social security over the year. The resulting dataset, known as *Appariement* and which we use, is also representative of the population.

In order to study access to care during the nineties, four years were selected: 1992, 1995, 1998 and 2000. That choice was partly driven by data considerations (prior to 1992, while the survey existed, the *Appariement* was of poor quality). It should be noted that a third of the households present in the sample in 1992 are interviewed again in 2000.

At each of these points, our sample consists of individuals over 15, who provide information on their health status and income level. Additionally, because other health insurance funds were progressively integrated in the *Appariement*, the sample is restricted to beneficiaries of the main health insurance fund. This fund (CNAMTS) covers the salaried workers and their families, i.e. more than 80% of the population. Specific weights are computed to calibrate these samples using the following variables: age, sex, household size, and occupation (inactive, active worker, active unemployed). We use a truncated linear quasi-measure for calibration, so that the final weights vary from 0.5 to 2.

Utilization of ambulatory care

Ideally, in order to assess changes in the horizontal equity of access to care, one would want to look at the volume of care of a given quality individuals receive depending on their income, correcting for health status, and the way this distribution changes over time. This raises a number of questions. First, for some types of care, like drugs, the volume typically has to be measured through expenditure². As a consequence, changes in this expenditure over time reflect both changes in volumes and prices. If increases in price solely reflect inflation in the market, changes in volume can be computed by deflating the expenditure. If prices also reflect changes in the quality of care (i.e. the development of more sophisticated drugs that appear on the market) then, the distribution of the expenditure may also measure

² This also holds when one wants to study aggregate measures of care.

changes in the access to *quality* across income groups. Even when the volume of care appears easy to measure (for instance via a number of contact between a patient and a health professional), the content of such contacts might change over time and insofar as prices reflect these changes in technology, both the distribution of the volume and the expenditure remain of interest.

At a later stage of the work, we plan on addressing this issue by studying the distribution of both the volume (expenditure deflated by relevant price indices) and the expenditure of care. For the moment, we will study some simple measures of volumes and the observed distribution of expenditure at each point of time³.

Our source of information is designed for reimbursement purposes and provides accurate expenditure data per type of care. However, for technical reasons, we can only compute the number of contacts for GP and specialists visits⁴, and these will be our simple volume measures. Additionally, we will study the expenditure on GPs and specialists as it reflect more than the number of contacts :

- š firstly, the fee schedule is such that additional procedures performed during a visit are included in the claims files, the expenditure therefore gives a more accurate measure of the intensity of the care than the number of contacts, which has the advantage of being more easy to interpret;
- š secondly, some physicians are allowed to balance-bill, and this extra charge can be considered to reflect quality of care.

Finally, we will look at the concentration of reimbursable drugs expenditure and an aggregate measure of ambulatory care expenditure which includes auxiliaries services, lab tests, prostheses and other pharmaceutical goods and only excludes dental care.

Table 1 provides summary measures for our utilization variables at each point of time. In our data, the utilization's rate of increase are high during the 1992-1995 period and appear much lower in the second part of the decade. These general trends are in line with the ones documented in the national health accounts and further work will be required to better compare the two sources and explain the differences⁵.

³ *In current prices.*

⁴ *For payment purposes, procedures are expressed in a volume unit called "lettre-clé" (key letter). A key-letter designates a type of provider performing the act and the number of key-letter is supposed to reflect the complexity of the procedure. If a provider sends one bill for a series of procedures at the end of a treatment, the aggregate reimbursement information will not provide the list of procedures or the number of contacts necessary to complete the treatment. The administrative volume unit has no intuitive meaning and will generally not be used, with the exception of GP and specialists visits.*

⁵ *In particular we will need to assess the sensitivity of our measures to outliers.*

Table 1: Measures of access to ambulatory care and sample size

		1992		1995		1998		2000	
		Mean	St. Dev.	Mean	St. Dev.	Mean	St. Dev.	Mean	St. Dev.
Number of GP visits		4,4	5,2	5,1	5,9	4,9	5,2	5,0	5,5
Expenditure on GP visits	Reflects the number of visits and technical procedures performed during these visits	86,2	108,4	103,4	130,0	102,2	122,2	102,2	121,8
Number of specialist visits		2,3	3,8	2,5	4,0	2,6	4,2	2,6	4,8
Expenditure on SP visits	Reflects the number of visits and technical procedures performed during these visits	100,4	256,4	114,2	255,4	119,3	216,8	112,1	214,6
Pharmaceutical expenditure		235,1	385,3	291,6	474,9	329,3	595,2	365,3	768,0
Ambulatory expenditure	GP + specialist+ drugs + auxiliaries services + lab tests + misc.	558,3	793,2	722,8	1197,8	754,9	1109,0	815,6	1350,5
Sample size		2790		2186		4233		3391	

Source: *Appariements 1992, 1995, 1998, 2000.*

Ranking variable

Income is our ranking variable and the method for recording it changed over time. Until 2000, when we asked a more detailed set of questions and obtained a continuous measure of income, respondents were asked to choose an income bracket. The middle point of each bracket is used to compute an equivalent income using the Oxford scale⁶.

