

Does Free-Billing Deter Access? Physicians and Public Health Insurance Beneficiaries in France*

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Preliminary — comments welcome

Abstract

We study financial discrimination in access to physician care in France, focusing on the population of low-income patients who benefit from public supplementary health insurance (the *Couverture Maladie Universelle Complémentaire*, CMU-C, and, since 2019, the *Complémentaire Santé Solidaire*, CSS). By law, free-billing (*secteur 2*) physicians must waive fee surcharges for CMU-C/CSS beneficiaries, which lowers their compensation for treating these patients relative to other patients and may induce free-billing physicians to avoid them. Using exhaustive claims data from the French *Système National des Données de Santé* (SNDS) for 2016, aggregated at the city×CMU-status (patients) by physician level, we estimate two-way fixed-effects Poisson models of the number of visits, controlling for spatial homophily, travel costs, and city×CMU-status and physician fixed effects, separately by specialty. Free-billing physicians are significantly less likely to see CMU-C patients than fee-regulated physicians: the implied “CMU penalty” on the probability of being visited ranges from about −6% in gynecology to −29% in ophthalmology, and reaches −50% in general practice. We show that a substantial part of this aversion operates through physicians’ fees: doctors who charge larger surcharges to non-CMU patients are also more averse to CMU-C patients, consistent with a price-discrimination mechanism. We further find that physicians located in richer municipalities are more averse to CMU-C patients, suggestive of spatial sorting. Taken together, our results point to financial-based statistical discrimination against beneficiaries of public supplementary health insurance in access to physician care.

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JEL codes: I11, I14, J71.

1 Introduction

Improving access to healthcare is a central policy objective of health systems in OECD countries, along several dimensions – geographic, but also financial. An old concern in the health economics literature is that healthcare providers may engage in adverse selection through “cream skimming,” whereby physicians – general practitioners (GPs) and specialists alike – select patients on the basis of expected profitability rather than medical need. This concern is especially salient for patients whose treatment is, for institutional reasons, less remunerative to providers.

In this paper we study discrimination in access to medical care along the financial dimension, focusing on a specific population: low-income patients who are beneficiaries of France’s public supplementary health insurance scheme, first the *Couverture Maladie Universelle Complémentaire* (CMU-C) and, since 2019, the *Complémentaire Santé Solidaire* (CSS). This setting is attractive because French law imposes a clear, verifiable obligation on physicians: free-billing (*secteur 2*) physicians cannot charge CMU-C/CSS beneficiaries a fee surcharge, whereas they can – and typically do – charge such a surcharge to other patients. This creates a sharp, plausibly exogenous wedge in the profitability of a visit that depends only on a patient’s CMU status, which we exploit to measure discrimination.

Our work relates to a small but growing literature on cream skimming and discrimination against low-income or publicly insured patients in the market for physician visits. [Cases et al. \(2008\)](#) document large disparities in the CMU-C clientele of self-employed physicians in France. [Chareyron et al. \(2023\)](#) use a correspondence field experiment and find evidence of discrimination against CMU-C and *Aide Médicale d’État* (AME) beneficiaries seeking appointments. [Le Rolland et al. \(2023\)](#) similarly document refusals of care against CSS and AME beneficiaries using an audit-style methodology. [Werbeck et al. \(2021\)](#) provide comparable evidence of cream skimming by healthcare providers from a randomized field experiment in a different institutional context. More broadly, [Gravelle et al. \(2016\)](#) study price discrimination across patients in the market for physician consultations in Australia. Our goal is to assess financial inequality in access to healthcare in France by measuring the difference in the probability of obtaining a visit between CMU-C beneficiaries and other patients.

This paper makes several contributions. First, we estimate the causal impact of being a beneficiary of the public supplementary health insurance (CMU-C) on the probability of visiting a doctor, and we provide a summary measure of discrimination against these patients. Second, we take a close look at the behavior of free-billing physicians, whose prevalence differs sharply across specialties: less frequent among GPs, but considerably more common among ophthalmologists, cardiologists, dermatologists, psychiatrists, and other specialists. Third, we use comprehensive claims data from the *Système National des Données de Santé* (SNDS), which cover the universe of French patients and physicians,

aggregated at the city $\times$ CMU-C status (patients) by physician level, in a cross-sectional analysis for the year 2016. Our identification strategy relies on the exogeneity of a patient’s CMU status conditional on municipality fixed effects. We estimate two-way fixed-effects Poisson models at both the patient and the physician levels.

