

Physician workforce supply in Belgium. Current situation and challenges *- Supplements -*

KCE reports 72S

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- Supplements -

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APPENDIX FOR CHAPTER 2 THE BELGIAN MEDICAL WORKFORCE

There are no appendices for this chapter.

APPENDIX FOR CHAPTER 3 WHY LIMITING NUMBERS?

I SEARCH STRATEGY FOR SUPPLIER INDUCED DEMAND

Author Christian Léonard & Dominique Roberfroid
 Project number 2006 - 27 - 2_HSR
 Project name Medical Supply Planning
 Keywords Physician utilization, physician-created demand, physician-induced demand, physician initiated demand, physician density, physician behaviour, physician pricing, practitioner behaviour, supplier-induced demand, supplier-inducement, inducement hypothesis, inefficiencies in physician practices, induced demand, information asymmetry, financial incentives, demand creation, demand for physician services, competition in physician services markets

Date 16 February 2007
 Database Econlit OVID
 Date covered 1970 - 2007
 Search Strategy

- 1 induced demand.mp. (96)
- 2 supplier inducement.mp. (8)
- 3 supplier\$ induced demand.mp. (43)
- 4 physician\$ induced demand.mp. (15)
- 5 physician\$ created demand.mp. (0)
- 6 physician\$ initiated demand.mp. (2)
- 7 or/1-6 (103)
- 8 demand for physician\$ service\$.mp. (14)
- 9 demand creation.mp. (17)
- 10 health care.mp. (10913)
- 11 9 and 10 (2)
- 12 7 or 8 or 11 (115)
- 13 inducement hypothesis.mp. (12)
- 14 12 or 13 (124)
- 15 physician\$ densit\$.mp. (7)
- 16 14 or 15 (127)
- 17 competition in physician\$ service\$ market\$.mp. (1)
- 18 16 or 17 (128)
- 19 practitioner\$ behavio\$.mp. (4)
- 20 Physician\$ behavio\$.mp. (25)
- 21 18 or 19 or 20 (153)
- 22 physician\$ pricing.mp. (4)
- 23 21 or 22 (157)
- 24 physician\$ utilization.mp. (4)
- 25 23 or 24 (159)
- 26 information\$ asymmetr\$.mp. (1082)
- 27 26 and 10 (26)
- 28 25 or 27 (185)
- 29 inefficien\$ in physician\$ practice\$.mp. (3)
- 30 29 or 28 (188)
- 31 financial\$ incentive\$.mp. (362)
- 32 31 and 10 (65)
- 33 30 or 32 (247)

Note [mp=heading words, abstract, title, country as subject]

Date	26 February 2007
Database	Embase
Date covered	1970 - 2007
Search Strategy	#1. 'supplier induced' AND demand - 49 #2. 'physician induced' AND demand - 25 #3. 'physician initiated' AND demand - 4 #4. 'physician created' AND demand - 0 #6. 'supplier inducement' - 11 #7. #1 OR #2 OR #3 OR #4 OR #6 - 84
Date	16 February 2007
Database	Medline OVID
Date covered	1970 – 2007
Search Strategy	#1. *"Health Services Needs and Demand"/ec, og, es, ut [Economics, Organization & Administration, Ethics, Utilization] (739) #2. physician\$ behavio\$.mp. [mp=title, original title, abstract, name of substance word, subject heading word] (665) #3. information\$ asymmetr\$.mp. [mp=title, original title, abstract, name of substance word, subject heading word] (43) #4. 1 and 2 (4) #5. "supplier\$-induced\$-demand\$".mp. [mp=title, original title, abstract, name of substance word, subject heading word] (40) #6. "physician\$-induce\$-demand\$".mp. [mp=title, original title, abstract, name of substance word, subject heading word] (22) #7. "physician\$-initiate\$-demand\$".mp. [mp=title, original title, abstract, name of substance word, subject heading word] (1) #8. "physician\$-create\$-demand\$".mp. [mp=title, original title, abstract, name of substance word, subject heading word] (0) #9. or/5-8 (61) #10. 9 or 4 (63) #11. from 10 keep 1-63 - (63)

Date	26 February 2007
Database	PsychINFO OVID
Date covered	1970 – 2007
Search Strategy	#1. suppl\$-induce\$ demand.mp. (2) #2. from 1 keep 1-2 (2) #3. physician\$-induc\$ demand.mp. [mp=title, abstract, heading word, table of contents, key concepts] (2) #4. 1 or 3 (4) #5. physician-initiated demand.mp. [mp=title, abstract, heading word, table of contents, key concepts] (0) #6. physician\$-create\$ demand.mp. [mp=title, abstract, heading word, table of contents, key concepts] (0) #7. inducement hypothesis.mp. [mp=title, abstract, heading word, table of contents, key concepts] (1) #8. induced demand.mp. [mp=title, abstract, heading word, table of contents, key concepts] (10) #9. 4 or 7 or 8 (11) #10. physician behavior.mp. [mp=title, abstract, heading word, table of contents, key concepts] (108) #11. information asymmetry.mp. [mp=title, abstract, heading word, table of contents, key concepts] (25) #12. health care demand.mp. [mp=title, abstract, heading word, table of contents, key concepts] (4) #13. 10 and 11 (0) #14. demand creation.mp. [mp=title, abstract, heading word, table of contents, key concepts] (4) #15. from 9 keep 1-11 (11) #16. from 15 keep 1-11 (11) [mp=title, abstract, heading word, table of contents, key concepts] 2 out of the 11 references are duplicates with those of the the precedent search and we keep 4 references taking the titles and the abstracts into account.

2 COMPLETE RESULTS OF THE SYSTEMATIC REVIEW ON SID

Ref	Q ^a	Year	Country	Physician Population	n	Analysis	Dependent variable	Independent variables	Results ^b	Statistical test ^c
1	M	2000	France FFS ^d (Fixed fees for 75 % of the GPs-sector I)	- GPs - at least 2 years practice; - less than 65 years; - contracted by health insurance funds - in 2 regions;	4 660	OLS	Annual number of procedures per patient and by GP	- GP density/district - GP density/country - GP practice patterns^e - GP seniority - GP gender - GP with free pricing vs fixed fees - Distance to the nearest hospital - Number of patients - % patients ≤ 16 y per GP - % patients ≥ 70 y per GP - % non-paying patients - % unemployed per canton - Average income tax per canton - Region (Burgundy vs Aquitaine) - GP density/district - GP density/country - GP practice patterns - GP seniority - GP gender - GP with free pricing vs fixed fees - Distance to the nearest hospital - % patients ≤ 16 y per GP - % patients ≥ 70 y per GP - % non-paying patients - Unemployment rate - Income tax	-0.0005^c +0.0081 +1.7 to +2.1 +0.0013 -0.018 -0.1065 +0.0021 -0.0017 -0.0101 +0.0093 +0.0165 -0.908 +0.005 +0.040 -0.1866 -0.6839 2 656 - 9 614 +0.59 -192.97 -80.04 -1.178 +5.606 -10.212 -0.233	- NS^p <0.05 <0.01 - NS - NS <0.05 - NS <0.01 <0.01 <0.01 <0.1 <0.1 - NS - NS <0.05 - NS <0.01 - NS <0.01 <0.05 - NS <0.05 <0.05 - NS

^a General quality score based on critical appraisal: H=high; M=medium; L=low;

^b C = coefficient, E = elasticity, Pr = Probability

^c P = P-value, SE = Standard error, T = t-ratios, CI = Confidence Interval

^d FFS = fee-for-service

²	M	2002	Germany FFS (fixed fees, but fees 2.3 times higher for private patients; 90% of patients are statutory)	- Physicians (GPs and SPs together) - 434 districts (over 439)	22 417	OLS 2 SLS Logistic	Number of physician visits per patient during a 3-month period	- Log physician density (per district)^f - Private health insurance - Very good health (vs fair health) - Very poor health (vs fair health) - Hospital stay in 2001 - Age - Age*Age - Female - Married - Married*Female - Years of education - Full time employed - Part time employed - Log equivalent income	-435.55 -6.706 +0.1719^E +0.1816 -0.7109 +1.0452 +0.5093 -0.0053 +0.0033 +0.1986 +0.0473 -0.0996 +0.0025 -0.1055 -0.0725 +0.0022	NS <0.05 <0.01^P <0.01 <0.01 <0.01 <0.01 NS NS <0.01 NS <0.05 NS <0.01 <0.05 NS
³	M	2001	Belgium FFS (fixed fees for physicians linked to the State health scheme)	- Certified GPs - at least 500 contacts per year and at least 50 patients - 993 zip-codes included (on 1 144). Criterion: at least one GP in the area	12 133	Log-log OLS	Number of home and office visits per GP per year	- Log GP density (per zip-code) - Accreditation - Kids (% in age category 0-10 years) - Young (% in age category 10-24 y) - Old (% in age category 65+) - Female (%) - Foreigners (%) - Flanders - Brussels - Unemployment (%) - Mean Income (in 10,000€) - Hosp beds (<5km) - Rest beds (<5km)	-0.305^E +1.007 -1.754 -2.167 -1.584 +3.030 -0.744 +0.076 -0.152 +1.409 -0.010 -0.087 -0.001	<0.10 ^P <0.10 <0.10 <0.01 <0.05 <0.01 <0.01 <0.01 <0.05 <0.01 <0.01 <0.01 NS

^e Practice patterns defined on the basis of a K-means cluster analysis (4 dummy variables)

^f We give here the results for the full model (no discrimination between statutory and private patients). The elasticity of the number of contacts with respect to the physician density equals 0.17 in the full model but equals 0.16 for statutory patients and 0.27 for private patients

⁴	M	1996	Australia FFS (charges above the government funded rebate allowed)	- GPs - 187 statistical subdivisions (SSD)	n.d.	Log-log OLS and TSLS ^g	Number of services per GP per year (average per SSD (Statistical Sub-Division))	- GPs per 10 000 persons (per SSD) - Net price per GP service (per SSD)	+0.468 ^{E(OLS)} -0.28	<0.01 ^P <0.01
⁵	M	1993 to 1996	Norway Trial from mix system (practice allowance and FFS) to mix system (capitation and FFS)	- GPs of the trial (in four municipalities)	109	OLS and GLS ^h	GP income per listed person (i.e. total income divided by the number of listed person)	- Municipality 2 (6.36 GPs/10 000) - Municipality 3 (5.83 GPs/10 000) - Municipality 4 (5.44 GPs/10 000) - Patient shortage - Proportion of female in the list - Female physician - Proportion of 70 and + in the list	+59.2 ^{cj} -77.6 -112.7 +32.2 +160.2 -38.1 300.0	0.261 ^{SE} 20.9 22.4 7.7 43.0 13.7 59.7
⁶	H	1979 to 1993	France FFS (fixed fee in sector I)	- GPs and SPs of sector I (retrospective study)	4 500	GMM ^k	Average number of encounters per physician (n) per day Quantity of care delivered (x) Intensity of care (l) ^j	- GP density per department - SP density per department	-0.201 ^E -0.125	0.002 ^{SE} 0.006
⁷	H	1990	Australia	- GPs	495	Multilev	Decision	- GP density per department - SP density per department	-0.063 ^E +0.114 +0.088 ^E +0.239	0.002 ^{SE} 0.006 NR^m NR

^g TSLS = Two-Stage Least Squares

^h GLS = Generalized Least Squares

ⁱ Before the trial was implemented, each GP informed the National Insurance Administration about the number of persons he wanted to have on his list

^j In an alternative regression municipality dummies were replaced with the number of GPs per 10,000 inhabitants. A positive and statistically significant effect of GP density on service provision was found.

^k Generalized Method of Moments

^l With (x = n^{xi}) and l = 1 for a normal consultation

^m NR = Non reported

		FFS and gatekeeping (Fees for private patient is 1.6 times that paid by the State for public patient)	in 8 areas 3 categories of insurance	patients	regression	(return visits)	- GP density ^w - Area index of per capita income - Medical card ratio ^x	0.08 ^{Pr} 0.91	< 0.01 ^P < 0.01 ^P
¹³	M/ H -1976	USA Fee per surgery charged by Medicare	- Surgeons In 349 primary Sampling Units	2 837	TSLs	- Rate of elective surgery	- Surgeon density - High school education - GP density - Hospital expenses per admission - Beds disability days - Female - White	0.40 0.11 0.54 0.01	< 0.01 < 0.01 < 0.01 < 0.01
^{14y}	M 1977	USA FFS	- Physicians^z national survey in the USA	40 000	WLS ^{aa}	- Physician-initiated expenditures for ambulatory care	- Physician density - Perceived 'good' health - Perceived 'fair' health - Perceived 'poor' health - Medicare and private patients - Private patients only	+13.01 ^c +11.3 -7.2 -0.07 +5.8 +18.5 +8.6 +0.10 ^c +18.81 +57.43 +115.30 +70.02 +18.89	<0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05

^u 42 % of the total number of physicians

^v 'Full Model' means the model with all the independent variables

^w The estimated parameters of a logistic regression are difficult to interpret. The odds ratios are commonly used to assess the relative increases or decreases of risk due to exposition variables. In this paper, the authors chose to 'plug in' specified values of the independent variables, multiplying them by their respective coefficient, adding the intercept term and solving for p, given that the left-hand side of the logistic regression equals $\log(p/1-p)$, where p is the probability of the event, here the return visit (see Tussing and Wojtowycz 1986 p. 855¹²).

^x Proportion of patients who are beneficiary of medical care services free of charge

^y The three following papers are based on the same source but propose a different analysis of SID. Each of them uses the physician density as independent variable but complementary independent variables are specific in each of them (respectively the 'perceived health', the 'type of insurance' and the 'level of education')

^z The type of physician is not reported

^{aa} WLS = Weighted Least Squares

¹⁵	M	1977 -1978	USA FFS	- Physicians national survey in the USA	40 000				- Medicare patients only - Medicaid patients only - Number of disability days - Beds per 100 000 populations - Percent physician age 45 - Percent physicians board certified	+10.41 +44.29 +1.5 -0.02 -4.59 +15.6	NS <0.05 <0.05 NS NS NS
									- Physician density - Part paid by the family - Perceived health status (excellent – good – fair – poor) - Female - Education - Income adjusted for family size - Age of the physician	+0.125 ^E -0.176 +0.012-0.020	<0.05 <0.05 <0.05
									- Physician density - Part paid by the family - Perceived health status - Female - Education - Income adjusted for family size - Age of the physician	+0.094 +0.002-0.010 -0.246 -0.370	<0.05 NS <0.05 <0.05
									- Physician density - Part paid by the family - Perceived health status - Female - Education - Income adjusted for family size - Age of the physician	+0.306 ^E -0.010-0.292 +0.019-0.062 +0.122 +0.001-0.038 -0.002-0.019 -0.070	<0.05 <0.05 <0.05 <0.05 NS NS NS
									- Physician density - Insurance (public vs private) - Perceived health status - Female - Education - Income adjusted for family size - Age of the physician	+0.112 ^E -0.069 +0.019-0.040 +0.095 +0.002-0.010 -0.246 -0.370	<0.05 <0.05 <0.05 <0.05 NS <0.05 <0.05
¹⁶	M	1977	USA FFS	- Physicians national survey in the USA	40 000				- Physician density - High education - Low education - Perceived health status – poor - Perceived health status – fair - Perceived health status – good	-0.001 ^C +0.116 +0.195 +0.930 +0.556 +0.210	<0.01 <0.01 <0.01 <0.01 <0.01 <0.01

18	M	1998	Norway FFS (contract physicians) and salary systems	- Contract primary care physicians - Salaried primary care physicians in 435 municipalities	1 818 564	OLS and logistic	- Mean number of laboratory tests per consultation	- Doctor's fee - Public patient ratio - Per capita income	-0.00774 -0.30289 -0.00218	NS <0.05 <0.05
								- Physician density^{cc} - Contract physicians - Group practice - Number of years in present practice - Log of % 6 years and younger - More than 50 % 60 years and older - More than 75 % patients are women - GP is a male - GP is 35 – 50 years old - GP is > 50 years old - Salaried physicians - Group practice - Number of years in present practice - Log of % 6 years and younger - More than 50 % 60 years and older - More than 75 % patients are women - GP is a male - GP is 35 – 50 years old - GP is > 50 years old	+0.14 ^{c-ols} +0.10 -0.02 -0.20 -0.06 +0.04 +0.12 +0.10 +0.14 -0.08 +0.31 -0.0008 -0.11 +0.42 -0.08 +0.10 +0.05 -0.21 +0.20 ^{c-Log} -0.06 -0.22	0.32 ^T 1.46 0.67 0.78 0.81 0.38 1.34 0.73 0.88 0.09 1.38 0.02 0.21 2.69 0.09 0.71 0.31 1.03 0.03 0.13 10.02

^{cc} All the results we show are results of regressions (OLS and Logistic) with instruments

						than 20 minutes per physician	- Salaried physicians - Group practice - Number of years in present practice - Log of % 6 years and younger - More than 50 % 60 years and older - More than 75 % patients are women - GP is a male - GP is 35 – 50 years old - GP is > 50 years old	-1.32 +0.73 +0.31 -0.09 +0.34 +0.37 +0.47 -1.49 -0.21 -1.71 +1.42 -1.07 -0.40 +0.36 +0.06	4.62 15.58 1.46 0.17 1.08 1.01 0.04 4.61 1.71 1.37 8.12 2.84 0.80 0.60 0.01
¹⁹	M	1995	Norway FFS (contract physicians) and salary systems	Contract primary care physicians in 435 municipalities	I 366	OLS and TSLS	- Physician density - Non practice income^{dd} - Physician is a male - Age physician - Presence of an hospital in the area - % of female in the population - Income per capita - Physician density - Non practice income - Physician is a male - Age physician - Presence of an hospital in the area - % of female in the population	-10.89 ^{c-ols} -0.033 +33.09 +10.5 +0.806 +1156.91 +0.566 -0.210^{c-ols} +0.001 +18.6 +1.72 -3.95	<0.05 ^p <0.05 <0.05 <0.05 NS <0.05 <0.05 NS NS <0.05 NS NS

^{dd} Capital revenue and spouse income

22	M	1986	USA 12 specialties - FFS	Physicians (GP + 11 specialties)	1 700	IT3SLS ⁸⁸	laboratory tests	- The physician is a male - Physician has a specialist degree - % population 68 years and over - % population 6 years and younger - Unemployment rate - Number of welfare recipients per capita - Mortality rate	+0.467 ^{E(W)} +0.073 +0.187 +0.401 -0.844 -2.075 -1.518 +0.835 +0.0001	<0.05 <0.05 <0.05 <0.05 NS NS NS NS NS
							- Number of private patient visits - Number of Medicaid patient visits	Physician density in the same specialty Physician density in other specialties - Physician age - Physician gender (female) - Solo practice - Board certified - Malpractice premium - Number of nurses per physician - Number of clerical worker per physician Physician density in the same specialty Physician density in other specialties - Physician age - Physician gender (female) - Solo practice - Board certified - Malpractice premium - Number of nurses per physician	-0.00006 ^c 0.000007 -0.004 -0.38 -0.14 +0.08 +0.05 +0.30 -0.03 -0.0006 +0.000083 -0.01 +2.01 -2.76 +0.45 -1.19 -2.41	S 1% NS S 1% S 1% S 1% S 5% NS S 1% NS S 1% NS S 1% S 1% S 1% S 10% S 1% S 1%

⁸⁸ IT3SLS = Iterated Three Stages Least Squares

²³	M	Norway FFS (contract physicians) and salary systems	Patients	10 576	Logit	- Physician initiated visits	- Number of clerical worker per physician	+5.53	NS	
							- Inverse of physician density (number of population per physician) - R ₁ (1 818 pop/phy) - R ₂ (2 583 pop/phy) - R ₃ (3 796 pop/phy) - R ₄ (8 853 pop/phy) - R ₅ (40 366 pop/phy) - % population 6 years and younger - % population 80 years and older - Proportion of unemployed - Average life expectancy - There is an hospital in the area - There is a junior physician in the area - Subjective health status - Reduction of activity due to illness - Chronically ill - Number of unemployment during the last year - Index measuring the frequency of intake of alcohol - Smoking daily - Travel time to the physician - Household income	-0.00355 ^{Chh} +0.0015 +0.00031 +0.000096 -0.000006 +0.14 ^{Eii} +0.02 ^E -0.16 ^E +2.38 ^E +0.22 -0.64 +0.38 +1.15 +1.26 +0.14 -0.038 +0.12 -0.01 ^E -0.00072 ^E	0.23 0.52 0.49 0.47 0.50 0.80 0.97 0.26 0.30 0.21 0.0003 0.0001 0.0001 0.0001 0.50 0.26 0.05 0.96 0.96	
²⁴	M	Michigan	Patients	NR	OLS	- Per capita (of	- Physician density	+0.269 ^E	2.56 ^T	

hh The coefficients of the logistic regression can be transformed in odds ratio. When we compute the OR corresponding to these coefficients we obtain values in the range of 0.996 to 1.001. These results represent an absence of association between the population-physician ratio and the number of physician initiated visits

ii Some of other variables are entered in the regression in logarithmic form (mentioned with E, if not C). Thus the regressions coefficient of these variables can be interpreted as elasticities; they measure the effect of a one per cent increase in the independent variables on the odds of having a physician-initiated visit

jj D = Dummy (not expressed in logarithm)

	to 1980	424 medical procedures				population) utilization of care	- Bed density - Real fee - Real family income - Mean school years - % living in urban areas - % female - % minority - % less than 5 years old - % more than 65 years old - Average real manufacturing wages - Rate of work loss days - % population covered by Blue Shield - % population covered by Medicaid	+0.124 +1.331 +0.272 -6.022 -0.282 +0.153 +0.037 +0.130 -1.288 -0.858 +0.019 +0.014 +0.013	4.37 2.76 1.35 3.91 2.78 0.11 0.92 0.28 4.15 3.02 0.35 1.67 0.12
						- Per unique patient intensity of care	- General surgeons density - Family doctors density^{Dil} - Internal medicine doctors density^D - Paediatric medicine doctors density^D - Bed density - Real fee - Real family income - Mean school years - % living in urban areas - % female - % minority - % less than 5 years old - % more than 65 years old - Average real manufacturing wages - Rate of work loss days - % population covered by Blue Shield - % population covered by Medicaid	+0.054 -0.016 +0.319 -0.057 +0.068 +0.704 +0.136 -5.651 -0.570 -4.648 +0.130 -2.043 -1.660 -1.589 -0.071 -0.027	0.54 1.11 28.4 -3.65 0.44 16.37 0.55 2.60 3.66 2.76 2.27 3.47 3.83 4.63 0.81 0.32

[illegible]

3 CRITICAL APPRAISAL OF THE SYSTEMATIC REVIEW ON SID

Ref.	Criteria
1.	Research question well explained:
2.	Appropriate study design:
3.	Data quality
4.	Analysis:
4.1.	Methods clearly explained
4.2.	Appropriate statistics
4.3.	Goodness of fit of the models
4.4.	Validity of models tested
5.	Discussion

	5.1. Internal validity 5.2. External validity 6. Conclusions supported by findings?	variables (procedures per GP and procedure per patient) - Not discussed. Can not be ascertained, but difficult to generalize the results for two regions to the whole country - All conclusions should be considered with caution given the important methodological flaws
2	1. Research question well explained: 2. Appropriate study design: 3. Data quality: 4. Analysis: 4.1. Methods clearly explained 4.2. Appropriate statistics 4.3. Goodness of fit of the models 4.4. Validity of models tested	- <i>Effects of individual health insurance status and local physician density on the individual number of doctor visits.</i> - Cross-sectional study - No discrimination between specialists and general practitioners - Only a 3 month-period is considered. Can capture only frequency based on visits at close intervals in a specific period. No information given on the period. - Source: Survey data on individual health care utilization (SOEP 2002) + indicators at the regional level (INKAR database) - No quality check reported (e.g. around 10 % of patients with ≥ 6 visits over 3 months. Is this real?) - Four stages model clearly explained - Definition of type of physicians missing - Management of outliers not described - Procedures for building up the model not described - Endogeneity tested through a Hausman test - Cluster effect accounted for - Interactions tested - Heteroscedasticity addressed through robust estimates of SE - Pseudo R^2 : 0,0488 (Full Model) - No - Endogeneity of the physician density is addressed with 3 instrumental variables at the regional level: setting up a medical school; percentage of inhabitants age 65+; log income per capita. The suitability of the latter is at stakes as age and income are variables also associated to health care use. - Normality not tested

	5. Discussion 5.1. Internal validity 5.2. External validity	- Potential bias of self-reporting visit to physician by patients is not addressed - Results not adjusted for the prevalence of chronic diseases, a powerful factor of repeated visits - Not discussed. - Numerous limitations (see above) reflected in the poor R^2 - Covers all patients on the majority of the national territory - Unknown specificities of the period considered - Does not allow to disentangle demand inducement by GPs and SPs
3	6. Conclusions supported by findings? 1. Research question well explained: 2. Appropriate study design: 3. Data quality: 4. Analysis: 4.1. Methods clearly explained 4.2. Appropriate statistics 4.3. Goodness of fit of the models 4.4. Validity of models tested 5. Discussion	- Evidence of supply induced demand in Belgian primary care market? Which type of visits does the GP use for inducing demand for services? - Cross-sectional study in year 2001 - No individual information about the GP (age or gender) but proxy of the health and socio-economic status of the patients - Source: routine data from the state health fund (INAMI), restricted to active GPs - Validity check not reported - Procedure for variables selection not described - Management of outliers not described - Interactions not tested - Multi-levels not accounted for - Endogeneity assessed - R^2: 0.22 - Check about robustness and heteroscedasticity are reported - Endogeneity addressed through IV (population size, population density).

	5.1. Internal validity	- Not discussed - The results are linked to the hypothesis of the model based on the relative notions of 'high' and 'low' density
	5.2. External validity	- Not discussed (absence of individual data of the patients can lead to inexact interpretation)
	6. Conclusions supported by findings?	- Author provides a coherent intuitive interpretation of coefficients in low density areas (availability effect) and in high density areas (SID). Nevertheless, few coefficients are really significant (i.e. $p < 0.05$)
4	1. Research question well explained:	- <i>Evaluation of the use of cross-sectional data and the inclusion of the doctor supply to specify the demand equations for medical care. Testing of evidence of SID.</i>
	2. Appropriate study design:	
	3. Data quality:	- Cross-sectional data - Data aggregated on SSD (Statistical Sub-Division) level
	4. Analysis:	- Source: Billing statistics from Health Insurance Commission and Australian Census (socio-economic proxy for health status for 187 Statistical subdivisions)
	4.1. Methods clearly explained	- Quality check not reported - If a doctor practiced in two or more locations, their supply is apportioned pro rata between these two or more locations - Number of GPs and patients not reported
	4.2. Appropriate statistics	- 'Services' not defined - Treatment of the outliers not reported - Test for endogeneity of density and four alternative demand models clearly explained - Affectation of the physicians between areas well explained - Management of outliers not described
	4.3. Goodness of fit of the models	- Multi-leveling of data (statistical local areas, statistical divisions) not accounted for - Endogeneity of the physician density tested with 26 location variables as instrumental variables - Heteroscedasticity and misspecification of the demand function tested
	4.4. Validity of models tested	- Pearson correlation matrix reported - $R^2 = 0.83$

	5. Discussion 5.1. Internal validity 5.2. External validity 6. Conclusions supported by findings?	- Not tested - No adjustment for health needs - No individual patient data (only proxy on SSD level) - Absence of border crossing reported - Sensibility of the average elasticity to doctor supply changes is reported - The whole country is covered by the data - A bias due to the partial aggregation can not be excluded - <i>Effect of a 'shortage' of patients on the provision of services per patient</i>
5	1. Research question well explained: 2. Appropriate study design: 3. Data quality: 4. Analysis: 4.1. Methods clearly explained 4.2. Appropriate statistics 4.3. Goodness of fit of the models 4.4. Validity of models tested	- Use of a trial making the difference between two different kinds of remuneration systems - Reporting of all the GPs over the desired size of patient list and comparison between expected and actual size - Source : Data from a capitation trial conducted between 1993 and 1996 - No quality check reported - The population of the four Municipalities is very different (8 200 to 114 000), the population density is not reported - Data based on the reported answers by GPs (no quality control reported, no treatment of outliers reported) - Management of outliers not described - Some results of correlations for independent variables are not reported (ex: age of the physician) - Endogeneity of density not assessed - Dummy for rationed and unrationed GPs - No use of socio-economic characteristics of the patients - R^2: 0.29 - Endogeneity of GP density not assessed - Border crossing not reported - Collinearity, heteroscedasticity not assessed

	5. Discussion 5.1. Internal validity 5.2. External validity 6. Conclusions supported by findings?	- Test of the sensitivity of the results for rationed GPs if the number of listed patients increases over time - Results from OLS and GLS modelling are different (standard errors are smaller with the GLS model) - Test for selection bias (two step estimator and propensity score matching method) - Representativeness of the 4 municipalities is at stake - Results and statistical tests lead to evidence of SID (reduction of services with the physician density and increase of services per patient if GPs are confronted with a patient shortage)^{kk}
⁶	1. Research question well explained: 2. Appropriate study design: 3. Data quality: 4. Analysis: 4.1. Methods clearly explained 4.2. Appropriate statistics 4.3. Goodness of fit of the models	- <i>Analyzing the change in physician behaviour consecutive to an increase in local physician density to test the evidence of SID</i> - Use of panel data. Appropriate design to highlight behavioural changes over time (5 years of observations) - Patient data is a random draw of about a tenth of the whole population (official source : Caisse Nationale d'Assurance Maladie des Travailleurs Salariés) - Seniority of physicians at least 7 years - Quality control reported - Assessing of endogeneity of density, availability effect and non observable heterogeneity clearly explained - The results commented correspond to the most accurate estimates - No distinction between patient initiated and physician initiated encounters - Construction of a variable measuring the real volume of care provided by each physician - Density calculated at department level (too much aggregated) - No data about patient characteristics (but panel data permitting to deal with unobserved heterogeneity) - Results of robustness tests are reported - Computation of elasticity for 'intensity of care' not clearly reported (no SE or IC reported) - Lack of details concerning the computation of the intensity of care - Not reported - Yes - Tests of validity of the procedure, testing of heteroscedasticity, testing of the significance of the instruments

kk Iversen and Luras have analyzed the first results of this capitation trial in 2000 ²⁵

	4.4. Validity of models tested	- Consistency and efficiency of GMM checked - Endogeneity of physician density is assessed
	5. Discussion 5.1. Internal validity	- Control for availability effect - No control for cross-border effect - Roughly character of physician density, because aggregation, reported - Robustness of results has been checked
	5.2. External validity	- Use of a representative sample of physicians in a long period, result can be extrapolated to the entire population of physicians of the sector one (results not applicable to sector two where fees are free)
	6. Conclusions supported by findings?	- The increase of physician density leads to SID (weak reduction of the number of encounters and compensation with an increase of the intensity of care)^{II}. Nevertheless, the authors do not discuss the potential influence of other parameters not included in the analysis. They consider that the lack of patient characteristics has little effect on the results because the panel structure of the data allows to specify and deal with unobserved heterogeneity
7	1. Research question well explained:	- <i>Analysis of the effects of competition on the behaviour of Australian GPs (hypothesis that GPs in areas of high competition are more likely to recommend a follow-up consultation compared to GPs in areas of low competition)</i>
	2. Appropriate study design:	- 495 randomly selected GPs, stratified by state - Details of all consultations undertaken were collected in 21-week periods 6 months apart - Details on GPs and their practice also collected - Included only new episodes of disease - GPs were asked if they requested that the patient returned within the next 3 months - GP density measured at the local level (LGA) and in FTE per 10,000 population
	3. Data quality:	- Disaggregated data - Quality check not reported
	4. Analysis: 4.1. Methods clearly explained	- Yes - Endogeneity not addressed because use of individual data
	4.2. Appropriate statistics	- Multilevel analysis - Iterative process

II A preliminary version of this paper was written in 2000 ²⁶

	- Comparison of fixed- and random-effect models - Interaction not tested (only age squared for one medical condition) - Collinearity not tested - Likelihood ratio test - Pseudo R^2 : 0.23, 0.35, 0.14 and 0.16 for the four models corresponding to the four medical conditions - Not discussed but likely to be good given the study design - Likely to be good within GPs (random selection). Unknown for other specialties or health conditions - SID demonstrated only in case of otitis media, coefficient relatively small. R^2 is only 0.06 for the otitis media model. Reasons for variations across health conditions are not discussed. - The link between follow up visit and SID could be completely reversed: to have a follow up visit could be the best practice, but only physicians with a lower workload (i.e. being in a high density area) could afford to do it. - For all conditions, ordering a diagnostic test is a strong predictor of follow up visit. Not clear if ordering a diagnostic test is a proxy for disease seriousness, and/or it is influenced itself by GP density? Same remark for medication and treatment.	
8	4.3. Goodness of fit of the models 4.4. Validity of models tested 5. Discussion 5.1. Internal validity 5.2. External validity 6. Conclusions supported by findings? 1. Research question well explained: 2. Appropriate study design: 3. Data quality: 4. Analysis: 4.1. Methods clearly explained 4.2. Appropriate statistics	- Analysis of the reaction of obstetricians and gynaecologists face to a reduction of fertility, considered as an exogenous income shock (this research question is considered as 'dubious' by Mc Guire 2000 p.510)²⁷ - Time-series study - Data from the National Hospital Survey – dataset of individual birth records from 1970 to 1982. - Quality control of the data not reported - Empirical framework clearly explained - Logistic regression - Adjustment for mother age, marital status, race, and having had a previous c-section - Adjustment for 3 state indicators - No interaction tested - Unclear treatment of the clustering and repeated measurements ("a full set of state and year dummies")

	4.3. Goodness of fit of the models 4.4. Validity of models tested 5. Discussion 5.1. Internal validity 5.2. External validity	- Not reported - No. - Endogeneity of physician density not assessed. - No specific test for collinearity or heteroscedasticity - Representative sample of the USA - Check for the symmetric character of the diffusion of the technology. Response to fertility changes is equally strong in the period when fertility is rising and falling. - The magnitude of the SID attitude is small but the test about the symmetric character of the use of a new technology shows that the response to fertility is equally strong in the period when fertility is rising and falling. This suggests that the physicians are able to adapt their practices in response to financial incentives.
9	6. Conclusions supported by findings? 1. Research question well explained: 2. Appropriate study design: 3. Data quality: 4. Analysis: 4.1. Methods clearly explained 4.2. Appropriate statistics	- <i>Analysis of the effect of ownership of facilities on the services utilization (controlled for physician density)</i> - Cross sectional analysis - Data from two surveys of physical therapy and rehabilitation facilities (details about the survey not reported) and of physical therapists (voluntary response via a newspaper) - No quality check reported but clear explanation of data exclusion (resting data 203 on 313 eligible) - Unclear modelling strategy - Innovative variable: ownership of facilities, average ownership share is measured by the total number of owners of the clinic. This calculation can lead to bias because the real ownership can vary from owner to owner - Adjustment for individual characteristics of physicians (age, type of training, race, ethnicity, years in Florida, number of patients seen in a week, quality or not of orthopaedist) - Effect of physician density tested alone and by interaction ownership - Management of outliers not described - Many interactions are tested and the modelling stays hierarchical - Adjusted $R^2 = 0.413$ (for the number of visits) and 0.196 (for length of visits)

	4.3. Goodness of fit of the models 4.4. Validity of models tested 5. Discussion 5.1. Internal validity 5.2. External validity 6. Conclusions supported by findings?	- Not reported - Test for heteroscedasticity reported - Endogeneity of GP density not assessed - No control of the case-mix of the patients reported - Data obtained by survey (voluntary response) and only for one State. Difficult to assess the possibility to generalize the results - The physician density has a greater effect on the consumption in 'dependent' clinics (i.e. clinics which are owned by physicians). - For independent clinics, physician density has no effect on consumption of physical therapy services - The analysis attests of SID if physician owns the clinics, the effect of density is of secondary order. - <i>Analysis of the effect of surgeon supply on the demand for surgeon's services in 4 specialties</i> - Cross section analysis among elderly Medicare enrollees - Source: data of Health Care Financing Administration, Medicare and Physician's Current Procedural Terminology Codes (Four specialties). - No quality control reported - Selection of sample clearly explained - Management of outliers not described - Aggregation on Metropolitan area level and services level - Adjustment for patients characteristics (age, sex, income) - Use of instrumental variables (TSLs) to address the problem of endogeneity of the density. - $R^2 = 0.44$ four specialties (from 0.24 to 0.29 per specialty) and R^2 between 0.22 and 0.49 for first occurrence - Heteroscedasticity tested
10	1. Research question well explained: 2. Appropriate study design: 3. Data quality: 4. Analysis: 4.1. Methods clearly explained 4.2. Appropriate statistics 4.3. Goodness of fit of the models 4.4. Validity of models tested 5. Discussion 5.1. Internal validity	

	5.2. External validity 6. Conclusions supported by findings?	- Not discussed - Endogeneity of physician density assessed (TSLs) - Significance level set at 0.10 - Not discussed - The results can not be generalized to other specialities given the substantial difference between ophthalmology and the others specialities - The influence of the surgeon density on the first contact between the patient and the physician seems to be a support for the availability hypothesis. On the other hand, the surgeon density has only a significant effect on ophthalmology. The authors do not explain this specific support for SID.
"	1. Research question well explained: 2. Appropriate study design: 3. Data quality: 4. Analysis: 4.1. Methods clearly explained 4.2. Appropriate statistics 4.3. Goodness of fit of the models 4.4. Validity of models tested 5. Discussion 5.1. Internal validity 5.2. External validity	- <i>Analysis of the supplier-induced demand hypothesis for physicians in Switzerland (4 types of physicians)</i> - Cross section analysis of office – based physicians in one canton (Bern) - Official sources of data (Statistical offices of Switzerland and the Canton Bern) and 1980 census (population figures) and Survey of the hospital association (hospital beds) - No quality control reported - Addressing endogeneity of physician density clearly explained - Density on local level (n = 28) - Use of physicians characteristics at individual level - Adjustment for the age of the patients - Use of TSLs specification to assess the endogeneity of the density - Not reported - Heteroscedasticity tested - Endogeneity of physician density is assessed using a Hausman Test - Not reported - The coefficients are characteristic of SID but the aggregation at district level and the quasi absence of control variables for the patients are sources of bias - Not possible to generalize the results to the whole country

	6. Conclusions supported by findings?	- The results support the SID hypothesis. They show also the influence of the experience of the physicians and the age of the patients on the medical technology employed.
12	1. Research question well explained: 2. Appropriate study design: 3. Data quality: 4. Analysis: 4.1. Methods clearly explained 4.2. Appropriate statistics 4.3. Goodness of fit of the models 4.4. Validity of models tested 5. Discussion 5.1. Internal validity 5.2. External validity 6. Conclusions supported by findings?	- <i>Influence of physician density, per capita income and insurance status of the patient on the ratio of return visits</i> - Cross-sectional survey - Source: Nationwide sample survey of households in Ireland. One observation randomly taken in each household of the sample. - No quality control specified - Rules followed for selection of variables in regression modelling not clearly explained. - One model tested without female aged 18 – 40 to avoid obstetrical return visits in the data - Age and gender of the patients used as proxies for health status - Interaction between density and income and between density and two other independent variables (second order interactions – i.e. interaction between more than two variables - should be excluded to avoid collinearity and interpretation problems) - Management of data clustering not described - Adjustment for social and health characteristics of the patients - <i>R² adjusted for degree of freedom = 0.136 (Full Model) and 0.123 (Model with only variables significant at the 5 % level)</i> - Endogeneity of GP density not assessed or discussed - The model stays hierarchical (i.e. the variables used in the interactions are also present in the model) - Not discussed - Not discussed. Likely to be good given the sampling procedure - The results support the SID hypothesis, more return visits in high density area.
13	1. Research question well explained:	- <i>Influence of surgeon density on fees and utilization of surgery in the Medicare system (USA)</i>

	2. Appropriate study design: - Cross sectional study with control for patient characteristics - Estimation of the modelling for three sub-samples (large, small and non-metropolitan areas) - Estimation (OLS) making the difference between areas with shortage and surplus of surgeons - Source: Health Interview Surveys – sample of all US households in 349 Primary Sampling Units 3. Data quality: - No quality control reported 4. Analysis: 4.1. Methods clearly explained - The narrative results are based on elasticities but the table reports regression coefficients - Adjustment for health and socio-economic status of the patients - Management of outliers not described for OLS 4.2. Appropriate statistics -TSLM modelling 4.3. Goodness of fit of the models - R^2 Between 0.05 and 0.09 4.4. Validity of models tested - Collinearity and heteroscedasticity not reported 5. Discussion 5.1. Internal validity - Endogeneity of physician density assessed - Control for border crossing effect 5.2. External validity - Second estimation with different geographic areas tested 6. Conclusions supported by findings? - The surgeon density plays a significant role in explaining the elective surgery rate. The authors also show the strong positive influence of the surgeon density on the surgical fees, an alternative way to compensate the effects of the increase of competition between the surgeons when the density increases.
¹⁴	1. Research question well explained: - <i>Analysis of the physician-induced demand hypothesis with patient's financial burden as a limiting factor on inducement</i> 2. Appropriate study design: - Cross sectional study 3. Data quality: - Source: National Medical Care Expenditure Survey - Nationally representative sample (for each reported ambulatory visit, we know who initiated the visit)

	4. Analysis: 4.1. Methods clearly explained 4.2. Appropriate statistics 4.3. Goodness of fit of the models 4.4. Validity of models tested 5. Discussion 5.1. Internal validity 5.2. External validity 6. Conclusions supported by findings?	- No quality control reported - No explanation concerning the construction of the sample - Rules for modelling clearly explained - Individual data for patients - Weighted least square regression - Management of outliers not described - Adjustment for health status of the patient - Data clustering not accounted - $R^2 = 0.13$ - Endogeneity of insurance status addressed. Endogeneity of medical density not addressed but use of individual data - Collinearity and heteroscedasticity not reported - Various specifications are tried to test the robustness of the coefficient of physician supply - Not discussed - No control for border crossing effect - Not discussed - Other explanatory variables than density play a substantial role in the determination of the physician's initiated expenditures but the physician density has a significantly effect on the physician-initiated expenditures. This result can be considered as a support of the SID hypothesis
15 1. Research question well explained: 2. Appropriate study design: 3. Data quality: 4. Analysis:		- <i>Analysis of the relation between the physician density and the reimbursement system on one hand and the physician-initiated visits and services on the other hand</i> - Cross-sectional data - 14 000 randomly selected households during 18 months - No explanation about the randomization - No quality control reported - Possible bias due to interview techniques - Speciality of the physician available but not exploited

	4.1.1. Methods clearly explained 4.2. Appropriate statistics 4.3. Goodness of fit of the models 4.4. Validity of models tested 5. Discussion 5.1. Internal validity 5.2. External validity 6. Conclusions supported by findings?	- No rules of retrograde process reported - Calculation of elasticities not clearly explained - Patients characteristics, insurance status and physician characteristics to control the estimations - <i>Not reported</i> - No test of collinearity or heteroscedasticity reported - Not discussed - Endogeneity of physician density not assessed but individual data - No control for border crossing effect - Not discussed - The authors conclude to a small magnitude of SID effect but the values of the elasticities can be considered as a support for the SID hypothesis - <i>Effect of physician density of the patient and physician initiated visits control for patient characteristics</i>
¹⁶	1. Research question well explained: 2. Appropriate study design: 3. Data quality: 4. Analysis: 4.1. Methods clearly explained 4.2. Appropriate statistics 4.3. Goodness of fit of the models 4.4. Validity of models tested	- Interview of 40 000 individuals representative of the US population - One example of question presented - No control of quality reported - Treatment of outliers not reported - Possible bias due to interview techniques - No explanation of the calculation of the elasticities - Patients characteristics - Difference between patient and physician characteristics - $R^2 = 0.07$ for patient-initiated model and 0.12 for physician-initiated model - Common tests of collinearity and heteroscedasticity not reported

	5. Discussion 5.1. Internal validity 5.2. External validity 6. Conclusions supported by findings?	- Not discussed - Endogeneity of physician density not assessed but individual data - No control for border crossing effect - Not discussed - The conclusion of weak evidence of SID corresponds to the results, other independent variables play a more important explanatory role (health status) - <i>Analysis of the possible link between return visits and the GP density in Ireland</i> - Cross sectional study based on individual data collected by interview - Source: Nationwide interview of 1 069 households - Details about the interview reported - Validity of the answers reported - Two direct measures of self referrals by physicians ('Whose idea was the present visit?' and 'Did the visit lead to an arranged return visit?') - Health and age as proxies of the health status - Density and income per capita at regional level (8 homogeneous areas) - $R^2 = 0.103$ to 0.118 depending on the dependent variable and the model - Endogeneity of GP density not discussed - Problem of heteroscedasticity not assessed - Collinearity not discussed - The author considers as a potential weakness of the study, the lack of further control for medical factors influencing both physician density and the return visits, such as regional prevalence of chronic conditions - Not discussed but, given the magnitude of the sample, the results can be generalized to the whole population of Ireland
17	1. Research question well explained: 2. Appropriate study design: 3. Data quality: 4. Analysis: 4.1. Methods clearly explained 4.2. Appropriate statistics 4.3. Goodness of fit of the models 4.4. Validity of models tested 5. Discussion 5.1. Internal validity 5.2. External validity	

	6. Conclusions supported by findings?	- The results support the SID hypothesis. The number of return visits rises with the GP density and the less informed patients (public patients with low incomes) have significantly more return visits. Nevertheless, a return visit by a public patient can be the consequence of an objective medical need. - <i>Comparison of two kinds of physicians in Norway, salaried and fee-for-service paid, to assess the existence of SID in function of the inducement incentives as reaction to physician density increases</i> - Cross sectional of individual production of medical acts (at physician level), data analysed with OLS and logit regressions - Questionnaire sent to a sample of contract and salaried physicians - No reporting of the way to choose the sample - No reporting of the reasons of non response to the questionnaire - Modelling clearly explained - Results are poorly reported (confusion between equations, modelling and corresponding tables of results) - Independent variable representing the physician density not clearly defined - Four variables to measure inducement - Physician characteristics and patient health status as control variables - $R^2 = 0.02$ for model explaining the number of laboratory tests (very low) - Endogeneity of GP density assessed - Checks of robustness and heteroscedasticity are not reported - No confidence interval for logistic regression coefficients - Many coefficients are non statistically significant - Clearly discussed - Not discussed - The results are not clearly reported. The magnitude and sign of elasticities should be interpreted with caution. Contrary to what the authors conclude, the coefficients for contract and salaried physicians are different. The results concerning the influence of the physician density are not significantly different from zero and interpreted as an absence of SID. The authors interpret the number of consultations during more than
¹⁸	1. Research question well explained: 2. Appropriate study design: 3. Data quality: 4. Analysis: 4.1. Methods clearly explained 4.2. Appropriate statistics 4.3. Goodness of fit of the models 4.4. Validity of models tested 5. Discussion 5.1. Internal validity 5.2. External validity 6. Conclusions supported by findings?	