Health status and other explanatory variables

In order to measure inequalities of access across income groups, health status which is assumed to reflect need has to be controlled for. Many studies only rely on age, sex, and self-assessed health to do so; we use them as well as two additional categorical variables that reflect disability and the mortality risk⁷.

Non-need variables

One of the objectives of this work is to better understand the extend to which income inequalities in access to health are also related to "non-need" variables. Beyond income, education, labor market status, and the occupational class of the household head⁸ are taken into account as well as a number of "health insurance" variables:

- Ø exemption from statutory copayments often granted because of a long term illness;
- Ø an indicator of whether the person is covered by private health insurance or a public schemes aimed at the poor. During the nineties, some categories of individuals were granted a limited coverage (AMG), which the CMU replaced and expanded in 2000.

⁶ A weight of 1 for the first adult, 0.7 for other adults and 0.5 for children. For technical reasons, we cannot recompute these using the preferred OECD scale, but we should be able to do it at a later stage.

⁷ This variable is constructed by physicians on the basis of declarative information on health and treatments as well as questions on health behaviors (smoking and drinking habits).

⁸ Four groups are constituted, based on the available categories and the specificities of the populations: higher and upper-intermediate professions (including liberal professions), employees, workers, and self-employed workers (non-liberal).

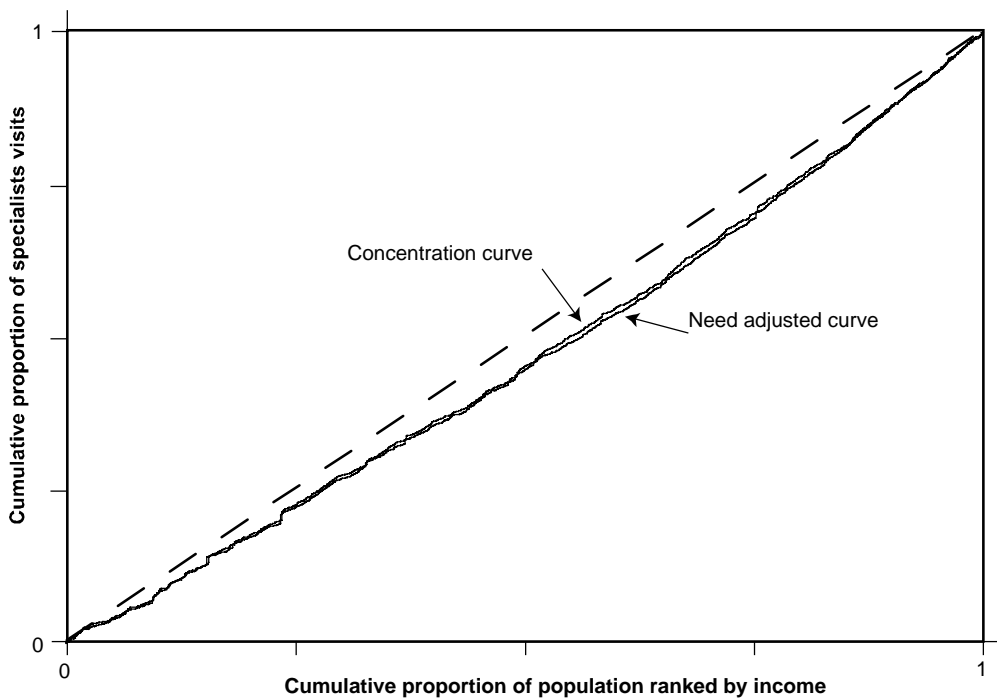
4. Results

This section presents a limited set of results which illustrate both the method and the main findings. We use the Wagstaff and Van Doorslaer methodology to compute inequality indices for various types of ambulatory care and then we propose an analysis of the explanatory factors that contributed to changes in inequalities in the number of specialist visits in the past decade.