Our results can be previewed as follows. Our main outcome is the number of visits at the patient-municipality $\times$ CMU-status by doctor level. We find clear evidence of aversion to distance – travel costs are higher in pediatrics – and of spatial homophily between doctors and patients. We document a marked aversion of free-billing doctors to CMU-C patients across essentially all specialties, with the notable exception of gynecology. This aversion translates into significant and substantial “CMU penalties,” i.e., percentage reductions in the probability of being admitted to such doctors relative to non-CMU patients as the baseline: penalties range between -29% in ophthalmology and -6% in gynecology, and general practice stands out with a substantially larger penalty of about -50% . We provide evidence that this penalty is related to price discrimination by physicians. We also find aversion of doctors located in richer municipalities to CMU-C patients – suggestive of spatial sorting, particularly pronounced in pediatrics and less so in psychiatry – along with heterogeneity by physician age and gender that varies by specialty.

The remainder of the paper is organized as follows. Section 2 describes the institutional background of French health insurance and physician payment schemes. Section 3 presents the data and the working sample. Section 4 lays out the empirical strategy. Section 5 presents our main results, Section 6 investigates the price-discrimination mechanism, Section 7 discusses robustness checks, and Section 8 concludes.

2 Institutional Background

2.1 Patients

Patients in France are free to choose their general practitioner and, for a subset of specialties, to consult specialists directly. This choice can be informed by publicly available information on physicians’ payment scheme (fee-regulated vs. free-billing) and on the distribution of the fees they charge.

The copayment scheme for an ordinary visit works as follows. Seventy percent of the service’s reference price is reimbursed by the public National Health Insurance (NHI, *Assurance Maladie*). Up to thirty percent of that reference price may in addition be reimbursed by a private complementary health insurance policy. On top of the reference price, free-billing physicians may charge a surcharge, which is either (partly) covered by private health insurance or paid out-of-pocket (OOP) by the patient. As of 2017, about 4% of the French population was deprived of private complementary health insurance, and hence particularly exposed to OOP surcharges.

2.2 CMU-C and CSS Patients

Public supplementary health insurance is part of the French social safety net and is a non-contributory health benefit for the poorest households: when patients are too poor to afford private complementary health insurance, they may still be eligible for a publicly provided supplementary scheme. This scheme was created in 2000 as the *Couverture Maladie Universelle Complémentaire* (CMU-C). In 2019, the CMU-C and the *Aide à la Complémentaire Santé* (ACS) were merged into a single scheme, the *Complémentaire Santé Solidaire* (CSS).

Eligibility rules distinguish two tiers. Households below an income threshold benefit from a means-tested, complimentary (i.e., free) CSS: annual earnings must be below €10,339 for a single-person household, with the threshold varying with family size, with spatial variations between overseas territories and mainland France (the “hexagon”), and with specific conditions for students, the self-employed, salaried workers, and welfare recipients. Households with annual earnings between €10,339 and €13,957 are eligible for a non-complimentary CSS, for which they pay a contribution that increases with age – from €96 for those under 29 to €360 for those above 70 – again with spatial variations (Alsace-Moselle vs. overseas territories and the hexagon).

2.3 CMU-C and CSS Benefits

The general principle underlying CMU-C/CSS benefits is to erase or substantially reduce out-of-pocket expenditures for beneficiaries. Fee-regulated physicians cannot charge any surcharge to any patient, by definition of their payment scheme. Free-billing physicians, who can freely set surcharges for other patients, are legally forbidden from charging any surcharge to CMU-C and (former) ACS patients.

Beyond the absence of surcharges, CMU-C/CSS beneficiaries are entitled to a range of in-kind and other benefits: no upfront payment at the point of care, no deductible for hospitalizations, medical visits, drugs, imaging, or testing, and no extra fees (with narrow exceptions such as late-evening or weekend consultations). The “100% santé” reform additionally guarantees full coverage of a base range of medical goods in dental care, optics, and hearing aids.

2.4 Doctors

Physicians in France choose between two payment schemes: *secteur 1* (fee-regulated), under which fees are set at the negotiated reference price, and *secteur 2* (free-billing), under which physicians may charge fees above the reference price, subject only to a requirement of “tact and moderation.” This distinction applies to both GPs and specialists.