		20 minutes as a proxy of the health status but we can also interpret this variable as a characteristic of the practice.
19	1. Research question well explained: 2. Appropriate study design: 3. Data quality: 4. Analysis: 4.1. Methods clearly explained 4.2. Appropriate statistics 4.3. Goodness of fit of the models 4.4. Validity of models tested 5. Discussion 5.1. Internal validity 5.2. External validity	- <i>Influence of non practice incomes and physician density (physician competition) on the number of consultations and the revenue of primary care physicians in Norway</i> - Cross-sectional data of volume of care and non practice revenues collected per individual physician, and density data per administrative area. Accurate design to answer the research question. Nevertheless, the link between non practice income and inducement is not trivial and should be better explained. The authors do not provide empirical evidence for their assumptions nor do they develop an intuitive argument. - Data from National Insurance Administration and from tax forms - Individual data for physicians and area data for patients - Exclusion of data well explained - No explicit quality control reported - Management of the outliers and exclusion criteria of data clearly reported - Rules of choice of the variables not reported - Patient (municipality characteristics) and physician (individual) characteristics as control variables - No explanation of the chosen cut-off for age and education - Several interactions with variable 'marital status' of the physician are tested - R^2: 0.15 for consultations as dependent variable and = 0.34 for revenue as dependent variable. - Endogeneity of non practice incomes tested but not of the GP density - Common tests of collinearity and heteroscedasticity not reported - Calculus of elasticities not reported - Not discussed - Sensitivity analysis for the effect of the physician density - Not discussed - Nationwide sample. The results, if robust, should be generalized to the whole country - The interpretation of the magnitude of the regression coefficients is not correct. They are of small magnitude but have to be multiplied by the value of the variable to assess the real effect of the independent

	6. Conclusions supported by findings?	variable. In the sensitivity analysis, coefficients are significant with TSLS and not with OLS and R^2 are not reported. The coefficients of the 'Non practice' income are considered as evidence against SID. Nevertheless, these coefficients are negative and significant, this means that the number of consultations decreases if the non-practice income increases. This relation can be considered as a proof of the capacity of the physician to modify the demand of care. Our conclusion is that SID can not be excluded. On the other hand, the coefficient of the physician density is very strong (- 10.9), multiplied by the average number of consultations, this leads to a dramatic reduction of the number of consultations in areas where competition is 'high'. We have doubts about a coefficient of such magnitude. - Examination whether increased competition for patients leads to SID for primary care physicians services in Norway
20	1. Research question well explained: 2. Appropriate study design: 3. Data quality: 4. Analysis: 4.1. Methods clearly explained 4.2. Appropriate statistics 4.3. Goodness of fit of the models 4.4. Validity of models tested 5. Discussion 5.1. Internal validity	- Cross-sectional data of volume of care collected per individual physician, and density data per administrative area. Accurate design to answer the research question. - Data from National Insurance Administration and from tax forms - Individual data for physicians and area data for patients - No explicit quality control reported - Management of the outliers and exclusion criteria of data clearly reported - Rules of choice of the variables not reported - Patient (municipality characteristics) and physician (individual) characteristics as control variables - No interaction - R^2: 0.17 for consultations as dependent variable, = 0.32 for revenue as dependent variable and 0.15 for net income as dependent variable - Endogeneity of GP density assessed - Common tests of collinearity and heteroscedasticity not reported - Not discussed - Sensitivity analysis for the effect of the physician density - Results presented as elasticities but the variables are not explicitly expressed in log terms (computations are necessary to control) - Not discussed

	5.2. External validity	- Nationwide sample. The results, if robust, should be generalized to the whole country - Conclusion of absence of evidence of SID congruent with the presented results
21	6. Conclusions supported by findings? 1. Research question well explained: 2. Appropriate study design: 3. Data quality: 4. Analysis: 4.1. Methods clearly explained 4.2. Appropriate statistics 4.3. Goodness of fit of the models 4.4. Validity of models tested 5. Discussion 5.1. Internal validity 5.2. External validity	- <i>Distinction between inducement and availability effects when primary care physicians in Norway are confronted with competition for patients (high physician density)</i> - Cross-sectional data of volume of care collected per individual physician, and density data per administrative area. Accurate design to answer the research question - Data from National Insurance Administration and from tax forms - Individual data for physicians and area data for patients - No explicit quality control reported - Rules of choice of variables clearly explained - Only paper where the dependent variable is the inverse of the conventional physician density - Individual physician's characteristics and population characteristics at municipality level - Minor remark: the physician density is expressed as the ratio of the number of inhabitants / physician, the inverse of the conventional way to present it. - $R^2 = 0.167$ to 0.174 - Endogeneity of GP density assessed - Common tests of collinearity and heteroscedasticity not reported - Not discussed - The results are linked to the hypothesis of the model based on the relative notions of 'high' and 'low' density. Objective criteria not discussed or reported to assess the absolute notion of high density - Not discussed - Nationwide sample. The results, if robust, should be generalized to the whole country - The results are not convincing because linked to specific hypothesis - The interpretation of the coefficients (elasticities) is not correct. They have to be negative and equal to the
	6. Conclusions supported by findings?	

		unity to reject the SID hypothesis. The results show that the number of consultations and the revenue from laboratory tests increase if the physician density increases. We can not consider these results as proof of absence of SID but as a capacity of the physicians to adapt their practices in function of exogenous variations. - <i>Analysis of the relation between the number of visits and the physician density per specialty and county</i> - Cross-sectional data of volume of care collected per individual physician, and density data per specialty. - Accurate design to answer the research question, also repartition by geographical area. - Physicians Practice Cost and Income Survey – personal physician characteristics - No quality control reported - Repartition in function of region is not clearly documented - Rules of choice of variables clearly explained - Individual data for physicians - Lack of clear repartition on the whole country - $R^2 = \text{not reported}$ - Endogeneity of physician density not assessed (individual data) but reported - Common tests about assumptions of multiple regressions not reported - Not discussed - Not discussed - No element to assess if the sample and the results are representative - No evidence and no absence of evidence of SID, conclusion supported by the results. The authors argue that the higher quality physicians may self-select physician dense areas, mobile patients may travel to these areas, and the enhanced competition may enhance quality. - <i>Analysis of the relation between the physician's initiated visits and the physician density in a fee-for-service context.</i>
²²	1. Research question well explained: 2. Appropriate study design: 3. Data quality: 4. Analysis: 4.1. Methods clearly explained 4.2. Appropriate statistics 4.3. Goodness of fit of the models 4.4. Validity of models tested 5. Discussion 5.1. Internal validity 5.2. External validity 6. Conclusions supported by findings?	
²³	1. Research question well explained: 2. Appropriate study design:	- The part of the study concerning the laboratory tests is not taken into account because the data are

	3. Data quality: 4. Analysis: 4.1. Methods clearly explained 4.2. Appropriate statistics 4.3. Goodness of fit of the models 4.4. Validity of models tested 5. Discussion 5.1. Internal validity 5.2. External validity 6. Conclusions supported by findings?	aggregated. - Central Bureau of Statistics - Individual interviews, physician – initiated contacts measured during a 14-day period - No quality control reported - Not clearly reported - Aggregated data for laboratory expenditures lead to bias. - Individual data for physician-initiated visits - <i>Gamma : 0.65</i> - Endogeneity of physician density not assessed but reported - Commonly tests about assumptions of multiple regressions not reported - Not discussed - Not discussed - The results can be generalized to the whole country - The results reveal no indication of inducement effect (OR are in the range of 0.996 and 1.001). Only few results are significant. - <i>Analysis of the relation between the quantity of care per capita and the physician (GPs and surgeons) and bed densities</i> - Cross-sectional data concerning volume of care given by GPs and surgeons at the level of individual patient - Use of aggregate variable (utilization per capita) and individual variable (intensity of care per patient) - Data from 15 markets in Michigan and for 424 procedures - The way to obtain the data not clearly explained - No quality control reported - Management of outliers described
²⁴	1. Research question well explained: 2. Appropriate study design: 3. Data quality 4. Analysis: 4.1. Methods clearly explained	

	4.2. Appropriate statistics 4.3. Goodness of fit of the models 4.4. Validity of models tested 5. Discussion 5.1. Internal validity 5.2. External validity 6. Conclusions supported by findings?	- Cross-sectional micro-data - $R^2 = 0.952$ for dependent variable - extremely high (to be considered with cautious) (Quantity per capita only 0.099 and 0.102 for intensity of care given by GPs and surgeons respectively) - Border-crossing assessed - Endogeneity not assessed and not reported (individual data) - Not discussed - Not discussed. Results only valid for Michigan. - The elasticity of the utilization per capita is a support of SID. Nevertheless, the author argues that the absence of modification of the intensity of care characterizes an 'availability effect' i.e. the patients visit more physicians because of dissatisfaction. But, the values of elasticities of intensity of care with respect to physician density can also be considered as an increase of return visits, initiated by the physician. We can not follow the conclusion of Stano who considers the results as an absence of SID.
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4 PHYSICIAN VOLUME AND MEDICAL DENSITY: RESULTS

Ref	Q ³⁹	Year	Country	Physician Population	n	Analysis	Dependent variable	Independent variables	Results ⁴⁰	Statistical test ⁴¹
3	M	2001	Belgium	- Certified GPs	12 33	Log-log OLS	Number of contacts (home and office visits) per GP per year	- GP density per zip-code ⁴²	-0.305 ^{E (OLS)}	<0.10 ^P
1	L	2000	France	- GPs	4 660	OLS	- Annual number of procedures per GP	- GP density/district - GP density/county	-0.1866 ^C -0.6839	<0.05 ^P NS
6	H	1979 to 1993	France	- GPs and SPs of sector 1 (retrospective study)	4 500	GMM ⁴³	Average number of encounters per physician per day Quantity of care delivered (x)	- GP density per department - SP density per department	-0.201 ^E -0.125	0.002 ^{SE} 0.006
7,44	H	1990 1991	Australia	- GPs Selected at random	495	Multilevel logit model	Follow-up visits (question to the GP) for: - Acute bronchitis (n = 1 328) - Tonsillitis (n = 964) - Sprain (n = 837) - Otitis media (n = 790)	- GP density per LGA ⁴⁵ - Diagnostic test ordered - GP density per LGA - Diagnostic test ordered - GP density per LGA - Diagnostic test ordered - GP density per LGA - Diagnostic test ordered	1.006 ^{OR46} 20.025 0.998 25.078 0.991 6.037 1.014 7.932	NS ^P <0.01 NS <0.01 NS <0.01 <0.05 <0.01

39 General quality score based on critical appraisal: H=high; M=medium; L=low;

40 C = Coefficient, E = Elasticity, Pr = Probability, OR = Odds Ratio, LOG = Coefficient Logistic

41 P = P-value, SE = Standard error, T = t-ratios, CI = Confidence Interval, W = Wald chi-square test statistic

42 zip-codes correspond to smaller geographical areas than 'municipalities'

43 Generalized Method of Moments

44 We find a very similar version in Scott and Schiell 1997²⁸

45 LGA = Local Government Area

46 Own computations

17,47	M	1981	Ireland	- GPs	2 874	Logistic, OLS and WLS	- Present visit is the GP's idea ⁴⁸ (question to the patient) (4.0 % of the total number of visits) - Return visit (question to the patient) (28.7 % of the total number of visits)	- Physician density - Physician density	+3.1155 ^c (LOG) +13.29 ^c (LOG)	<0.05 <0.01
18	L	1998	Norway FFS (contract physicians) and salary systems	- Contract primary care physicians - Salaried primary care physicians (Questionnaire) in 435 municipalities	1 818 response rate : 68 % 564 response rate : 57 %	OLS and logistic	- Mean number of laboratory tests per consultation - Proportion of consultations lasting more than 20 minutes per physician	- Physician density - Contract physicians - Salaried physicians - Physician density - Contract physicians - Salaried physicians	+0.14 ^E (OLS) -0.08 +0.20 ^E (LOG) ⁴⁹ +0.47	NS NS NS NS
20	M	1995	Norway	Contract primary care physicians	1 415 619 246 contacts during one month in 1995	OLS and TSLS - (log- Log)	- Number of consultations per contract physician - Revenue from treatment per consultation per contract physician - Net income per physician	- Physician density - Physician density - Physician density	-0.25 ^E (OLS) -1.00 ^E (TSLS) -0.04 ^E (OLS) -0.09 ^E (TSLS)	<0.05 ^P <0.05 ^P NS NS <0.05 ^P

47 The three papers concerning Ireland are based on the same source but propose a different analysis of SID. Each of them uses the physician density as independent variable but complementary independent variables are specific in each of them (respectively the 'perceived health', the 'type of insurance' and the 'level of education')

48 We report here the results of the OLS modelling (sign of the coefficient of WLS and Logistic regression is identical) (n = 2 874)

49 In the logistic regression, when the independent variable is expressed in logarithmic form, the coefficient of the regression can be interpreted as an elasticity and measures the percentage change in odds-ratio produced by a 1 % increase in the independent variable

19	M	1995	Norway	Contract primary care physicians	1 366 306 992 consultations during one month in 1995	OLS and TSLS	- Number of consultations per physician - Revenue from treatment per consultation	- Physician density - Physician density	-0.96 ^E (TSLS) -10.89 ^C (OLS) -10.78 ^C (TSLS) -0.210 ^{C-OLS} -0.220 ^{C-TSLS}	<0.05 ^P <0.05 ^P <0.05 ^T NS NS
21	M	1995	Norway	Contract primary care physicians	1 617 360 914 consultations during one month in 1995	OLS and IV (Log-Log)	- Number of consultations per physician -Revenue from laboratory tests per physician	- Inverse of physician density ⁵⁰ - Inverse of physician density	+0.358 ^E (OLS) +0.425 ^E (OLS) ⁵¹ +0.729 ^E (IV) +0.109 ^E (OLS) +0.172 ^E (OLS) +0.467 ^E (IV)	<0.05 ^P <0.05 ^P <0.05 ^P NS <0.05 ^P <0.05 ^P
15,52	M	1977 - 1978	USA FFS	- Physicians national survey in the USA – 40 000 persons		Logit Logit WLS	- Likelihood of ambulatory physician- initiated visits ⁵³ - Likelihood of surgery - Physician- initiated expenditures for ambulatory visits per physician (including tests)	- Physician density - Physician density	+0.125 ^E -0.004 ^E +0.143 ^E	<0.05 NS <0.05

50 The second results correspond to the regression with only significant variables

51 The second result refers to regression without insignificant control variables

52 The three following papers are based on the same source but propose a different analysis of SID. Each of them uses the physician density as independent variable but complementary independent variables are specific in each of them (respectively the 'perceived health', the 'type of insurance' and the 'level of education') and alternative dependent variables are used

53 The authors use two questions of the National Medical Care Expenditure Survey For this particular visit, did you have an appointment or just walk in? Did the physician tell you when to come in during an earlier visit or did you just call up for an appointment? We find similar questions in Tussing 1983¹⁷ and Scott & Schiell 1988⁷

14	M	1977	USA FFS	- Physicians ⁵⁴ national survey in the USA – 14 000 households	WLS	- Physician- initiated expenditures for ambulatory care physician services	- Physician density	+0.10 ^c	<0.05
16	M	1977	USA FFS	- Physicians national survey in the USA – 40 000 persons	WLS	- Number of ambulatory visits patient initiated - Number of ambulatory visits physician initiated	- Physician density	-0.000 ^c	NS
11	M	1983	Switzerland	- Office-based physicians (28 districts) ⁵⁵	OLS	- Cost per visit per physician	- Physician density - General internist dummy - Special internist dummy ⁵⁶ - Psychotherapist dummy - Other specialists dummy	+35.576 ^c +25.363 +86.856 +375.20 +42.319	7.744 ¹⁵⁷ 3.933 7.862 32.111 4.171
22	M	1986	USA	Physicians (GP + 11 specialties)	IT3SLS ⁵⁸	- Number of visits for private patients - Number of visits for Medicaid patients	- Competing physician density - Non-competing physician density - Competing physician density - Non-competing physician density	-0.00006 ^c +0.000007 -0.0006 +0.000083	<0.01 NS <0.01 NS
10	M	1986	USA	- Surgeons	TSLS	- First occurrences	- Ophthalmology density - General surgery density - Orthopaedic surgery density - Urology density	+0.52 ^E +0.18 +0.30 +0.17	<0.01 NS <0.01 NS

5 INDIVIDUAL INTENSITY OF CARE AND MEDICAL DENSITY: RESULTS

Ref	Q ⁵⁹	Year	Country	Physician	n	Analysis	Dependent	Independent variables	Results ⁶⁰	Statistical
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54 The type of physician is not reported

55 The first interest variable of this paper is the co-insurance status

56 Internists specialized in blood diseases, lungs, heart, gastro-enteric

57 Two-tailed test

58 IT3SLS = Iterated Three Stages Least Squares

								announced before the begin of the trial)	+32.2	7.7
²³	L	1985	Norway	patients per GP	10 576	Logit	- Physician initiated visits per patient	- R ₁ (1 818 pop/phy) - R ₂ (2 583 pop/phy) - R ₃ (3 796 pop/phy) - R ₄ (8 853 pop/phy) - R ₅ (40 366 pop/phy)	-0.00355 ^{c70} +0.0015 +0.00031 +0.000096 -0.000006	0.23 ^r 0.52 0.49 0.47 0.50
⁹	M	1988 1989	Florida	- Physical therapists In 203 facilities	1 967	Probit model	- Physical therapy visits per patient - Minutes of physical therapist labour per patient visit	- Orthopaedic surgeon density (OSD) ⁷¹ - Orthopaedic surgeon density (OSD)	-0.2693 ^c +2.3734	0.38 ^r 0.39
¹⁰	M	1986	USA	- Surgeons	NR	TSLS	- Intensity of care	- Ophthalmology density - General surgery density - Orthopaedic surgery density - Urology density	+0.04 ^E -0.12 -0.19 -0.04	NS NS <0.10 NS
²⁴	M	1975 to 1980	Michigan	Surgeons, family doctors, internal medicine, paediatricians	NR	OLS (log-log)	- Per unique patient intensity of care	- General surgeons density ^{D72} - Family doctors density ^{D72} - Internal medicine doctors density ^D - Paediatric medicine doctors density ^D	+0.054 ^E -0.016 +0.319 -0.057	0.54 ^r 1.11 28.4 -3.65
¹¹	M	1983	Switzerland	- Office-based physicians (28)	918	OLS	- Visits per patient - Cost per	- Physician density - Physician density	+0.258 ^c +138.11	S 99 % ⁷⁴ S 99 %

68 GLS = Generalized Least Squares

69 In an alternative regression municipality dummies were replaced by the number of GPs per 10 000 inhabitants. A positive and statistically significant effect of GP density on service provision was found.

70 The coefficients of the logistic regression can be transformed in odds ratio. When we compute the OR corresponding to these coefficients we obtain values in the range of 0.996 to 1.001. These results represent an absence of association between the population-physician ratio and the number of physician initiated visits. The P-values show that the coefficients are not significantly different from zero or that the OR are not significantly different from 1.

71 The first interest variable of this study is the ownership of ancillary services

72 D = Dummy (not expressed in logarithm)

73 The first interest variable of this paper is the co-insurance status

⁸	M	1970 - 1992	USA	paediatricists - Ob/Gyns	255 593 births	Logistic	Caesarean deliveries	- Obstetrician/gynecologists per state ⁸⁴	+0.342 ^E	0.174 ^{SE}
¹⁰	M	1986	USA	- Surgeons	NR	TSLs	- Surgeon's service per Medicare enrollee in 1986 ⁸⁵	- Surgeon density four specialties - Ophthalmology density - General surgery density - Orthopaedic surgery density - Urology density	+0.23 ^E +0.56 +0.06 +0.11 +0.13	<0.10 <0.10 NS NS NS
¹³	M/ H	1969 - 1976	USA	- Surgeons	2 837	TSLs	- Rate of elective surgery per capita	- Surgeon density - GP density	+13.01 ^C -7.2	<0.05 <0.05

84 The first interest dependent variable of this study is the fertility

85 We consider here the Medicare population as a whole population (not all persons are patients)

7 DISTRIBUTION OF AVAILABLE DATA FOR GPs (IMA 2005)

This appendix includes the charts computed on the final database (IMA data-I row=1 GP).

7.1 IMA DATA EXTRACTION

The variables of care activity had already been defined by the IMA, for its own Feedback datamarts, according to the following clustering:

(A_H : Ambulatory or Hospitalized patient code)

Variable	A_H	RIZIVcode	Label(French)	Label(Dutch)
advice	A	109012	Avis - Par avis, il faut entendre la rédaction et la signature, en dehors de tout examen du malade, de certificats, ordonnances pharmaceutiques et documents divers. Les honoraires pour avis ne peuvent jamais être cumulés avec les honoraires pour consultation ou visite.	Advies - Onder advies wordt verstaan, het opmaken en ondertekenen, buiten welk onderzoek van de zieke ook, van getuigschriften, farmaceutische voorschriftbriefjes en allerlei bescheiden. Honorarium voor advies mag nooit samengevoegd worden met honorarium voor raadpleging of bezoek.
ambul	A	109734	Prestations requérant la qualification de médecin généraliste agréé : Honoraires pour assistance médicale prêtée à un patient par le médecin généraliste agréé pendant son transfert urgent par ambulance à un hôpital	Verstrekingen voor dewelke de bekwaming vereist is van erkend huisarts : Honorarium voor geneeskundige bijstand aan een patiënt, verleend door de erkende huisarts, gedurende zijn dringende overbrenging, per ziekenhuismwagent, naar een ziekenhuis
bezarts	A	104355	Consultations au cabinet du médecin et visites au domicile du malade : Consultation du médecin généraliste agréé appelé par un médecin au domicile du malade	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Consult van een erkende huisarts bij de zieke thuis door een geneesheer aangevraagd
bezarts	A	104650	Consultations au cabinet du médecin et visites au domicile du malade : Consultation du médecin généraliste avec droits acquis appelé par un médecin au domicile du malade	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Consult van de algemeen geneeskundige met verworven rechten bij de zieke thuis door een geneesheer aangevraagd
bezavond	A	104215	Consultations au cabinet du médecin et visites au domicile du malade : Visite effectuée par le médecin généraliste agréé au domicile du malade entre 18 heures et 21 heures	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek door de erkende huisarts tussen 18 en 21 uur afgelegd bij de zieke thuis
bezavond	A	104392	Consultations au cabinet du médecin et visites au domicile du malade : Visite effectuée entre 18 heures et 21 heures, par le médecin généraliste agréé à un patient palliatif à domicile	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek door de erkende huisarts tussen 18 en 21 uur thuis bij een palliatieve patiënt
bezavond	A	104510	Consultations au cabinet du médecin et visites au domicile du malade : Visite effectuée par le médecin généraliste avec droits acquis au domicile du malade entre 18 heures et 21 heures	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek door de algemeen geneeskundige met verworven rechten tussen 18 en 21 uur afgelegd bij de zieke thuis

Variable	A_H	RIZIVcode	Label(French)	Label(Dutch)
bezavond	A	104694	Consultations au cabinet du médecin et visites au domicile du malade : Visite effectuée, entre 18 heures et 21 heures, par le médecin généraliste avec droits acquis à un patient palliatif à domicile	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek door de algemeen geneeskundige met verworven rechten, tussen 18 en 21 uur thuis bij een palliatieve patiënt
bezavond_ah	A	104333	Consultations au cabinet du médecin et visites au domicile du malade : Suppléments aux visites n°s 103412, 103434, 103515, 103530 ou 103552, 103913, 103935 et 103950 : lorsque la visite est effectuée le soir entre 18 heures et 21 heures	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bijkomend honorarium voor de bezoeken nrs 103412, 103434, 103515, 103530 of 103552, 103913, 103935 en 103950 : wanneer het bezoek 's avonds tussen 18 en 21 wordt afgelegd
bezavond_ah	A	104635	Consultations au cabinet du médecin et visites au domicile du malade : Suppléments aux visites n°s 103213, 103235, 103316, 103331 103353, 104112, 104134 ou 104156 lorsque la visite est effectuée le soir entre 18 heures et 21 heures	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bijkomend honorarium voor de bezoeken nrs 103213, 103235, 103316, 103331 of 103353, 104112, 104134 en 104156 wanneer het bezoek 's avonds tussen 18 en 21 uur wordt afgelegd
beznacht	A	104230	Consultations au cabinet du médecin et visites au domicile du malade : Visite effectuée par le médecin généraliste agréé au domicile du malade, la nuit, entre 21 heures et 8 heures	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek door de erkende huisarts 's nachts tussen 21 en 8 uur afgelegd bij de zieke thuis
beznacht	A	104414	Consultations au cabinet du médecin et visites au domicile du malade : Visite effectuée la nuit, entre 21 heures et 8 heures, par le médecin généraliste agréé à un patient palliatif à domicile	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek door de erkende huisarts 's nachts tussen 21 en 8 uur thuis bij een palliatieve patiënt
beznacht	A	104532	Consultations au cabinet du médecin et visites au domicile du malade : Visite effectuée par le médecin généraliste avec droits acquis au domicile du malade, la nuit, entre 21 heures et 8 heures	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek door de algemeen geneeskundige met verworven rechten 's nachts tussen 21 en 8 uur afgelegd bij de zieke thuis
beznacht	A	104716	Consultations au cabinet du médecin et visites au domicile du malade : Visite effectuée la nuit, entre 21 heures et 8 heures, par le médecin généraliste avec droits acquis à un patient palliatif à domicile	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek door de algemeen geneeskundige met verworven rechten, 's nachts tussen 21 en 8 uur thuis bij een palliatieve patiënt
beznacht_ah	A	104311	Consultations au cabinet du médecin et visites au domicile du malade : Suppléments aux visites n°s 103412, 103434, 103515, 103530, ou 103552, 103913, 103935 et 103950 : lorsque la visite est effectuée la nuit entre 21 heures et 8 heures	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bijkomend honorarium voor de bezoeken nrs. 103412, 103434, 103515, 103530 of 103552, 103913, 103935 en 103950 : wanneer het bezoek 's nachts tussen 21 en 8 uur wordt afgelegd
beznacht_ah	A	104613	Consultations au cabinet du médecin et visites au domicile du malade : Suppléments aux visites n°s 103213, 103235, 103316, 103331, 103353, 104112, 104134 ou 104156 lorsque la visite est	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bijkomend honorarium voor de bezoeken nrs 103213, 103235, 103316, 103331 of 103353, 104112, 104134 en 104156

Variable	A_H	RIZIVcode	Label(French)	Label(Dutch)
			effectuée la nuit entre 21 heures et 8 heures	wanneer het bezoek 's nachts tussen 21 en 8 uur wordt afgelegd
bezoek	A	I03110	Consultations au cabinet du médecin et visites au domicile du malade : Visite au domicile du malade, par le médecin généraliste avec droits acquis	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek, bij de zieke thuis, door de algemeen geneeskundige met verworven rechten
bezoek	A	I03132	Consultations au cabinet du médecin et visites au domicile du malade : Visite, au domicile du malade, par le médecin généraliste agréé	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek, bij de zieke thuis, door de erkende huisarts
bezoek	A	I03213	Consultations au cabinet du médecin et visites au domicile du malade : Visite par le médecin généraliste avec droits acquis à plusieurs bénéficiaires à leur résidence ou domicile commun, à l'occasion d'un même déplacement : deux bénéficiaires, par bénéficiaire	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek door de algemeen geneeskundige met verworven rechten bij verscheidene rechthebbenden in hun gemeenschappelijke woonplaats of gemeenschappelijk huis, bij eenzelfde reis : twee rechthebbenden, per rechthebbende
bezoek	A	I03235	Consultations au cabinet du médecin et visites au domicile du malade : Visite par le médecin généraliste avec droits acquis à plusieurs bénéficiaires à leur résidence ou domicile commun, à l'occasion d'un même déplacement : trois bénéficiaires ou plus, par bénéficiaire	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek door de algemeen geneeskundige met verworven rechten bij verscheidene rechthebbenden in hun gemeenschappelijke woonplaats of gemeenschappelijk huis, bij eenzelfde reis : drie rechthebbenden of meer, per rechthebbende
bezoek	A	I03412	Consultations au cabinet du médecin et visites au domicile du malade : Visite par le médecin généraliste agréé à plusieurs bénéficiaires à leur résidence ou domicile commun, à l'occasion d'un même déplacement : deux bénéficiaires, par bénéficiaire	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek door de erkende huisarts bij verscheidene rechthebbenden in hun gemeenschappelijke woonplaats of gemeenschappelijk huis, naar aanleiding van een zelfde reis : twee rechthebbenden, per rechthebbende
bezoek	A	I03434	Consultations au cabinet du médecin et visites au domicile du malade : Visite par le médecin généraliste agréé à plusieurs bénéficiaires à leur résidence ou domicile commun, à l'occasion d'un même déplacement : trois bénéficiaires ou plus, par bénéficiaire	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek door de erkende huisarts bij verscheidene rechthebbenden in hun gemeenschappelijke woonplaats of gemeenschappelijk huis, naar aanleiding van een zelfde reis : drie rechthebbenden of meer, per rechthebbende
bezoek	A	I04370	Consultations au cabinet du médecin et visites au domicile du malade : Visite effectuée par le médecin généraliste agréé à un patient palliatif à domicile	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek door de erkende huisarts thuis bij een palliatieve patiënt
bezoek	A	I04672	Consultations au cabinet du médecin et visites au domicile du malade : Visite effectuée par le médecin généraliste avec droits	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek door de algemeen geneeskundige met

Variable	A_H	RIZIVcode	Label(French)	Label(Dutch)
			acquis à un patient palliatif à domicile	verworven rechten, thuis bij een palliatieve patiënt
bezwefe	A	I04252	Consultations au cabinet du médecin et visites au domicile du malade : Visite effectuée par le médecin généraliste agréé le week-end, du samedi à 8 heures au lundi à 8 heures, au domicile du malade	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek door de erkende huisarts tijdens het weekend, van zaterdag 8 uur tot maandag 8 uur, afgelegd bij de zieke thuis
bezwefe	A	I04274	Consultations au cabinet du médecin et visites au domicile du malade : Visite au domicile du malade effectuée par le médecin généraliste agréé au cours d'un jour férié, c'est-à-dire depuis la veille de ce jour férié à 21 heures jusqu'au lendemain de ce jour à 8 heures	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek bij de zieke thuis, afgelegd door de erkende huisarts op een feestdag, dat wil zeggen vanaf daags voor die feestdag om 21 uur tot daags na die feestdag om 8 uur
bezwefe	A	I04436	Consultations au cabinet du médecin et visites au domicile du malade : Visite effectuée le week-end, du samedi à 8 heures au lundi à 8 heures, par le médecin généraliste agréé à un patient palliatif à domicile	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek door de erkende huisarts tijdens het weekeind van zaterdag 8 uur tot maandag 8 uur, thuis bij een palliatieve patiënt
bezwefe	A	I04451	Consultations au cabinet du médecin et visites au domicile du malade : Visite effectuée au cours d'un jour férié, c'est-à-dire depuis la veille de ce jour férié à 21 heures jusqu'au lendemain de ce jour à 8 heures, par le médecin généraliste agréé à un patient palliatif à domicile	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek door de erkende huisarts op een feestdag, dat wil zeggen vanaf daags voor die feestdag om 21 uur tot daags na die feestdag om 8 uur bij een palliatieve patiënt
bezwefe	A	I04554	Consultations au cabinet du médecin et visites au domicile du malade : Visite effectuée par le médecin généraliste avec droits acquis le week-end, du samedi à 8 heures au lundi à 8 heures, au domicile du malade	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek door de algemeen geneeskundige met verworven rechten tijdens het weekeind van zaterdag 8 uur tot maandag 8 uur, afgelegd bij de zieke thuis
bezwefe	A	I04576	Consultations au cabinet du médecin et visites au domicile du malade : Visite effectuée par le médecin généraliste avec droits acquis au cours d'un jour férié, c'est-à-dire depuis la veille de ce jour férié à 21 heures jusqu'au lendemain de ce jour à 8 heures	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek bij de zieke thuis, afgelegd door de algemeen geneeskundige met verworven rechten op een feestdag, dat wil zeggen vanaf daags voor die feestdag om 21 uur tot daags, na die feestdag om 8 uur
bezwefe	A	I04731	Consultations au cabinet du médecin et visites au domicile du malade : Visite effectuée le week-end, du samedi à 8 heures au lundi à 8 heures, par le médecin généraliste avec droits acquis à un patient palliatif à domicile	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek door de algemeen geneeskundige met verworven rechten, tijdens het weekeind van zaterdag 8 uur tot maandag 8 uur thuis bij de palliatieve patiënt
bezwefe	A	I04753	Consultations au cabinet du médecin et visites au domicile du malade : Visite effectuée au cours d'un jour férié, c'est-à-dire depuis la veille de ce jour férié à 21 heures jusqu'au lendemain de	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek door de algemeen geneeskundige met verworven rechten, op een feestdag, dat wil zeggen vanaf daags

Variable	A_H	RIZIVcode	Label(French)	Label(Dutch)
			ce jour à 8 heures, par le médecin généraliste avec droits acquis à un patient palliatif à domicile	voor die feestdag om 21 uur tot daags na die feestdag om 8 uur thuis bij de palliatieve patiënt
bezwefe_ah	A	I04296	Consultations au cabinet du médecin et visites au domicile du malade : Suppléments aux visites n°s I03412, I03434, I03515, I03530, ou I03552, I03913, I03935 et I03950 : lorsque la visite est effectuée un samedi, un dimanche ou un jour férié entre 8 heures et 21 heures	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bijkomend honorarium voor de bezoeken nrs I03412, I03434, I03515, I03530 of I03552, I03913, I03935 en I03950 : wanneer het bezoek zaterdags, zondags of op een feestdag tussen 8 en 21 uur wordt afgelegd
bezwefe_ah	A	I04591	Consultations au cabinet du médecin et visites au domicile du malade : Suppléments aux visites n°s I03213, I03235, I03316, I03331, I03353, I04112, I04134 ou I04156 lorsque la visite est effectuée un samedi, un dimanche ou un jour férié entre 8 heures et 21 heures	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bijkomend honorarium voor de bezoeken nrs I03213, I03235, I03316, I03331 of I03353, I04112, I04134 en I04156 wanneer het bezoek zaterdags, zondags of op een feestdag tussen 8 en 21 uur wordt afgelegd
bezzh	H	I09701	Prestations requérant la qualification de médecin généraliste agréé : Honoraires du médecin généraliste agréé, pour la visite dans un hôpital à un patient dans un service Sp (soins palliatifs) à la demande du patient ou à la demande d'un membre de sa famille ou d'un de ses proches	Verstrekkings voor dewelke de bekwaming vereist is van erkend huisarts : Honorarium voor de behandelende erkende huisarts voor het bezoek in een ziekenhuis aan een patiënt, in een Sp-dienst (palliatieve zorg), op verzoek van de patiënt of op verzoek van een familielid of van één van zijn naastbestaanden
bezzh	H	I09723	Prestations requérant la qualification de médecin généraliste agréé : Honoraires du médecin généraliste agréé pour la visite à un bénéficiaire hospitalisé à son intervention, à la demande de ce bénéficiaire ou d'un membre de sa famille	Verstrekkings voor dewelke de bekwaming vereist is van erkend huisarts : Honorarium voor de verwijzende erkende huisarts voor het bezoek aan een in een ziekenhuis opgenomen rechthebbende, op verzoek van de rechthebbende of op verzoek van een familielid
instel	A	I03316	Consultations au cabinet du médecin et visites au domicile du malade : Visite par le médecin généraliste avec droits acquis dans un établissement où séjournent des enfants, des convalescents ou des handicapés (séjour de jour, séjour de nuit, séjour de jour et de nuit) : à un bénéficiaire	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek door de algemeen geneeskundige met verworven rechten in een instelling waar kinderen, herstellenden of gehandicapten verblijven (dagverblijf, overnachting, dagverblijf en overnachting) : bij één rechthebbende
instel	A	I03331	Consultations au cabinet du médecin et visites au domicile du malade : Visite par le médecin généraliste avec droits acquis dans un établissement où séjournent des enfants, des convalescents ou des handicapés (séjour de jour, séjour de nuit, séjour de jour et de nuit) : à deux bénéficiaires, à l'occasion d'un même déplacement, par bénéficiaire	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek door de algemeen geneeskundige met verworven rechten in een instelling waar kinderen, herstellenden of gehandicapten verblijven (dagverblijf, overnachting, dagverblijf en overnachting) : bij twee rechthebbenden, bij eenzelfde reis, per rechthebbende
instel	A	I03353	Consultations au cabinet du	Raadplegingen in de spreekkamer