Concentration curves

The following graph presents concentration curves for specialists visits in 2000. The “simple” concentration curve plots the cumulative proportion of specialists visits on the vertical axis against the cumulative proportion of the population ranked by income, beginning with the poorest individual. The fact that this curve lies below the diagonal signals a pro-rich inequality in the distribution of specialist visits. If the rich were in worse health than the poor, this distribution could result from an appropriate allocation of care. The second curve shows that it is not the case. It represents the health-adjusted concentration curve, i.e. the difference between the reality and what would happen if individuals with the same health status received the same amount of care regardless of their socio-economic characteristics. This curve lies farther from the diagonal than the first one which means that a distribution solely based on needs should be slightly pro-poor and that once health status is taken into account, the pro-rich inequality is (slightly) larger than the raw data suggests. The surface between the diagonal and the second curve is closely linked to our measure of inequality (HI index).

Graph 1. Non-standardized and need-adjusted concentration curves for the number of specialist visits



Horizontal inequality index

Graphs 2 and 3 represent our measure of inequality in access to care for all our dependent variables. For each year and each type of care, starting with the number of GP visits in 1992 (GP92), the inequality index and its confidence interval are represented.

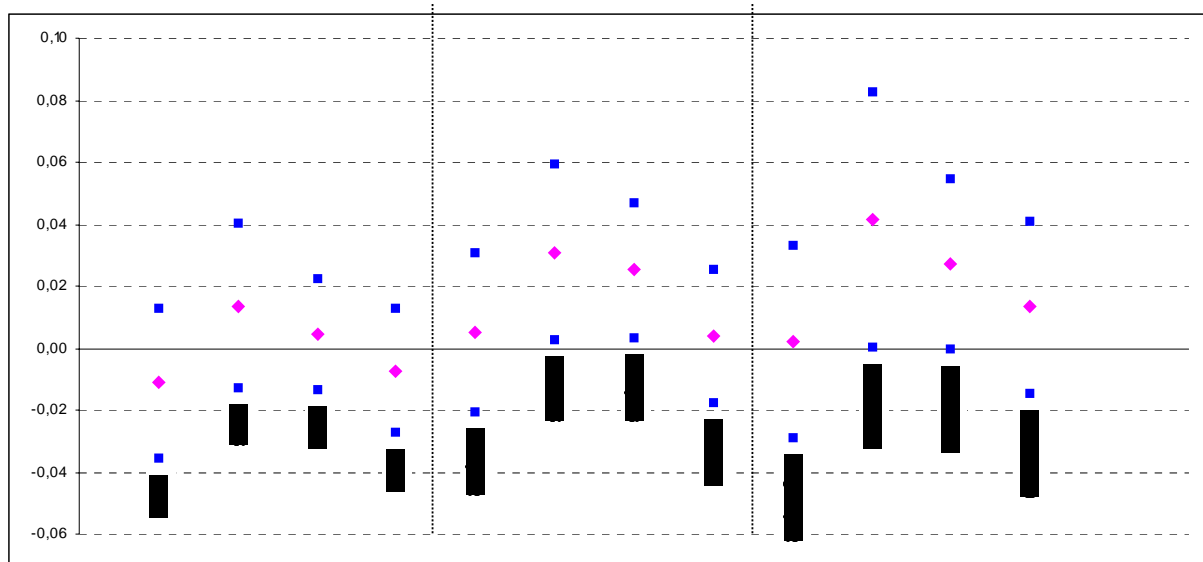
Graph 2 shows that the number of GP visits, the related expenditure and the prescribed drugs followed the same pattern over the decade, this similarity between the first two and the last series being a consequence of the fact that the generalists prescribe the bulk of the drugs in France. The main result is that very few of the indices are significantly different from zero, which means that these types of care are primarily allocated according to need and not socio-economic status⁹. The confidence intervals of the different years overlap for each type of care, which means that the inequalities in access to care did not change much over the period. The detailed results still need to be analyzed but the (non-significant) increase of inequalities in favor of the rich between 1992 and 1995 could be a consequence of the 1993 Veil reform which consisted in an increase of all co-payments by 5%. Such a reform is more likely to affect the poor who have less often access to private insurance.

Graph 3 presents the same type of information for specialists care and total ambulatory care. The allocation of specialists care is significantly pro-rich¹⁰ throughout the period and seems to have slightly decreased over time. The following paragraphs will shed some light on the explanatory mechanisms underlying this trend.

⁹ A positive index denotes a pro-rich inequality, while a negative one means that the poor receive a disproportionately high amount of care, given their health status.