For a subset of specialties – gynecologists, ophthalmologists, pediatricians, psychia-

trists, and stomatologists – patients enjoy *direct access*: they can consult these specialists without a prior referral. For other specialists (e.g., dermatologists, endocrinologists), a referral is in principle required, and GPs act as gatekeepers to the rest of the healthcare system.

3 Data

We use a comprehensive administrative database covering the universe of French patients and physicians, observed from 2016 to 2018. This is a distinctive feature of our data relative to, e.g., the United States, where comparable comprehensive claims data (Medicare) are only available for patients aged 65 and above. The data come from the *Système National des Données de Santé* (SNDS) and are recorded at the granularity of individual claims (visits), with information on fees charged, drug prescriptions, and other visit-level characteristics.

We impose the following sample restrictions: non-missing information on physicians’ gender, age, and location; non-missing information on the population, density, and *Accessibilité Potentielle Localisée* (APL, a local measure of the potential accessibility of care) of the physician’s municipality of practice; mainland (“Hexagonal”) France, excluding Corsica; and healthcare providers restricted to GPs and specialists. We then aggregate the data by grouping patients and physicians at various levels of analysis, as described in Section 4.

Our working sample consists of self-employed physicians – both GPs and specialists, and both fee-regulated and free-billing – aged 30 to 79, over the period 2016. As of January 2016, our sample includes approximately 55,000 GPs (aggregated at the practice level for the current draft; the ultimate unit of analysis is the individual physician).

Table 1 presents summary statistics comparing CMU-C beneficiaries, ACS beneficiaries, the pooled CMU-C/ACS population, and the general population, restricted to patients who visited at least one physician in 2016. CMU-C and ACS beneficiaries differ markedly from the general population along several dimensions, most notably age (CMU-C beneficiaries are much younger on average) and chronic disease prevalence (higher among ACS beneficiaries, who include an older population than CMU-C).

Figure 1 plots, for each specialty, the average share of CMU-C/ACS patients among all patients, separately for fee-regulated and free-billing physicians. Across nearly every specialty, the average share of CMU-C/ACS patients is lower among free-billing physicians than among fee-regulated physicians. Figure 2 shows that this pattern also holds when we look at the full distribution (not just the mean) of physician-level CMU-C/ACS shares within specialty and payment scheme, and that there is substantial dispersion in these shares even within a given specialty×payment-scheme cell.

Table 1: Summary Statistics

	CMU-C	ACS	CMU-C or ACS	General population
Women	55	60	55	51
40 ⁻	72	42	68	46
incl. 20 ⁻	44	26	41	22
40–59	22	26	22	25
60 ⁺	6	32	10	28
Chronic disease	10	36	14	17
Medical desert (ZIP)	11	10	10	17
ZAC	53	53	53	52
<i>Hors vivier</i>	36	37	37	31
Same city as doctor	68	66	68	55
Observations	4,984,234	893,572	5,735,654	53,456,932

Sources: SNDS (patients), Insee (general population: gender and age composition).

Sample: Patients visiting at least once some physician in 2016.

Note: Sample means, in %. Coefficients transcribed from presentation slides; to be verified against the original estimation output.

[Insert: Average share of CMU-C and ACS patients among all patients, by payment scheme and specialty (bar chart).]

Figure 1: Average Share of CMU-C/ACS Patients, by Payment Scheme and Specialty

[Insert: Distribution (box plots) of shares of CMU-C and ACS patients among all patients, by payment scheme and specialty.]

Figure 2: Distribution of Shares of CMU-C/ACS Patients, by Payment Scheme and Specialty

4 Empirical Strategy

4.1 Estimating Equation

Let N_{ij} denote the number of visits by patients in group i to doctor j , where group i is defined at the city $\times$ CMU-C-status (of patients) level, and j indexes individual doctors. We estimate all models separately by specialty. We assume that visit counts follow a Poisson model, $N_{ij} \sim \mathcal{P}(\lambda_{ij})$, with

$$\ln \lambda_{ij} = \gamma_c \mathbb{1}\{C_i = C_j\} + \gamma_d d_{ij} + \beta \text{CMU}_i X_j + \alpha_i + \psi_j, \quad (1)$$

where C denotes the city of residence (of patients) or practice (of doctors), and γ_c is a spatial homophily parameter capturing whether patients and doctors are located in the same city; d_{ij} is travel time (in minutes) between i and j , and γ_d measures travel costs; X_j is a vector of doctor covariates (age, gender, the median income of the doctor’s municipality, and the free-billing dummy); β captures physicians’ preferences for CMU-C patients (interacted with doctor covariates); and α_i , ψ_j are, respectively, city $\times$ CMU-C (patient-side) and doctor fixed effects. We estimate Equation (1) by (pseudo-)Poisson maximum likelihood (PPML), which is robust to overdispersion and accommodates the many zeros in the dyadic patient-group $\times$ doctor visit-count data.