Variable	A_H	RIZIVcode	Label(French)	Label(Dutch)
			médecin et visites au domicile du malade : Visite par le médecin généraliste avec droits acquis dans un établissement où séjournent des enfants, des convalescents ou des handicapés (séjour de jour, séjour de nuit, séjour de jour et de nuit) : à trois bénéficiaires ou plus, à l'occasion d'un même déplacement, par bénéficiaire	van de geneesheer en bezoeken bij de zieke thuis : Bezoek door de algemeen geneeskundige met verworven rechten in een instelling waar kinderen, herstellenden of gehandicapten verblijven (dagverblijf, overnachting, dagverblijf en overnachting) : bij drie rechthebbenden, of meer, bij eenzelfde reis, per rechthebbende
instel	A	I03515	Consultations au cabinet du médecin et visites au domicile du malade : Visite par le médecin généraliste agréé dans un établissement où séjournent des enfants, des convalescents ou des handicapés (séjour de jour, séjour de nuit, séjour de jour et de nuit) : à un bénéficiaire	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek door de erkende huisarts in een instelling waar kinderen, herstellenden of mindervaliden verblijven (verblijf overdag, verblijf 's nachts, verblijf overdag en 's nachts) : bij één rechthebbende
instel	A	I03530	Consultations au cabinet du médecin et visites au domicile du malade : Visite par le médecin généraliste agréé dans un établissement où séjournent des enfants, des convalescents ou des handicapés (séjour de jour, séjour de nuit, séjour de jour et de nuit) : à deux bénéficiaires, à l'occasion d'un même déplacement, par bénéficiaire	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek door de erkende huisarts in een instelling waar kinderen, herstellenden of mindervaliden verblijven (verblijf overdag, verblijf 's nachts, verblijf overdag en 's nachts) : bij twee rechthebbenden, naar aanleiding van een zelfde reis, per rechthebbende
instel	A	I03552	Consultations au cabinet du médecin et visites au domicile du malade : Visite par le médecin généraliste agréé dans un établissement où séjournent des enfants, des convalescents ou des handicapés (séjour de jour, séjour de nuit, séjour de jour et de nuit) : à trois bénéficiaires ou plus, à l'occasion d'un même déplacement, par bénéficiaire	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek door de erkende huisarts in een instelling waar kinderen, herstellenden of mindervaliden verblijven (verblijf overdag, verblijf 's nachts, verblijf overdag en 's nachts) : bij drie rechthebbenden of meer, naar aanleiding van een zelfde reis, per rechthebbende
instel	A	I03913	Consultations au cabinet du médecin et visites au domicile du malade : Visite effectuée par le médecin généraliste agréé à un malade dans un établissement pouvant porter en compte une intervention forfaitaire telle que prévue dans les arrêtés ministériels des 19 mai 1992 et 5 avril 1995 concernant respectivement les maisons de repos et de soins et les maisons de repos pour personnes âgées : à un bénéficiaire	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek door de erkende huisarts bij de zieke in een inrichting die een forfaitaire tegemoetkoming zoals voorzien in de ministeriële besluiten van 19 mei 1992 en 5 april 1995 met betrekking tot respectievelijk de rust- en verzorgingstehuizen en de rustoorden voor bejaarden, in rekening kan brengen : bij één rechthebbende
instel	A	I03935	Consultations au cabinet du médecin et visites au domicile du malade : Visite effectuée par le médecin généraliste agréé porteur d'un certificat de formation complémentaire à un malade dans un établissement pouvant porter en compte une intervention forfaitaire telle que	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek door de erkende huisarts bij de zieke in een inrichting die een forfaitaire tegemoetkoming zoals voorzien in de ministeriële besluiten van 19 mei 1992 en 5 april 1995 met betrekking tot respectievelijk de

Variable	A_H	RIZIVcode	Label(French)	Label(Dutch)
			prévue dans les arrêtés ministériels des 19 mai 1992 et 5 avril 1995 concernant respectivement les maisons de repos et de soins et les maisons de repos pour personnes âgées : à deux bénéficiaires, à l'occasion d'un même déplacement, par bénéficiaire	rusten verzorgingstehuizen en de rustoorden voor bejaarden, in rekening kan brengen : bij twee rechthebbenden, bij eenzelfde reis, per rechthebbende
instel	A	I03950	Consultations au cabinet du médecin et visites au domicile du malade : Visite effectuée par le médecin généraliste agréé porteur d'un certificat de formation complémentaire à un malade dans un établissement pouvant porter en compte une intervention forfaitaire telle que prévue dans les arrêtés ministériels des 19 mai 1992 et 5 avril 1995 concernant respectivement les maisons de repos et de soins et les maisons de repos pour personnes âgées : à trois bénéficiaires ou plus, à l'occasion d'un même déplacement, par bénéficiaire	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek door de erkende huisarts bij de zieke in een inrichting die een forfaitaire tegemoetkoming zoals voorzien in de ministeriële besluiten van 19 mei 1992 en 5 april 1995 met betrekking tot respectievelijk de rusten verzorgingstehuizen en de rustoorden voor bejaarden, in rekening kan brengen : bij drie rechthebbenden of meer bij eenzelfde reis, per rechthebbende
instel	A	I04112	Consultations au cabinet du médecin et visites au domicile du malade : Visite effectuée par le médecin généraliste avec droits acquis à un malade dans un établissement pouvant porter en compte une intervention forfaitaire telle que prévue dans les arrêtés ministériels des 19 mai 1992 et 5 avril 1995 concernant respectivement les maisons de repos et de soins et les maisons de repos pour personnes âgées : à un bénéficiaire	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek door de algemeen geneeskundige met verworven rechten bij de zieke in een inrichting die een forfaitaire tegemoetkoming zoals voorzien in de ministeriële besluiten van 19 mei 1992 en 5 april 1995 met betrekking tot respectievelijk de rust- en verzorgingstehuizen en de rustoorden voor bejaarden in rekening kan brengen : bij één rechthebbende
instel	A	I04134	Consultations au cabinet du médecin et visites au domicile du malade : Visite effectuée par le médecin généraliste avec droits acquis d'un malade dans un établissement pouvant porter en compte un intervention forfaitaire telle que prévue dans les arrêtés ministériels des 19 mai 1992 et 5 avril 1995 concernant respectivement les maisons de repos et de soins et les maisons de repos pour personnes âgées : à deux bénéficiaires, à l'occasion d'un même déplacement, par bénéficiaire	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek door de algemeen geneeskundige met verworven rechten bij de zieke in een inrichting die een forfaitaire tegemoetkoming zoals voorzien in de ministeriële besluiten van 19 mei 1992 en 5 april 1995 met betrekking tot respectievelijk de rust- en verzorgingstehuizen en de rustoorden voor bejaarden in rekening kan brengen : bij twee rechthebbenden, bij eenzelfde reis, per rechthebbende
instel	A	I04156	Consultations au cabinet du médecin et visites au domicile du malade : Visite effectuée par le médecin généraliste avec droits acquis à un malade dans un établissement pouvant porter en	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek door de algemeen geneeskundige met verworven rechten bij de zieke in een inrichting die een forfaitaire

Variable	A_H	RIZIVcode	Label(French)	Label(Dutch)
			compte une intervention forfaitaire telle que prévue dans les arrêtés ministériels des 19 mai 1992 et 5 avril 1995 concernant respectivement les maisons de repos et de soins et les maisons de repos pour personnes âgées : à trois bénéficiaires ou plus, à l'occasion d'un même déplacement, par bénéficiaire	tegemoetkoming zoals voorzien in de ministeriële besluiten van 19 mei 1992 en 5 april 1995 met betrekking tot respectievelijk de rust- en verzorgingstehuizen en de rustoorden voor bejaarden in rekening kan brengen : bij drie rechthebbenden of meer, bij eenzelfde reis, per rechthebbende
raadpl	A	I01010	Consultations au cabinet du médecin et visites au domicile du malade : Consultation au cabinet du médecin généraliste avec droits acquis	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Raadpleging in de spreekkamer van de algemeen geneeskundige met verworven rechten
raadpl	A	I01032	Consultations au cabinet du médecin et visites au domicile du malade : Consultation au cabinet du médecin généraliste agréé	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Raadpleging in de spreekkamer van de erkende huisarts
raadpl	A	I01054	Consultations au cabinet du médecin et visites au domicile du malade : Consultation au cabinet du médecin porteur du diplôme de licencié en science dentaire (TL)	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Raadpleging in de spreekkamer van de geneesheer,houder van het diploma van licentiaat in de tandheelkunde (TL)
raadpl	A	I01076	Consultations au cabinet du médecin et visites au domicile du malade : Consultation au cabinet du médecin généraliste agréé accrédité	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Raadpleging in de spreekkamer van de geaccrediteerde erkende huisarts
ranacht_ah	A	I02432	Consultations au cabinet du médecin et visites au domicile du malade : Supplément pour consultation d'urgence au cabinet d'un médecin généraliste agréé, lorsque la consultation est effectuée la nuit entre 21 heures et 8 heures	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bijkomend honorarium voor een dringende raadpleging in de spreekkamer van een erkende huisarts wanneer de raadpleging's nachts tussen 21 en 8 uur wordt gehouden
ranacht_ah	A	I02476	Consultations au cabinet du médecin et visites au domicile du malade : Supplément pour consultation d'urgence au cabinet d'un médecin généraliste avec droits acquis : lorsque la consultation est effectuée la nuit entre 21 heures et 8 heures	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bijkomend honorarium voor een dringende raadpleging in de spreekkamer van de algemeen geneeskundige met verworven rechten : wanneer de raadpleging 's nachts tussen 21 en 8 uur wordt gehouden
rawefe_ah	A	I02410	Consultations au cabinet du médecin et visites au domicile du malade : Supplément pour consultation d'urgence au cabinet d'un médecin généraliste agréé, lorsque la consultation est effectuée un samedi, un dimanche ou un jour férié entre 8 heures et 21 heures	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bijkomend honorarium voor een dringende raadpleging in de spreekkamer van een erkende huisarts wanneer de raadpleging zaterdag, zondag of op een feestdag tussen 8 en 21 uur wordt gehouden
rawefe_ah	A	I02454	Consultations au cabinet du médecin et visites au domicile du malade : Supplément pour consultation d'urgence au cabinet d'un médecin généraliste	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bijkomend honorarium voor een dringende raadpleging in de spreekkamer van

Variable	A_H	RIZIVcode	Label(French)	Label(Dutch)
			avec droits acquis : lorsque la consultation est effectuée un samedi, un dimanche ou un jour férié entre 8 heures et 21 heures	de algemeen geneeskundige met verworven rechten : wanneer de raadpleging, zaterdags, zondags of op een feestdag tussen 8 en 21 uur wordt gehouden

Socio-demographic variables:

Zone	Libellé de la zone Label van de zone	Remarks
PP2001	Forfait B soins infirmiers Forfait B verpleegkundige zorgen	Definition unchanged from POPULATION IMA file
PP2002	Forfait C soins infirmiers Forfait C verpleegkundige zorgen	ib
PP2003	Kinésithérapie E ou physiothérapie Kinesitherapie E of fysiotherapie	ib
PP2004	Allocations familiales majorées Verhoogde kinderbijslagen	ib
PP2010	Critère hospitalisation (120 jours) Criterium hospitalisatie (120 dagen)	ib
PP2011	Critère hospitalisation (6 hospitalisations) Criterium hospitalisatie (6 hospitalisaties)	ib
PP3011	Droit aux subsides pour personnes handicapées Recht op toelage van gehandicapten	ib
PP3012	Plus de 6 mois d'indemnités de chômage Meer dan 6 maanden werkloosheidsuitkering	ib
PP3010_13	Droit à l'assistance d'un CPAS. Ou Droit au revenu garanti, revenus pour les personnes âgées, minimum vital Recht op gewaarborgd inkomen, inkomens garantie voor oudere of op het leefloon of Recht op hulp van OCMW	ib : Combination of 2 IMA variables (PP3010 & PP3013)
start	GP unicity number (< > identification)	KCE programming
Npat_DMGM	Nb Pat w/ DMG (file patient)	Extraction
Npat_ownDMGM	Nb Pat w/ DMG (file GP)	Extraction
Ppat_vvt	Nb patients w/ Preferential status	ib (verhoogde tegemoetkoming)
Ppat_locins	Nb of patients w/ same INS as GP (contact)	Extraction
sumflagpat_ins	Nb of patients with INS missing/invalid	Extraction
sumflagpat_gmd	Nb of patients with GMD missing/invalid	Extraction

The next table gives the distribution of the available variables: all rows included (n=13.205). Some variables were not used in the analyses.

No information was available on the regional distribution of self-employed patients without rights.

Variable	N	N Miss	Mean	Std Dev	Minimum	Lower Quartile	Median	Upper Quartile	Maximum	Sum
med_geslacht	13205	0	0.7	0.5	0	0	1	1	1	9451
med_age2005	13186	19	49.3	10.9	27	42	49	56	94	650728
Npat	13205	0	819.4	594.6	1	340	788	1193	6891	10820742
Npat_DMG	13205	0	227	276.9	0	29	119	330	2037	2997638
Npatown_DMG	13205	0	173	255.8	-1	3	56	246	2111	2284591
Ppat_male	13205	0	364.8	275.8	0	137	342	534	3062	4817529
Ppat_0	13205	0	178.9	154.7	0	48	154	270	1614	2362183
Ppat_21	13205	0	210.4	173.8	0	73	187	307	3045	2777761
Ppat_41	13205	0	218.1	163.4	0	89	205	318	1687	2880482
Ppat_61	13205	0	165.1	124.5	0	69	154	239	1849	2180560
Ppat_81	13205	0	46.9	40	0	16	41	68	776	619756
Ppat_vvt	13205	0	126.4	108	0	47	111	178	1560	1669182
Ppat_pp2001	13205	0	4.9	5.8	0	1	3	7	199	410479
Ppat_pp2002	13205	0	2.1	2.6	0	0	1	3	44	27607
Ppat_pp2003	13205	0	13.7	11.7	0	5	12	20	320	180340
Ppat_pp2010	13205	0	5.9	6.9	0	1	4	8	165	78031
Ppat_pp2011	13205	0	10	10.5	0	3	8	14	210	131411
Ppat_pp2004	13205	0	2.3	3.4	0	0	1	3	112	30903
Ppat_pp3011	13205	0	31.3	28.8	0	9	26	45	448	412946
Ppat_pp3012	13205	0	32.3	30.8	0	12	27	44	1043	426695
Ppat_pp3010_13	13205	0	17.9	23.5	0	5	12	22	427	236482
Ppat_locins	13205	0	515.4	464.4	0	79	447	814	3654	6805554
advice	13205	0	18.9	66.7	0	0	0	6	2615	249947
bezarts	13205	0	0	0.1	0	0	0	0	10	93
bezavond	13205	0	11.1	28.9	0	0	3	12	1051	146089
bezavond_ah	13205	0	1	5.2	0	0	0	1	244	13580
beznacht	13205	0	11.7	35.1	0	0	6	14	1813	155073
beznacht_ah	13205	0	0.9	4.6	0	0	0	1	390	12008
bezoek	13205	0	973.1	1050.3	0	120	721	1463	30744	12849720
bezwefe	13205	0	30.6	48.3	0	1	19	42	1672	403770
bezwefe_ah	13205	0	4	13	0	0	1	5	643	52834
bezzh	13205	0	1.3	8.8	0	0	0	0	399	17822
raadpl	13205	0	2095.6	1719.3	0	727	1875	3071	18626	27672892
raadplr	13205	0	2060.1	1708	-4	686	1834	3035	18594	27203854
ranacht_ah	13205	0	8.3	41.9	0	0	0	3	1484	109028
rawefe_ah	13205	0	27.3	60.7	0	0	6	32	1202	360010
AMBUL	13205	0	0	0.3	0	0	0	0	22	370
INSTEEL	13205	0	180.5	350.3	0	1	84	231	7286	2383890
sumflagpat_ins	13205	0	6	5.7	0	2	5	9	83	79794
sumflagpat_gmd	13205	0	0.1	0.4	0	0	0	0	8	1339

7.2 GPs' CHARACTERISTICS

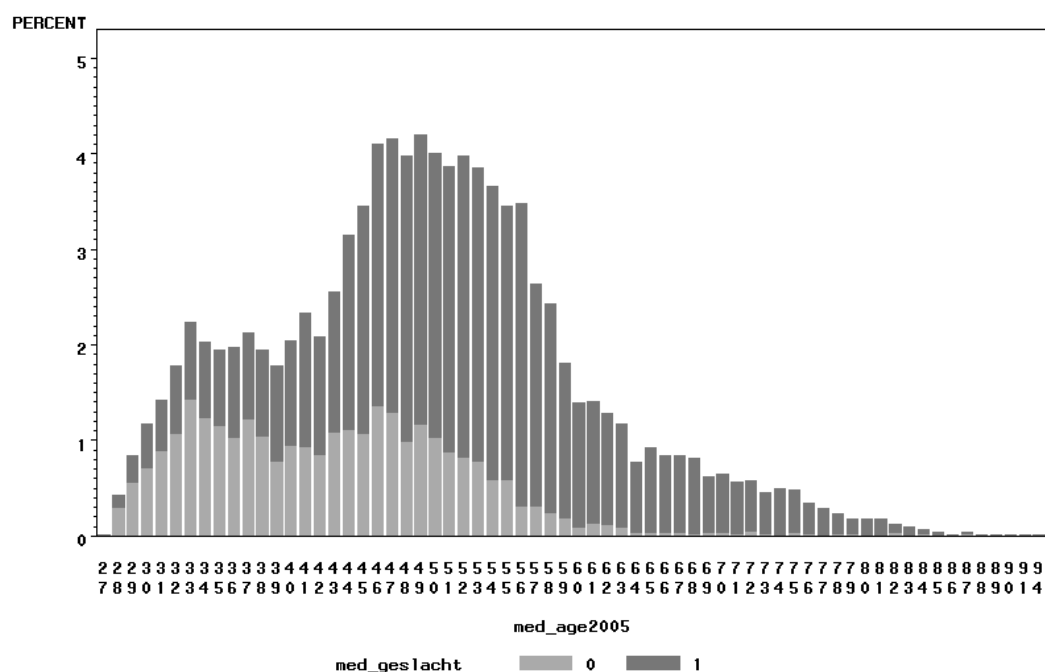
7.2.1 Med_age2005 & Med_geslacht: Age (2005) & sex of the GP

Med_age2005 N	N Miss	Mean	Std Dev	Minimum	Lower Quartile	Median	Upper Quartile	Maximum
13186	19	49.3	10.9	27.0	42.0	49.0	56.0	94.0

	p10	p20	p30	p40	p50	p60	p70	p80	p90
Med_age2005	35	40	44	47	49	52	54	57	63

Female GP: 71.57% (9451 rows).

Distribution of GP's age and gender (n= 13205)



Med_Region & Med_Prov: Region and province of the physician

med_region	Frequency	Percent	Cumul. freq	Cumul. %
0	3	0.02	3	0.02
Bruxelles(1)	1530	11.59	1533	11.61
Vlaanderen(2)	6792	51.44	8325	63.04
Wallonie(3)	4880	36.96	13205	100.00

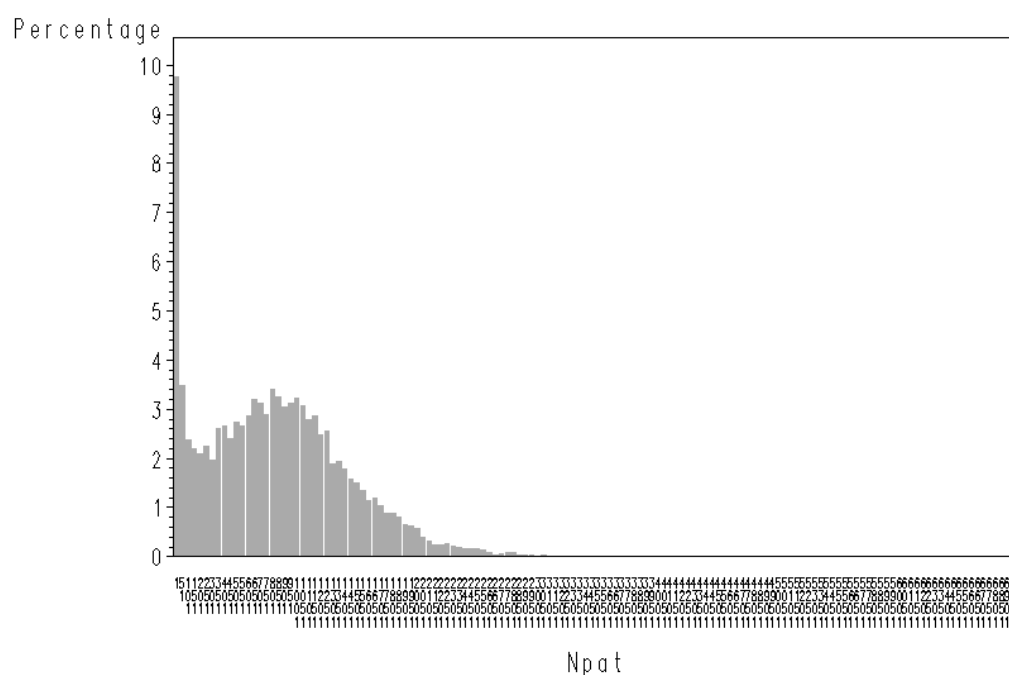
med_prov	Frequency	Percent
Indéterminée	3	0.02
Bruxelles	1530	11.59
Antwerpen	1836	13.90
Vlaams Brabant	1297	9.82
West-Vlaanderen	1256	9.51
Oost-Vlaanderen	1563	11.84
Limburg	840	6.36
Brabant Wallon	568	4.30
Hainaut	1624	12.30
Liège	1605	12.15
Luxembourg	333	2.52
Namur	750	5.68

Npat : Number of patients & patients with a Global Medical Record per physician

Npat									
N	N Miss	Mean	Std Dev	Minimum	Lower Quartile	Median	Upper Quartile	Maximum	Sum
13205	0	819.4	594.6	1	340	788	1193	6891	10820742

Npat	p10	p20	p30	p40	p50	p60	p70	p80	p90
	28	227	439	625	788	942	1106	1299	1613

Distribution of Nb of patients per GP (n= 13.205)



Globally, 1547 GPs (incl. 5 GPs who were discarded due to missings/invalid INS or age) have less than Npat=50 (11.7%), and 1900 less than Npat=100 (14.4%).

7.3 DATA CLEANING

1. Missings

Variable	N	Mean	Std Dev	Minimum	1st Pctl	5th Pctl	10th Pctl	25th Pctl	Median	75th Pctl	90th Pctl	95th Pctl	99th Pctl	Maximum	Sum
Npat	19	520.84	603.45	1	1	1	2	46	262	886	1636	1965	1965	1965	9896
advice	19	4.89	15.46	0	0	0	0	0	0	3	15	67	67	67	93
bezoek	19	112.58	223.41	0	0	0	0	0	1	74	664	690	690	690	2139
raadpl	19	745.05	991.40	0	0	0	0	0	182	1138	2153	3467	3467	3467	14156
INSTEEL	19	72.37	229.07	0	0	0	0	0	0	17	264	983	983	983	1375

2. Npat<50

Variable	N	Mean	Std Dev	Minimum	1st Pctl	5th Pctl	10th Pctl	25th Pctl	Median	75th Pctl	90th Pctl	95th Pctl	99th Pctl	Maximum	Sum
Npat	1542	11.15	12.96	1	1	1	1	2	4	17	34	40	47	49	17189
advice	1542	4.15	19.03	0	0	0	0	0	0	2	10	22	51	629	6395
bezoek	1542	16.09	53.28	0	0	0	0	0	0	2	43	100	244	808	24809
raadpl	1542	16.12	47.22	0	0	0	0	0	0	9	47	87	228	590	24852
INSTEEL	1542	4.38	48.05	0	0	0	0	0	0	0	0	3	90	1233	6753

3. Extremely high values

The variables depicting the volume of activity of care and the number of patients were plotted in order to enhance the presence of extreme values. In case of values unlikely to be correct records in terms of volume and in terms of average (observations far from the cloud of plotted observations, both on X-, and Y-axis), the GP was discarded. This was the case for 2 GP's.

N	Npat	advice	bezoek	raadpl	instel
	6891	0	66	18594	1
1	1902	0	30744	7166	409

4. Contact = 0

16 GPs have all activity variables=0.

Filter applied

Discard missings and invalid values (19 rows)

Discard GPs w/ < 50 Npat (further 1542 rows)

Discard GP with Npat=6891 and GP w/ bezoek=30744

Discard GPs w/ contact=0

RESULTS : 11 626 GPs entered the analyses

The 2005 GP table included 13 205 rows/GPs. After the discarding of 19 rows including missing values, 2 GPs with extreme values, 1542 GPs with less than 50 patients and 16 GPs with contact=0, 11 626 practising GPs were considered to represent the current practising medical workforce and were described in Chapter 2.

The same cleaning process was applied for the 2002 GP database. The 2002 GP table included 15 765 rows/GPs. After the discarding of 44 rows including missing values, 2 GPs with extreme values, 3 188 GPs with less than 50 patients, 12 531 practising GPs were considered to represent the medical workforce of GPs in 2002 and were described in Chapter 2.

7.4 DENSITY CALCULATION

INS_GPDENSITY													
N	Mean	Std Dev	Minimum	1st Pctl	5th Pctl	10th Pctl	25th Pctl	Median	75th Pctl	90th Pctl	95th Pctl	99th Pctl	Maximum
587	11.22	3.09	3.01	4.56	6.93	7.89	9.17	10.83	12.88	15.14	16.80	21.02	24.45

ARR_GPDENSITY													
N	Mean	Std Dev	Minimum	1st Pctl	5th Pctl	10th Pctl	25th Pctl	Median	75th Pctl	90th Pctl	95th Pctl	99th Pctl	Maximum
43	11.09	1.45	8.86	8.86	9.39	9.53	9.86	10.79	11.91	13.35	13.52	14.80	14.80

PROV_GPDENSITY													
N	Mean	Std Dev	Minimum	1st Pctl	5th Pctl	10th Pctl	25th Pctl	Median	75th Pctl	90th Pctl	95th Pctl	99th Pctl	Maximum
11	11.52	1.61	9.56	9.56	9.56	9.74	9.93	11.29	12.92	13.35	14.30	14.30	14.30

The FINAL CLEANED database 2005 comprised the following activity level:

11 626 GPs (rows), including 8 400 men (72.25%),
 10 783 004 patients w/ contact(s), with duplicates added up,
 243 459 advices
 87 bezarts (visits following a colleague's call)
 145 203 bezavond (visits in the evening)
 154 241 beznacht (visits at night)

12 911 688	bezoek (visits)
400 384	bezwefe (visits during the week-end)
17 790	bezzh (visits in a Sp department = rehabilitation)
27 608 124	raadpl (consultations)
27 142 171	raadplr (idem except WE, nights, bank holidays)
367	ambul (accompanying GPs in ambulance)
2 375 352	instel (visits in home for the elderly)

The following fees were supplements paid when visits happened in emergency:

13 556	bezavond_ah
11 931	beznacht_ah
52 031	bezwefe_ah
107 819	ranacht_ah
358 134	rawefe_ah

The following activity variables were calculated:

43 736 602	Contacts= beznacht + bezwefe + bezzh + bezarts + bezoek + bezavond + raadpl + advice + instel
27 851 583	Consultations= raadpl + advice
12 937 252	Visits= bezarts + bezoek + bezavond + instel
572 415	Visits_NW= beznacht + bezwefe + bezzh

7.5 DISTRIBUTIONS ON 11 626 GPs

The age of the general practitioners ranged from 27 years to 91 years, the mean age was 49 years. They were 8400 male (72%). On average, GPs had contacts with 927 patients including 413 male (43.8% of their patients). Some GPs did not see any male patients at all but they all saw women during 2005 (the minimum number of female is 13.7% of the GP patients). Amongst groups of age, patients between 41 and 60 years were the most numerous (2 871 524 out of 10 783 004 or 26.6%). The mean proportion of this group of age amongst the patients was also 26.6% per GP, while in average one fifth were aged less than 21 years, one quarter were aged between 21 and 40 years, 21.5% were aged between 61 and 80 years and 6.9% were at least 81 years old. It is important to note that summing number of patients from more than one GP do imply double counting patients (patients are not unique).

Sixty percent of the patients lived in the same municipality than the GP (variable locins). This proportion ranged from 0% to 98.3% per GP. For 25% of the GPs, this proportion amounted to less than 47%. On the contrary, for 25% of GPs, this proportion was higher than 80%. In average, the patients of a GP included 0.62% of patients entitled for a lump sum B (home care), 2.7% of patients entitled for a lump sum C (home care) and 1.77% of patients entitled for severe physiotherapy. The maxima observed for these proportions are respectively 36% (B), 20.2% (C) and 57% (physiotherapy). Concerning socioeconomic patient characteristics, the patients seen by the average GP included 2.4% of patients entitled for a preferential status (with a maximum of 43.5%). The mean number of contact per GP amounted to 3 762 contacts that can be broken down into a mean of 2 396 consultations and a mean of 1 317 visits. In average, one GP visited each patient 1.5 times and saw each of them 2.6 times in consultation.

GP characteristics

Variable	N	Mean	Std Dev	Minimum	1st Pctl	5th Pctl	10th Pctl	25th Pctl	Median	75th Pctl	90th Pctl	95th Pctl	99th Pctl	Maximum	Sum
med_geslacht	11626	0.72	0.45	0	0	0	0	0	0	1	1	1	1	1	8400
med_age2005	11626	49.01	10.50	27	29	32	34	42	49	55	62	68	76	91	569755
Npat	11626	927.49	546.36	50	63	140	244	514	875	1255	1663	1914	2464	3980	10783004
Npat_DM	11626	257.25	281.50	0	3	11	20	51	156	371	644	842	1239	2037	2990811
Npatown_DM	11626	196.29	263.83	-1	0	0	0	0	84	284	555	746	1184	2111	2282068
Ppat_male	11626	412.98	256.66	0	23	55	98	219	385	563	758	880	1159	1968	4801290

Patients' characteristics AND activity level: Absolute numbers

Variable	N	Mean	Std Dev	Minimum	1st Pctl	5th Pctl	10th Pctl	25th Pctl	Media n	75th Pctl	90th Pctl	95th Pctl	99th Pctl	Maximum	Sum
Ppat_0	11626	202.51	148.84	0	2	14	31	85	179	289	402	484	644	1179	2354391
Ppat_21	11626	237.97	164.31	0	7	27	50	116	213	325	453	544	740	1442	2766587
Ppat_41	11626	246.97	151.89	0	13	34	62	134	230	335	446	520	687	1397	2871254
Ppat_61	11626	186.93	116.58	0	7	27	51	102	173	252	337	392	523	1849	2173242
Ppat_81	11626	53.12	38.64	0	0	5	10	26	47	72	101	121	171	776	617530
Ppat_vvt	11626	142.89	103.43	0	7	20	35	71	125	188	266	328	488	1221	1661227
Ppat_pp2001	11626	5.60	5.93	0	0	0	0	2	4	8	12	16	24	199	65107
Ppat_pp2002	11626	2.37	2.68	0	0	0	0	0	2	3	6	7	11	44	27497
Ppat_pp2003	11626	15.45	11.27	0	0	2	3	8	14	21	29	35	49	320	179639
Ppat_pp2010	11626	6.68	7	0	0	0	1	2	5	9	14	18	34	165	77669
Ppat_pp2011	11626	11.24	10.53	0	0	1	2	5	9	14	21	27	53	210	130696
Ppat_pp2004	11626	2.65	3.49	0	0	0	0	1	2	4	6	8	13	112	30760
Ppat_pp3011	11626	35.37	28.24	0	1	3	6	15	30	48	70	87	129	448	411246
Ppat_pp3012	11626	36.47	28.87	0	1	5	9	18	30	47	69	87	136	438	424034
Ppat_pp3010_13	11626	20.21	23.94	0	0	2	4	8	14	24	40	55	121	427	234979
Ppat_locins	11626	584.30	451.67	0	0	8	39	206	529	865	1195	1415	1855	3515	6793059
advise	11626	20.94	70.48	0	0	0	0	0	0	7	58	121	309	2615	243459
bezarts	11626	0.01	0.16	0	0	0	0	0	0	0	0	0	0	10	87
bezavond	11626	12.49	30.40	0	0	0	0	1	5	13	29	46	118	1051	145203
bezavond_ah	11626	1.17	5.50	0	0	0	0	0	0	1	3	5	14	244	13556
beznacht	11626	13.27	37.11	0	0	0	0	2	7	16	27	38	97	1813	154241
beznacht_ah	11626	1.03	4.92	0	0	0	0	0	0	1	3	4	9	390	11931
bezoek	11626	1100.29	1017.88	0	0	1	26	334	870	1584	2400	3041	4568	8443	12791962
bezwefe	11626	34.44	48.91	0	0	0	0	5	24	46	75	102	207	1672	400384
bezwefe_ah	11626	4.48	12.58	0	0	0	0	0	1	5	11	16	38	643	52031
bezhz	11626	1.53	9.41	0	0	0	0	0	0	0	1	6	37	399	17790
raadpl	11626	2374.69	1633.87	0	26	238	506	1171	2123	3247	4529	5383	7244	18626	27608124
raadplr	11626	2334.61	1627.09	-4	15	213	460	1120	2087.50	3214	4479	5346	7154	17784	27142171
ranacht_ah	11626	9.27	44.21	0	0	0	0	0	1	3	10	22	230	1484	107819
rawefe_ah	11626	30.80	63.62	0	0	0	0	0	10	37	75	116	321	1202	358134
AMBUL	11626	0.03	0.32	0	0	0	0	0	0	0	0	0	1	22	367
INSTEEL	11626	204.31	366.40	0	0	0	0	22	111	258	468	656	1484	7286	2375352
contact	11626	3761.96	2436.91	1	122	416	801	1894	3471.50	5197	7029	8178	10769	26529	43736602
consult	11626	2395.63	1643.58	0	46	246	514	1187	2144	3276	4561	5444	7338	18626	27851583
Visit	11626	1317.10	1186.05	0	0	2	34	417	1062.50	1882	2862	3601	5282	9608	15312604
Visit_NW	11626	49.24	73.66	0	0	0	0	10	35	64	104	140	302	2141	572415
sumflagpat_ins	11626	6.83	5.62	0	0	0	1	3	6	9	13	17	25	83	79461
sumflagpat_gmd	11626	0.11	0.40	0	0	0	0	0	0	0	0	1	2	8	1331

Patients' characteristics AND activity level : Percentages and averages

Variable	N	Mea n	Std Dev	Minimu m	1st Pctl	5th Pctl	10th Pctl	25th Pctl	Media n	75th Pctl	90th Pctl	95th Pctl	99th Pctl	Maximu m	Sum
Avg ambul	11626	0	0	0	0	0	0	0	0	0	0	0	0	0.04	0.54
Avg instel	11626	0.26	0.78	0	0	0	0	0.03	0.13	0.28	0.52	0.75	2.15	28.46	2997.09
Avg bezavond	11626	0.01	0.05	0	0	0	0	0	0.01	0.02	0.03	0.05	0.14	2.83	170.99
Avg advice	11626	0.03	0.11	0	0	0	0	0	0	0.01	0.07	0.14	0.39	3.09	321.38
Avg bezarts	11626	0	0	0	0	0	0	0	0	0	0	0	0	0.01	0.11
Avg beznacht	11626	0.02	0.11	0	0	0	0	0	0.01	0.02	0.03	0.05	0.15	7.71	208.99
Avg bezoek	11626	1.25	1.15	0	0	0	0.07	0.48	1.03	1.72	2.53	3.24	5.29	20.08	14588.90
Avg bezwefe	11626	0.04	0.08	0	0	0	0	0.01	0.03	0.05	0.10	0.14	0.37	3.40	521.18
Avg bezzh	11626	0	0.01	0	0	0	0	0	0	0	0	0	0.05	0.20	22.29
Avg raadpl	11626	2.57	1.13	0	0.18	1.03	1.31	1.94	2.50	3.08	3.72	4.27	6.28	23.32	29891.71
Avg raadplr	11626	2.53	1.15	-0.04	0.10	0.77	1.26	1.91	2.48	3.05	3.67	4.22	6.22	23.32	29365.87
Avg bezavond_ah	11626	0	0.01	0	0	0	0	0	0	0	0	0	0.02	0.25	15.69
Avg beznacht_ah	11626	0	0.01	0	0	0	0	0	0	0	0	0	0.01	0.50	14.46
Avg ranacht_ah	11626	0.01	0.05	0	0	0	0	0	0.01	0.04	0.08	0.15	0.36	1.81	120.69
Avg rawefe_ah	11626	0.03	0.07	0	0	0	0	0	0	0.01	0.01	0.02	0.06	1.47	405.15
Avg bezwefe_ah	11626	0.01	0.03	0	0	0	0	0	0	0.01	0.01	0.02	0.06	1.96	69.73
Avg Contact	11626	4.19	1.89	0	1.03	1.33	2.12	3.10	4.02	5.01	6.22	7.20	10.44	30.52	48722.65
Avg_Visit_NW	11626	0.06	0.16	0	0	0	0	0.01	0.04	0.07	0.13	0.20	0.52	7.71	752.46
Avg_Visit	11626	1.53	1.14	0	0	0	0.09	0.60	1.25	2.06	3.05	3.89	6.51	30.52	17757.09
Avg Consult	11626	2.60	1.13	0	0.41	1.04	1.33	1.96	2.53	3.11	3.74	4.30	6.34	23.32	30213.10
PERC_PP2001	11626	0.62	0.69	0	0	0	0	0.24	0.51	0.85	1.26	1.58	2.70	35.96	7260.20
PERC_PP2002	11626	0.27	0.39	0	0	0	0	0	0.20	0.37	0.61	0.79	1.40	20.18	3120.07
PERC_PP2003	11626	1.77	1.25	0	0	0.53	0.76	1.17	1.62	2.16	2.82	3.37	5.33	57.02	20611.91
PERC_PP2004	11626	0.28	0.75	0	0	0	0	0.07	0.22	0.38	0.57	0.73	1.34	58.60	3285.80
PERC_PP2010	11626	0.78	1.07	0	0	0	0.15	0.35	0.60	0.95	1.45	1.99	4.08	62.16	9089.87
PERC_PP2011	11626	1.30	1.32	0	0.26	0.98	1.43	0.74	1.09	1.52	2.15	2.88	5.56	47.13	15125.04
PERC_PP3011	11626	4.04	3.24	0	0.92	1.65	1.98	2.63	3.62	5.04	6.77	8.33	13.73	90	46990.28
PERC_PP3012	11626	4.14	2.23	0	0	0	0.48	0.69	1.72	2.74	4.57	6.55	11.58	31.17	48144.29
PERC_PP3010_13	11626	2.41	2.62	0	0	0	0.48	1.09	1.72	2.74	4.57	6.55	13.71	43.48	28050.55
PERC_pat0	11626	20.49	8.32	0	1.46	6.65	9.93	15.33	20.61	25.53	30.20	33.13	40.22	100	238201.19
PERC_pat21	11626	24.90	7.76	0	5.95	13.95	16.89	20.81	24.39	28.16	32.89	37.85	51.08	85.96	289496.72
PERC_pat41	11626	26.62	5.29	0	12.96	18.83	20.92	23.72	26.54	29.25	32.13	34.74	43.04	67.35	309529.61
PERC_pat61	11626	21.54	8.98	0	4.13	9.45	11.91	15.76	20.30	25.77	32.64	38	51.72	81.88	250413.81
PERC_pat81	11626	6.45	4.74	0	0	1.25	2.14	3.66	5.54	8.02	11.37	14.23	23.64	75.57	74958.67
PERC_DMGM	11626	25.72	20.20	-0.49	1.57	3.13	4.37	8.57	19.70	39.32	56.99	65.57	77.94	91.36	298970.71
PERC_DMGMGown	11626	18.77	20.36	-0.49	0	3.33	37.17	41.18	10.47	30.69	51.03	61.50	75.92	93.21	218225.61
PERC_male	11626	43.82	6.37	0	20.22	33.33	37.17	41.18	44.60	47.28	49.88	51.68	57.97	86.30	509465.17
PERC_inzr	11626	0.20	0.29	0	0	0	0	0	0.11	0.30	0.53	0.74	1.38	3.72	2381.33
PERC_invgheh	11626	1.01	1.59	0	0	0	0.19	0.42	0.74	1.23	1.94	2.59	4.88	75.44	11697.76
PERC_invar	11626	3.83	2.02	0	0.63	1.40	1.79	2.48	3.45	4.75	6.35	7.53	10.24	40.68	44505.90
PERC_locins	11626	60.11	26.88	0	0	1.79	9.87	46.89	69	80.74	86.67	89.24	92.40	98.26	698896.01
PERC_flagpat_ins	11626	0.81	0.74	0	0	0	0.19	0.41	0.67	1.03	1.50	1.92	3.41	13.51	9461.91
PERC_flagpat_DMGM	11626	0.01	0.06	0	0	0	0	0	0	0	0	0.09	0.22	1.89	139.78