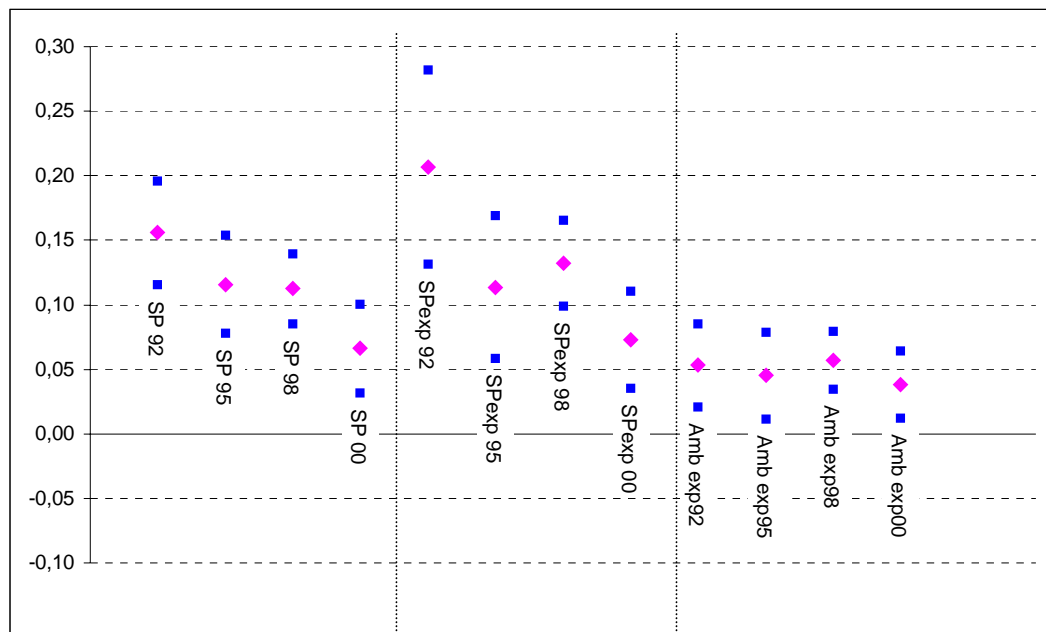
¹⁰ Though not very highly so. A recent and still unpublished OECD study shows that France's HI for specialists visits is equal to .06 (as here – same data was used), behind among others Austria's (0.7), Italy's (0.11) Ireland's (0.13), Portugal's (0.21).

Graph 2 Inequality indexes and confidence intervals for GP visits, GP visits related expenditure, and pharmaceutical expenditure 1992-2000



The last results presented in Graph 3 show that ambulatory care in France remained fairly stable over the period. If we go into more details, health care appeared to be distributed according to need in 1992 became very slightly pro-rich in 1995 and 1998. By the year 2000, the HI was again not significantly different from zero. Yet the varying patterns across the different types of care already point towards a more complex story. While we initially had excluded dental care of the analysis, we are now considering including it, as it is one of the types of care for which social security covers the lowest proportion of the cost and therefore for which socio-economic status may have a strong impact in terms of access. Moreover, in order to put this analysis into perspective, we plan on looking into hospital care. The data should in theory at least allow us to look into the distribution of the number of hospital nights.

Graph 3 Inequality indexes and confidence intervals for specialist visits, specialist visits related expenditure, and ambulatory care 1992-2000



Decomposing concentration indices

Using the decomposition method briefly presented above, the total inequality observed in health care use can be decomposed into an equality explained by need variables, one that relates to non-need variables and an unexplained. The latter two elements make up the HI index, but the residuals are always small¹¹ and the HI index can be thought of as the contribution of socio-economic factors to the observed inequality.

These factors are income, education, labor market status, head of the household's occupation, private and public supplementary insurance, and the exemption from public co-payments.

The contribution of an explanatory factor to inequalities is a combination of the impact of the variable itself on health care use (private insurance is linked, all being kept equal, with higher levels of health consumption) and the inequality of the distribution of the factor itself across income groups (measured by the concentration index of the variable). The idea is that a factor strongly correlated to health care use but uniformly distributed throughout social classes does not contribute to global inequality.

Table 2 displays three examples of combinations of concentration indices, coefficient level, and contributions to the inequality for specialist use in 2002.

- š Private insurance is concentrated among the rich, as the positive sign of the concentration index shows. Moreover, as it is often the case, the coefficient associated to private insurance in the

¹¹ In 2000 for specialists visits the residual represents about 4% of the HI.

regression explaining the number of specialists visits is positive. Combining these two effects, the impact of private insurance is pro-rich (it's contribution to HI is positive) and rather high.

- š Low education is largely concentrated among the poor, as reflected by the negative concentration index, and its impact, relatively to high level of education, on specialist use, is negative. Its contribution to the level of observed inequality is therefore positive.
- š Exemption from public co-payments is more common among the poor. It is also correlated with a higher number of specialists visits. As a consequence, its impact on HI is negative, which means that it tends to decrease the level of inequality.