4.2 Pitfalls of a Doctor-Level Analysis

A naïve alternative to Equation (1) would regress a physician-level measure of CMU-C clientele – e.g., the share of CMU-C patients among a physician’s patients – on physician covariates, ignoring the dyadic (patient-group $\times$ doctor) structure of the data. We show

that this doctor-level approach is misleading.

To see why, denote by $k \in \{0, 1\}$ a patient's CMU status, and assume separate Poisson models for each patient type at the doctor level: $N_j^k \sim \mathcal{P}(\lambda_j^k)$ with $\ln \lambda_j^k = \psi_j + \mathbb{1}\{k = 1\}X_j'\beta$. It follows that, conditional on the total number of visits $N_j = N_j^1 + N_j^0$,

$$N_j^1 \mid N_j \sim \text{Bin}\left(N_j, \frac{\lambda_j^1}{\lambda_j^1 + \lambda_j^0}\right) = \text{Bin}\left(N_j, \frac{e^{X_j'\beta}}{1 + e^{X_j'\beta}}\right). \quad (2)$$

Denoting by $s_j = N_j^1/N_j$ the share of CMU-C patients of doctor j , we obtain a binomial model with

$$\mathbb{E}(s_j \mid N_j) = \frac{e^{X_j'\beta}}{1 + e^{X_j'\beta}} = \text{Logit}(X_j'\beta). \quad (3)$$

This binomial (logit) representation is formally consistent with the dyadic Poisson model *only* when the underlying doctor fixed effect ψ_j is correctly netted out and there is no omitted dyadic heterogeneity (e.g., spatial homophily or travel costs that are correlated with a doctor's CMU-C clientele). In practice, ignoring such dyadic information is likely to bias the estimated aversion to CMU-C patients. We therefore compare the estimated β obtained from the doctor-level (binomial/logit) analysis with that obtained from the dyadic-level (Poisson/PPML) analysis, and show below that the two differ substantially.

5 Results

5.1 Doctor-Level Analysis

Table 2 reports estimates of the binomial (logit) model of the share of CMU-C patients at the doctor level, separately by specialty. The coefficient on the free-billing dummy is negative and significant in general practice, psychiatry, and ophthalmology, and marginally significant (and of much smaller magnitude) in cardiology and ENT (*oto-rhino-laryngologie*), but is not significantly different from zero in dermatology, pediatrics, gastroenterology, and gynecology.

Table 2: Doctor-Level Analysis: Share of CMU Patients — Binomial Model (Logit Link)

	General practice	Psychiatry	Ophthalmology	Dermatology	Pediatrics	Cardiology	ENT	Gastroenterology	Gynecology
Free-billing doctor	−0.483*** (0.030)	−0.284*** (0.046)	−0.257*** (0.038)	−0.007 (0.033)	−0.053 (0.058)	0.078* (0.042)	−0.063* (0.034)	−0.014 (0.038)	0.011 (0.063)
60+ doctor	−0.050*** (0.013)	−0.096*** (0.033)	0.119*** (0.037)	0.096*** (0.033)	0.028 (0.055)	−0.036 (0.036)	0.014 (0.036)	−0.128** (0.052)	−0.001 (0.080)
Female doctor	−0.062** (0.012)	−0.269*** (0.032)	0.001 (0.035)	−0.085** (0.054)	−0.311*** (0.040)	0.069* (0.048)	0.051 (0.046)	0.093** (0.109)	−0.261** (0.109)
Median income in doctor's city (K€)	−0.174*** (0.002)	−0.064*** (0.005)	−0.109*** (0.007)	−0.102*** (0.005)	−0.147*** (0.007)	−0.095*** (0.006)	−0.115*** (0.006)	−0.094*** (0.007)	−0.114*** (0.009)
# of doctors	55,017	4,455	4,304	2,635	2,366	4,141	2,008	1,995	1,067

Robust standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Note: Coefficients transcribed from presentation slides; to be verified against the original estimation output before submission.