7.6 SUMMARY TABLES

7.6.1 Per municipality: analysis per GP

	GP density (/10 000 inhabs)				
	Low density	Medium Low	Medium	Medium High	High density
	QT1	QT2	QT3	QT4	QT5
	From 3.01	From 8.885	From 10.231	From 11.602	From 13.77
	To 8.88	To 10.23	To 11.601	To 13.37	To 24.45
N municipalities	117(19.93%)	118(20.10%)	117(19.93%)	117(19.93%)	118(20.10%)
	SUPPLY MEAN (SD)°				
N GPs (total)	1246	2666	2904	2120	2690
N Gp per cell	10.65	22.59	24.82	18.12	22.80
Density (per GP)	7.92(0.96)	9.61(0.35)	10.93(0.39)	12.42(0.45)	15.91(2.12)
Density (per cell)	7.45(1.32)	9.54(0.40)	10.84(0.40)	12.43(0.50)	15.81(2.35)
	CONSUMPTION : Mean (SD))°				
Npat	1142.4 (589.18)	1035.48 (554.75)	964.05 (541.73)	860.94 (510.46)	733.91 (476.69)
contact	4649.48 (2642.75)	4274.66 (2517.23)	3986 (2406.16)	3499.41 (2304.5)	2807.81 (2019.78)
consult	3200.07 (1838.13)	2769.31 (1717.8)	2479.67 (1584.73)	2180.87 (1535.79)	1731.2 (1302.22)
visit	1389.3 (1191.54)	1453.98 (1227.14)	1454.28 (1218.62)	1270.58 (1150.01)	1036.56 (1079.11)
visit_NW	60.11 (75.14)	51.37 (63.48)	52.05 (63.38)	47.96 (77.97)	40.05 (86.99)
Avg_contact	4.17 (1.6)	4.29 (1.94)	4.29 (1.84)	4.19 (1.85)	4 (2.05)
Avg_consult	2.84 (1.05)	2.7 (1.13)	2.6 (1.05)	2.55 (1.13)	2.42 (1.2)
Avg_Visit	1.26 (1.03)	1.52 (1.51)	1.62 (1.42)	1.57 (1.41)	1.52 (1.68)
Avg_visit_NW	0.06 (0.16)	0.06 (0.1)	0.06 (0.12)	0.07 (0.13)	0.07 (0.23)
prop_visit (%)	0.27 (0.16)	0.31 (0.18)	0.34 (0.18)	0.33 (0.2)	0.32 (0.22)
	CONTROL VARIABLES – GP LEVEL				
med_age2005	48.7 (9.9)	48.8 (10.2)	49.3 (10.7)	49 (10.6)	49 (10.7)
	74.10%	73.93%	75.17%	70.09%	68.17%
Med_geslacht (% male)	48.7 (9.9)	48.8 (10.2)	49.3 (10.7)	49 (10.6)	49 (10.7)
	CONTROL VARIABLES – PATIENT LEVEL MEAN % (SD%)				
PERC_male	45.41 (5.6)	44.53 (5.75)	44.07 (5.72)	43.65 (6.26)	42.25 (7.61)
PERC_pat0	21.55 (7.6)	20.31 (7.93)	20.06 (7.84)	20.97 (8.32)	20.25 (9.39)

PERC_pat2I	24.97 (6.49)	25.08 (7.3)	24.95 (7.54)	24.33 (7.31)	25.09 (9.18)
PERC_pat4I	26.81 (4.61)	26.37 (4.88)	26.63 (4.98)	26.93 (5.28)	26.55 (6.23)
PERC_pat6I	21.22 (8.63)	21.83 (8.84)	21.85 (8.85)	21.35 (8.82)	21.22 (9.51)
PERC_pat8I	5.44 (3.51)	6.41 (4.8)	6.52 (4.39)	6.42 (4.75)	6.9 (5.41)
PERC_DM	35.69 (21.29)	30.05 (19.74)	28.46 (20.69)	22.11 (19.38)	16.69 (15.65)
PERC_DMGown (from GP file)	27.59 (22.53)	22.51 (20.51)	20.77 (20.93)	15.83 (19.44)	11.13 (15.83)
CONTROL VARIABLE – AREA LEVEL Mean (SD)					
N inhab per cell=INS_Npop	13750.91 (10798.37)	23531.04 (47328.44)	22736.35 (27807.64)	14608.15 (15663.03)	14550.53 (22381.43)
N inhab/km ² /cell	817.58 (2583.9)	490.27 (537.6)	877.6 (2146.17)	549.55 (1379.88)	764.49 (1834.22)
ins_GPDENSITY	7.45 (1.32)	9.54 (0.4)	10.84 (0.4)	12.43 (0.5)	15.81 (2.35)
ins_NGP	10.65 (9.22)	22.59 (45.77)	24.82 (30.79)	18.12 (19.38)	22.8 (35.48)
Npat	12166.05 (10085.62)	23394.72 (46397.89)	23928.1 (28909.78)	15600.02 (14463.87)	16730.58 (23944.15)
contact	49514.97 (41831.08)	96578.44 (177249.4)	98934.44 (117475.4)	63408.08 (55310.65)	64008.64 (92170.86)
consult	34079.32 (28190.97)	62567.59 (120274.7)	61546.68 (73875.1)	39516.56 (35588.75)	39465.49 (56218.86)
visit	14795.49 (14774.96)	32850.17 (57151.73)	36095.96 (44453.41)	23022.49 (21940.19)	23630.12 (36403.03)
visit_NW	640.16 (676.5)	1160.68 (1842.35)	1291.81 (1551.85)	869.03 (745.99)	913.03 (1231.61)
ins_Avg_contact	4.07 (0.64)	4.34 (0.66)	4.15 (0.54)	4.15 (0.63)	3.92 (0.59)
ins_Avg_consult	2.78 (0.42)	2.75 (0.43)	2.56 (0.33)	2.58 (0.45)	2.36 (0.31)
ins_Avg_visit	1.23 (0.53)	1.53 (0.6)	1.53 (0.52)	1.51 (0.51)	1.51 (0.6)
ins_Avg_visit_NW	0.05 (0.03)	0.06 (0.03)	0.06 (0.02)	0.06 (0.03)	0.06 (0.03)
ins_pop_Npat=Nb pat / 10 000 In	8240.52 (2385.6)	9846.56 (1755.25)	10520.32 (1829.74)	111195.66 (2319.43)	12237.87 (2366.98)
ins_Avgpop_contact	33536.83 (10880.58)	42612.66 (8901.53)	43692.54 (9116.84)	46382.86 (11337.65)	47966.81 (11166.29)
ins_Avgpop_consult	23038.61 (7611.78)	27154.44 (6702.5)	27081.28 (6547.43)	28955.54 (8278.19)	28727.71 (6267.25)
ins_Avgpop_visit	10061.59 (5121.92)	14923.69 (5478.32)	16024.58 (5542.6)	16772.13 (6405.63)	18503.16 (8013.25)
ins_Avgpop_visit_NW	436.63 (232.9)	534.53 (214.78)	586.68 (248.58)	655.19 (302.61)	735.94 (374.65)
ins_prop_visit	0.3 (0.1)	0.35 (0.1)	0.36 (0.09)	0.36 (0.09)	0.37 (0.1)

7.6.2 Per arrondissement: analysis per GP

	GP density (/10 000 inhabs)				
	Low density	Medium Low	Medium	Medium High	High density
	QT1	QT2	QT3	QT4	QT5
	From 8.86 To 9.80	From 9.86 To 10.41	From 10.55 To 11.04	From 11.25 To 12.08	From 12.55 To 14.80
N arrondiss.	9(20.93%)	9(20.93%)	7(16.28%)	9(20.93%)	9(20.93%)
	SUPPLY Mean (SD°)				
N GPs (total)	2 537	2 355	1 540	1 632	3 562
N Gp per cell	281.89(253.42)	261.67(165.06)	220(207.89)	181.33(158.81)	395.78(422.35)
Density (per GP)	9.50(0.23)	10.18(0.20)	10.73(0.12)	11.69(0.21)	13.46(0.81)
Density (per cell)	9.46(0.3)	10.11(0.22)	10.81(0.17)	11.68(0.25)	13.34(0.78)
	CONSUMPTION : Mean (SD°)				
Npat	1109.19 (566.13)	1027.36 (558.65)	942.17 (524.02)	908.1 (509.15)	734.59 (484.69)
contact	4510.21 (2508.29)	4223.72 (2549.39)	4093.16 (2449.98)	3771.64 (2288.42)	2776.12 (2014.27)
consult	3111.7 (1775.17)	2764.44 (1705.91)	2391.78 (1498.21)	2249.14 (1523.34)	1710.55 (1297.4)
visit	1347.62 (1158.87)	1404.77 (1164.76)	1643.41 (1302.4)	1469.47 (1228.5)	1026.51 (1080.64)
visit_NW	50.89 (58.8)	54.5 (66.45)	57.97 (79.85)	53.03 (81.69)	39.06 (79.72)
Avg_contact	4.25 (1.82)	4.24 (1.85)	4.48 (1.89)	4.31 (1.79)	3.94 (1.99)
Avg_consult	2.86 (1.06)	2.73 (1.12)	2.58 (1.06)	2.52 (1.17)	2.37 (1.14)
Avg_Visit	1.34 (1.39)	1.45 (1.31)	1.83 (1.43)	1.72 (1.4)	1.5 (1.64)
Avg_visit_NW	0.05 (0.08)	0.06 (0.13)	0.07 (0.12)	0.07 (0.18)	0.07 (0.21)
prop_visit (%)	0.28 (0.16)	0.31 (0.17)	0.37 (0.18)	0.36 (0.2)	0.32 (0.22)
	CONTROL VARIABLES – GP LEVEL Mean (SD)				
med_age2005	48.4 (10.5)	48.6 (10.4)	49.7 (10.5)	49.1 (10.6)	49.3 (10.5)
Med_geslacht (% male)	73.75%	74.44%	75.91%	71.14%	68.67%
	CONTROL VARIABLES – PATIENT LEVEL : MEAN % (SD%)				
PERC_male	45.19 (5.42)	44.76 (5.73)	44.19 (5.66)	43.83 (5.59)	42.06 (7.54)
PERC_pat0	20.54 (7.62)	20.44 (7.58)	20.63 (7.38)	21.36 (8.04)	20.02 (9.63)
PERC_pat21	25.04 (6.85)	24.52 (6.39)	24.72 (7.15)	23.52 (7.06)	25.77 (9.46)
PERC_pat41	26.51 (4.79)	26.76 (4.83)	26.52 (4.96)	26.84 (5.18)	26.56 (6.06)
PERC_pat61	21.93 (9.05)	22.08 (8.75)	21.71 (8.38)	21.67 (8.78)	20.78 (9.37)
PERC_pat81	5.99 (5)	6.21 (4.31)	6.42 (3.59)	6.62 (4.38)	6.87 (5.34)
PERC_DMGM	38.34 (19.39)	33.04 (20.36)	25.65 (19.27)	21.19 (18.37)	13.98 (13.37)
PERC_DMGMown	28.85 (21.5)	24.5 (21.85)	19 (19.82)	14.82 (18.19)	9.51 (14.15)
	CONTROL VARIABLE – AREA LEVEL Mean (SD)				

N inhab per cell=Arr_Npop	296864.3 (263333.9)	257160 (158989.2)	204921.6 (194076.9)	155184.4 (135658.6)	295056.9 (323986.5)
N inhab/km²/cell	475 (229.58)	383.56 (181.75)	412.86 (292.74)	229.22 (135.57)	897.22 (2014.17)
Arr_GPDENSITY	9.46 (0.3)	10.11 (0.22)	10.81 (0.17)	11.68 (0.25)	13.34 (0.78)
Arr_NGP	281.89 (253.42)	261.67 (165.06)	220 (207.89)	181.33 (158.81)	395.78 (422.35)
Npat	312667.2 (272782.9)	268826.4 (167776.1)	207277.4 (198152.6)	164668.8 (160544.6)	290733.3 (280501)
contact	1271379 (1022619)	1105206 (620939.7)	900494.3 (833568)	683924.6 (662554.7)	1098728 (1016286)
consult	877153.9 (752801.5)	723363 (456035.3)	526192.1 (510352.3)	407844.9 (460894.5)	676998 (656416.1)
visit	379879.2 (277811.2)	367582.7 (168440.3)	361549.1 (321950.1)	266464.1 (223045.9)	406269.6 (376197.2)
visit_NW	14345.67 (8260.56)	14260.56 (6401.12)	12753 (10877.43)	9615.56 (7036.44)	15460.89 (13451.39)
Arr_Avg_contact	4.22 (0.4)	4.31 (0.46)	4.39 (0.53)	4.05 (0.29)	3.94 (0.4)
Arr_Avg_consult	2.81 (0.19)	2.7 (0.18)	2.52 (0.32)	2.39 (0.25)	2.35 (0.1)
Arr_Avg_visit	1.36 (0.43)	1.55 (0.38)	1.81 (0.48)	1.59 (0.46)	1.53 (0.4)
Arr_Avg_visit_NW	0.05 (0.02)	0.06 (0.02)	0.07 (0.02)	0.06 (0.01)	0.06 (0.01)
Arr_pop_Npat=Nb pat / 10 000 In	10514.26 (550.72)	10323.76 (899.84)	9929.9 (487.33)	9997.88 (1838.11)	10616.24 (988.32)
Arr_Avgpop_contact	44257.63 (3014.17)	44407.53 (5314.08)	43727.41 (6245.38)	40573.2 (8234.93)	41988.24 (6557.09)
Arr_Avgpop_consult	29509.76 (2645.91)	27890.58 (3388.56)	24989.64 (3567.58)	23929.66 (5380.53)	24922.02 (2682.23)
Arr_Avgpop_visit	14180.69 (4061.81)	15890.26 (3729.99)	18056.5 (4965.79)	16007.02 (5454.81)	16422.2 (4745.49)
Arr_Avgpop_visit_NW	567.18 (158.96)	626.68 (169.43)	681.27 (151.96)	636.52 (173.11)	644.02 (156.29)
Arr_prop_visit	0.32 (0.08)	0.36 (0.06)	0.41 (0.08)	0.39 (0.09)	0.38 (0.07)

N inhab per cell	811 962	1 682 683	1 139 815	1 383 647	1 040 261	1 287 172	257 114	1 012 258	1 036 588	364 722	456 620
N inhab/km ² per cell	333	582	361	461	490	339	57	6196	267	331	123
Prov_GPDENSITY	9.56	9.74	9.93	10.28	10.95	11.29	11.78	12.67	12.92	13.35	14.30
Prov_NGP	776	1639	1132	1422	1139	1453	303	1283	1339	487	653
Npat	913855	1793274	1211093	1426746	1106927	1300656	231437	836202	1049429	390546	522839
contact	3472395	7116339	5377023	6340568	4404413	5615783	851861	2820440	4325052	1311003	2101725
consult	2609462	5074842	3231711	3895453	3065162	2875513	573981	1977020	2432516	910781	1205142
visit	823056.0	1974578	2059204	2361290	1293921	2648990	263273	805492	1833811	385559	863430
visit_NW	39877	66919	86108	83825	45330	91280	14607	37928	58725	14663	33153
Prov_Avg_contact	3.80	3.97	4.44	4.44	3.98	4.32	3.68	3.37	4.12	3.36	4.02
Prov_Avg_consult	2.86	2.83	2.67	2.73	2.77	2.21	2.48	2.36	2.32	2.33	2.30
Prov_Avg_visit	0.90	1.10	1.70	1.66	1.17	2.04	1.14	0.96	1.75	0.99	1.65
Prov_Avg_visit_NW	0.04	0.04	0.07	0.06	0.04	0.07	0.06	0.05	0.06	0.04	0.06
Prov_pop_Npat =Nb pat / 10 000 ln	11254.90	10657.23	10625.35	10311.49	10640.86	10104.76	9001.34	8260.76	10123.88	10708.05	11450.20
Prov_Avgpop_contact	42765.49	42291.62	47174.52	45825.04	42339.50	43628.85	33131.65	27862.86	41723.93	35945.27	46027.88
Prov_Avgpop_consult	32137.74	30159.23	28352.94	28153.52	29465.32	22339.77	22323.99	19530.79	23466.57	24971.92	26392.67
Prov_Avgpop_visit	10136.63	11734.70	18066.12	17065.70	12438.43	20579.92	10239.54	7957.38	17690.84	10571.31	18909.16
Prov_Avgpop_visit_NW	491.12	397.69	755.46	605.83	435.76	709.15	568.11	374.69	566.52	402.03	726.05
Prov_prop_visit	0.24	0.28	0.38	0.37	0.29	0.47	0.31	0.29	0.42	0.29	0.41

8 DISTRIBUTION OF AVAILABLE DATA FOR SPS (IMA 2005)

8.1 IMA DATA EXTRACTION

IMA data extracted (1 row=ISP). Originally, the dB included n=13.572 rows.

Variable	N	N Miss	Mean	Std Dev	Minimum	Lower Quartile	Median	Upper Quartile	Maximum	Sum
med_geslacht	13572	0	0.7	0.5	0	0	1	1	1	9289
med_age2005	13565	7	49.1	10.8	27	41	48	56	92	666151
Npat	13572	0	927	911.3	1	239	709.5	1352	20703	12581524
Ppat_male	13572	0	367.9	419.4	0	50	246	551	9965	4992730
Ppat_0	13572	0	179.9	327.6	0	8	40	208	6241	2441747
Ppat_21	13572	0	207.5	287.4	0	27.5	107	272	6960	2815688
Ppat_41	13572	0	264.7	275.4	0	42	196	399.5	4585	3592676
Ppat_61	13572	0	230.7	267.8	0	20	149	345	3137	3131260
Ppat_81	13572	0	44.2	64.9	0	1	20	61	1359	600153
advice	1857	11715	21.7	88.4	0	1	2	6	1678	40375
raadpl	13554	18	1773.8	1655.3	0	582	1401	2558	36653	24041515
geroep	304	13268	10.6	60.9	1	1	2	6	1010	3231

The variable geroep (consultation requested by another physician) was not used in the analysis as it was considered independent from the physician's own initiative. Furthermore, any possible influence of this variable on the activity level was not analyzed because of the small numbers.

Advices have the same definition as for the GP's database (code 109012). The consultations (variable raadpl) had already been summed up by the IMA, for its own Feedback datamarts, according to the following clustering:

(A_H : Ambulatory or Hospitalized patient code)

RIZIV/INAMI code	A_H	Label (Dutch)	Label (French)
101010	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Raadpleging in de spreekkamer van de algemeen geneeskundige met verworven rechten	Consultations au cabinet du médecin et visites au domicile du malade : Consultation au cabinet du médecin généraliste avec droits acquis
101032	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Raadpleging in de spreekkamer van de erkende huisarts	Consultations au cabinet du médecin et visites au domicile du malade : Consultation au cabinet du médecin généraliste agréé
101076	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Raadpleging in de spreekkamer van de geaccrediteerde erkende huisarts	Consultations au cabinet du médecin et visites au domicile du malade : Consultation au cabinet du médecin généraliste agréé accrédité
102012	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Raadpleging, in zijn spreekkamer, van een ander geneesheer-specialist dan die, vermeld onder de nrs 102034, 102174, 102196, 102211, 102071, 102093, 102115, 102130, 102152 en 102734	Consultations au cabinet du médecin et visites au domicile du malade : Consultation, à son cabinet, d'un médecin spécialiste autre que ceux cités aux n°s 102034, 102174, 102196, 102211, 102071, 102093, 102115, 102130, 102152 et 102734
102034	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Raadpleging, in zijn spreekkamer, van de geneesheer, specialist voor inwendige geneeskunde, inclusief eventueel schriftelijk verslag	Consultations au cabinet du médecin et visites au domicile du malade : Consultation, à son cabinet, du médecin spécialiste en médecine interne, y compris un rapport écrit éventuel

RIZIV/INAMI code	A_H	Label (Dutch)	Label (French)
102071	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Raadpleging, in de spreekkamer, van de geneesheer, specialist voor kindergeneeskunde, inclusief eventueel schriftelijk verslag	Consultations au cabinet du médecin et visites au domicile du malade : Consultation, à son cabinet, du médecin spécialiste en pédiatrie, y compris un rapport écrit éventuel
102093	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Raadpleging, in de spreekkamer, van de geneesheer, specialist voor cardiologie, inclusief eventueel schriftelijk verslag	Consultations au cabinet du médecin et visites au domicile du malade : Consultation, à son cabinet, du médecin spécialiste en cardiologie, y compris un rapport écrit éventuel
102130	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Raadpleging, in de spreekkamer, van de geneesheer, specialist voor pneumologie, inclusief een eventueel schriftelijk verslag	Consultations au cabinet du médecin et visites au domicile du malade : Consultation, à son cabinet, du médecin spécialiste en pneumologie, y compris un rapport écrit éventuel
102410	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bijkomend honorarium voor een dringende raadpleging in de spreekkamer van een erkende huisarts wanneer de raadpleging zaterdag, zondag of op een feestdag tussen 8 en 21 uur wordt gehouden	Consultations au cabinet du médecin et visites au domicile du malade : Supplément pour consultation d'urgence au cabinet d'un médecin généraliste agréé, lorsque la consultation est effectuée un samedi, un dimanche ou un jour férié entre 8 heures et 21 heures
102432	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bijkomend honorarium voor een dringende raadpleging in de spreekkamer van een erkende huisarts wanneer de raadpleging's nachts tussen 21 en 8 uur wordt gehouden	Consultations au cabinet du médecin et visites au domicile du malade : Supplément pour consultation d'urgence au cabinet d'un médecin généraliste agréé, lorsque la consultation est effectuée la nuit entre 21 heures et 8 heures
102454	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bijkomend honorarium voor een dringende raadpleging in de spreekkamer van de algemeen geneeskundige met verworven rechten : wanneer de raadpleging, zaterdag, zondag of op een feestdag tussen 8 en 21 uur wordt gehouden	Consultations au cabinet du médecin et visites au domicile du malade : Supplément pour consultation d'urgence au cabinet d'un médecin généraliste avec droits acquis : lorsque la consultation est effectuée un samedi, un dimanche ou un jour férié entre 8 heures et 21 heures
102476	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bijkomend honorarium voor een dringende raadpleging in de spreekkamer van de algemeen geneeskundige met verworven rechten : wanneer de raadpleging 's nachts tussen 21 en 8 uur wordt gehouden	Consultations au cabinet du médecin et visites au domicile du malade : Supplément pour consultation d'urgence au cabinet d'un médecin généraliste avec droits acquis : lorsque la consultation est effectuée la nuit entre 21 heures et 8 heures
102491	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bijkomend honorarium voor een dringende raadpleging in de spreekkamer van een geneesheer-specialist : wanneer de raadpleging zaterdag, zondag of op een feestdag tussen 8 en 21 uur wordt gehouden	Consultations au cabinet du médecin et visites au domicile du malade : Supplément pour consultation d'urgence au cabinet d'un médecin spécialiste : lorsque la consultation est effectuée un samedi, un dimanche ou un jour férié entre 8 heures et 21 heures
102513	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bijkomend honorarium voor een dringende raadpleging in de spreekkamer van een geneesheer-specialist : wanneer de raadpleging 's nachts tussen 21 en 8 uur wordt gehouden	Consultations au cabinet du médecin et visites au domicile du malade : Supplément pour consultation d'urgence au cabinet d'un médecin spécialiste : lorsque la consultation est effectuée la nuit entre 21 heures et 8 heures
102535	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Raadpleging in zijn spreekkamer, van een ander geaccrediteerde geneesheer-specialist dan die, vermeld onder de nrs. 102550, 102675, 102690, 102712, 102572, 102594, 102616, 102631, 102653 en 102756	Consultations au cabinet du médecin et visites au domicile du malade : Consultation à son cabinet d'un médecin spécialiste accrédité autre que ceux cités aux numéros 102550, 102675, 102690, 102712, 102572, 102594, 102616, 102631, 102653 et 102756
102550	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Raadpleging in de spreekkamer, van de geaccrediteerde geneesheer, specialist voor inwendige geneeskunde, inclusief eventueel schriftelijk verslag	Consultations au cabinet du médecin et visites au domicile du malade : Consultation à son cabinet du médecin accrédité spécialiste en médecine interne, y compris un rapport écrit éventuel

RIZIV/INAMI code	A_H	Label (Dutch)	Label (French)
102572	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Raadpleging in de spreekkamer van de geaccrediteerde geneesheer, specialist voor kindergeneeskunde, inclusief een eventueel schriftelijk verslag	Consultations au cabinet du médecin et visites au domicile du malade : Consultation à son cabinet, du médecin accrédité spécialiste en pédiatrie, y compris un rapport écrit éventuel
102594	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Raadpleging in de spreekkamer van de geaccrediteerde geneesheer, specialist voor cardiologie, inclusief een eventueel schriftelijk verslag	Consultations au cabinet du médecin et visites au domicile du malade : Consultation à son cabinet du médecin accrédité spécialiste en cardiologie, y compris un rapport écrit éventuel
102631	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Raadpleging in de spreekkamer van de geaccrediteerde geneesheer, specialist voor pneumologie, inclusief een eventueel schriftelijk verslag	Consultations au cabinet du médecin et visites au domicile du malade : Consultation à son cabinet du médecin accrédité spécialiste en pneumologie, y compris un rapport écrit éventuel
102771	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bijkomend honorarium bij de verstrekkingen 101032, 101076, 103132, 103412, 103434, 103515, 103530, 103552, 103913, 103935 en 103950 voor het beheer van het globaal medisch dossier op uitdrukkelijk verzoek en/of na schriftelijk akkoord van de patiënt, eenmaal per kalenderjaar en per patiënt aan te rekenen door de erkende huisarts	Consultations au cabinet du médecin et visites au domicile du malade : Honoraires complémentaires aux prestations 101032, 101076, 103132, 103412, 103434, 103515, 103530, 103552, 103913, 103935 et 103950 pour la gestion du dossier médical global à la demande expresse du patient et/ou avec l'accord écrit de celui-ci, à facturer une fois par année civile et par patient, par le médecin généraliste agréé
103014	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Consult van de geneesheer-specialist, schriftelijk geroepen door de behandelende erkende huisarts of door de behandelende algemeen geneeskundige met verworven rechten bij een zieke thuis, met schriftelijk verslag van de geneesheer specialist. De aanwezigheid van beide geneesheren samen is slechts vereist in de gevallen waarin dit gevraagd wordt in de schriftelijke aanvraag	Consultations au cabinet du médecin et visites au domicile du malade : Consultation du médecin spécialiste appelé par écrit par le médecin généraliste agréé traitant ou par le médecin généraliste avec droits acquis traitant, au domicile du malade, avec rapport écrit par le médecin spécialiste. La présence simultanée des deux médecins n'est obligatoire que dans le cas où celle-ci est demandée dans la demande écrite
103051	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Consult van de geneesheer-specialist, schriftelijk geroepen door de behandelende erkende huisarts of door de behandelende algemeen geneeskundige met verworven rechten bij een zieke verblijvend in een rustoord voor bejaarden of in een rust- en verzorgingstehuis, zoals gedefinieerd in de hoofding voorafgaand aan de verstrekkingen 103913 en 104112, met schriftelijk verslag van de geneesheer specialist. De aanwezigheid van beide geneesheren samen is slechts vereist in de gevallen waarin dit gevraagd wordt in de schriftelijke aanvraag	Consultations au cabinet du médecin et visites au domicile du malade : Consultation du médecin spécialiste appelé par écrit par le médecin généraliste agréé traitant ou par le médecin généraliste avec droits acquis traitant, auprès du malade résidant en maison de repos ou en maison de repos et de soins, comme définies dans l'intitulé qui précède les prestations 103913 et 104112, avec rapport écrit par le médecin spécialiste. La présence simultanée des deux médecins n'est obligatoire que dans le cas où celle-ci est demandée dans la demande écrite
103073	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Consult van de geneesheer-specialist, schriftelijk geroepen door de behandelende arts bij een zieke verblijvend in een instelling waar gehandicapten tijdelijk of definitief verblijven, met schriftelijk verslag van de bijgeroepen geneesheer specialist. De aanwezigheid van beide geneesheren samen is slechts vereist in de gevallen waarin dit gevraagd wordt in de schriftelijke aanvraag	Consultations au cabinet du médecin et visites au domicile du malade : Consultation du médecin spécialiste appelé par écrit par le médecin traitant, auprès du malade séjournant en résidence communautaire, momentanée ou définitive de personnes handicapées, avec rapport écrit par le médecin spécialiste appelé. La présence simultanée des deux médecins n'est obligatoire que dans le cas où celle-ci est demandée dans la demande écrite
103110	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek, bij de zieke thuis, door de algemeen geneeskundige met verworven rechten	Consultations au cabinet du médecin et visites au domicile du malade : Visite au domicile du malade, par le médecin généraliste avec droits acquis

RIZIV/INAMI code	A_H	Label (Dutch)	Label (French)
103132	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek door de erkende huisarts	Consultations au cabinet du médecin et visites au domicile du malade : Visite, au domicile du malade, par le médecin généraliste agréé
103213	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek door de algemeen geneeskundige met verworven rechten bij verscheidene rechthebbenden in hun gemeenschappelijke woonplaats of gemeenschappelijk huis, bij eenzelfde reis : twee rechthebbenden, per rechthebbende	Consultations au cabinet du médecin et visites au domicile du malade : Visite par le médecin généraliste avec droits acquis à plusieurs bénéficiaires à leur résidence ou domicile commun, à l'occasion d'un même déplacement : deux bénéficiaires, par bénéficiaire
103235	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek door de algemeen geneeskundige met verworven rechten bij verscheidene rechthebbenden in hun gemeenschappelijke woonplaats of gemeenschappelijk huis, bij eenzelfde reis : drie rechthebbenden of meer, per rechthebbende	Consultations au cabinet du médecin et visites au domicile du malade : Visite par le médecin généraliste avec droits acquis à plusieurs bénéficiaires à leur résidence ou domicile commun, à l'occasion d'un même déplacement : trois bénéficiaires ou plus, par bénéficiaire
103316	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek door de algemeen geneeskundige met verworven rechten in een instelling waar kinderen, herstellenden of gehandicapten verblijven (dagverblijf, overnachting, dagverblijf en overnachting) : bij één rechthebbende	Consultations au cabinet du médecin et visites au domicile du malade : Visite par le médecin généraliste avec droits acquis dans un établissement où séjournent des enfants, des convalescents ou des handicapés (séjour de jour, séjour de nuit, séjour de jour et de nuit) : à un bénéficiaire
103331	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek door de algemeen geneeskundige met verworven rechten in een instelling waar kinderen, herstellenden of gehandicapten verblijven (dagverblijf, overnachting, dagverblijf en overnachting) : bij twee rechthebbenden, bij eenzelfde reis, per rechthebbende	Consultations au cabinet du médecin et visites au domicile du malade : Visite par le médecin généraliste avec droits acquis dans un établissement où séjournent des enfants, des convalescents ou des handicapés (séjour de jour, séjour de nuit, séjour de jour et de nuit) : à deux bénéficiaires, à l'occasion d'un même déplacement, par bénéficiaire
103353	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek door de algemeen geneeskundige met verworven rechten in een instelling waar kinderen, herstellenden of gehandicapten verblijven (dagverblijf, overnachting, dagverblijf en overnachting) : bij drie rechthebbenden, of meer, bij eenzelfde reis, per rechthebbende	Consultations au cabinet du médecin et visites au domicile du malade : Visite par le médecin généraliste avec droits acquis dans un établissement où séjournent des enfants, des convalescents ou des handicapés (séjour de jour, séjour de nuit, séjour de jour et de nuit) : à trois bénéficiaires ou plus, à l'occasion d'un même déplacement, par bénéficiaire
103412	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek door de erkende huisarts bij verscheidene rechthebbenden in hun gemeenschappelijke woonplaats of gemeenschappelijk huis, naar aanleiding van een zelfde reis : twee rechthebbenden, per rechthebbende	Consultations au cabinet du médecin et visites au domicile du malade : Visite par le médecin généraliste agréé à plusieurs bénéficiaires à leur résidence ou domicile commun, à l'occasion d'un même déplacement : deux bénéficiaires, par bénéficiaire
103434	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek door de erkende huisarts bij verscheidene rechthebbenden in hun gemeenschappelijke woonplaats of gemeenschappelijk huis, naar aanleiding van een zelfde reis : drie rechthebbenden of meer, per rechthebbende	Consultations au cabinet du médecin et visites au domicile du malade : Visite par le médecin généraliste agréé à plusieurs bénéficiaires à leur résidence ou domicile commun, à l'occasion d'un même déplacement : trois bénéficiaires ou plus, par bénéficiaire
103515	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek door de erkende huisarts in een instelling waar kinderen, herstellenden of mindervaliden verblijven (verblijf overdag, verblijf 's nachts, verblijf overdag en 's nachts) : bij één rechthebbende	Consultations au cabinet du médecin et visites au domicile du malade : Visite par le médecin généraliste agréé dans un établissement où séjournent des enfants, des convalescents ou des handicapés (séjour de jour, séjour de nuit, séjour de jour et de nuit) : à un bénéficiaire

RIZIV/INAMI code	A_H	Label (Dutch)	Label (French)
103530	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek door de erkende huisarts in een instelling waar kinderen, herstellenden of mindervaliden verblijven (verblijf overdag, verblijf 's nachts, verblijf overdag en 's nachts) : bij twee rechthebbenden, naar aanleiding van een zelfde reis, per rechthebbende	Consultations au cabinet du médecin et visites au domicile du malade : Visite par le médecin généraliste agréé dans un établissement où séjournent des enfants, des convalescents ou des handicapés (séjour de jour, séjour de nuit, séjour de jour et de nuit) : à deux bénéficiaires, à l'occasion d'un même déplacement, par bénéficiaire
103552	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek door de erkende huisarts in een instelling waar kinderen, herstellenden of mindervaliden verblijven (verblijf overdag, verblijf 's nachts, verblijf overdag en 's nachts) : bij drie rechthebbenden of meer, naar aanleiding van een zelfde reis, per rechthebbende	Consultations au cabinet du médecin et visites au domicile du malade : Visite par le médecin généraliste agréé dans un établissement où séjournent des enfants, des convalescents ou des handicapés (séjour de jour, séjour de nuit, séjour de jour et de nuit) : à trois bénéficiaires ou plus, à l'occasion d'un même déplacement, par bénéficiaire
103736	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek door de geneesheer, specialist voor kindergeneeskunde, bij de zieke thuis	Consultations au cabinet du médecin et visites au domicile du malade : Visite au domicile du malade par le médecin spécialiste en pédiatrie
103751	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek door de geneesheer, specialist voor kindergeneeskunde bij verscheidene rechthebbenden in hun gemeenschappelijke woonplaats of gemeenschappelijk huis, bij eenzelfde reis : twee rechthebbenden, per rechthebbende	Consultations au cabinet du médecin et visites au domicile du malade : Visite par le médecin spécialiste en pédiatrie à plusieurs bénéficiaires à leur résidence ou domicile commun, à l'occasion d'un même déplacement : deux bénéficiaires, par bénéficiaire
103773	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek door de geneesheer, specialist voor kindergeneeskunde bij verscheidene rechthebbenden in hun gemeenschappelijke woonplaats of gemeenschappelijk huis, bij eenzelfde reis : drie rechthebbenden of meer, per rechthebbende	Consultations au cabinet du médecin et visites au domicile du malade : Visite par le médecin spécialiste en pédiatrie à plusieurs bénéficiaires à leur résidence ou domicile commun, à l'occasion d'un même déplacement : trois bénéficiaires ou plus, par bénéficiaire
103795	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek door de geneesheer, specialist voor kindergeneeskunde in een instelling waar kinderen verblijven (dagverblijf, overnachting, dagverblijf en overnachting) : bij één rechthebbende	Consultations au cabinet du médecin et visites au domicile du malade : Visite par le médecin spécialiste en pédiatrie dans un établissement où séjournent des enfants, (séjour de jour, séjour de nuit, séjour de jour et de nuit) : à un bénéficiaire
103810	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek door de geneesheer, specialist voor kindergeneeskunde in een instelling waar kinderen verblijven (dagverblijf, overnachting, dagverblijf en overnachting) : bij twee rechthebbenden, bij eenzelfde reis, per rechthebbende	Consultations au cabinet du médecin et visites au domicile du malade : Visite par le médecin spécialiste en pédiatrie dans un établissement où séjournent des enfants, (séjour de jour, séjour de nuit, séjour de jour et de nuit) : à deux bénéficiaires, à l'occasion d'un même déplacement, par bénéficiaire
103832	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek door de geneesheer, specialist voor kindergeneeskunde in een instelling waar kinderen verblijven (dagverblijf, overnachting, dagverblijf en overnachting) : bij drie rechthebbenden of meer, bij eenzelfde reis, per rechthebbende	Consultations au cabinet du médecin et visites au domicile du malade : Visite par le médecin spécialiste en pédiatrie dans un établissement où séjournent des enfants, (séjour de jour, séjour de nuit, séjour de jour et de nuit) : à trois bénéficiaires ou plus, à l'occasion d'un même déplacement, par bénéficiaire
103913	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek door de erkende huisarts bij de zieke in een inrichting die een forfaitaire tegemoetkoming zoals voorzien in de ministeriële besluiten van 19 mei 1992 en 5 april 1995 met betrekking tot respectievelijk de rust- en verzorgingstehuizen en de rustoorden voor bejaarden, in rekening kan brengen : bij één rechthebbende	Consultations au cabinet du médecin et visites au domicile du malade : Visite effectuée par le médecin généraliste agréé à un malade dans un établissement pouvant porter en compte une intervention forfaitaire telle que prévue dans les arrêtés ministériels des 19 mai 1992 et 5 avril 1995 concernant respectivement les maisons de repos et de soins et les maisons de repos pour personnes âgées : à un bénéficiaire

RIZIV/INAMI code	A_H	Label (Dutch)	Label (French)
103935	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek door de erkende huisarts bij de zieke in een inrichting die een forfaitaire tegemoetkoming zoals voorzien in de ministeriële besluiten van 19 mei 1992 en 5 april 1995 met betrekking tot respectievelijk de rusten verzorgingstehuizen en de rustoorden voor bejaarden, in rekening kan brengen : bij twee rechthebbenden, bij eenzelfde reis, per rechthebbende	Consultations au cabinet du médecin et visites au domicile du malade : Visite effectuée par le médecin généraliste agréé porteur d'un certificat de formation complémentaire à un malade dans un établissement pouvant porter en compte une intervention forfaitaire telle que prévue dans les arrêtés ministériels des 19 mai 1992 et 5 avril 1995 concernant respectivement les maisons de repos et de soins et les maisons de repos pour personnes âgées : à deux bénéficiaires, à l'occasion d'un même déplacement, par bénéficiaire
103950	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek door de erkende huisarts bij de zieke in een inrichting die een forfaitaire tegemoetkoming zoals voorzien in de ministeriële besluiten van 19 mei 1992 en 5 april 1995 met betrekking tot respectievelijk de rusten verzorgingstehuizen en de rustoorden voor bejaarden, in rekening kan brengen : bij drie rechthebbenden of meer bij eenzelfde reis, per rechthebbende	Consultations au cabinet du médecin et visites au domicile du malade : Visite effectuée par le médecin généraliste agréé porteur d'un certificat de formation complémentaire à un malade dans un établissement pouvant porter en compte une intervention forfaitaire telle que prévue dans les arrêtés ministériels des 19 mai 1992 et 5 avril 1995 concernant respectivement les maisons de repos et de soins et les maisons de repos pour personnes âgées : à trois bénéficiaires ou plus, à l'occasion d'un même déplacement, par bénéficiaire
104112	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek door de algemeen geneeskundige met verworven rechten bij de zieke in een inrichting die een forfaitaire tegemoetkoming zoals voorzien in de ministeriële besluiten van 19 mei 1992 en 5 april 1995 met betrekking tot respectievelijk de rust- en verzorgingstehuizen en de rustoorden voor bejaarden in rekening kan brengen : bij één rechthebbende	Consultations au cabinet du médecin et visites au domicile du malade : Visite effectuée par le médecin généraliste avec droits acquis à un malade dans un établissement pouvant porter en compte une intervention forfaitaire telle que prévue dans les arrêtés ministériels des 19 mai 1992 et 5 avril 1995 concernant respectivement les maisons de repos et de soins et les maisons de repos pour personnes âgées : à un bénéficiaire
104134	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek door de algemeen geneeskundige met verworven rechten bij de zieke in een inrichting die een forfaitaire tegemoetkoming zoals voorzien in de ministeriële besluiten van 19 mei 1992 en 5 april 1995 met betrekking tot respectievelijk de rust- en verzorgingstehuizen en de rustoorden voor bejaarden in rekening kan brengen : bij twee rechthebbenden, bij eenzelfde reis, per rechthebbende	Consultations au cabinet du médecin et visites au domicile du malade : Visite effectuée par le médecin généraliste avec droits acquis d'un malade dans un établissement pouvant porter en compte une intervention forfaitaire telle que prévue dans les arrêtés ministériels des 19 mai 1992 et 5 avril 1995 concernant respectivement les maisons de repos et de soins et les maisons de repos pour personnes âgées : à deux bénéficiaires, à l'occasion d'un même déplacement, par bénéficiaire
104156	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek door de algemeen geneeskundige met verworven rechten bij de zieke in een inrichting die een forfaitaire tegemoetkoming zoals voorzien in de ministeriële besluiten van 19 mei 1992 en 5 april 1995 met betrekking tot respectievelijk de rust- en verzorgingstehuizen en de rustoorden voor bejaarden in rekening kan brengen : bij drie rechthebbenden of meer, bij eenzelfde reis, per rechthebbende	Consultations au cabinet du médecin et visites au domicile du malade : Visite effectuée par le médecin généraliste avec droits acquis à un malade dans un établissement pouvant porter en compte une intervention forfaitaire telle que prévue dans les arrêtés ministériels des 19 mai 1992 et 5 avril 1995 concernant respectivement les maisons de repos et de soins et les maisons de repos pour personnes âgées : à trois bénéficiaires ou plus, à l'occasion d'un même déplacement, par bénéficiaire
104215	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek door de erkende huisarts tussen 18 en 21 uur afgelegd bij de zieke thuis	Consultations au cabinet du médecin et visites au domicile du malade : Visite effectuée par le médecin généraliste agréé au domicile du malade entre 18 heures et 21 heures
104230	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek door de erkende huisarts 's nachts tussen 21 en 8 uur afgelegd bij de zieke thuis	Consultations au cabinet du médecin et visites au domicile du malade : Visite effectuée par le médecin généraliste agréé au domicile du malade, la nuit, entre 21 heures et 8 heures