Table 2: Understanding the contribution of underlying factors to inequality

Explanatory Factor	Concentration Index of the variable	Coefficient in the regression explaining number of specialist visits	Contribution
Private Insurance	0.006	1.44	0.030
Low education	-0.14	-0.65	0.019
Exoneration from public co-payments	-0.07	1.39	-0.005

Source ESPS EPAS 2000

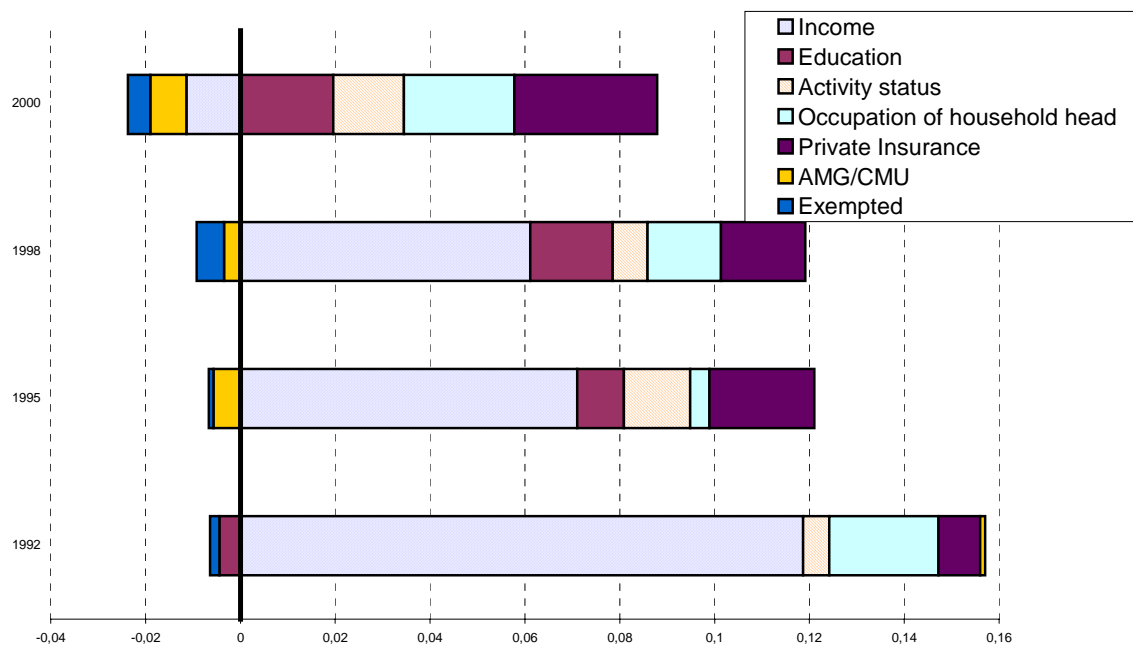
Graphs 4 represents the contributions of non need explanatory factors from 1992 to 2000. Over the years the net sum of positive and negative contributions¹² tends to decrease, as we had underlined in the previous section. The graph allows us to go one step further and to see which underlying factors can explain these changes.

- š Means-tested insurance (AMG/CMU) and exemption from public co-payments joint contribution rises constantly, the impact of the latest becoming tangible in 1998. Private insurance on the other hand has the opposite effect and its contribution to pro-rich inequality seems to have increased over the period.
- š The most striking result pertains to income, which contributed strongly to the pro rich inequality in 1992, and saw its impact decrease steadily, becoming negative in 2000. Over the period, the income concentration index (the Gini index) remained stable so this trend was not driven by modification in the structure of income, by means of social redistribution for instance. Rather, this trend is explained by the decrease of the impact of income itself, all else equal, on the number of specialists visits. This decrease can be contrasted with the slower but steady increase in the contribution of variables like education, occupation and activity which also reflect social status, but point more towards socio-cultural than strictly economic differences.

It will be interesting to compare these results with those obtained for all types of care. Before that, we will have to estimate the significance of the contributions to the HI. Because these contributions are computed on the basis of estimated variables, this requires the implementation of a bootstrap procedure.

¹² Which is equal to the HI minus the residual.

Graph 4 Contributions of the need variables to inequalities in specialist visits for the period 1992-2000.



5. Discussion/conclusion

This first attempt at studying changes in inequalities of access to care and in the underlying factors seems promising. As we pointed in the beginning, due to lack of time, we chose to focus on a limited set of results and a presentation of the methodology.

Although the level of inequalities did not seem to change much during the nineties, it will be interesting to study all types of care separately in order to understand the factors that contribute to inequalities in access to care in France.

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