5.2 Dyadic Analysis

Table 3 reports estimates of the dyadic Poisson (PPML) model of Equation (1) at the patient-municipality $\times$ CMU-status by doctor level. The coefficient of interest, on the interaction between the free-billing dummy and CMU-C status, is negative and highly significant in every specialty except gynecology, where it is only marginally significant and an order of magnitude smaller.

Table 3: Dyadic Analysis at the Patient-Doctor Level: Number of Medical Visits — Poisson Model

	General practice	Psychiatry	Ophthalmology	Dermatology	Pediatrics	Cardiology	ENT	Gastroenterology	Gynecology
Free-billing doctor $\times$ CMU patients	-0.704*** (0.022)	-0.267*** (0.023)	-0.333*** (0.021)	-0.141*** (0.021)	-0.200*** (0.096)	-0.091*** (0.027)	-0.118*** (0.023)	-0.170*** (0.025)	-0.066* (0.039)
60+ doctor $\times$ CMU patients	-0.004 (0.008)	-0.080*** (0.020)	0.138*** (0.020)	0.104*** (0.016)	0.034 (0.032)	-0.042** (0.023)	0.046* (0.023)	0.120*** (0.032)	-0.007 (0.044)
Female doctor $\times$ CMU patients	-0.055*** (0.008)	-0.275*** (0.020)	0.016 (0.019)	-0.082*** (0.016)	-0.216*** (0.025)	0.054* (0.028)	-0.037*** (0.014)	-0.049*** (0.025)	-0.035** (0.031)
Median income in doctor's city (K€) $\times$ CMU patients	-0.051*** (0.0004)	-0.010*** (0.001)	-0.026*** (0.001)	-0.044*** (0.001)	-0.061*** (0.002)	-0.051*** (0.001)	-0.037*** (0.001)	-0.049*** (0.003)	-0.035*** (0.003)
Distance $\times$ CMU patients	-0.062*** (0.0001)	-0.054*** (0.0005)	-0.070*** (0.0004)	-0.058*** (0.0004)	-0.066*** (0.0006)	-0.068*** (0.0007)	-0.059*** (0.0005)	-0.064*** (0.0006)	-0.055*** (0.0006)
Distance $\times$ Other patients	-0.079*** (0.0001)	-0.061*** (0.0002)	-0.073*** (0.0003)	-0.061*** (0.0002)	-0.081*** (0.0002)	-0.089*** (0.0003)	-0.075*** (0.0002)	-0.082*** (0.0002)	-0.067*** (0.0005)
Same city $\times$ CMU patients	3.26*** (0.009)	0.95*** (0.028)	1.70*** (0.026)	2.33*** (0.025)	2.68*** (0.029)	2.24*** (0.030)	2.07*** (0.034)	1.74*** (0.054)	2.32*** (0.045)
Same city $\times$ Other patients	1.82*** (0.004)	1.00*** (0.010)	1.47*** (0.013)	1.95*** (0.014)	1.80*** (0.010)	1.87*** (0.014)	2.06*** (0.017)	1.74*** (0.015)	1.78*** (0.018)
# of CMU-patient city FE	67,682	42,179	54,894	52,051	41,140	46,241	47,019	44,958	40,739
# of doctor FE	55,017	4,455	4,304	2,635	2,366	4,141	2,008	1,995	1,067

Robust standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Note: Coefficients transcribed from presentation slides; to be verified against the original estimation output before submission.

5.3 Interpretation

Two broad patterns emerge from Tables 2 and 3. First, we find a robust aversion of free-billing doctors to CMU-C patients, especially pronounced among GPs and ophthalmologists. Aversion to distance is stronger in pediatrics and smaller in psychiatry, while spatial homophily is generally higher for CMU-C patients, and especially so in general practice and pediatrics. We also find that doctors located in richer municipalities are more averse to CMU-C patients, again suggestive of spatial sorting. The age and gender of physicians are not always associated with coefficients of the same sign across specialties, pointing to specialty-specific heterogeneity.