RIZIV/INAMI code	A_H	Label (Dutch)	Label (French)
104252	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek door de erkende huisarts tijdens het weekend, van zaterdag 8 uur tot maandag 8 uur, afgelegd bij de zieke thuis	Consultations au cabinet du médecin et visites au domicile du malade : Visite effectuée par le médecin généraliste agréé le week-end, du samedi à 8 heures au lundi à 8 heures, au domicile du malade
104274	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek bij de zieke thuis, afgelegd door de erkende huisarts op een feestdag, dat wil zeggen vanaf daags voor die feestdag om 21 uur tot daags na die feestdag om 8 uur	Consultations au cabinet du médecin et visites au domicile du malade : Visite au domicile du malade effectuée par le médecin généraliste agréé au cours d'un jour férié, c'est-à-dire depuis la veille de ce jour férié à 21 heures jusqu'au lendemain de ce jour à 8 heures
104296	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bijkomend honorarium voor de bezoeken nrs 103412, 103434, 103515, 103530 of 103552, 103913, 103935 en 103950 : wanneer het bezoek zaterdags, zondags of op een feestdag tussen 8 en 21 uur wordt afgelegd	Consultations au cabinet du médecin et visites au domicile du malade : Suppléments aux visites n°s 103412, 103434, 103515, 103530, ou 103552, 103913, 103935 et 103950 : lorsque la visite est effectuée un samedi, un dimanche ou un jour férié entre 8 heures et 21 heures
104311	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bijkomend honorarium voor de bezoeken nrs. 103412, 103434, 103515, 103530 of 103552, 103913, 103935 en 103950 : wanneer het bezoek 's nachts tussen 21 en 8 uur wordt afgelegd	Consultations au cabinet du médecin et visites au domicile du malade : Suppléments aux visites n°s 103412, 103434, 103515, 103530, ou 103552, 103913, 103935 et 103950 : lorsque la visite est effectuée la nuit entre 21 heures et 8 heures
104333	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bijkomend honorarium voor de bezoeken nrs 103412, 103434, 103515, 103530 of 103552, 103913, 103935 en 103950 : wanneer het bezoek 's avonds tussen 18 en 21 uur wordt afgelegd	Consultations au cabinet du médecin et visites au domicile du malade : Suppléments aux visites n°s 103412, 103434, 103515, 103530 ou 103552, 103913, 103935 et 103950 : lorsque la visite est effectuée le soir entre 18 heures et 21 heures
104355	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Consult van een erkende huisarts bij de zieke thuis door een geneesheer aangevraagd	Consultations au cabinet du médecin et visites au domicile du malade : Consultation du médecin généraliste agréé appelé par un médecin au domicile du malade
104370	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek door de erkende huisarts thuis bij een palliatieve patiënt	Consultations au cabinet du médecin et visites au domicile du malade : Visite effectuée par le médecin généraliste agréé à un patient palliatif à domicile
104392	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek door de erkende huisarts tussen 18 en 21 uur thuis bij een palliatieve patiënt	Consultations au cabinet du médecin et visites au domicile du malade : Visite effectuée entre 18 heures et 21 heures, par le médecin généraliste agréé à un patient palliatif à domicile
104414	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek door de erkende huisarts 's nachts tussen 21 en 8 uur thuis bij een palliatieve patiënt	Consultations au cabinet du médecin et visites au domicile du malade : Visite effectuée la nuit, entre 21 heures et 8 heures, par le médecin généraliste agréé à un patient palliatif à domicile
104436	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek door de erkende huisarts tijdens het week-end van zaterdag 8 uur tot maandag 8 uur, thuis bij een palliatieve patiënt	Consultations au cabinet du médecin et visites au domicile du malade : Visite effectuée le week-end, du samedi à 8 heures au lundi à 8 heures, par le médecin généraliste agréé à un patient palliatif à domicile
104451	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek door de erkende huisarts op een feestdag, dat wil zeggen vanaf daags voor die feestdag om 21 uur tot daags na die feestdag om 8 uur bij een palliatieve patiënt	Consultations au cabinet du médecin et visites au domicile du malade : Visite effectuée au cours d'un jour férié, c'est-à-dire depuis la veille de ce jour férié à 21 heures jusqu'au lendemain de ce jour à 8 heures, par le médecin généraliste agréé à un patient palliatif à domicile
104510	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek door de algemeen geneeskundige met verworven rechten tussen 18 en 21 uur afgelegd bij de zieke thuis	Consultations au cabinet du médecin et visites au domicile du malade : Visite effectuée par le médecin généraliste avec droits acquis au domicile du malade entre 18 heures et 21 heures

RIZIV/INAMI code	A_H	Label (Dutch)	Label (French)
104532	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek door de algemeen geneeskundige met verworven rechten 's nachts tussen 21 en 8 uur afgelegd bij de zieke thuis	Consultations au cabinet du médecin et visites au domicile du malade : Visite effectuée par le médecin généraliste avec droits acquis au domicile du malade, la nuit, entre 21 heures et 8 heures
104554	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek door de algemeen geneeskundige met verworven rechten tijdens het weekeind van zaterdag 8 uur tot maandag 8 uur, afgelegd bij de zieke thuis	Consultations au cabinet du médecin et visites au domicile du malade : Visite effectuée par le médecin généraliste avec droits acquis le week-end, du samedi à 8 heures au lundi à 8 heures, au domicile du malade
104576	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek bij de zieke thuis, afgelegd door de algemeen geneeskundige met verworven rechten op een feestdag, dat wil zeggen vanaf daags voor die feestdag om 21 uur tot daags, na die feestdag om 8 uur	Consultations au cabinet du médecin et visites au domicile du malade : Visite au domicile du malade effectuée par le médecin généraliste avec droits acquis au cours d'un jour férié, c'est-à-dire depuis la veille de ce jour férié à 21 heures jusqu'au lendemain de ce jour à 8 heures
104591	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bijkomend honorarium voor de bezoeken nrs 103213, 103235, 103316, 103331 of 103353, 104112, 104134 en 104156 wanneer het bezoek zaterdags, zondags of op een feestdag tussen 8 en 21 uur wordt afgelegd	Consultations au cabinet du médecin et visites au domicile du malade : Suppléments aux visites n°s 103213, 103235, 103316, 103331, 103353, 104112, 104134 ou 104156 lorsque la visite est effectuée un samedi, un dimanche ou un jour férié entre 8 heures et 21 heures
104613	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bijkomend honorarium voor de bezoeken nrs 103213, 103235, 103316, 103331 of 103353, 104112, 104134 en 104156 wanneer het bezoek 's nachts tussen 21 en 8 uur wordt afgelegd	Consultations au cabinet du médecin et visites au domicile du malade : Suppléments aux visites n°s 103213, 103235, 103316, 103331, 103353, 104112, 104134 ou 104156 lorsque la visite est effectuée la nuit entre 21 heures et 8 heures
104635	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bijkomend honorarium voor de bezoeken nrs 103213, 103235, 103316, 103331 of 103353, 104112, 104134 en 104156 wanneer het bezoek 's avonds tussen 18 en 21 uur wordt afgelegd	Consultations au cabinet du médecin et visites au domicile du malade : Suppléments aux visites n°s 103213, 103235, 103316, 103331 103353, 104112, 104134 ou 104156 lorsque la visite est effectuée le soir entre 18 heures et 21 heures
104650	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Consult van de algemeen geneeskundige met verworven rechten bij de zieke thuis door een geneesheer aangevraagd	Consultations au cabinet du médecin et visites au domicile du malade : Consultation du médecin généraliste avec droits acquis appelé par un médecin au domicile du malade
104672	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek door de algemeen geneeskundige met verworven rechten, thuis bij een palliatieve patiënt	Consultations au cabinet du médecin et visites au domicile du malade : Visite effectuée par le médecin généraliste avec droits acquis à un patient palliatif à domicile
104694	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek door de algemeen geneeskundige met verworven rechten, tussen 18 en 21 uur thuis bij een palliatieve patiënt	Consultations au cabinet du médecin et visites au domicile du malade : Visite effectuée, entre 18 heures et 21 heures, par le médecin généraliste avec droits acquis à un patient palliatif à domicile
104716	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek door de algemeen geneeskundige met verworven rechten, 's nachts tussen 21 en 8 uur thuis bij een palliatieve patiënt	Consultations au cabinet du médecin et visites au domicile du malade : Visite effectuée la nuit, entre 21 heures et 8 heures, par le médecin généraliste avec droits acquis à un patient palliatif à domicile
104731	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek door de algemeen geneeskundige met verworven rechten, tijdens het weekeind van zaterdag 8 uur tot maandag 8 uur thuis bij de palliatieve patiënt	Consultations au cabinet du médecin et visites au domicile du malade : Visite effectuée le week-end, du samedi à 8 heures au lundi à 8 heures, par le médecin généraliste avec droits acquis à un patient palliatif à domicile
104753	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek door de algemeen geneeskundige met verworven rechten, op een feestdag, dat wil zeggen vanaf daags voor die feestdag om 21 uur tot daags na die feestdag om 8 uur thuis bij de palliatieve patiënt	Consultations au cabinet du médecin et visites au domicile du malade : Visite effectuée au cours d'un jour férié, c'est-à-dire depuis la veille de ce jour férié à 21 heures jusqu'au lendemain de ce jour à 8 heures, par le médecin généraliste avec droits acquis à un patient palliatif à domicile

RIZIV/INAMI code	A_H	Label (Dutch)	Label (French)
104812	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek afgelegd bij de zieke thuis door de geneesheer-specialist voor kindergeneeskunde, tussen 18 en 21 uur	Consultations au cabinet du médecin et visites au domicile du malade : Visite effectuée au domicile du malade, par le médecin-spécialiste en pédiatrie, entre 18 et 21 heures
104834	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek afgelegd bij de zieke thuis door de geneesheer-specialist voor kindergeneeskunde's nachts tussen 21 en 8 uur	Consultations au cabinet du médecin et visites au domicile du malade : Visite effectuée au domicile du malade par le médecin-spécialiste en pédiatrie, la nuit, entre 21 et 8 heures
104856	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek afgelegd bij de zieke thuis door de geneesheer-specialist voor kindergeneeskunde tijdens het weekeind, van zaterdag 8 uur tot maandag 8 uur	Consultations au cabinet du médecin et visites au domicile du malade : Visite effectuée au domicile du malade, par le médecin-spécialiste en pédiatrie, le week-end, du samedi à 8 heures au lundi à 8 heures
104871	A	Raadplegingen in de spreekkamer van de geneesheer en bezoeken bij de zieke thuis : Bezoek afgelegd bij de zieke thuis door de geneesheer-specialist voor kindergeneeskunde op een feestdag, dat wil zeggen vanaf daags voor die feestdag om 21 uur tot daags na die feestdag om 8 uur	Consultations au cabinet du médecin et visites au domicile du malade : Visite effectuée au domicile du malade par le médecin-spécialiste en pédiatrie, au cours d'un jour férié, c'est-à-dire depuis la veille de ce jour férié à 21 heures jusqu'au lendemain de ce jour à 8 heures
109012	A	Advies - Onder advies wordt verstaan, het opmaken en ondertekenen, buiten welk onderzoek van de zieke ook, van getuigschriften, farmaceutische voorschriftbriefjes en allerlei bescheiden. Honorarium voor advies mag nooit samengevoegd worden met honorarium voor raadpleging of bezoek.	Avis - Par avis, il faut entendre la rédaction et la signature, en dehors de tout examen du malade, de certificats, ordonnances pharmaceutiques et documents divers. Les honoraires pour avis ne peuvent jamais être cumulés avec les honoraires pour consultation ou visite.
109701	H	Verstrekkings voor dewelke de bekwaming vereist is van erkend huisarts : Honorarium voor de behandelende erkende huisarts voor het bezoek in een ziekenhuis aan een patiënt, in een Sp-dienst (palliatieve zorg), op verzoek van de patiënt of op verzoek van een familielid of van één van zijn naastbestaanden	Prestations requérant la qualification de médecin généraliste agréé : Honoraires du médecin généraliste agréé, pour la visite dans un hôpital à un patient dans un service Sp (soins palliatifs) à la demande du patient ou à la demande d'un membre de sa famille ou d'un de ses proches
109723	H	Verstrekkings voor dewelke de bekwaming vereist is van erkend huisarts : Honorarium voor de verwijzende erkende huisarts voor het bezoek aan een in een ziekenhuis opgenomen rechthebbende, op verzoek van de rechthebbende of op verzoek van een familielid	Prestations requérant la qualification de médecin généraliste agréé : Honoraires du médecin généraliste agréé pour la visite à un bénéficiaire hospitalisé à son intervention, à la demande de ce bénéficiaire ou d'un membre de sa famille
109734	A	Verstrekkings voor dewelke de bekwaming vereist is van erkend huisarts : Honorarium voor geneeskundige bijstand aan een patiënt, verleend door de erkende huisarts, gedurende zijn dringende overbrenging, per ziekenhuiswagen, naar een ziekenhuis	Prestations requérant la qualification de médecin généraliste agréé : Honoraires pour assistance médicale prêtée à un patient par le médecin généraliste agréé pendant son transfert urgent par ambulance à un hôpital

8.2 SPs CLUSTERING:

code	specialty	nSP	Npat	Avg_ consult	consult_per_SP	consult	raadpl	advice
340	Gynaecology	1151	1598812	2.02368	2811.02	3235485	3232729	2756
370	Ophtalmology	851	1794514	1.50794	3179.81	2706019	2705621	398
480	Orthopaedics	801	1173919	2.00512	2938.64	2353852	2353258	594
580	Internal Medicine	1592	1044795	1.90854	1252.53	1994032	1989122	4910
550	Dermatology	604	1103979	1.75766	3212.61	1940417	1938681	1736
690	Paediatrics	1055	803938	2.37874	1812.66	1912361	1908664	3697
140	Surgery	1096	836140	1.86679	1424.18	1560900	1560035	865
760	Neuropsychiatry	1134	414627	3.14445	1149.71	1303772	1302929	843
410	ENT	514	745953	1.72466	2502.94	1286513	1285976	537
730	Cardiology	703	639425	1.48413	1349.91	948988	945550	3438
830	Occupational Medicine	380	364232	2.15985	2070.23	786688	786371	317
450	Urology	308	346838	1.89057	2128.96	655720	654847	873
780	Psychiatry	587	131483	4.61787	1034.36	607172	606971	201
650	Gastroenterology	376	342256	1.63324	1486.66	558986	558509	477
790	Rheumatology	202	188355	2.33322	2175.61	439473	439412	61
620	Pneumology	265	167302	1.83162	1156.35	306434	306189	245
100	Anesthesiology	606	180588	1.61701	481.87	292012	276341	15671
520	Stomatology	238	175518	1.50037	1106.48	263342	263308	34
210	Plastic Surgery	171	103674	2.03122	1231.49	210585	210553	32
770	Neurology	175	127791	1.64653	1202.35	210412	210347	65
170	Neurosurgery	126	87266	1.88749	1307.25	164714	164674	40
960	Radiotherapy	126	63154	2.14447	1074.86	135432	134051	1381
980	980 - unspecified	106	84740	1.50165	1200.47	127250	127203	47
970	Nuclear Medicine	93	52766	1.19751	679.44	63188	63185	3
930	Radio-diagnostic	250	3175	2.54961	32.38	8095	8085	10
860	Biology	53	3395	1.63446	104.70	5549	4405	1144
270	Thoracic Surgery	1	2845	.	.	.	4452	.
870	Anatomopathology	8	44	.	.	.	47	.
		13572	12581524			24077391	24041515	40375

The grouping of some selected SPs resulted in 10 346 rows:

SURGERY (ALL) = 140 (surgery) + 170 (neurosurgery) + 210 (plastic surgery) + 450 (urology) + 480 (orthopaedics)

INTERNAL MEDICINE & NEUROLOGY = 580 (internal medicine) + 620 (pneumology) + 650 (gastroenterology) + 730 (cardiology) + 770 (neurology) + 790 (rheumatology)

PSYCHIATRY (ALL) = 780 (psychiatry) + 760 (neuropsychiatry)

GYNAECOLOGY = 340

PAEDIATRICS = 690

DERMATOLOGY = 550

OPHTALMOLOGY = 370

ENT (eye-nose-throat) = 410

For the specialists :

CONSULT=ADVICE + RAADPL

8.3 DATA CLEANING

1. Missings

5 SPs with missing age were discarded from the 11 711 grouped SPs (or n=7 rows out of 13 572⁸⁶).

GROUP	code	verstr_spec	Npat	consult	advice	raadpl
SURGERY	140	Surgery	557	1684	1	1683
SURGERY	140	Surgery	1874	4632	0	4632
INTERNAL MEDICINE	580	Internal Medicine	10	31	0	31
INTERNAL MEDICINE	580	Internal Medicine	105	261	0	261
PAEDIATRICS	690	Paediatrics	29	60	0	60
			2575	6668	1	6667

2. Npat<50

Discard SPs w/ < 50 Npat (Note that the average number of patients was similar between the specialists and the general practitioners from the cleaned database, around 930 patients per physician).

⁸⁶ 140x2, 580x2, 690x1, 930x1, 970x1

GROUP	N Obs	Variable	Mean	Std Dev	Min	1st Pctl	5th Pctl	10th Pctl	25th Pctl	Median	75th Pctl	90th Pctl	95th Pctl	99th Pctl	Max	Sum
DERMATOLOGY	11	Npat	9.64	13.53	1	1	1	1	1	3	16	21	44	44	44	106
		consult	14.64	22.39	0	0	0	1	1	3	18	56	60	60	60	161
		raadpl	14.64	22.39	0	0	0	1	1	3	18	56	60	60	60	161
		advice	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ENT	16	Npat	11.06	15.12	1	1	1	1	1	3	19	36	44	44	44	177
		consult	15.56	23.12	1	1	1	1	1	3.50	24	61	67	67	67	249
		raadpl	15.56	23.12	1	1	1	1	1	3.50	24	61	67	67	67	249
		advice	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GYNAECOLOGY	33	Npat	16.27	16.65	1	1	1	1	2	9	32	42	46	47	47	537
		consult	34.79	62.82	1	1	1	1	2	11	57	66	104	347	347	1148
		raadpl	34.79	62.82	1	1	1	1	2	11	57	66	104	347	347	1148
		advice	0	0	0	0	0	0	0	0	0	0	0	0	0	0
INTERNAL MEDICINE	209	Npat	19.39	14.78	1	1	1	1	5	17	33	41	44	49	49	4053
		consult	48.29	61.54	1	1	1	2	9	32	65	105	137	269	457	10093
		raadpl	48.28	61.54	1	1	1	2	9	32	65	105	137	269	457	10091
		advice	0.01	0.10	0	0	0	0	0	0	0	0	0	0	1	2
OPHTALMOLOGY	15	Npat	5.87	9.04	1	1	1	1	1	3	4	21	33	33	33	88
		consult	7.13	9.55	1	1	1	1	1	4	7	21	36	36	36	107
		raadpl	7.13	9.55	1	1	1	1	1	4	7	21	36	36	36	107
		advice	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PAEDIATRICS	79	Npat	16.05	13.88	1	1	1	1	3	13	26	41	42	48	48	1268
		consult	30.86	35.41	1	1	1	1	5	18	42	78	104	180	180	2438
		raadpl	30.73	35.22	0	0	1	1	5	18	42	77	104	178	178	2428
		advice	0.13	0.56	0	0	0	0	0	0	0	0	1	4	4	10
PSYCHIATRY	235	Npat	25.73	14.76	1	1	3	5	12	27	39	46	48	49	49	6047
		consult	262.83	334.71	1	1	6	18	59	135	334	721	921	1714	2120	61765
		raadpl	262.80	334.71	1	1	6	18	59	135	334	721	921	1714	2120	61758
		advice	0.03	0.19	0	0	0	0	0	0	0	0	0	1	2	7
SURGERY	186	Npat	14.92	14.22	1	1	1	1	3	9	27	37	42	48	49	2775
		consult	27.76	37.22	0	1	1	1	3	14	39	72	89	202	256	5164
		raadpl	27.70	37.23	0	1	1	1	3	14	39	72	89	202	256	5152
		advice	0.06	0.67	0	0	0	0	0	0	0	0	0	1	9	12
784																

The 784 discarded SPs totaled 6.69% of the 11 711 SPs, 15 051 or 0.13% of the summed patients and 81 125 or 0.36% of the consultations.

3. Extremely high values

No extremely high value was considered to be necessary to discard. The charts from the previous pages show that no SP presented an atypical average number of consultations per patient.

4. Consult = 0

Discard SPs w/ consult=0 (concerns only GROUP=SURGERY (n=1))

The 2005 SP table included 13 572 rows/SPs of which 11 711 belonged to a specialty selected for analysis. After the discarding of 7 rows including missing values and 784 SPs with less than 50 patients, 10 922 practising SPs entered the analysis. The current medical workforce of ALL specialists with at least 50 patients and at least 1 consultation was described in Chapter 2.

The same cleaning process was applied for the 2002 SP database. The 2002 SP table included 13 801 rows/SPs. After the discarding of 12 rows including missing values, 1 SP without any consultation and 1 564 SPs with less than 50 patients, 12 227 practising SPs were considered to represent the medical workforce of specialists in 2002 and were described in Chapter 2.

8.4 DENSITY CALCULATION

GROUP=Gynaecology

ARR_SPDENSITY													
N	Mean	Std Dev	Minimum	1st Pctl	5th Pctl	10th Pctl	25th Pctl	Median	75th Pctl	90th Pctl	95th Pctl	99th Pctl	Maximum
41	0.89	0.38	0.32	0.32	0.42	0.47	0.62	0.85	1.07	1.34	1.54	2.07	2.07

GROUP=INTERNAL MEDICINE

ARR_SPDENSITY													
N	Mean	Std Dev	Minimum	1st Pctl	5th Pctl	10th Pctl	25th Pctl	Median	75th Pctl	90th Pctl	95th Pctl	99th Pctl	Maximum
43	2.50	1.01	0.62	0.62	1.30	1.47	1.60	2.54	3.17	3.60	4.07	5.46	5.46

GROUP=PAEDIATRICS

ARR_SPDENSITY													
N	Mean	Std Dev	Minimum	1st Pctl	5th Pctl	10th Pctl	25th Pctl	Median	75th Pctl	90th Pctl	95th Pctl	99th Pctl	Maximum
42	0.77	0.38	0.32	0.32	0.36	0.40	0.51	0.68	0.87	1.28	1.58	1.97	1.97

GROUP=PSYCHIATRY

ARR_SPDENSITY													
N	Mean	Std Dev	Minimum	1st Pctl	5th Pctl	10th Pctl	25th Pctl	Median	75th Pctl	90th Pctl	95th Pctl	99th Pctl	Maximum
43	1.02	0.63	0.20	0.20	0.38	0.48	0.55	0.82	1.37	1.74	2.39	2.92	2.92

GROUP=SURGERY

ARR_SPDENSITY													
N	Mean	Std Dev	Minimum	1st Pctl	5th Pctl	10th Pctl	25th Pctl	Median	75th Pctl	90th Pctl	95th Pctl	99th Pctl	Maximum
42	1.88	0.76	0.40	0.40	0.80	0.86	1.34	1.88	2.38	2.62	2.82	4.25	4.25

GROUP=DERMATOLOGY

ARR_SPDENSITY													
N	Mean	Std Dev	Minimum	1st Pctl	5th Pctl	10th Pctl	25th Pctl	Median	75th Pctl	90th Pctl	95th Pctl	99th Pctl	Maximum
39	0.50	0.22	0.13	0.13	0.18	0.21	0.37	0.48	0.62	0.77	1.04	1.05	1.05

GROUP=ENT

ARR_SPDENSITY													
N	Mean	Std Dev	Minimum	1st Pctl	5th Pctl	10th Pctl	25th Pctl	Median	75th Pctl	90th Pctl	95th Pctl	99th Pctl	Maximum
42	0.43	0.20	0.13	0.13	0.17	0.18	0.28	0.39	0.55	0.70	0.78	0.88	0.88

GROUP=OPHTALMOLOGY

ARR_SPDENSITY													
N	Mean	Std Dev	Minimum	1st Pctl	5th Pctl	10th Pctl	25th Pctl	Median	75th Pctl	90th Pctl	95th Pctl	99th Pctl	Maximum
43	0.70	0.28	0.17	0.17	0.21	0.32	0.47	0.71	0.88	1.05	1.12	1.37	1.37

The FINAL CLEANED database 2005 comprised the following activity level:

10 922 SPs (rows), including **7 424** men (67.97%),
11 633 441 patients w/ consult(s), with duplicates added up,
 21 736 advices
 + 22 286 306 raadpl (consultations)
= 22 308 042 Consults=raadpl + advices

Gynaecologists were absent from two arrondissements: Waremme and Diksmuide. This latest arrondissement had no paediatrist, nor ENT, nor surgeon. There were no dermatologists in four arrondissements from which three from the Province of Luxembourg (Bastogne, Neufchâteau, Virton & Philippeville).

8.5 DISTRIBUTIONS OF 10 922 SPs BY GROUPS OF SPs

GROUP	N Obs	Variable	Mean	Std Dev	Minimu m	1st Pctl	5 th Pctl	10 th Pctl	25 th Pctl	Media n	75 th Pctl	90 th Pctl	95 th Pctl	99 th Pctl	Maximu m	Sum
DERMATOLOGY	593	med_geslacht	0.4	0.5	0	0	0	0	0	0	0	1	1	1	1	214
		med_age2005	48.1	11.8	29	29	32	34	39	46	56	65	69	80	85	28524
		Npat	1861.5	1045.6	51	80	328	574	1147	1730	2459	3223	3853	4964	5726	1103873
		Ppat_0	461.9	293.9	2	7	46	105	251	429	622	853	1001	1357	1690	273923
		Ppat_21	507.8	301.6	8	22	80	143	302	473	663	903	1076	1418	1777	301116
		Ppat_41	487.7	279.1	1	22	87	147	299	453	640	850	1019	1298	1648	289186
		Ppat_61	339.8	199	0	14	50	95	197	312	458	605	726	938	1151	201486
		Ppat_81	64.4	42.4	0	1	7	15	36	57	87	117	147	197	262	38162
		Ppat_male	724.4	430.2	15	29	113	194	426	668	960	1291	1547	2076	2349	429552
		consult	3271.9	1852.6	54	176	577	1060	1991	3131	4265	5637	6720	8703	11709	1940256
		advice	2.9	15.7	0	0	0	0	0	0	0	3	9	67	255	1736
		raadpl	3269	1850.7	54	176	577	1059	1990	3124	4265	5637	6720	8702	11709	1938520
		Avg_Constult	1.8	0.5	1.1	1.2	1.3	1.4	1.5	1.7	2	2.2	2.5	3.5	9.7	1065.6
		Avg_advice	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0.8
		Avg_raadpl	1.8	0.5	1.1	1.2	1.3	1.4	1.5	1.7	2	2.2	2.5	3.5	9.7	1064.7
		PERC_pat0	24.1	7.7	0.9	3	12.8	16.5	20.5	24.2	27.5	31.1	33.1	43.9	97.3	14264.9
		PERC_pat21	27.2	5	2.4	12.3	20.7	22.1	24.6	26.7	29.7	33.3	36	43.9	48.1	16151.6
		PERC_pat41	26.4	3.9	0.3	18.2	21.6	22.9	24.4	26	28.1	30.4	31.9	43	49.2	15675.5
		PERC_pat61	18.8	5.4	0	8.4	11.2	13.4	15.4	18.1	21.3	24.3	27.2	40.7	48.7	11122.4
		PERC_pat81	3.5	1.5	0	0.5	1.4	1.9	2.5	3.4	4.3	5.3	6.1	8.1	10.4	2085.6
		PERC_male	38.3	5.3	13	17.5	30.1	33.5	36.1	38.5	41.4	44	45.5	49.1	51.3	22730.1

GROUP	N Obs	Variable	Mean	Std Dev	Minimum	1st Pctl	5th Pctl	10th Pctl	25th Pctl	Media n	75th Pctl	90th Pctl	95th Pctl	99th Pctl	Maximum	Sum
ENT	498	med_geslacht	0.7	0.5	0	0	0	0	0	0	1	1	1	1	1	331
		med_age2005	48.5	10.7	30	32	34	36	40	47	55	64	68	77	82	24163
		Npat	1497.5	801.9	69	133	257	439	980	1448	1967	2510	2908	3926	5062	745776
		Ppat_0	463	293.9	4	13	47	96	259	433.5	638	838	982	1247	2234	230597
		Ppat_21	272.8	160.5	8	16	40	74	164	258	368	465	548	854	930	135847
		Ppat_41	360.6	207.3	14	30	59	104	203	338.5	474	597	738	1056	1355	179588
		Ppat_61	328	189.8	1	26	67	93	187	305.5	427	582	686	888	1181	163337
		Ppat_81	73.1	46.4	3	6	11	19	37	65	101	139	212	212	238	36407
		Ppat_male	710.4	388.5	24	56	119	191	453	685.5	948	1205	1388	1891	2353	353798
		consult	2582.9	1430.9	146	199	423	774	1648	2447	3336	4433	5064	6621	9743	1286264
		advice	1.1	6.4	0	0	0	0	0	0	0	2	3	29	108	537
		raadpl	2581.8	1430.5	146	199	423	772	1648	2447	3336	4431	5064	6621	9742	1285727
		Avg_Conult	1.8	0.7	1.1	1.1	1.3	1.4	1.5	1.7	1.9	2.2	2.4	3.1	13.7	878.6
		Avg_advice	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3
		Avg_raadpl	1.8	0.7	1.1	1.1	1.3	1.4	1.5	1.7	1.9	2.2	2.4	3.1	13.7	878.2
		PERC_pat0	30	11.5	2.5	7.1	12.3	16.6	23.1	29.3	35	43.4	50.4	64.3	93.4	14941.8
		PERC_pat21	18.1	4.4	2.6	7.4	11.5	13.1	15.5	17.8	20.4	23.5	26.4	31.6	34.8	9024.4
		PERC_pat41	24.2	4.9	2.4	11.9	15.8	18.2	21.7	24.4	26.7	29.9	32.7	36.8	43	12056.3
		PERC_pat61	22.5	6.4	0.2	7.4	13	15.5	18.5	22	26.1	29.8	32.9	43.8	54.3	11206.1
		PERC_pat81	5.2	2.5	0.2	0.8	2	2.5	3.6	4.7	6.3	8.4	9.7	14.2	17.1	2571.4
		PERC_male	47	3.7	34.2	35.4	41.9	43.1	44.8	47.1	49	50.6	52.1	59.2	67.2	23430.1
GYNAECOLOGY	1118	med_geslacht	0.6	0.5	0	0	0	0	0	1	1	1	1	1	1	694
		med_age2005	48.8	10.9	28	31	33	35	40	48	57	64	68	75	87	54578
		Npat	1429.6	773.2	57	92	277	472	893	1388	1827	2392	2744	3676	6319	1598275
		Ppat_0	75.6	56.8	0	1	6	12	34	65	105	147	181	269	366	84500
		Ppat_21	707.6	444.9	1	15	67	157	393	669	948	1240	1482	2037	3912	791052
		Ppat_41	478.8	319	6	23	67	117	250	434	643	866	1022	1472	2535	535346
		Ppat_61	158.1	137.3	0	0	8	24	66	128	217	323	400	606	1721	176707
		Ppat_81	9.5	10	0	0	0	1	3	7	13	21	28	50	81	10670
		Ppat_male	13.6	33.2	0	0	1	2	4	8	14	22	32	139	664	15236
		consult	2893	1697.7	70	153	462	862	1727	2737.5	3795	4946	5746	8542	14337	3234337
		advice	2.5	22.1	0	0	0	0	0	0	0	2	4	45	513	2756
		raadpl	2890.5	1697.1	70	153	462	862	1721	2734.5	3781	4946	5745	8541	14276	3231581
		Avg_Conult	2	0.7	1	1.1	1.3	1.5	1.7	1.9	2.2	2.6	2.9	4.3	13.7	2262.5
		Avg_advice	0	0	0	0	0	0	0	0	0	0	0	0	0.5	2.4
		Avg_raadpl	2	0.7	1	1.1	1.3	1.5	1.7	1.9	2.2	2.6	2.9	4.3	13.7	2260.1
		PERC_pat0	5.3	3.4	0	0.1	1.2	2	3	4.7	6.9	9.4	11.5	16.9	34.4	5963.6
		PERC_pat21	49	17.9	0.6	7	17.2	25.3	37.8	49.2	60.4	72.4	80.8	91.3	95.3	54835.3
		PERC_pat41	33.5	12	1.7	6.4	12.4	16.7	26.2	33.6	41.5	48.3	52.8	60.8	75.6	37487
		PERC_pat61	11.4	8.3	0	0	1.6	3.1	6	9.7	14.5	20.7	27	41.4	74.5	12744.6
		PERC_pat81	0.7	0.7	0	0	0	0.1	0.3	0.5	0.9	1.4	1.8	3.7	8.1	769.4
		PERC_male	1.1	3.1	0	0	0.1	0.2	0.4	0.6	0.9	1.5	3	15.4	48	1279.2

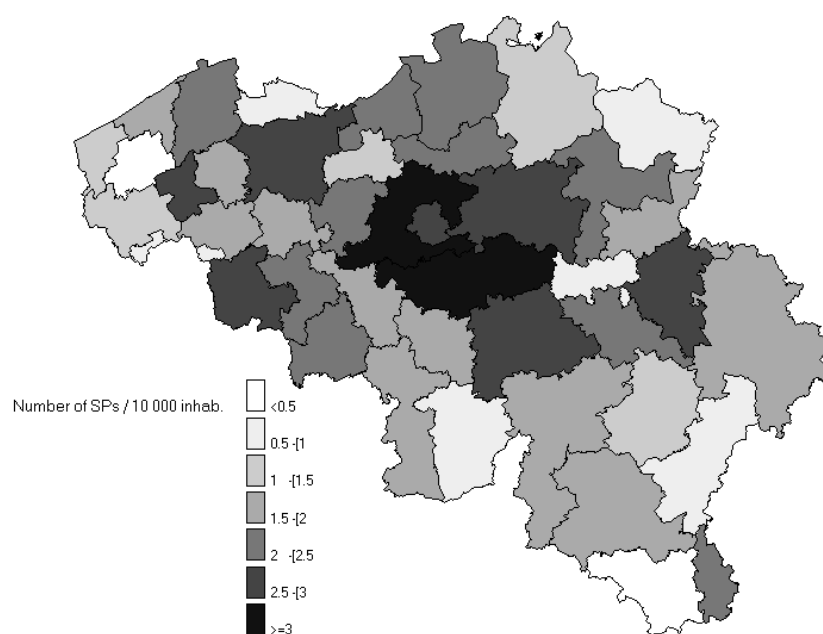
GROUP	N Obs	Variable	Mean	Std Dev	Minimu m	1st Pctl	5 th Pctl	10 th Pctl	25 th Pctl	Media n	75 th Pctl	90 th Pctl	95 th Pctl	99 th Pctl	Maximu m	Sum
INTERNAL MEDICINE	3102	med_geslacht	0.7	0.4	0	0	0	0	0	0	1	1	1	1	1	2322
		med_age2005	47.9	10	27	32	34	34	36	40	47	55	62	74	89	148471
		Npat	807.8	743.8	50	64	117	176	176	377	691	1070	1494	2813	20703	2505756
		Ppat_0	43.4	151.4	0	0	1	1	2	7	18	36	73	538	5092	134706
		Ppat_21	130.3	204.6	0	1	9	18	18	42	87	164	262	705	358	404105
		Ppat_41	259.3	216.9	0	6	29	48	48	120	220.5	350	495	915	4585	804455
		Ppat_61	312.8	250.1	0	13	39	62	62	137	263	423	615	1070	3137	970191
		Ppat_81	62	66.1	0	0	5	10	10	22	45	80	132	299	1359	192299
		Ppat_male	372.9	361.6	3	22	47	73	73	160	316.5	495	709	1457	9965	1156656
		consult	1433.9	1305.2	64	108	218	354	354	720	1236.5	1834	2613	5028	36653	4447940
		advice	3	32.2	0	0	0	0	0	0	0	0	1	55	1118	9194
		raadpl	1430.9	1302.9	0	107	216	354	354	719	1235	1833	2611	5023	36653	4438746
		Avg_Constult	1.9	0.7	1	1.1	1.2	1.3	1.3	1.4	1.7	2.2	2.7	4.2	13	5884.4
		Avg_advice	0	0	0	0	0	0	0	0	0	0	0	0.1	1.9	12.3
		Avg_raadpl	1.9	0.7	0	1.1	1.2	1.3	1.3	1.4	1.7	2.1	2.7	4.2	12.9	5872.1
		PERC_pat0	4.5	7.4	0	0	0.3	0.7	0.7	1.4	2.5	4.5	9.4	30.8	97.1	13812.9
		PERC_pat21	15.4	9.3	0	1.2	3.7	5	5	8.3	14.5	20.1	27	32.2	46.4	66.3
		PERC_pat41	32.1	8.2	0	3.6	19.2	22.6	22.6	27.4	32.7	37.2	41.3	43.8	64.5	99535.3
		PERC_pat61	39.7	11.8	0	6.6	17.2	24.9	24.9	32.8	40.3	47.9	54.3	57.9	72.6	123057.3
		PERC_pat81	8.4	7	0	0	1.8	2.8	2.8	4.6	6.7	10.3	14.5	18.3	71.9	25904
		PERC_male	45.9	10.4	0.7	17.1	27.5	31.6	31.6	40.2	46.8	53.1	57.8	68.2	84.6	142491.9
OPHTHALMOLOGY	836	med_geslacht	0.4	0.5	0	0	0	0	0	0	0	1	1	1	1	366
		med_age2005	49.2	11.3	29	31	33	35	35	40	48	56.5	65	79	86	41157
		Npat	2146.4	1058.7	50	97	506	846	846	1454.5	2031.5	2755	3549	4946	6859	1794426
		Ppat_0	367.2	271.8	0	6	39	78	78	183	313	478	698	845	1888	307003
		Ppat_21	290.7	172.1	1	9	55	92	92	171.5	257	384	521	837	1031	243004
		Ppat_41	592.9	314.7	2	21	111	211	211	381	557	764	1012	1498	1949	495650
		Ppat_61	717.9	365.5	0	31	129	263	263	466.5	698.5	950.5	1189	1692	2635	600181
		Ppat_81	177.7	100.5	0	8	29	55	55	108	165	237.5	317	437	706	148588
		Ppat_male	868.5	436.1	13	54	199	340	340	573.5	817	1122.5	1428	2176	3026	726062
		consult	3236.7	1648.1	86	141	751	1323	1323	2168	3127	4059	5314	8121	12829	2705912
		advice	0.5	2.5	0	0	0	0	0	0	0	0	1	11	39	398
		raadpl	3236.3	1647.7	86	141	751	1323	1323	2168	3126.5	4059	5314	8121	12808	2705514
		Avg_Constult	1.5	0.3	1	1.1	1.2	1.2	1.2	1.3	1.5	1.6	1.8	2.5	3.1	1271.5
		Avg_advice	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2
		Avg_raadpl	1.5	0.3	1	1.1	1.2	1.2	1.2	1.3	1.5	1.6	1.8	2.5	3.1	1271.3
		PERC_pat0	16.8	10.5	0	1.3	5	7.5	7.5	11.7	15.6	19.3	23.9	30.2	71	14022.2
		PERC_pat21	13.4	4.1	0.4	4.7	7.5	8.8	8.8	10.8	13.3	15.4	18	24.5	50	11179.4
		PERC_pat41	27.2	4.7	2.4	7.6	19.9	21.9	21.9	25.2	28.1	30.1	32	34.6	44	22775.8
		PERC_pat61	34	8.4	0	8.5	21.7	25.1	25.1	29.3	33.4	38.6	44.3	56.3	70	28386.4
		PERC_pat81	8.7	4.3	0	1.2	3.9	5	5	6.3	7.9	10.1	13.1	21.9	68.4	7236.3
		PERC_male	40.6	3.8	16.5	33.1	35.7	36.8	36.8	38.6	40.4	42.3	44.1	51.3	90.7	33905.7

GROUP	N Obs	Variable	Mean	Std Dev	Minimum m	1st Pctl	5 th Pctl	10 th Pctl	25 th Pctl	Media n	75 th Pctl	90 th Pctl	95 th Pctl	99 th Pctl	Maximum m	Sum
PAEDIATRICS	975	med_geslacht	0.5	0.5	0	0	0	0	0	0	0	1	1	1	1	446
		med_age2005	49.3	10.8	30	32	34	36	40	49	57	64	68	75	83	48113
		Npat	823.2	621.2	51	66	116	174	381	726	1110	1519	1802	3040	7091	802641
		Ppat_0	792.7	600.3	6	54	101	158	361	698	1075	1471	1745	2975	6241	772861
		Ppat_21	24.6	40	0	1	3	4	9	17	29	44	65	144	731	23962
		Ppat_41	5.3	12.6	0	0	0	0	1	3	6	9	15	40	250	5191
		Ppat_61	0.6	3.8	0	0	0	0	0	0	0	1	2	6	81	545
		Ppat_81	0.1	1.2	0	0	0	0	0	0	0	0	0	1	37	82
		Ppat_male	437.6	330.9	15	32	63	89	203	382	593	805	965	1615	3586	426621
		consult	1958.8	1518.2	62	110	200	360	910	1657	2662	3926	4814	7035	12656	1909863
		advise	3.8	55.7	0	0	0	0	0	0	0	2	6	46	1678	3687
		raadpl	1955.1	1517.4	62	110	200	351	910	1655	2662	3918	4771	7033	12655	1906176
		Avg_Constult	2.4	0.8	1	1.1	1.4	1.5	1.9	2.3	2.8	3.3	3.7	5.1	11.3	2337.2
		Avg_advise	0	0.3	0	0	0	0	0	0	0	0	0	0.1	9.6	12.1
		Avg_raadpl	2.4	0.8	1	1.1	1.3	1.5	1.9	2.3	2.8	3.3	3.7	5	9.7	2325.1
		PERC_pat0	95.5	8.3	4.3	47.8	89.3	93.9	96.1	97.1	97.9	98.4	98.7	99.2	100	93134.7
		PERC_pat21	3.6	6.2	0	0.6	1	1.2	1.7	2.3	3.3	5.2	8	33.2	86.1	3473
		PERC_pat41	0.8	2.3	0	0	0	0	0.2	0.4	0.7	1.2	1.8	11.5	41.7	792.2
		PERC_pat61	0.1	0.5	0	0	0	0	0	0	0	0.1	0.3	2.2	8.6	89.8
		PERC_pat81	0	0.1	0	0	0	0	0	0	0	0	0	0.2	2.8	10.4
		PERC_male	53.2	4.8	9.4	42.1	47.4	49.2	51.1	53	54.8	57.4	59.8	69.1	76.7	51847.8

8.6 SPECIALISTS' DENSITY PER 10 000 INHABITANTS: MAPS

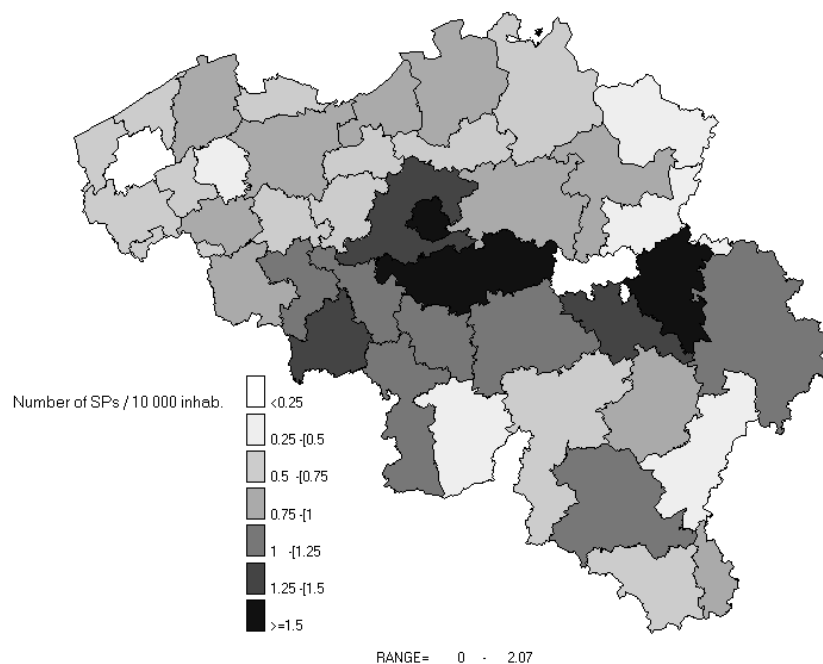
The following maps were drawn thanks to the information published on the website of the SPF Économie - Direction générale Statistique et Information économique.

Number of SP's per 10 000 inhabitants per arrondissement
GROUP=SURGERY (ALL)

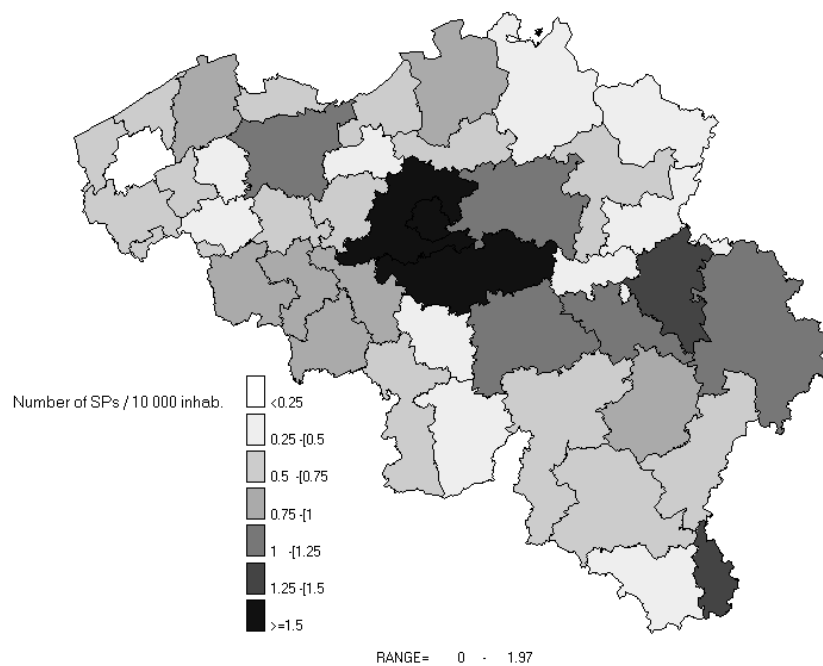


RANGE= 0 - 4.25

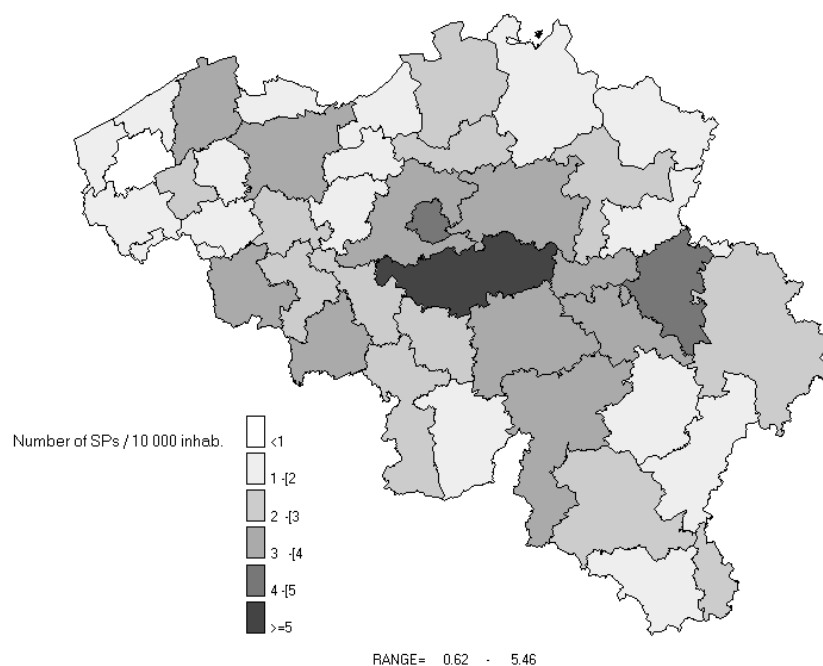
Number of SP's per 10 000 inhabitants per arrondissement
GROUP=Gynaecology



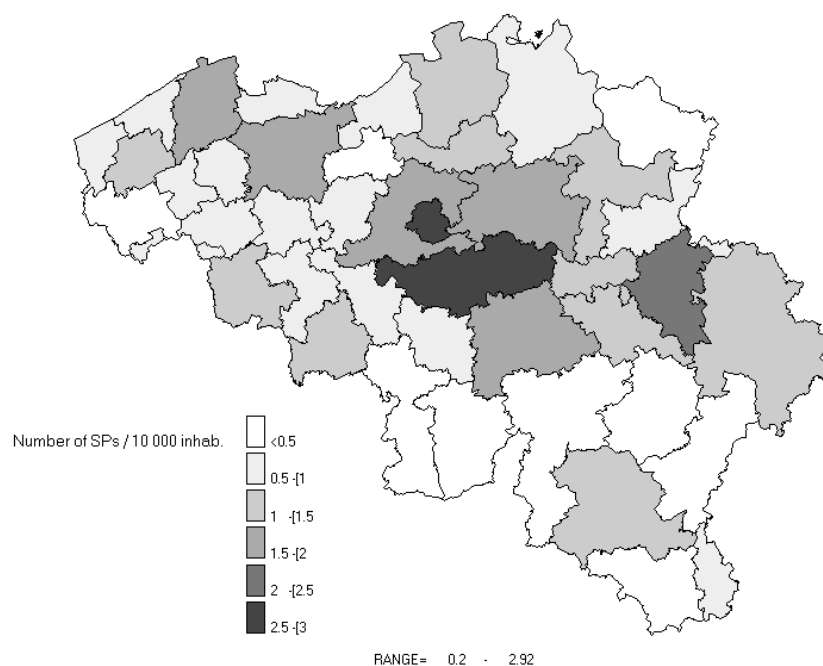
Number of SP's per 10 000 inhabitants per arrondissement
GROUP=Paediatrics



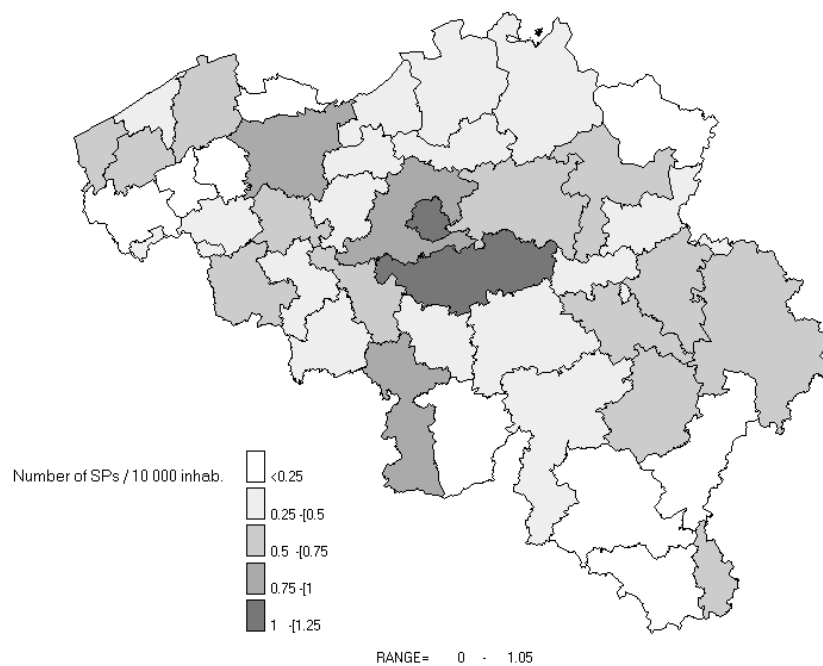
Number of SP's per 10 000 inhabitants per arrondissement
GROUP=INTERNAL MEDICINE AND NEUROLOGY



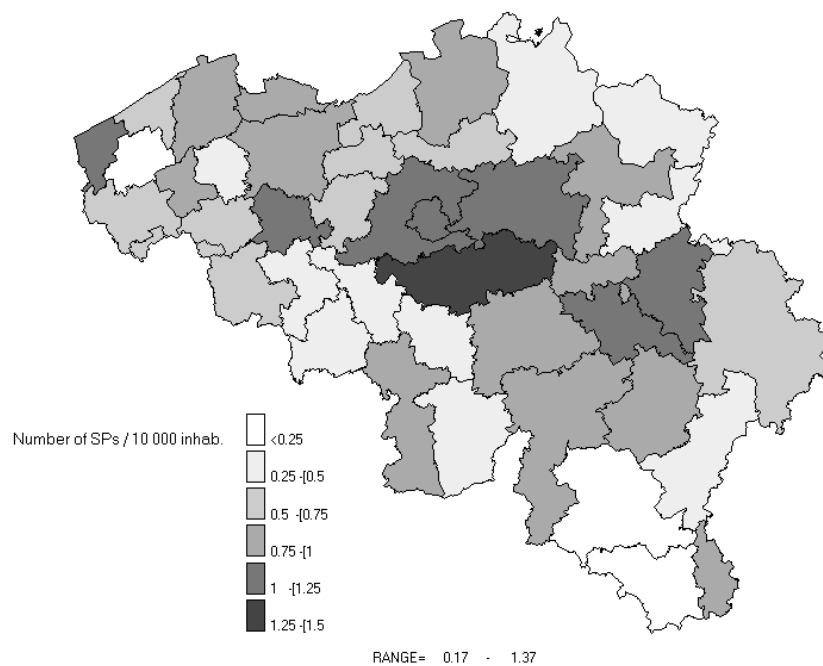
Number of SP's per 10 000 inhabitants per arrondissement
GROUP=PSYCHIATRY (ALL)



Number of SP's per 10 000 inhabitants per arrondissement
GROUP=DERMATOLOGY



Number of SP's per 10 000 inhabitants per arrondissement
GROUP=OPHTHALMOLOGY



9 METHODS SECTION FOR 3.2 “PHYSICIAN DENSITY AND HEALTH CARE UTILISATION IN THE BELGIAN HEALTH CARE SECTOR”

9.1.1.1 Data description

Data Sources

The database was made available by IMA (see Appendixes B.7 and B.8) and contains information on volume of GP and SP services, physician characteristics and patient characteristics. All variables are at the level of the individual physician. Only practising physicians, i.e. physicians with at least one contact among 50 patients, are included. The number of patients per physician in the IMA-database underestimates the real number of patients and contacts since GP and SP contacts of the self-employed without right to reimbursement of small risks in the compulsory system are not included. Hence the volume and intensity of care measures relate to patients insured against small and major risks.

Each sickness fund has detailed information on the reimbursements paid to its affiliated members in the context of the compulsory health insurance, covering drugs, medical devices, procedures, hospital care, ambulatory contacts by GPs and SPs, etc. These billing data are pooled by the IMA. The mission of this non-profit institution is to support the sickness funds through studies on the health insurance data in order to guarantee and further develop the performance of the Belgian Healthcare system and Health Insurance.

The dataset made available by IMA for this study contained aggregated billing data at the level of the physician, related to all GPs activity for the years 2002 and 2005 and all SPs consultations of 2002 and 2005, as well as patients' and GPs characteristics. The database was originally designed to send feedbacks to the physicians on specific topics. Some manipulations were made to adjust the original database to the specific needs of this study.

Three types of information were drawn from the original database:

- the number of contacts of a particular patient with the identification of the physician
- physician characteristics: (place of practice identified by its municipality (INS) code, age, sex)
- patient characteristics (category of age, sex and for GP also preferential status, entitled to lump sum B or C for home care, etc).

Appendices B.7 and B.8 show the list of billing/nomenclature codes that were selected by the IMA to calculate the number of consultations, visit types (for the GPs) and advices. Population characteristics are available twice a year (on June 30 and December 31). Only patients who were recorded alive for both periods were selected.

Patients having seen different GPs in 2005 were included in the number of patients for each of these GPs. So patients are not unique in the dataset. However, in the original feedback database a variable is available which allows attributing each patient to a unique GP for the whole year. This GP is:

- the GP who created a Global Medical Record for the patient, or
- in absence of a GMR, the GP by whom the patient had the largest number of contacts. In case of ex aequo, the GP with the largest INAMI/RIZIV number was chosen.

As data were aggregated per GP, variables included characteristics of his/her “loyal” patients and characteristics of patients attributed to other GPs. Hence the GP activity was measurable through the contacts with his/her loyal patients and contacts made with colleagues' patients.

Prior to the data extraction from the IMA data server, the INAMI/RIZIV identifier of the GP or the SP was deleted from the final database in order to respect the anonymity of the physician in the data, according to the Belgian Privacy law concerning health dataⁱⁱⁱⁱ.

Finally, the IMA-data were merged with demographic information downloaded from the website of the SPF.

Data handling

The population of GPs and SPs consists of those physicians with at least 50 patients. This physician population was already described in Chapter 2 (see section 2.2 in main report).

Further details concerning the data Extraction, Transformation and Loading process including cleaning process can be found in Appendix B.7 for the GPs and in Appendix B.8 for the SPs.

9.1.1.2 Analysis

Functional form

First, univariate statistics were calculated to describe each of the activity variables (number of patients, total contacts...). Next, scatter plots for determining association between activity and density (with non parametric LOESS regression method) were created to have an idea of the trend of the relation. Then analysis of the functional form was undertaken to find for each type of activity the best model specification. The final form of the model was based on the statistical results of the functional form analysis. Specifically, residuals from three regression models with only density as covariate were compared (linear, semi-log and log-log). Also, to study the problem of heteroscedasticity, results from a specification test (the White test) were also taken into account. Other tests were also performed: the PE test, which helps to discriminate between the linear and the loglinear model, and the RESET test (regression equation specification error test) to test for quadratic relationships. The visual inspection of the residuals and the results of the tests led to the choice of two different functional forms for the intensity and volume measures. Since the intensity of care variables showed no problem of heteroscedasticity (due to the ratio limiting the dispersion in the dependent variable), the linear form was preferred. For the volume measures, strong heteroscedasticity problems in the linear form led to the log transformation of the dependent variable. The choice between the semi-log or log-log specification could not be made on the basis of the statistical results. Therefore, the choice between these two models was based on the interpretation of the coefficients. This is discussed in more details in the methods section in the main report.

Choice of covariates

The relationship between health care utilisation and physician density was further disentangled by multivariate analysis. The model building strategy was the following: Model 1 included only the physician density. Then physician age and sex were added (Model 2). Because of the non linear relationship between physician age and some of the activity variables (see section 2.2.4, Figure 7), age was categorized.

Due to the limited number of physicians in the below 30 years and above 70 years categories, 4 groups were retained. Next, the model was extended with patient characteristics. Model 3 included the percentage of male patients and the percentage of patients in 5 age categories at the level of the physician. Model 4 also included the following patients' characteristics at the level of the individual physician: the percentage of patients with preferential status^{jjjj}, entitled to lump sum B or C for home care^{kkkk},

ⁱⁱⁱⁱ Loi du 8 décembre 1992 relative à la protection de la vie privée à l'égard des traitements de données à caractère personnel / Wet van 8 december 1992 tot bescherming van de persoonlijke levenssfeer ten opzichte van de verwerking van persoonsgegevens.

^{jjjj} Patients entitled to preferential treatment pay reduced co-payments. A low income level is the common characteristic of most target groups. These include pensioners, widowers/widows, orphans, invalids (receiving a disablement benefit), long term unemployed aged 50 and older with at least one year of full unemployment, handicapped children entitled to increased child allowance and persons entitled to one of

entitled to increased child allowance or to an allowance for handicapped persons, entitled to lump sum for physiotherapy (E-pathology), entitled to lump sum for 6 hospital admissions and the proportion of patients entitled to support from the public municipal welfare centres, the subsistence level income or income guarantee for the elderly. Model 4 was not estimated for the SPs, since these patients' characteristics were not available. Model 4 was selected as the preferred model for the GPs, Model 3 for the SPs. All models were estimated with OLS.

The choice of the above covariates was motivated by the literature and the availability and reliability of the data. One patient characteristic not included in the regressions is whether or not having a Global Medical Record. It has been shown elsewhere that patients with a GMR not only have a larger average number of contacts than patients without a GMR, but that this larger average already existed before the introduction of the GMR (Avalosse, 2006)^{III}. Hence a problem of endogeneity is very likely to occur.

All models contain the same covariates for all volume and intensity of care measures, even if they are not statistically significant. The correlation between a covariate and the dependent variable was checked, as well as the correlation between different covariates.

Selection and grouping of SPs

Only for a selection of SPs the analyses were performed. For some specialties the number of SPs was too small to analyse their behaviour at the level of the arrondissement. Part of them are SPs performing dominantly technical acts for which we have no data available. Next, some specialties were grouped together because of medical coherence (see Appendix B.8).

Clustering

To take into account the clustering of physicians per geographical entity, the Generalized Estimating Equations (GEE) method was used on the preferred model (Model 3 for SPs and Model 4 for GPs). In this method, the dependence between the observations was treated as a nuisance parameter (i.e. was not explicitly modeled) and a working correlation structure was assumed (exchangeable working correlation structure). The resulting robust variance estimates were thus corrected for the intra-cluster correlations.

To confirm the robustness of the results, another method to adjust for GP clustering was used; a hierarchical model with a random intercept for the geographical effect (results not shown).

Sensitivity analysis

Sensitivity analysis on the model specification was performed. The starting point of the sensitivity analysis for the GPs was the model at the level of the municipality (Model 4, corrected for clustering). However, patients do not necessarily live in the same municipality as their GP. To understand the effect of border-crossing, we also performed analyses at the level of the district (arrondissement). Since the relevant market for specialists is larger than the municipality level, we only performed analyses at the level of the arrondissement for specialists. Moreover, the geographical entity (municipality or arrondissement) is the place of residence of the physician. For GPs, in most cases, their place of residence is the same as their workplace. For SPs however, this may be a less realistic assumption. Although an analysis at the level of the arrondissement reduces the consequences of this assumption, it does not solve the problem that e.g. many specialists with residence in Walloon Brabant work in Brussels.

the following allowances: integration and income replacement allowance for handicapped persons, income guarantee for the elderly, subsistence level income, support from the public municipal welfare centres. In order to compensate the chronically ill for extra medical expenditures, a lump sum subsidy has been installed. The annual lump sum amounted to €253.61 in 2006. A chronically ill patient has to meet two conditions in order to be entitled to the lump sum. First, the amount of co-payments exceeds a threshold during two consecutive years. A second condition concerns the degree of dependency. Patients entitled to lump sum B or C for home care, to lump sum for physiotherapy (E-pathology), to lump sum for 6 hospital admissions, to increased child allowance or to an allowance for handicapped persons are all considered to be chronically ill patients.

III Avalosse H. Het globaal medisch dossier: meer consumptie of meer toegankelijkheid. 2006.

The number of patients per GP in Models 1-4 equals all patients with at least one contact with that GP during 2005. Consequently, the total number of patients is larger than the total number of physical persons who contacted a GP in 2005. Therefore the number of patients with specific characteristics (e.g. handicapped) is also larger than the real number of handicapped people in 2005. However, this does not bias the interpretation of the coefficients, as all analyses are performed at the physician level, and not at the patient level. Because the proportion of “loyal” patients is not evenly distributed over the GPs, Model 4 was also estimated on the activity levels for loyal patients only.

In order to discriminate between an inducement and an availability effect, we rely on the work of Carlsen and Grytten (1998)²¹ and Schaumans (2007)³. Instead of using one or two cut-of points as in Carlsen and Grytten (1998), we follow the approach of Schaumans (2007) and divide the municipalities into five equal-sized clusters, according to GP density. Q1 represents the cluster of municipalities with the lowest GP density, Q5 the cluster with the highest GP density.

The above sensitivity analyses were not performed on the preferred model for the SPs (Model 3), either because they were not relevant or because the data were lacking. The following sensitivity analyses were performed for both physician groups.

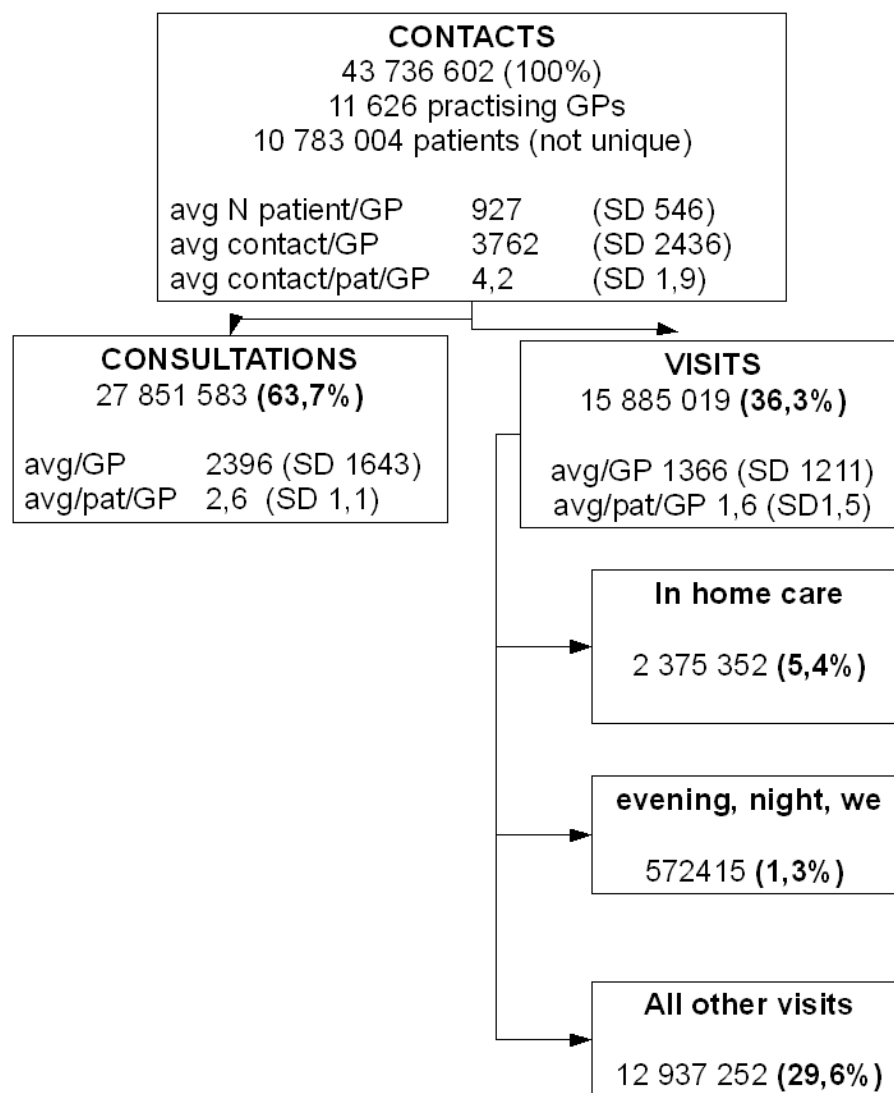
To take account of a possible biasing effect of the concentration of physicians in Brussels, Model 3 (SP) and Model 4 (GP) were estimated excluding all GPs and SPs living in the Brussels-Capital Region.

Since Belgian patients have free choice of physician and can directly access specialists, possible substitution between GPs and SPs was investigated. Two alternative models were estimated. The first model extended Model 4C (both for intensity and volume of care measures) with SP density with all 8 groups of SPs (see section 3.3.3.3) included. To concentrate on SPs who may be considered as close substitutes of GPs as providers of primary health care, we also estimated a model where SP density was based on the number of paediatricians, dermatologists and gynaecologists.

10 SUPPLEMENTARY TABLES AND FIGURES

FROM SECTION 3.2 “PHYSICIAN DENSITY AND HEALTH CARE UTILISATION IN THE BELGIAN HEALTH CARE SECTOR”

Figure GPI: Description of activity levels of GPs



Description of activity level on “loyal” patients

As such, 7 230 168 “loyal” patients were identified, corresponding to a total of 38 290 383 contacts (87.5% of the total amount of contacts). Hence, 22.5% of contacts were performed outside the “patient-principal GP” relationship. The proportion of evening, night and week-end visits dropped by half, as would be expected.

The average number of patients per GP decreased from 927 to 624, implying that approximately a third of their patients was outside the “patient-principal GP” relationship. The average of contacts, consultations and visits decreased slightly, respectively by 3 306, 2 069 and 12 636, and the average number of contacts per patient increased (due to the large decrease in the number of patients).

Socio-demographic characteristics of these patients are described in Table GPI.

Figure GP2: Description of Activity levels of GPs, only for “loyal” patients

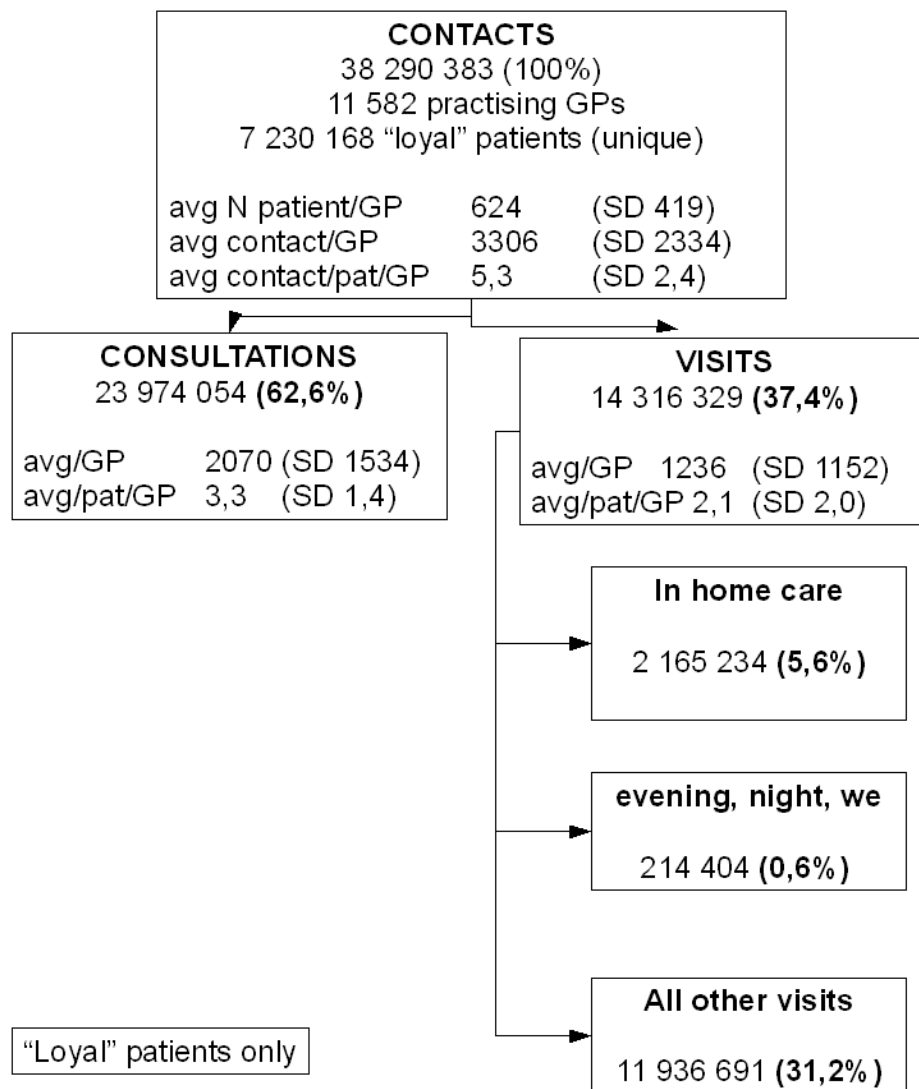
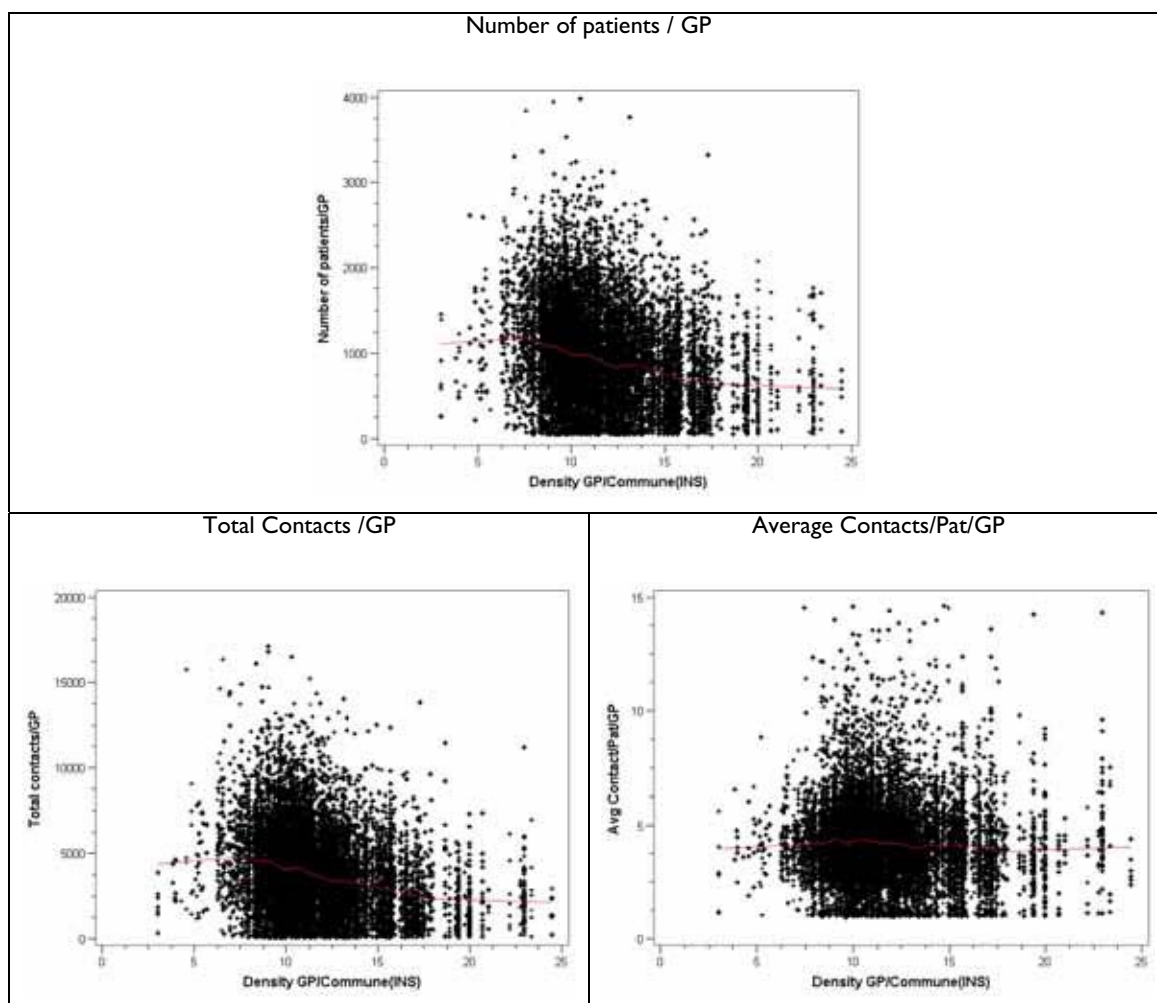


Table GP1: Demographic Characteristics of “loyal” patients

Label	N	Mean	Std Dev	Minimum	Median	Maximum
%of loyal patients per GP	11582	65.28	18.72	0.69	70.72	95.19
% of male patients per GP	11582	45.3	7.74	0	45.78	100
% of patients 21-40 years old per GP	11582	24.44	9.22	0	23.6	83.87
% of patients 41-60 years old per GP	11582	27.05	6.58	0	27.23	100
% of patients 61-80 years old per GP	11582	21.74	10.93	0	20.82	100
% of patients above 80 years old per GP	11582	5.85	5.18	0	4.78	76.19
% of patients with preferential status per GP	11582	15.52	8.48	0	14.19	100
% of patients entitled to lump sum B or C for home care per GP	11582	0.68	1.02	0	0.5	65.31
% of patients entitled to lump sum for physiotherapy (E-pathology) per GP	11582	1.51	1.41	0	1.37	65.31
% of patients entitled to lump sum for 6 hospitals admissions per GP	11582	0.95	1.24	0	0.82	67.86
% of patients entitled to increased child allowance or to an allowance for handicapped persons per GP	11582	3.81	3.72	0	3.24	96.94
% of patients entitled to support from the public municipal welfare centres, the subsistence level income or income guarantee for the elderly per GP	11582	2.33	3.03	0	1.57	100

Figure GP3: Relationship between activity level and GP density at municipality level



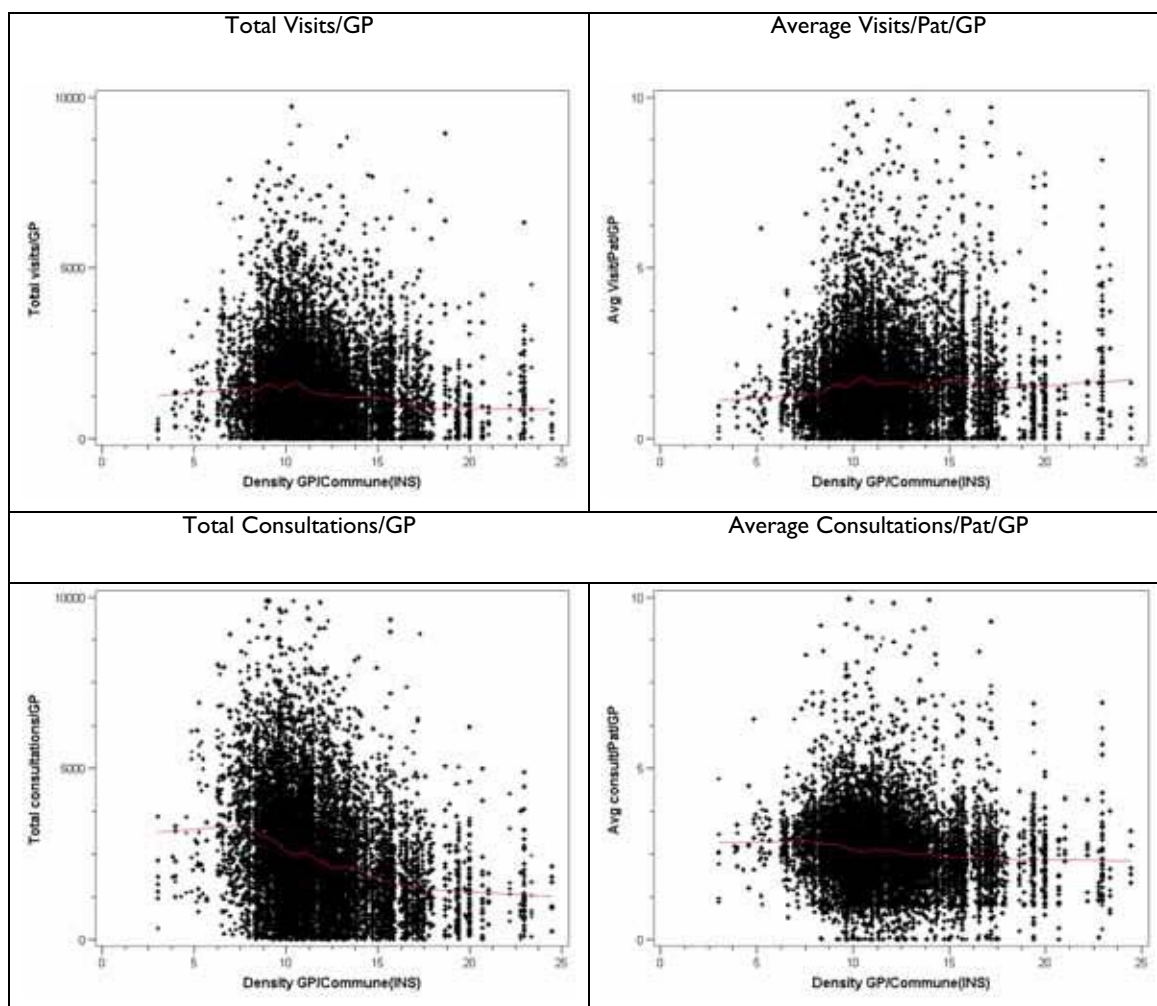


Table GP2: Results from regression models on Average number of contacts per patient per GP