Second, and methodologically important, we find that ignoring dyadic information between patients and doctors is misleading. Without dyadic controls, we obtain a spurious diagnosis of CMU-C patients’ propensity to be admitted to free-billing doctors in every specialty but general practice, psychiatry, and ophthalmology, whereas the dyadic analysis reveals significant, substantial, and negative point estimates – i.e., genuine “CMU penalties” – once we control for patient-doctor level factors such as distance and spatial homophily. In general practice and ophthalmology, the doctor-level approach *underestimates* the CMU penalty: the implied percentage reduction is $100(1 - e^{-0.483}) \approx 38.3\%$ under the doctor-level (aggregated) approach versus $100(1 - e^{-0.704}) \approx 50.5\%$ under the dyadic (disaggregated) approach in general practice. In psychiatry, by contrast, there is no significant difference between the two approaches, with an implied average penalty of between $100(1 - e^{-0.267}) \approx 23.4\%$ and $100(1 - e^{-0.284}) \approx 24.7\%$.

6 Mechanisms: The Role of Physicians’ Fees

To understand why $\hat{\beta}_{FB} < 0$ when the free-billing dummy $FB \subset X$ is included, we investigate whether financial incentives – specifically, the level of the surcharge a free-billing physician charges to non-CMU patients – can account for the observed aversion to CMU-C patients.

We first estimate a two-way fixed-effects pricing equation on the subset of free-billing doctors and their non-CMU-C patients:

$$p_{ij} = p_0 + \nu_c \mathbb{I}\{C_i = C_j\} + \nu_d d_{ij} + \bar{p}_j + \xi_i + \varepsilon_{ij}, \quad (4)$$

where C again denotes city, ν parameters capture spatial variation in prices, ξ_i are patient-municipality fixed effects, and $\bar{p}_j$ is a doctor fixed effect. Equation (4) allows us to recover an estimate $\hat{p}_j$ of the unobserved “surcharge” charged by physician j .

We then augment Equation (1) in two ways. First, we specify $\beta_{FB}FB_j$ as $(\beta_0 + \beta_p \hat{p}_j)FB_j$, allowing the CMU-C penalty among free-billing doctors to vary continuously with the doctor’s estimated fee level. Second, we split free-billing doctors into four groups

g of equal size according to their estimated fee $\hat{p}_j$ (quartiles), and estimate group-specific penalties β_{FB}^g .

Table 4: Doctor Fees: Continuous $\hat{p}_j$ — Poisson Model (Including Doctor Fees)

	General practice	Psychiatry	Ophthalmology	Dermatology	Pediatrics	Cardiology	ENT	Gastroenterology	Gynecology
Free-billing doctor $\times$ CMU patients	−0.906*** (0.027)	−0.422*** (0.024)	−0.381*** (0.022)	−0.159*** (0.023)	−0.266*** (0.037)	−0.128*** (0.028)	−0.153*** (0.024)	−0.185*** (0.023)	−0.062* (0.041)
Free-billing doctor $\times$ doctor fees (€) $\times$ CMU patients	−0.052*** (0.003)	−0.024** (0.001)	−0.021*** (0.002)	−0.006** (0.003)	−0.012*** (0.003)	−0.010*** (0.002)	−0.012*** (0.001)	−0.006*** (0.002)	−0.007** (0.003)
Other controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
# of CMU-patient city FE	67,682	42,178	54,891	52,049	41,137	46,240	47,019	44,958	40,739
# of doctor FE	54,992	4,452	4,273	2,629	2,363	4,123	2,000	1,990	1,065

Robust standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Other controls: same as in Table 3.

Note: Coefficients transcribed from presentation slides; to be verified against the original estimation output before submission.

Table 5: Doctor Fees: Four Ordered Groups of $\hat{p}_j$ — Poisson Model (Including Doctor Fees, in 4 Bins)