Average contacts per patient per GP						
	Model 1	Model 2	Model 3	Model 4	Model 4 - clustering	Model 4 - loyal - clustering
R^2_{adj}	0.00	0.20	0.28	0.34		
Variable	Beta	Beta	Beta	Beta	Beta	Beta
Density GP/Municipality(INS)	-0.03	-0.03	-0.04	-0.02	-0.03	-0.02
GP sex		0.68	0.38	0.40	0.39	0.49
GP age 40-49		0.81	0.69	0.63	0.64	0.35
GP age 50-59		1.32	0.90	0.79	0.81	0.40
GP age +60		2.24	1.25	1.04	1.04	0.34
% of male patients per GP			0.01	0.00	-0.01	-0.03
% of patients 21-40 years old per GP			0.00	0.01	0.01	0.03
% of patients 41-60 years old per GP			0.05	0.05	0.05	0.07
% of patients 61-80 years old per GP			0.04	0.05	0.05	0.06
% of patients above 80 years old per GP			0.09	0.07	0.08	0.11
% of patients with preferential status per GP				0.02	0.03	0.05
% of patients entitled to lump sum B or C for home care per GP				-0.10	-0.11	-0.06
% of patients entitled to lump sum for physiotherapy (E-pathology) per GP				-0.03	-0.03	0.03
% of patients entitled to lump sum for 6 hospital admissions per GP				-0.25	-0.24	-0.04
% of patients entitled to increased child allowance or to an allowance for handicapped persons per GP				0.11	0.09	0.11
% of patients entitled to support from the public municipal welfare centres, the subsistence level income or income guarantee for the elderly per GP				-0.07	-0.05	-0.06

Figure GP4: Evolution of Total consultations per GP (according to age and sex) between 2002 and 2005

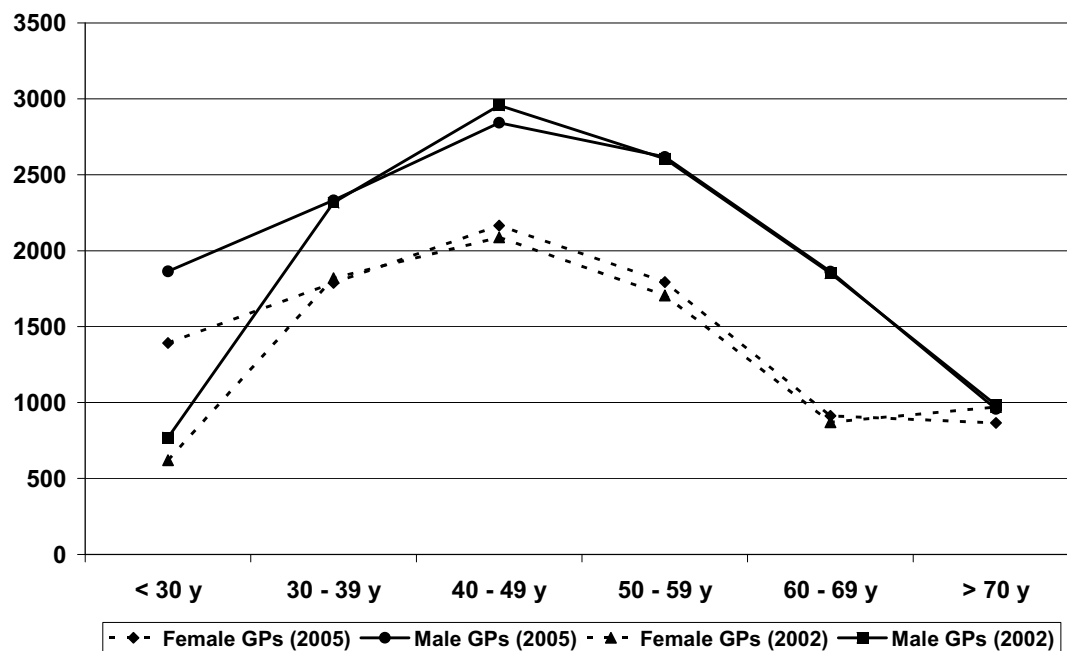
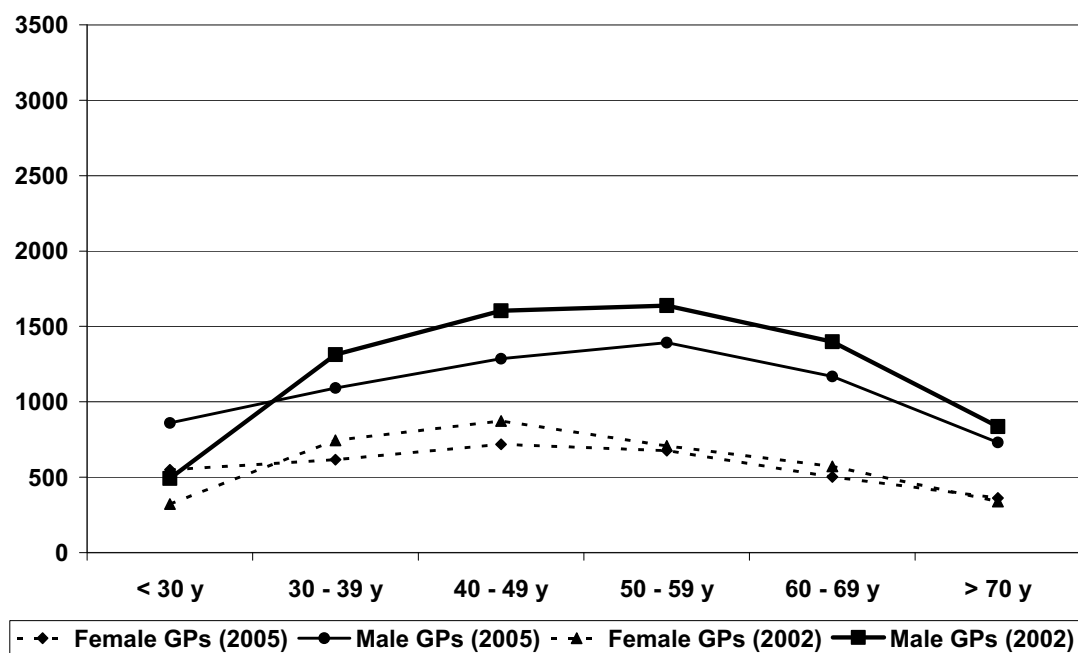
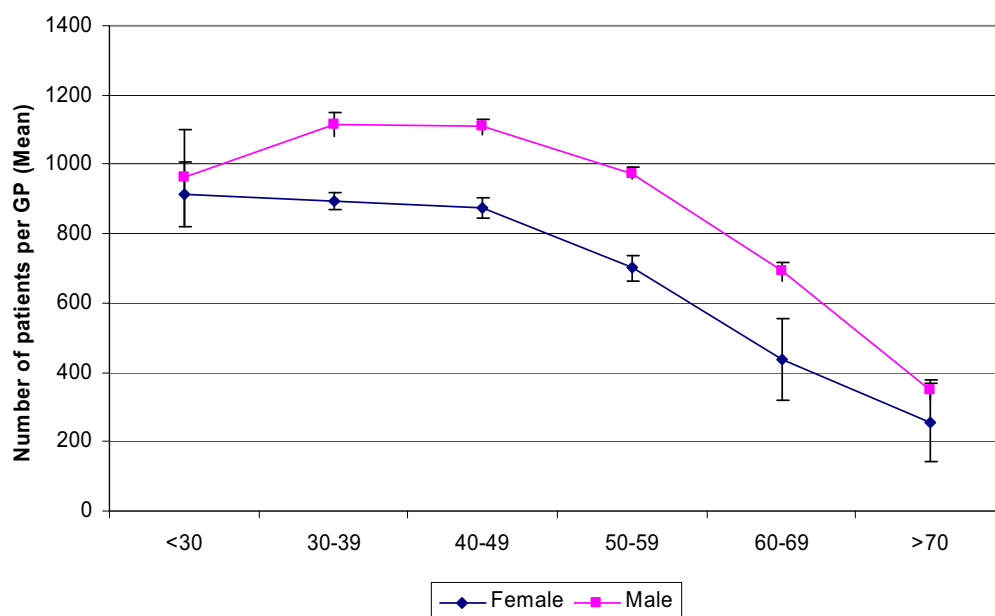


Figure GP5: Evolution of Total visits per GP (according to age and sex)

between 2002 and 2005

Figure GP6: Mean (with 95% CI) of Average number of patients per GP, by age and sex**Figure GP7: Mean (with 95% CI) of Average number of Contacts/patient/GP, by age and sex**

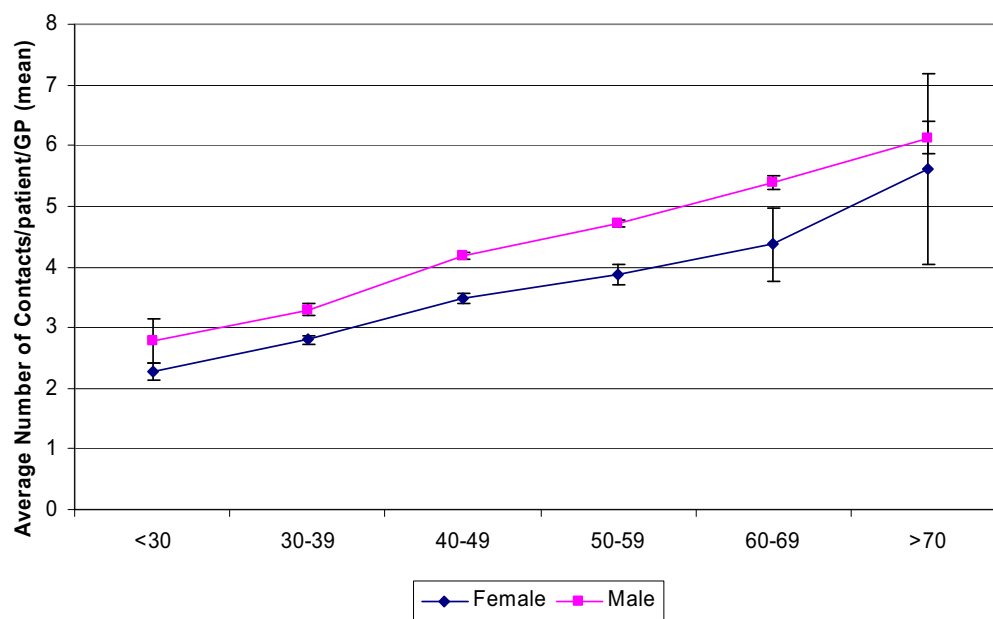


Figure GP8: Mean (with 95% CI) of Average number of Consultations/patient/GP, by age and sex

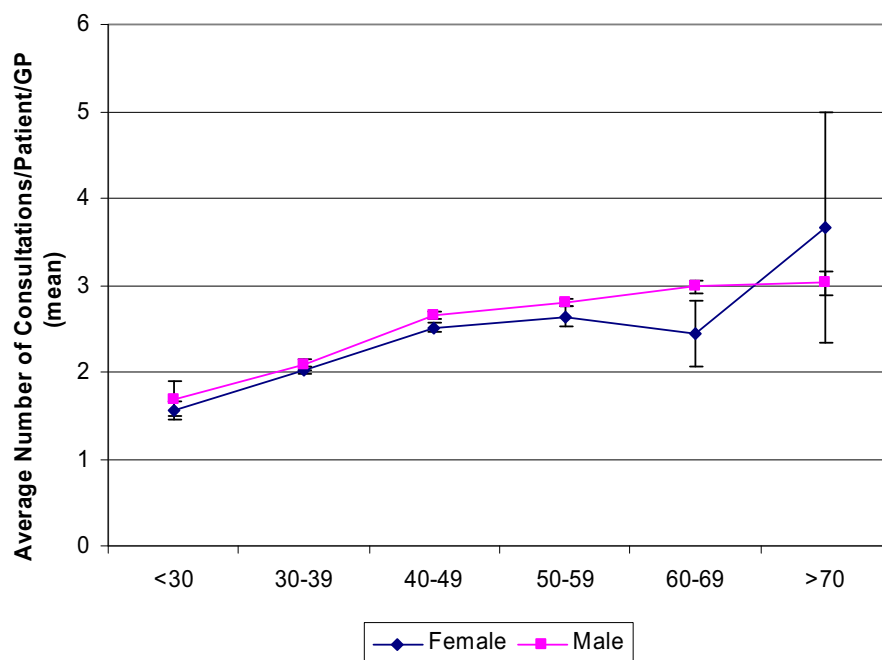


Figure GP9: Mean (with 95% CI) of Average number of Visits/patient/GP, by age and sex

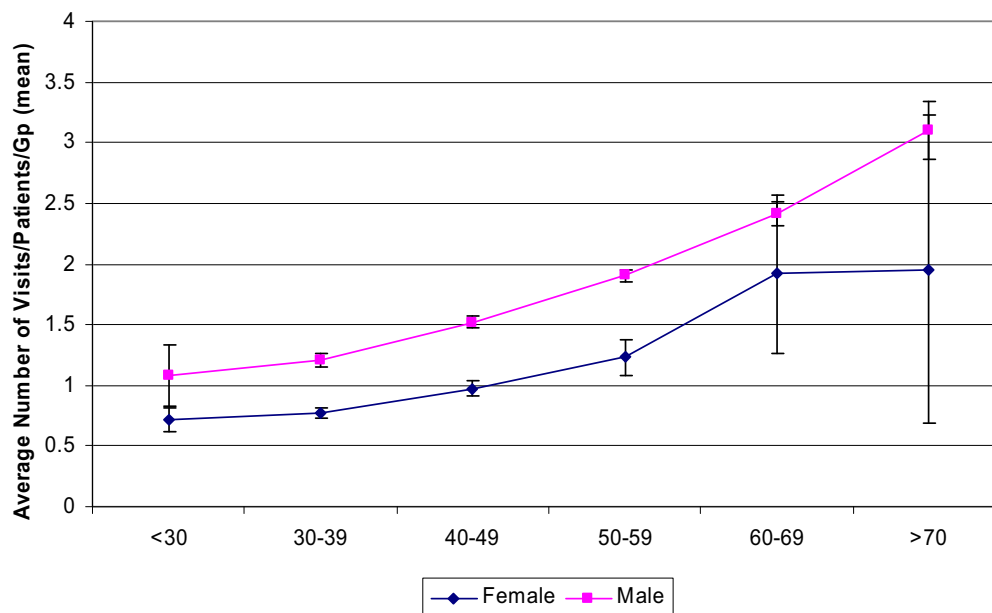


Figure GP10: Mean (with 95% CI) of Percentage of “Loyal Patients”/GP, by age and sex

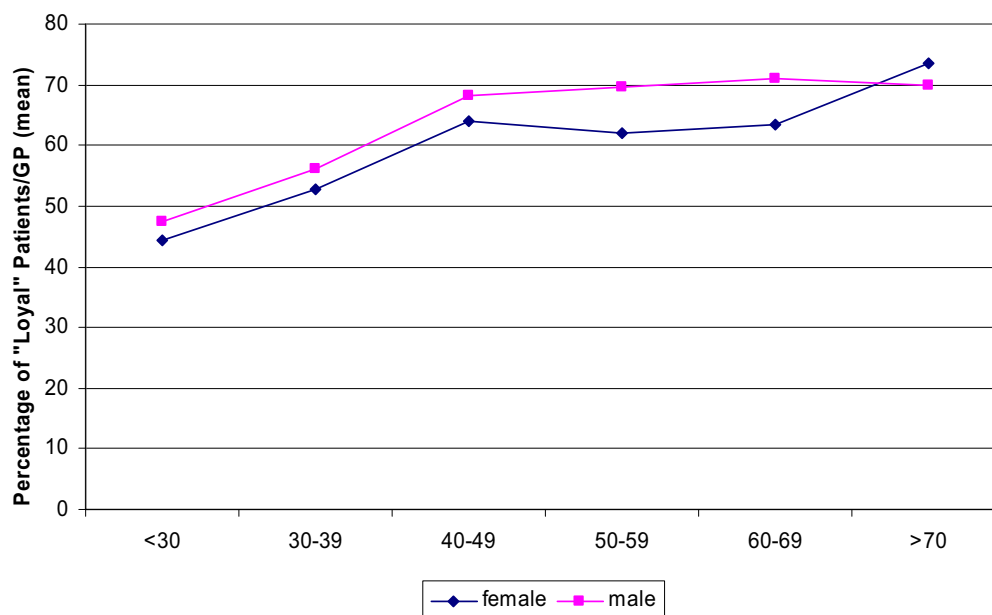
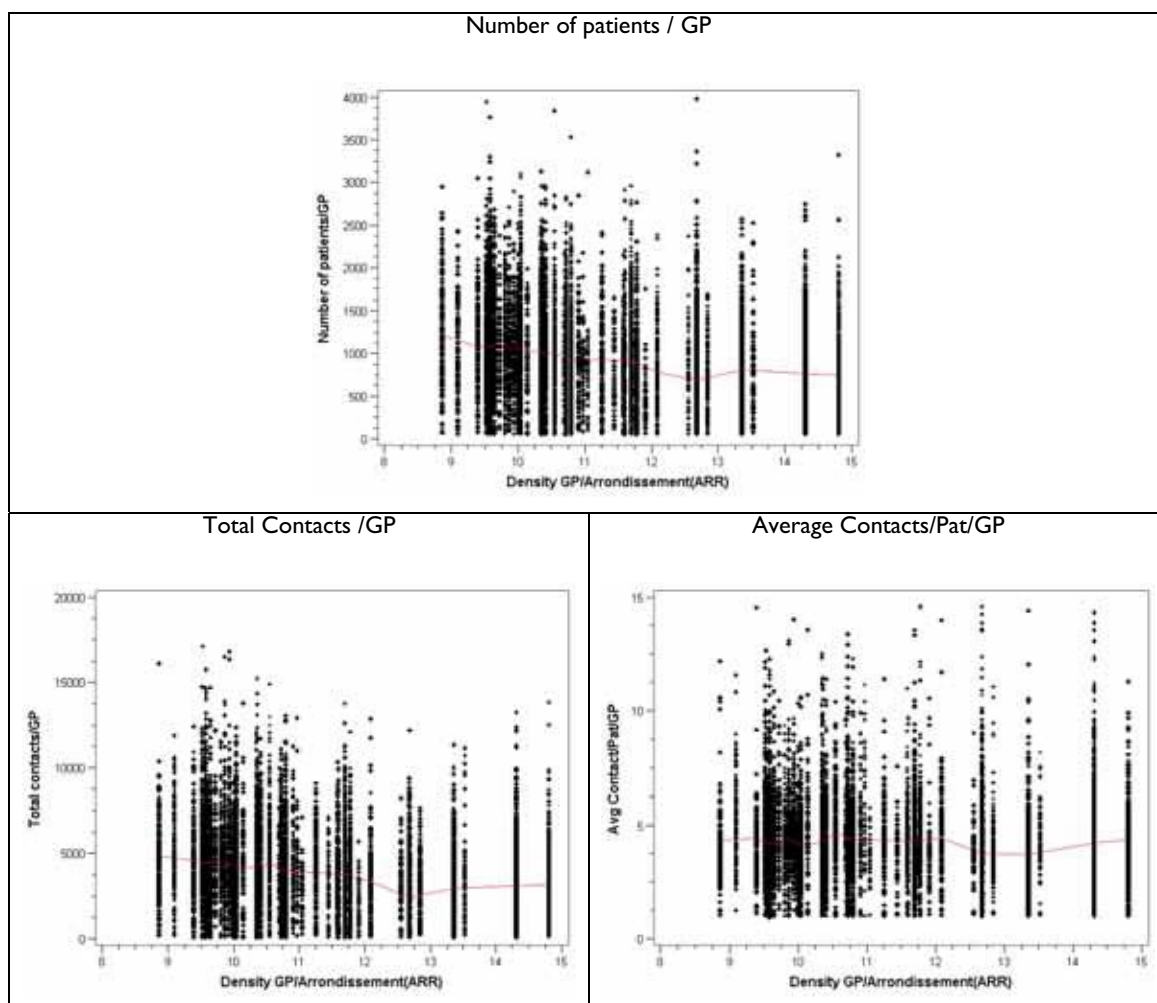


Table GP3: Results from regression models on Total number of contacts per GP, municipality level

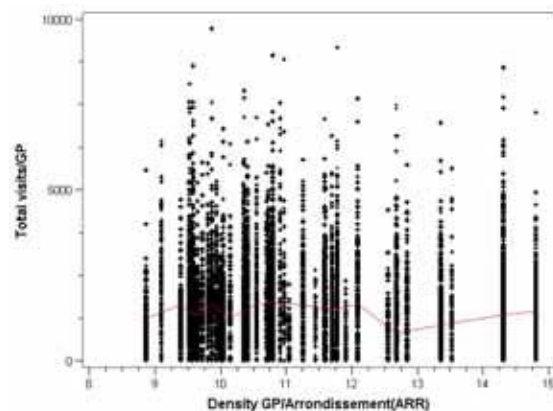
Log Total contacts per GP						
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	Model 1	Model 2	Model 3	Model 4	Model 4 - clustering	Model 4 - loyal - clustering
Variable	Beta	Beta	Beta	Beta	Beta	Beta
Log density GP/Municipality(INS)	-0.92	-0.86	-0.78	-0.68	-0.64	-0.79
GP sex		0.48	0.41	0.39	0.39	0.56
GP age 40-49		0.23	0.22	0.18	0.19	0.26
GP age 50-59		0.19	0.18	0.13	0.15	0.07
GP age +60		-0.26	-0.19	-0.29	-0.28	-0.63
% of male patients per GP			0.01	0.01	0.01	-0.02
% of patients 21-40 years old per GP			-0.02	-0.01	-0.01	0.00
% of patients 41-60 years old per GP			0.00	0.00	0.00	0.03
% of patients 61-80 years old per GP			-0.01	0.00	-0.01	0.02
% of patients above 80 years old per GP			-0.02	-0.01	0.00	0.01
% of patients with preferential status per GP				0.00	0.00	0.02
% of patients entitled to lump sum B or C for home care per GP				-0.01	-0.02	0.04
% of patients entitled to lump sum for physiotherapy (E-pathology) per GP				-0.05	-0.04	-0.01
% of patients entitled to lump sum for 6 hospital admissions per GP				-0.14	-0.14	-0.09
% of patients entitled to increased child allowance or to an allowance for handicapped persons per GP				0.02	0.01	0.00
% of patients entitled to support from the public municipal welfare centres, the subsistence level income or income guarantee for the elderly per GP				-0.05	-0.04	-0.07

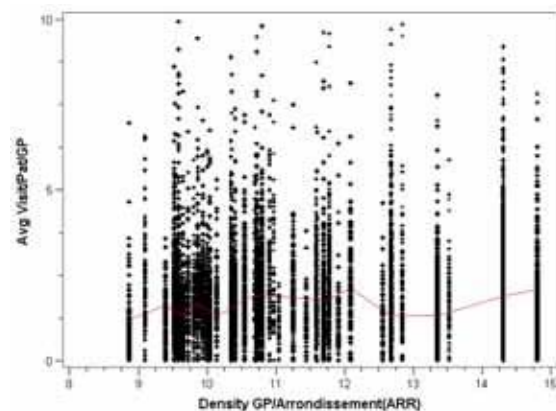
Figure GPI I: Relation between GP activity and GP density (at arrondissement level)



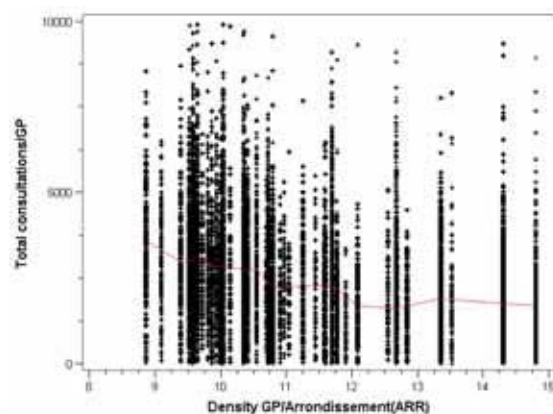
Total Visits



Average Visits/Pat/GP



Total Consultations



Average Consultations/Pat/GP

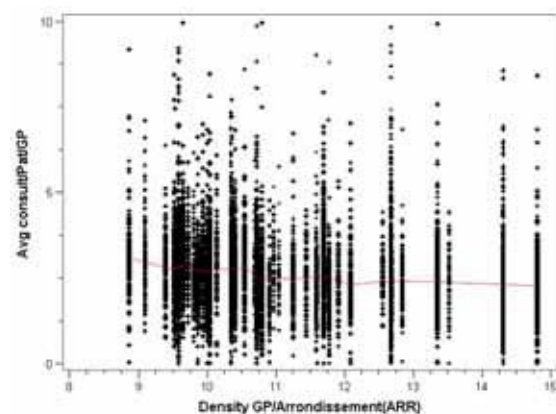


Figure GP12: Density of Municipality versus density of Arrondissement for GP

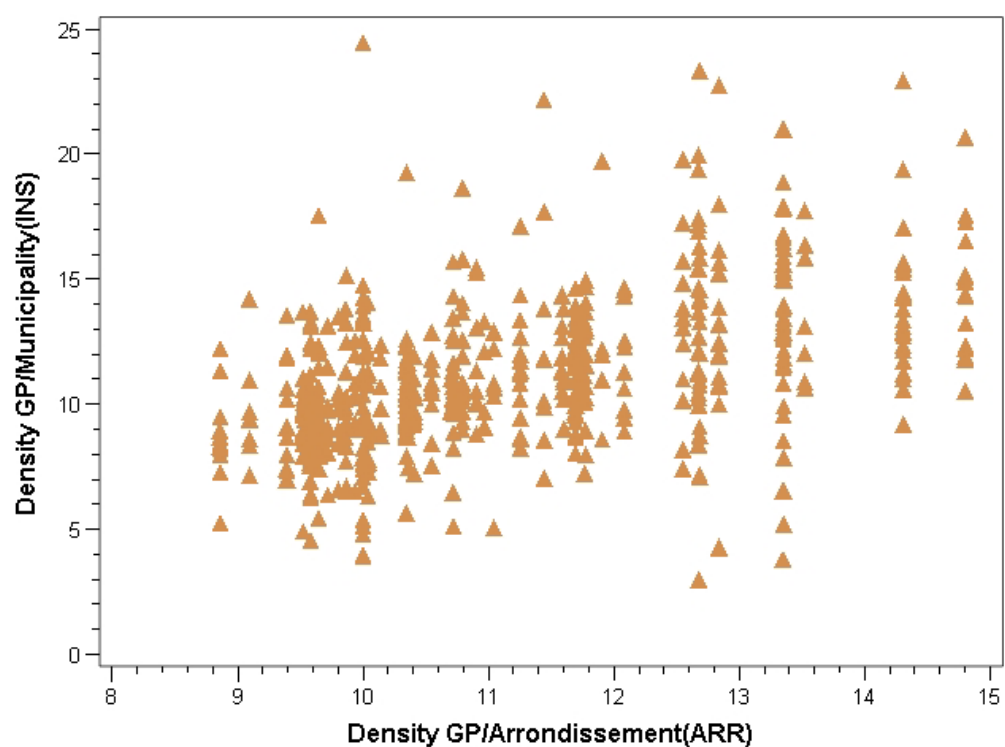
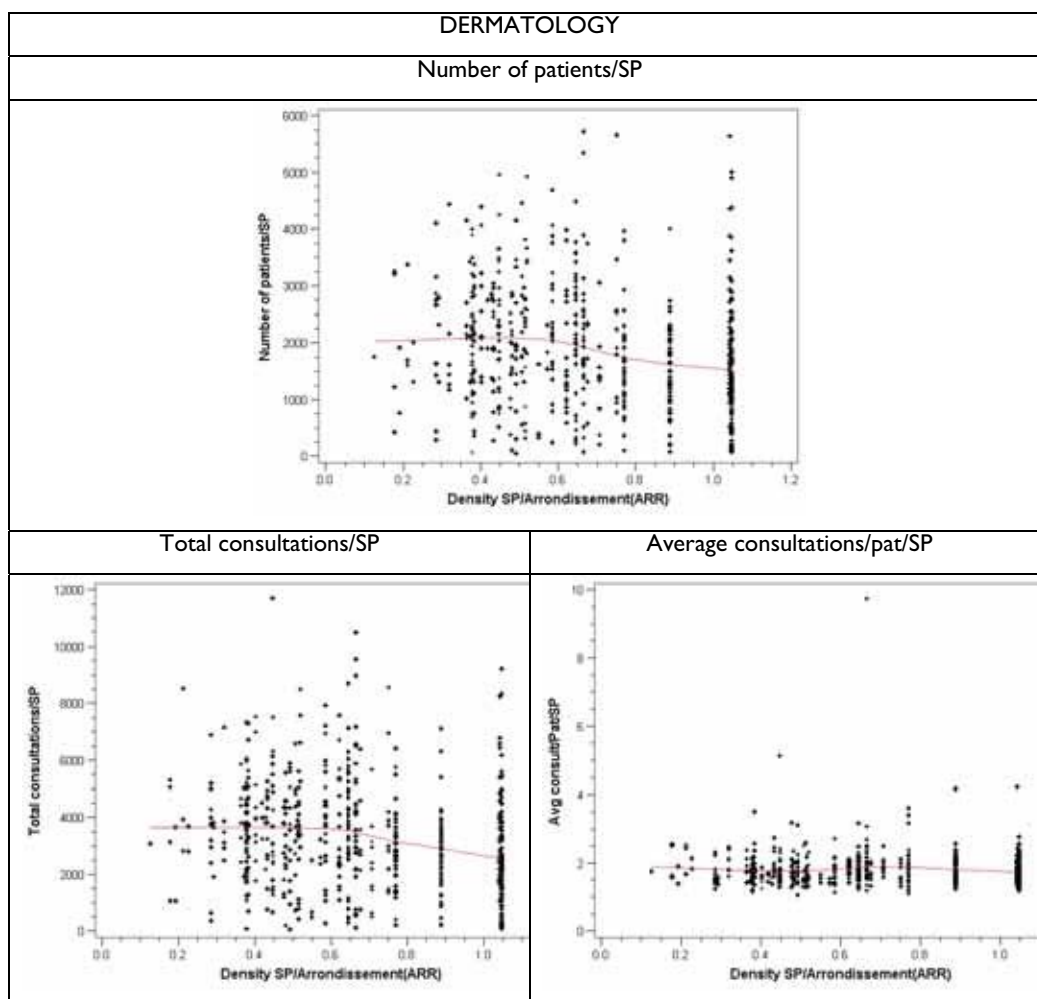


Table GP5: Descriptive activity variables per GP region

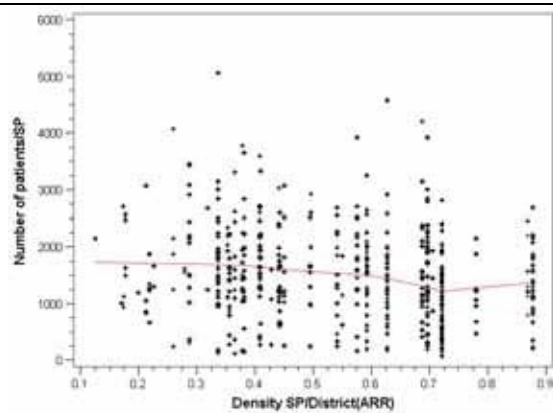
		GP Region			All
		Brussels	Flanders	Wallonia	
N GPs		1283	6108	4235	11626
Number of patients/GP	Mean	651.76	1056.30	825.24	927.49
Total contacts/GP	Mean	2198.32	4373.07	3354.29	3761.96
Total visits/GP	Mean	657.38	1446.32	1465.76	1366.34
Total consultations/GP	Mean	1540.94	2926.76	1888.53	2395.63
Avg Contact/Pat/GP	Mean	3.64	4.32	4.17	4.19
Avg Visit/Pat/GP	Mean	1.21	1.50	1.84	1.59
Avg consult/Pat/GP	Mean	2.43	2.82	2.33	2.60

Figure SPI: Graphical Relationship between SP activity level and SP density at arrondissement level

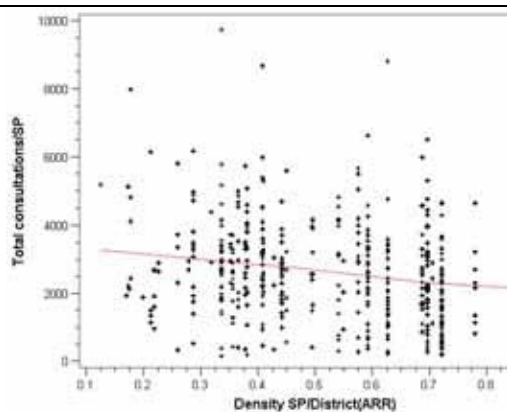


ENT

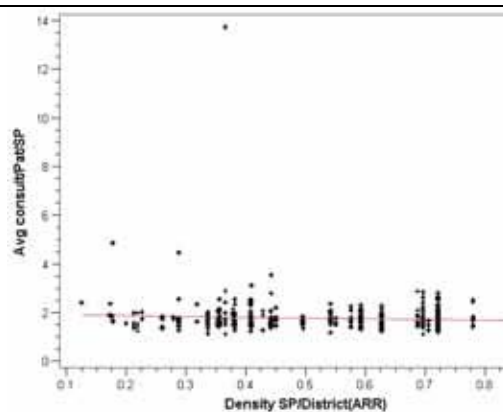
Number of patients/SP



Total consultations/SP

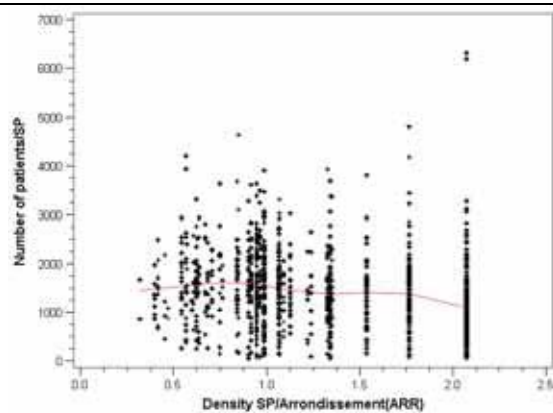


Average consultations/pat/SP

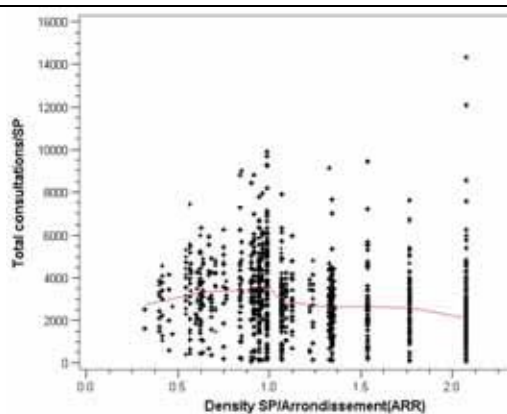


GYNAECOLOGY

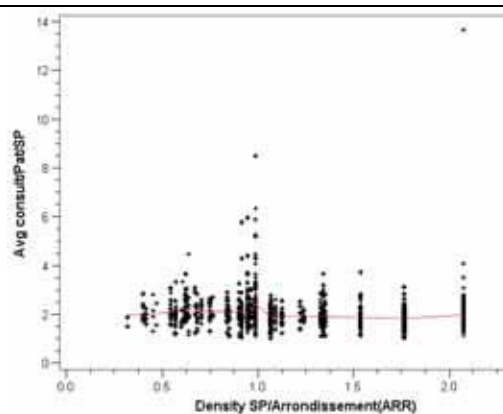
Number of patients/SP



Total consultations/SP

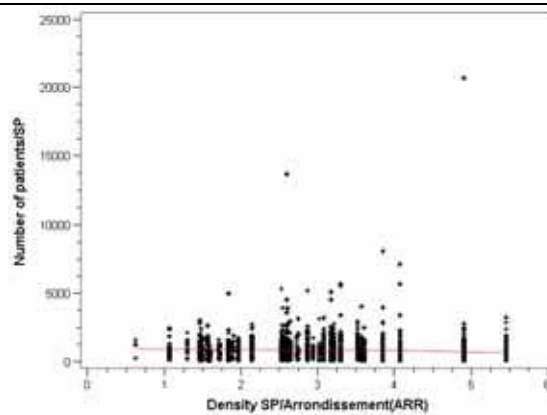


Average consultations/pat/SP

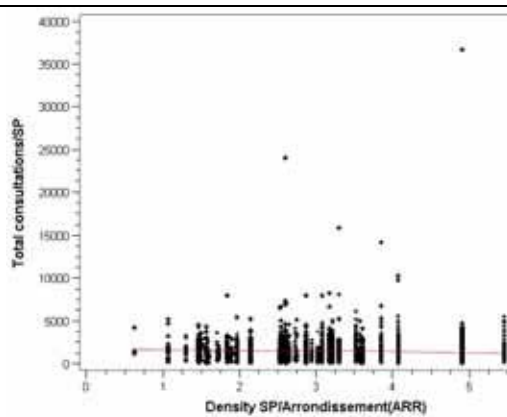


INTERNAL MEDECINE

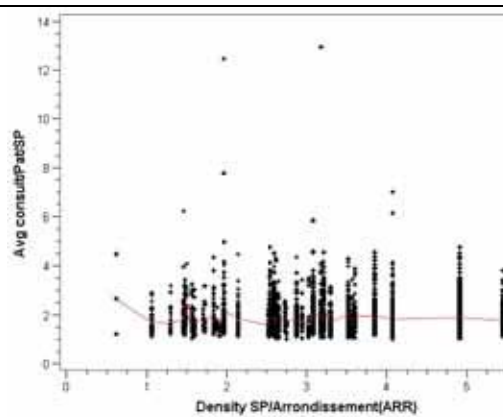
Number of patients/SP



Total consultations/SP

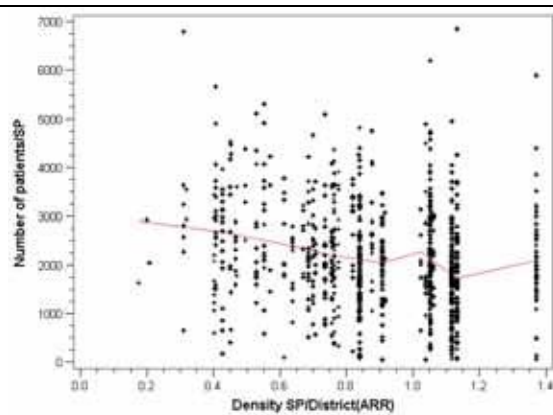


Average consultations/pat/SP

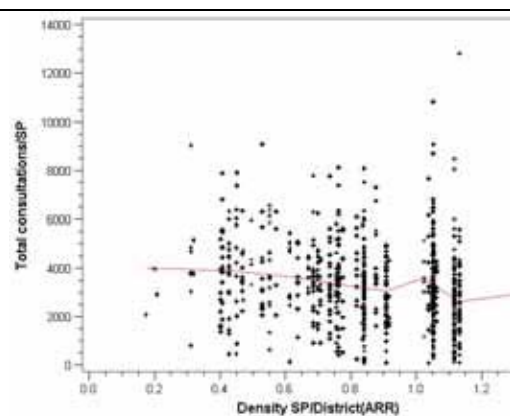


OPHTHALMOLOGY

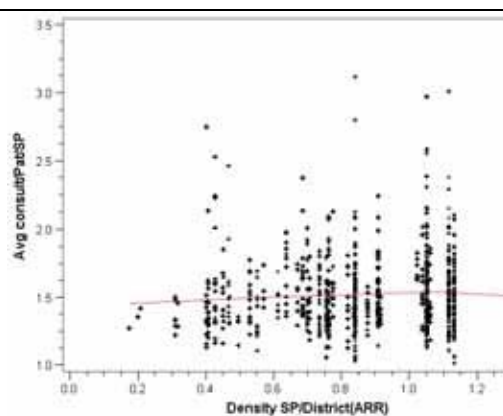
Number of patients/SP



Total consultations/SP

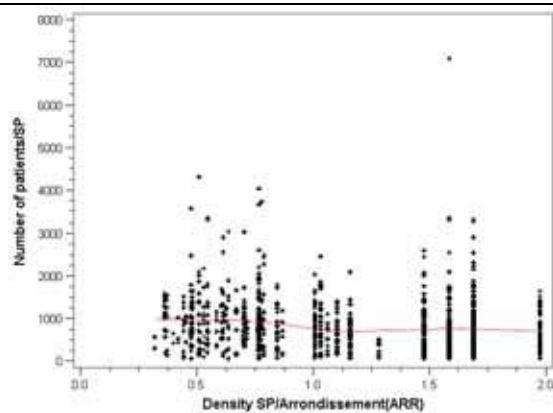


Average consultations/pat/SP

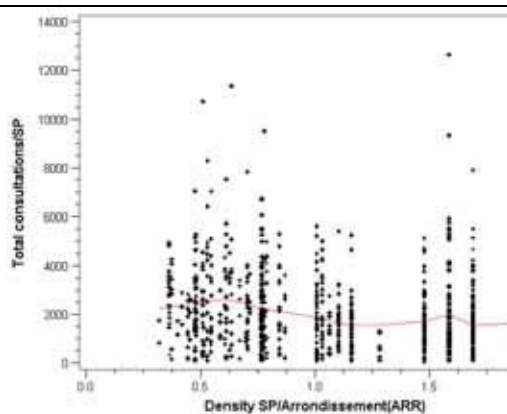


PAEDIATRICS

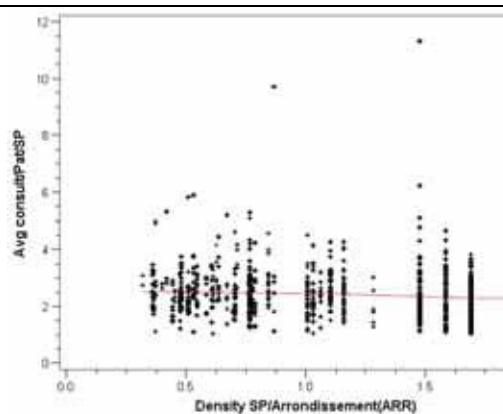
Number of patients/SP



Total consultations/SP

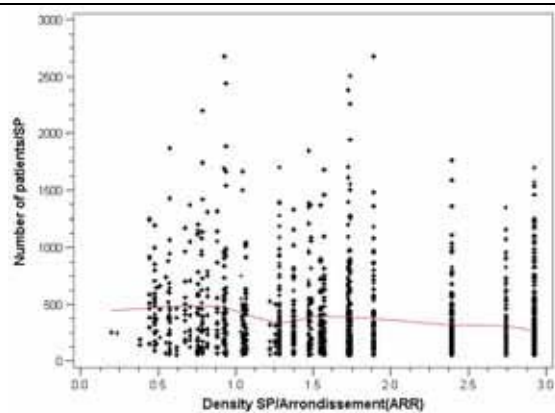


Average consultations/pat/SP

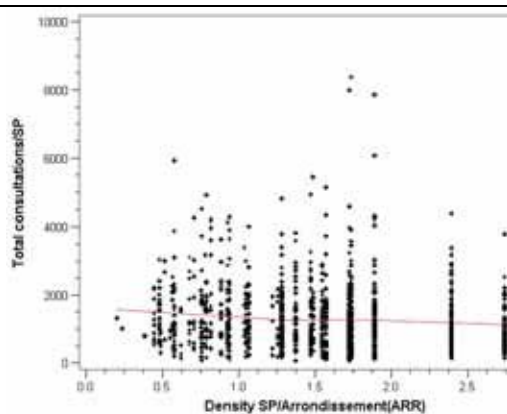


PSYCHIATRY

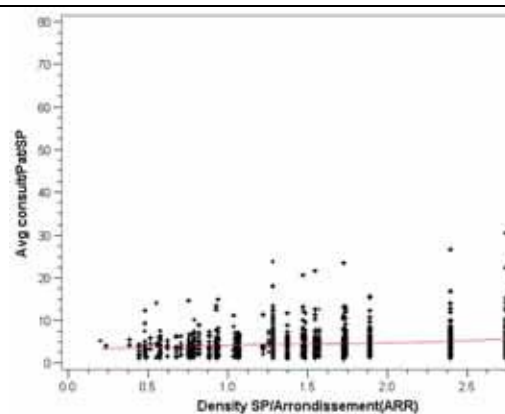
Number of patients/SP



Total consultations/SP

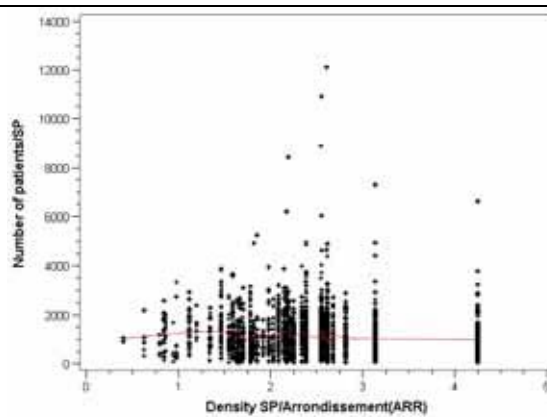


Average consultations/pat/SP

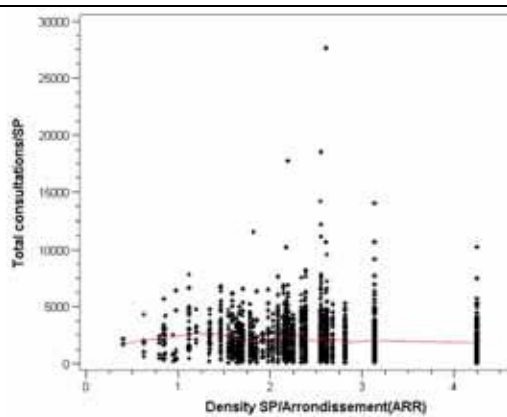


SURGERY

Number of patients/SP



Total consultations/SP



Average consultations/pat/SP

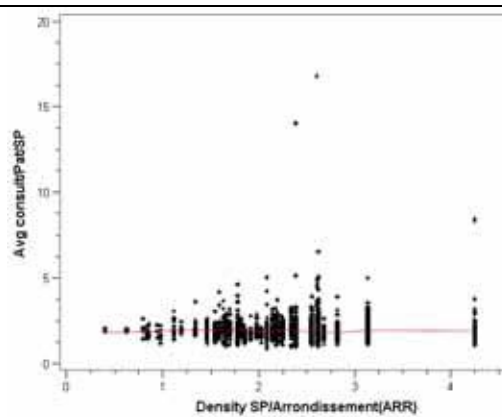


Table SP1: Results from Regression Models on Total number of Consultations (Model 1, 2, 3, 3-C and 5-C) and on Average Number of Consultations/patient, for all specialties