	General practice	Psychiatry	Ophthalmology	Dermatology	Pediatrics	Cardiology	ENT	Gastroenterology	Gynecology
Free-billing doctor $\times$ Q1 of doctor fees $\times$ CMU patients	−0.314*** (0.031)	0.097* (0.031)	−0.118*** (0.027)	−0.059* (0.031)	−0.028 (0.059)	0.011 (0.042)	−0.052* (0.029)	−0.148*** (0.036)	−0.044 (0.062)
Free-billing doctor $\times$ Q2 of doctor fees $\times$ CMU patients	−0.663*** (0.036)	−0.290*** (0.039)	−0.352*** (0.030)	−0.071* (0.032)	−0.197*** (0.053)	−0.042 (0.036)	−0.092*** (0.036)	−0.144*** (0.036)	−0.030 (0.068)
Free-billing doctor $\times$ Q3 of doctor fees $\times$ CMU patients	−1.041*** (0.036)	−0.512*** (0.046)	−0.405*** (0.032)	−0.165*** (0.038)	−0.274*** (0.065)	−0.085* (0.036)	−0.094** (0.038)	−0.128*** (0.036)	−0.135** (0.065)
Free-billing doctor $\times$ Q4 of doctor fees $\times$ CMU patients	−1.370*** (0.087)	−0.806*** (0.047)	−0.608*** (0.047)	−0.314*** (0.050)	−0.474*** (0.069)	−0.323*** (0.051)	−0.295*** (0.036)	−0.311*** (0.040)	−0.078 (0.079)
Other controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
# of CMU-patient city FE	67,682	42,176	54,891	52,049	41,137	46,240	47,019	44,958	40,739
# of doctor FE	54,992	4,452	4,273	2,629	2,363	4,123	2,000	1,990	1,065

Robust standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Other controls: same as in Table 3.

Note: Coefficients transcribed from presentation slides; to be verified against the original estimation output before submission.

Financial incentives appear to play a central role in free-billing physicians’ willingness to admit CMU-C patients. The estimated $\hat{\beta}_p$ is negative in Table 4: an extra €1 of surcharge charged to other patients reduces the admission probability of a CMU-C patient (relative to a non-CMU patient) at free-billing ophthalmologists or psychiatrists by about 2%, and by up to 5% among GPs. The 25% most affordable free-billing dermatologists, pediatricians, or ENT specialists do not appear to discriminate against CMU-C patients. The lowest CMU penalty is found in gynecology, where the corresponding coefficients are smaller and not always significant, suggesting that free-billing gynecologists do not systematically penalize CMU-C patients along this dimension. The majority of free-billing cardiologists likewise do not discriminate against CMU-C patients; only the 25% least affordable do. By contrast, the 25% least affordable free-billing GPs impose a severe penalty on CMU-C patients, who face only about a one-quarter relative chance of being admitted compared with other patients (Table 5, Q4).

7 Robustness Checks and Sensitivity Analyses

We conduct several robustness checks. First, to alleviate concerns about coarse grouping of patients at the municipality level, we group patients by health status – e.g., by municipality×age bin (under 18, 18–64, 65 and above) instead of by municipality alone – and, separately, by whether they suffer from a chronic disease. Second, we allow the free-billing aversion parameter β_{FB} to vary with doctor covariates X_j , such as age and gender. Preliminary results indicate that further grouping by age bin, and allowing β_{FB} to vary with doctor age and gender, does not significantly alter our previous findings.

8 Conclusion

We study financial discrimination against beneficiaries of France’s public supplementary health insurance (CMU-C/CSS) in access to physician care. Using exhaustive claims data and a dyadic empirical strategy that exploits variation across cities, CMU-C status, and physicians, we find that free-billing physicians tend to admit low-income CMU-C patients less often than fee-regulated physicians do. We estimate large CMU penalties on the probability of visiting free-billing doctors, spanning –6% in gynecology to –50% in general practice on average, with substantial heterogeneity depending on physicians’ specialty and average fees. We provide evidence that this effect is partly mediated by price discrimination: physicians who charge higher surcharges to other patients are also more averse to CMU-C patients. On the whole, our results provide suggestive evidence of financial-based statistical discrimination against beneficiaries of public supplementary health insurance in access to physician care in France.

Our analysis has several limitations. First, our results may be subject to confounding factors that we cannot fully rule out with cross-sectional data. Second, our aggregation of patients within the same municipality may mask within-municipality heterogeneity relevant to physicians' admission decisions. Third, we focus on the intensity of care (the number of visits) as our main outcome, and do not directly capture other dimensions of access, such as the time lag between a request for an appointment and the actual visit, or the quality of care received.

Promising extensions of this work include exploiting exogenous shocks to CMU-C eligibility conditions to provide supplementary causal evidence, and extending the analysis to other outcomes, such as indicators of the quality of care received by CMU-C beneficiaries relative to other patients.

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