Results Dermatologists

Dependent variable	Log Total Consultations/SP					Avg Number of Consultations/pat/SP
	Model					Model
Type of model	1	2	3	3	5	3
				C	C	C
Variable	Beta	Beta	Beta	Beta	Beta	
Log Density SP/District (ARR)	-0.37	-0.35	-0.34	-0.19	-0.14	
Density SP/ District (ARR)						-0.01
SP sex		0.26	0.22	0.24	0.25	0.12
SP age 40-49		0.08	0.10	0.14	0.13	0.02
SP age 50-59		0.04	0.06	0.11	0.10	0.12
SP age +60		-0.83	-0.79	-0.76	-0.76	0.04
% of male patients per SP			0.01	0.01	0.01	-0.02
% of patients 21-40 years old per SP			-0.01	-0.01	-0.01	0.01
% of patients 41-60 years old per SP			-0.01	-0.02	-0.01	0.00
% of patients 61-80 years old per SP			-0.01	-0.02	-0.02	0.02
% of patients above 80 years old per SP			0.03	0.05	0.05	-0.02
Log Density GP/ARR					-0.34	

Results Eye Nose Throat

Dependent variable	Log Total Consultations/SP					Avg Number of Consultations/pat/SP
	Model					Model
Type of model	1	2	3	3	5	3
				C	C	
Variable	Beta	Beta	Beta	Beta	Beta	
Log Density SP/District (ARR)	-0.33	-0.32	-0.33	-0.26	-0.29	
Density SP/ District (ARR)						-0.32
SP sex		0.40	0.40	0.40	0.40	-0.02
SP age 40-49		0.14	0.19	0.20	0.20	0.08
SP age 50-59		-0.13	0.02	0.03	0.03	0.03
SP age +60		-0.72	-0.51	-0.47	-0.47	0.22
% of male patients per SP			0.02	0.01	0.01	-0.01
% of patients 21-40 years old per SP			0.01	0.02	0.02	0.03
% of patients 41-60 years old per SP			-0.01	-0.01	-0.01	0.00
% of patients 61-80 years old per SP			-0.01	-0.01	-0.01	0.02
% of patients above 80 years old per SP			-0.05	-0.03	-0.03	-0.05
Log Density GP/ARR					0.13	

Results Gynaecology

Dependent variable	Log Total Consultations/SP					Avg Number of Consultations/pat/SP
	Model					Model
Type of model	1	2	3	3	5	3
				C	C	C
Variable	Beta	Beta	Beta	Beta	Beta	
Log Density SP/District (ARR)	-0.44	-0.43	-0.42	-0.17	-0.12	
Density SP/ District (ARR)						-0.17
SP sex		0.10	0.09	0.04	0.04	0.11
SP age 40-49		0.14	0.17	0.17	0.17	0.06
SP age 50-59		0.03	0.11	0.13	0.13	0.03
SP age +60		-0.72	-0.50	-0.49	-0.49	0.03
% of male patients per SP			-			
% of patients 21-40 years old per SP			0.02	0.03	0.03	0.04
% of patients 41-60 years old per SP			0.01	0.03	0.02	0.02
% of patients 61-80 years old per SP			0.00	0.01	0.00	0.02
% of patients above 80 years old per SP			0.06	0.11	0.10	0.11
Log Density GP/ARR					-0.26	

Results Internal medicine and Neurology

Dependent variable	Log Total Consultations/SP					Avg Number of Consultations/pat/SP
	Model					Model
Type of model	1	2	3	3	5	3
				C	C	C
Variable	Beta	Beta	Beta	Beta	Beta	
Log Density SP/District (ARR)	-0.22	-0.18	-0.22	-0.15	-0.06	
Density SP/ District (ARR)						-0.01
SP sex		0.22	0.28	0.28	0.28	-0.06
SP age 40-49		0.21	0.19	0.20	0.20	0.04
SP age 50-59		0.21	0.20	0.21	0.21	0.07
SP age +60		-0.26	-0.29	-0.28	-0.28	0.21
% of male patients per SP			-0.01	-0.01	-0.01	-0.01
% of patients 21-40 years old per SP			-0.01	-0.01	-0.01	0.00
% of patients 41-60 years old per SP			-0.01	-0.01	-0.01	0.01
% of patients 61-80 years old per SP			0.00	0.00	0.00	0.00
% of patients above 80 years old per SP					-0.04	-0.01
Log Density GP/ARR					-0.41	

Results Ophtalmology

Dependent variable	Log Total Consultations/SP					Avg Number of Consultations/pat/SP
	Model					Model
Type of model	1	2	3	3	5	3
				C	C	C
Variable	Beta	Beta	Beta	Beta	Beta	
Log Density SP/District (ARR)	-0.34	-0.32	-0.26	-0.24	-0.25	
Density SP/ District (ARR)						0.03
SP sex		0.16	0.22	0.22	0.22	0.00
SP age 40-49		0.12	0.08	0.08	0.08	0.00
SP age 50-59		0.04	0.01	0.02	0.02	0.01
SP age +60		-0.68	-0.68	-0.67	-0.68	-0.10
% of male patients per SP			-0.02	-0.02	-0.02	0.01
% of patients 21-40 years old per SP			-0.02	-0.01	-0.01	0.01
% of patients 41-60 years old per SP			0.02	0.02	0.02	-0.01
% of patients 61-80 years old per SP			0.00	0.00	0.00	0.01
% of patients above 80 years old per SP			-0.03	-0.03	-0.03	0.01
Log Density GP/ARR					0.03	

Results Paediatrics

Dependent variable	Log Total Consultations/SP					Avg Number of Consultations/pat/SP
	Model					Model
Type of model	1	2	3	3	5	3
				C	C	C
Variable	Beta	Beta	Beta	Beta	Beta	
Log Density SP/District (ARR)	-0.37	-0.36	-0.36	-0.35	-0.37	
Density SP/ District (ARR)						-0.17
SP sex		0.23	0.25	0.25	0.25	-0.14
SP age 40-49		0.22	0.22	0.22	0.22	0.13
SP age 50-59		0.04	0.04	0.04	0.04	0.20
SP age +60		-0.33	-0.35	-0.35	-0.35	0.45
% of male patients per SP			-0.01	-0.01		-0.01
% of patients 21-40 years old per SP			-	-		
% of patients 41-60 years old per SP			-	-		
% of patients 61-80 years old per SP			-	-		
% of patients above 80 years old per SP						
Log Density GP/ARR					0.08	

Results Psychiatrists

Dependent variable	Log Total Consultations/SP					Avg Number of Consultations/pat *
	Model					Model
Type of model	1	2	3	3	5	3
				C	C	C
Variable	Beta	Beta	Beta	Beta	Beta	
Log Density SP/District (ARR)	-0.15	-0.13	-0.16	-0.16	-0.20	
Density SP/ District (ARR)						0.54
SP sex		0.32	0.34	0.34	0.34	-0.14
SP age 40-49		0.29	0.28	0.28	0.28	0.53
SP age 50-59		0.23	0.26	0.26	0.26	0.22
SP age +60		-0.07	-0.01	-0.01	-0.01	0.65
% of male patients per SP			-0.01	-0.01	-0.01	-0.04
% of patients 21-40 years old per SP			0.01	0.01	0.01	0.04
% of patients 41-60 years old per SP			0.00	0.00	0.00	0.04
% of patients 61-80 years old per SP			-0.01	-0.01	-0.01	-0.04
% of patients above 80 years old per SP			0.03	0.03	0.03	-0.12
Density GP/ARR					0.28	

* results shown with 1 SP (outlier) excluded from analyses

Results Surgery (all)

Dependent variable	Log Total Consultations/SP					Avg Number of Consultations/pat/SP
	Model					Model
Type of model	1	2	3	3	5	3
				C	C	C

Variable	Beta	Beta	Beta	Beta	Beta	
Log Density SP/District (ARR)	-0.34	-0.31	-0.28	-0.12	-0.04	
Density SP/ District (ARR)						-0.01
SP sex		0.35	0.36	0.34	0.34	0.07
SP age 40-49		0.28	0.32	0.31	0.31	0.03
SP age 50-59		0.21	0.25	0.27	0.27	0.06
SP age +60		-0.31	-0.25	-0.21	-0.20	0.18
% of male patients per SP			0.01	0.01	0.01	0.00
% of patients 21-40 years old per SP			0.00	0.00	0.00	0.00
% of patients 41-60 years old per SP			-0.01	-0.01	-0.01	0.01
% of patients 61-80 years old per SP			-0.02	-0.02	-0.02	-0.01
% of patients above 80 years old per SP			0.01	0.01	0.01	0.01
Log Density GP/ARR					-0.67	

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Appendix for chapter 4

What are the Right Numbers?

I SEARCH STRATEGY FOR LITERATURE REVIEW ON FORECASTING MODELS

Author Dominique Roberfroid
Project number 2006 - 27 - 2_HSR
Project name Medical Supply Planning
Keywords

Date 20 February 2007
Database Medline OVID
Date covered 1970 - 2007
Search Strategy

- 1 health manpower/ (8597)
- 2 health personnel/ (11990)
- 3 workforce.mp. (4309)
- 4 human resources\$.mp. (1766)
- 5 health profession\$.mp. (16726)
- 6 1 or 2 or 3 or 4 or 5 (41203)
- 7 exp physicians/ (59438)
- 8 medical staff/ (1321)
- 9 students, medical/ (12871)
- 10 specialties, medical/ (13081)
- 11 faculty, medical/ (6413)
- 12 7 or 8 or 9 or 10 or 11 (87436)
- 13 forecasting/ (53206)
- 14 health planning/ (18308)
- 15 health planning organization/ (737)
- 16 health planning support/ (220)
- 17 planning techniques/ (12138)
- 18 personnel management/ (13773)
- 19 personnel downsizing/ (339)
- 20 health care rationing/ (8519)
- 21 attrition.mp. (3582)
- 22 retention.mp. (80409)
- 23 numerus clausus.mp. (26)
- 24 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 (188122)
- 25 (letter or comment or news or editorial or correspondence).pt. (927200)
- 26 developing countries/ (47259)
- 27 (6 and 12 and 24) not (25 or 26) (395)
- 28 limit 27 to ((dutch or english or french or spanish) and yr="1987 - 2007") (281)

Note

Author	Dominique Roberfroid
Project number	2006 - 27 - 2_HSR
Project name	Medical Supply Planning
Keywords	
Date	20 February 2007
Database	Embase
Date covered	1987 - 2007
Search Strategy	((('health'/exp/mj OR 'health') OR ('health'/exp/mj OR 'health')) OR medical) AND (((('profession'/exp/mj OR 'profession') OR ('profession'/exp/mj OR 'profession')) OR resource OR (('personnel'/exp/mj OR 'personnel') OR ('personnel'/exp/mj OR 'personnel')) OR (('staff'/exp/mj OR 'staff') OR ('staff'/exp/mj OR 'staff')) OR (('physician'/exp/mj OR 'physician') OR ('physician'/exp/mj OR 'physician')) OR (('student'/exp/mj OR 'student') OR ('student'/exp/mj OR 'student')))) AND (forecast OR plan OR numerus AND clausus) AND [humans]/lim AND [humans]/lim AND [1987-2007]/py
Note	[mp=heading words, abstract, title, country as subject]

2 OVERVIEW OF PLANNING MODELS IN SELECTED COUNTRIES

Ref	COUNTRY	MODELS & ANALYSIS	ADJUSTING PARAMETERS	BASE CASE	SCENARIOS	PREDICTIONS	YEAR IN	YEAR OUT	OVER- /UNDER-SUPPLY
1.	USA	1. Supply-demand model	1. Economic expansion		1% GDP=0.75 % in physician supply; GDP increases of 1.5-2% per year	Shortage (growth in the demand for physicians services increasing by 1.1-1.5 % per year while faculty slots constant)	2000	2010	50.000 physicians (6%)
		2. Deterministic	2. Population growth		Increase of 40 billions to 2010; +60 billions to 2020			2020	200.000 physicians (20%)
			3. Declining physician work effort		10% for age 55-65; 20 % over age 65; 20 % for women				
			4. Substitution trends		NPCs provide services equivalent to 65 physicians/100000				
2.	California	1. Supply-demand model	1. Base case	Historical trends remain constant			2002	2015	From 1% to more than 20% of the number of physicians required
		2. Deterministic	2. Reduced work hours		10% reduction	Shortage			
			3. Increased productivity		5 % increase				
			4. 1+2		ass. 1 + ass.2				
			1. Baseline scenario	Historical trends remain constant					
			2. Trend scenario (demand follows GDP increase)		1% GDP=0.75 % in physician supply; GDP increases of 1% per year				
			3. Reduction of unnecessary services+1		5% of unnecessary services + ass. 1				
			4. Reduction of unnecessary services+2		5% of unnecessary services + ass. 2				

SPF model 3. ^a	Belgium	I. Supply-demand models 2.	IN	1. Feminization 2. Worktime reduction	54% (35% and 25% less work for GP and SP, respectively)	increase 1% per 5 year; difference activity men-women held constant 1.5% reduction per five year	Decrease of the workforce in terms of FTE	1999	2050
		Deterministic			10% for age 55-59; 25% for age 60-64; 70% for age 65-69; 85% for age 70-74; 100 % for >74	Constant			
				3. Activity decrease by age range 4. Ageing					
				5. National inflow	Stock=39,252 indiv. 32180 FTE	1060 indiv. per year in 2000-2004; 743 in 2005-2011; 875 in 2012-onwards			
				4. International inflow	70 MD per year (average of years 2000-2003)	Constant			Head counts will increase by 17% by year 2020-2024, than stabilize at 89% of the baseline; FTE will decrease to 93% of baseline by years 2020-24, and 78% by 2050
			OUT	1. Retirement	See IN 3, mortality rate from general population by 5 years range				
				2. Mortality		constant			
			DEMAND	1. Utilization growth due to population growth and ageing	1		1,2497		

^a Usually called Dercq's model. An update of the model is discussed in chapter 2.

4.	SPF model ^b	Belgium	I. Supply-demand models	IN			56.4% in Flanders; 54.8% in Wallonia (women GP work 20% less)	2024: 65% in Flanders; 61% in Wallonia 2054: 74% in Flanders; 68% in Wallonia (difference activity men-women held constant)	Decrease of the workforce in terms of FTE	2004	2054	
			2. Deterministic					1.5% reduction per five year				
							8% for age 55-59; 20% for age 60-64; 50% for age 65-69; 68% for age 70-74; 83% for age >74					
								constant				
							Stock= 40,059 heads; 30297 FTE practising in curative care	752 until 2011; 885 in 2012; 1025 from 2013 onwards				
							4. International inflow	Held constant				Head counts will increase by 10.9% by 2024 and reach 95% of the baseline by 2050; FTE practising curative care will decrease by 12.5% and 32.6% of the baseline in 2024 and 2054, respectively
				OUT				Held constant				
							25%					
							1	1.21 in 2024; 1.20 in 2044				
				DEMA ND			1	1,094 in 2024; 1,16 from 2044 onwards				
5.	4	Australia	I. Supply model	IN				Domestic students (completion rate of 93%) + international medical graduates (2973 in 2001; increase by 50 each year; 33% will remain in Australia)	Shortage in general practitioners	2001	2012	382 (359-403) FTE per 100000= 67659 (63924-71036) physicians

^b Usually called Delège's model

8.	8	USA	1. Supply and demand		1. Supply	No change in residencies & fellowships, retirement rates			1999	2020	
			2. Markov+elasticities		2. Population dynamics	Demand fulfilled by supply in 1999		1. Demands exceeds supply in 1999 (based on trend in patient visits, waiting times, benchmarking) and growths in proportion to population			15%
					3. Effects of managed care			1 + modest managed care (2% decline in demand for endocrinologists)			Supply fulfils demand from 2007
					4. Population ageing			1 + 15% increase requirements in the over-65 population			Gap between supply and demand
					5. Income			1% increase in GDP per year			Gap between supply and demand
					6. Morbidity			1% increase in diabetes per year			
					1. Annual residency graduates						From 450 to 1,800 residents/year are needed
9.	9, 10	USA	1. Supply-demand								
			2. Linear regression						1997	2035	
					2. Attrition rate	4%		6%			
					3. Requirements: 5 physicians per emergency hospital	20,000 FTE		30,000 FTE			

3 USA: FROM “SHORTAGE” TO “OVER-SUPPLY” AND BACK AGAIN

The recent history of health manpower forecasting in the USA can be outlined by some key dates.

In the 60s, the diagnosis of physician shortage was widely agreed upon and was followed by 2 decades of medical faculties expansion.³ Between 1980 and 1990, the per capita supply of clinically active physicians in the United States grew 65%.¹¹

In 1980, the Graduate Medical Education National Advisory Committee (COGME) predicted that the country would have an excess of approximately 145 000 physicians by the year 2000. Some authors even considered that the oversupply was understated.^{12,13} The GMENAC's report was widely criticized because of its flawed modelling, and no steps were taken to curb physician supply.

In the early 1990s, another type of predictions, based on the physician staffing patterns of HMOS, came to conclusions similar to the GMENAC. The common framework of these studies was based on quantifying the “tasks” (physician services were disaggregated into micro-units according to such factors as disease prevalence, demographic subgroups, or insurance products) and associated “times” that constituted “good” patient care, i.e. a need-based approach. Until 1996, the Council on Graduate Medical Education (COGME) predicted an increase in demand for generalist physicians and a decrease in demand for specialists (COGME, Eight report, 1996) and advised reducing first-year residency position to 110% of the number of U.S. medical graduates and increasing the proportion of generalist to 50%.¹⁴ In 1994, an influential report suggested that under certain managed care delivery systems. The COGME relied heavily on assumptions of managed care growth and associated efficiencies, physicians being used much more sparingly.¹⁵

In early 1997, the nation's six preeminent medical associations released a consensus statement on the physician workforce that began with the words: “During the past few years, studies of the physician workforce have produced compelling evidence that the United States is on the verge of a serious oversupply of physicians.” Finally, the federal Balanced Budget Act placed a real cap on graduate medical education in the form of economic disincentives to train more than a certain number of physicians.

In fact, patient resentment of managed care restrictions and the threat of litigation have prompted managed care companies to liberalize access to specialty care.⁵ As a result, penetration of managed care was lower than expected.

In 2002, just five years later, the diagnostic is formulated in quite a different way: the nation will instead have a shortage of 50,000 physicians by 2010 (6 % of total demand) and as many as 200,000 by 2020, or more than 20 percent of total demand.¹ Cooper developed a new model for workforce planning based on assessments of the macro-trends that underlie the supply and use of physician services. These trends included economic expansion (1% difference in GDP or personal income resulting in a difference of approximately 0.75 % difference in physician supply), population growth, declining physicians work effort (assuming that physicians in the age-range 55-65 and over 65 work 10% and 20% less, respectively, and that women work 20% less), and the provision of services by non physician clinicians (output of nurse practitioners, physician assistants, nurse-midwives, chiropractors, acupuncturists, and other NPCs, is estimated to be equivalent to the services of approximately 65 physicians per 100,000 of population).

In 2005, the COGME acknowledged the diagnosis made by Cooper and forecasted a shortage of 85 000 to 96 000 physicians at the federal level in year 2020 (COGME 16th report).

Since 2005, efforts have been made to produce national and specialty-specific forecasts.^{3,2} In California, for instance, these studies led to recommend to increase enrollment by 15% to 20% as soon as possible (at least 10% by 2008) and to open at least one new medical school.

Appendix D
Appendices from chapter 5
Cross-National Comparisons of Health Systems and
Physician Supply

I CASE STUDY : FRANCE^c

I.1 HUMAN RESOURCES

I.1.1 General supply

I.1.1.1 Number of physicians

Data on the number of practising professionals come from various sources in France, and each source tends to follow slightly different definitions of 'health professionals'.

Some of the main sources of data on physicians are:

- ADELI (Automatisation des Listes des professions de santé), administrative database housed at the Ministry of Health. DREES (Direction de la Recherche, des Etudes, de l'Evaluation et des Statistiques) manages this database, made up of mandatory records of all diplomas for practising physicians and other regulated health professionals. Each year, on January 1st, DREES publishes tables reporting practising physicians grouped by specialty, age, mode of practice, region... Moreover, each 5 years, DREES makes a forecast for all practising physicians for 20-30 years. In 2004, results of such forecast until 2025 were published by region but also by specialty and mode of practice.¹⁶ In 2008, new forecast will be published by the year 2030.
- The "Observatoire National de la Démographie des Professions de Santé" (ONDPS). Created in 2003, its mission is to make a national and regional diagnosis of health professionals' demography. Its work is to gather all available data about demography and to compare them.
- The "Conseil National de l'Ordre des Médecins" (National Medical Council), the professional licensure group for physicians. Physicians are required to register in order to practise.
- CNAMTS (sickness fund) list of practising and registered self-employed professionals.
- INSEE Employment Survey (*Enquête Emploi*), a national survey of all employees and employers (the French Labour Survey), which would include hospitals and their staff.

There has been a concerted effort to harmonise the data on physicians kept by DREES (ADELI), the national licensure body (*Conseil National de l'Ordre des Médecins*), CNAMTS and INSEE. A ministerial working group was set up in 1998 for this purpose by the national statistical commission (*Conseil national de l'Information statistique* (CNIS) – it is named the *Comité ministériel d'harmonisation des données relatives à la démographie médicale*. This initiative involved the government, professional licensure groups, CNAMTS, other sickness funds and medical unions.

Figures published by the National Medical Council and DREES on total number of physicians are totally consistent. The Observatoire National de la Démographie des Professions de Santé (ONDPS) has conducted several methodological studies on source comparisons in the past two years. These studies have allowed a reconciliation of many discrepancies between sources due to differences in concepts or coverage.

In 2006, there were 207 277 active physicians in metropolitan France (without overseas departments), i.e. an increase by 0.7% comparing to 2005^d. Among active physicians, 92.5% have a regular clinical activity (i.e. 192 007), 4.6% are replacements and finally, 2.9% are temporarily not active.¹⁷ The number of doctors almost trebled between 1975 and 2000.

^c The case study is limited to metropolitan France and excludes overseas territories.

^d In 2007, there were 208 191 active physicians, i.e. an increase by 0.4% comparing to 2006.

Today, the total number of doctors is stabilizing and will decrease from 2010 onwards due to massive retirement of physicians graduated in the 60s.¹⁸ In order to counter the decrease, 3 500 new doctor posts were created in a 4-year period (2 000 in 2002-2003 and 1 500 in 2004-2005) (Berland, 2004).

1.1.1.2 Percentage of physicians not involved in curative activities

Among the 207 277 active physicians, 1 664 are not involved in clinical activities and 6 148 physicians have no declared activity, i.e. 3.7% of all active physicians.¹⁷ Moreover, 9 262 clinicians have no regular activity but work as replacements. This low percentage contrasts with the other selected countries. This could be due to databases used in France which consider 'active physicians' in medical sector and not 'holders of a medical diploma'.

1.1.1.3 Ratio specialists / general practitioners

Among physicians having a regular activity on January 1st 2006, 48.6% were GPs and 51.4% were SPs for a ratio 1.1.¹⁷

Nevertheless, considering GPs, these results have to be interpreted cautiously. In 2005, National Medical Council tried to compare its data with data of medical prescriptions. This comparison highlighted the discrepancy between the number of GPs registered by National Medical Council (104 556 GPs in 2005) and the number of GPs having a regular activity in general medicine (78 476 GPs in 2005), i.e. 75% of the registered workforce. More than 14 000 GPs obtained a title as specialists (mainly in gynaecology obstetrics and urology) and do not work anymore as general practitioners.¹⁹

1.1.1.4 Ratio specialists / hospital beds

In 2006, there were 504 600 hospital beds (84 beds per 10 000 inhabitants; 50% of acute beds). In 2006, there were 98 691 medical specialists in France. The ratio medical specialists / hospital beds can be estimated 0.20 and 0.40 for overall and acute beds, respectively.

1.1.2 Imbalances

1.1.2.1 Mean physician density

The physician-to-population ratio went from 21 to 33.9 doctors per 10 000 inhabitants between 1975 and 2004. This ratio was close to 31.4 when only practising physicians were considered (15.4 GPs and 16 SPs per 10 000 inhabitants). Nevertheless, taking into account GPs having a regular practice, this density fell to 11.5 GPs per 10 000 inhabitants.¹⁷

1.1.2.2 Ratio highest / lowest density

Currently, there is no restriction as regards practice location. This freedom results in geographical imbalances, with medical density varying across region by a factor 1.5 and 2.2 for GPs and specialists, respectively. The north of the country is traditionally under-supplied in comparison to Paris and southern regions. At a sub-regional level, inequalities are even more significant between urban and rural areas, as well as between the centre and the periphery in urban areas.

An area is considered as problematic when it combines a low medical density, a high activity level of working doctors and a low recourse to care. According to this definition, 643 areas were labelled "fragile" or "experiencing difficulties", i.e. 8.6% of all areas in the country; 3.6% of the whole population lived in these areas, i.e. 2 418 777 inhabitants.²⁰

Whereas 6 departments have more than 14 GPs per 10 000 inhabitants (Paris, Hautes Pyrénées, Hautes Alpes, Corse du sud, Bouches-du-Rhône et Alpes-Maritimes), 25 departments have less than 10 GPs per 10 000 inhabitants.¹⁹ Despite those disparities, the general accessibility to primary care remains high: 84% of the population live in a municipality with at least one general practitioner; in municipality without doctors, the average distance to a general practitioner is 7 km and the journey time is 8 minutes.¹⁸

For medical specialists, two regions have high densities: Île-de-France and Provence-Alpes-Côte d'Azur. Another group of regions is slightly above the national mean (Aquitaine, Languedoc-Roussillon, Midi-Pyrénées and Alsace). All other regions have a lower density than national mean, which is 17.3 medical specialists per 10 000 inhabitants. In Picardie, the specialists density, equalling 11.3 per 10 000 inhabitants is lower by 34.7% compared to national mean.²¹

The inequalities in physicians supply are more evident when analyzed at a departmental level. Paris has the highest density of practising physicians (76.9 per 10 000 inhabitants). The department « Bouches-du-Rhône » is also well covered with 18.9 GPs and 23.1 SPs per 10 000 population. The density of medical specialists is 7 times lower in Haute-Loire (6.9) than in Paris (50.2) and department of Eure has the lowest GPs density in the country (11.1).

1.1.2.3 *Specialty imbalances*

The continuing decrease of students in medicine in line with the strict numerus clausus between 1977 and 1997 had diversely impacted the profession profile. On the one hand, the SPs-to-GPs ratio (60/40 in 1980) reversed in 2000; on the other hand, the manpower distribution among specialties has changed.

General practice is not attractive for medical students. In 2005, 1 000 training posts in general practice remained unfilled, i.e. 41.7% of all posts. Students who were not ranked high enough to access a specialist training position preferred to repeat their exams in 2006, rather than enter general practice training. This lack of attractiveness is generally explained by predominantly curative and specialized care and hospital-centred model of medical education without experience of primary care, and the perception of difficult working conditions in primary care.^{22,17,23}

Six specialties are also considered undersupplied: anaesthesia and intensive care, gynaecology – obstetrics, emergency, paediatric, psychiatry and radiology.²⁴ Some specialties are even fading out: neuro-psychiatrist decreased by 15.6% in 2005 (total numbers have been decreasing by 9.1% annually since 1989); radiologists and medical imaging specialists decreased by 12.5% since 2004. General surgery and stomatology have been losing annually 2% of their workforce since 1989. It is also difficult to replace retired specialists in ear-nose-throat according to the falling in the number of young qualified specialists.¹⁷

1.1.3 *Employment indicators*

1.1.3.1 *Mean weekly effective work hours*

As in the other European countries, working time in hospitals has been regulated by the 1993 European Union Working-Time Directive (93/104/EC). The working time was limited to 48 hours a week. The introduction of the working week of 35 hours and the EU Labour Directive are the main legal innovations introduced in the working time of health professionals since 2000.²¹

By contrary, the mean working time of general practitioners in liberal practice has increased over time by 2 hours between 1989 and 2001, from 49 hours a week to 51 hours a week.²¹ According to the INSEE survey (Labour force survey), full-time general practitioners worked 55 hours a week while full-time specialists worked 54 hours a week. More recent data, obtained from the same source in 2004, reported a mean working time of 52h45 for self-employed general practitioners (including full-time and part-time) and a mean working time of 50h30 for self-employed specialists.²⁵ This observation was confirmed by the CNAMTS' analysis (Caisse Nationale de l'Assurance Maladie des Travailleurs Salariés) on activity levels during the period 2000-2004. This analysis reveals that activity increased in all medical specialties: the number of acts' increase is systematically above the numbers of practitioners' increase, though the part of female practitioners is also evolving.²⁶ While female GPs worked less than male GPs, this gap is reducing. In 1989, activity of female GPs was 60% of that of male GPs. In 2001, the mean activity of female GPs represented more than 70% of the mean activity of male GPs.²¹

Women work more frequently part-time than men (25% versus 2%). Women working full-time work 10 hours per week less than their male counterparts. Women working part-time have a working time slightly higher than male part-timers.¹⁷

1.1.3.2 Number of annual consultations per physician

Office-based consultations form the basis of general practitioners' work, but home visits represent about 25% of their work. On average, a general practitioner consults annually 1 400 different patients, and carries out around 4 800 consultations and visits. French people have an average of 4.7 annual contacts with a general practitioner (they can visit several general practitioners).¹⁸

1.1.3.3 Unfulfilled vacancies

In 2005, 5 431 posts for full-time hospital practitioners (16.3%) and 2 536 posts for part-time hospital practitioners (30.1%) remained unfilled.²⁴

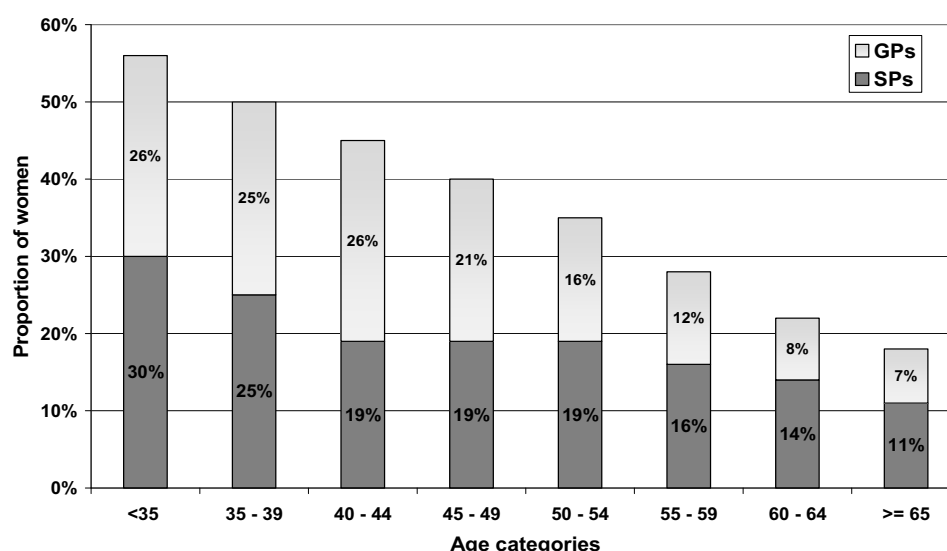
Specialties which have higher rates of unfulfilled vacancies are oncology, emergency and intensive care, psychiatry, radiology, paediatrics, anaesthesiology, plastic surgery, neurosurgery and geriatrics.

1.1.4 Demography

1.1.4.1 Ratio male / female

The number of female physicians has increased continuously over the last decades, reaching 39.2% of all active physicians in 2006. This proportion is lower than that of active women in the whole active population (45.8%) but equals the proportion of women in liberal professions (38.2%). The specialization rate of women (part of medical specialists among female doctors) reached 48.6% in 2006, while it was 50% among male doctors.¹⁷ (Figure I) Women predominantly specialize in paediatrics, obstetrics and gynaecology, general practice and psychiatry, while men prefer surgical specialties and anaesthesiology.¹⁷

Figure I. Physicians having a regular activity according to professional category, age and sex (n=192 007; year 2006)



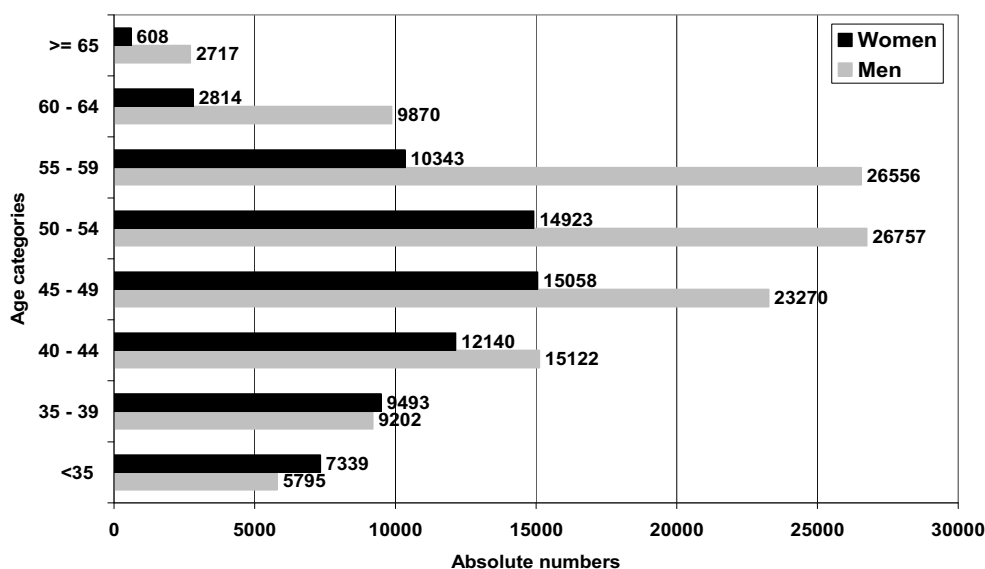
Source: CNOM, 01/01/2006

Among GPs, female doctors tend to prefer to practise as salaried workers and less as self-employed professionals.²⁶

1.1.4.2 Mean age

In 2006, mean age was 46.2 and 49.7 years for female and male doctors, respectively. An ageing of the workforce is observed, with less physicians in the age range 25-40 than in the age range 50-over.¹⁷

Figure 2. Physicians having a regular activity according to age and sex (n=192 007; year 2006)



Source: CNOM, 01/01/2006

In 2006, the proportion of active doctors aged over 55 years has risen sharply reaching 26.2% in the global population of physicians and more than 30% in some specialties such as anaesthesiology, medical gynaecology, internal medicine, paediatrics, psychiatry, revalidation, and most surgical specialties. By contrast, the part of physicians aged before 35 years was 7.4%.²⁴

1.1.4.3 Percentage of physicians in 30-50 years range

The age structure of physicians having a regular activity is presented in figure 2, by gender. Whereas 44.7% of male physicians were in 30-50 years range, 60.5% of female physicians were in the same age range.

The regional distribution of physicians by age group is relatively homogeneous, with the exception of Ile-de-France, which has an over-representation of physicians over the age of 60 years (Mission Démographie des Professions de Santé, 2002).

1.1.4.4 Mean age at retirement

Globally, 65% of women and 75% of men stop their professional activity after 60 years old. However, 21% of women and 12% of men stop their activity before 50 years old.¹⁷ GPs stop their activity earlier than SPs.¹⁷ The modal age of retirement is between 65 and 66 years. Nevertheless, according to numerous retirements in younger ages, mean age of retirement is 64 years old.²¹ Self-employed physicians are more numerous to retire than salaried physicians, both at earlier and older ages.²⁷

1.1.4.5 Percentage of immigrants

On average, there are very few native French physicians who do their medical training in another EU country. EU-trained physicians concentrate mostly around the border regions with Germany or Belgium, and to a lesser extent, Italy.

To work as doctor in France, three conditions have to be met:

1. Being French or citizen of a European Member state;
2. Having a recognized diploma to work as doctor in France, the diploma in question being a qualification from one of the Member States;
3. To be registered by the National Medical Council.

On January 1st 2001, the National Medical Council reported about 8 000 foreign-trained physicians accounting for 4% of all active doctors working in Metropolitan France. Among them, 2 572 were holders of a diploma from a European Member State; 3 272 were holders of a non-European diploma and were authorized to full practice; and finally, 1 985 were holders of a non-European diploma registered as 'Praticiens adjoints contractuels' whose practice is restricted to hospitals.²⁸

European diplomas

Since 1975 numerous directives have been adopted, and amended, governing the mutual recognition of the diploma for physicians by all Member States. According to these directives, holders of a qualification from one of the member States are free to practise in all European Member States. On January 2001, 2 572 doctors having a European diploma were working in France.

Non-European holders of diploma having obtained the authorisation for full practice

Since 1972, holders of a non-European diploma can obtain an individual authorization to practise. After verification of their diploma value, candidates have to pass written and oral exams to acquire the 'Certificat de synthèse clinique et thérapeutique' (same certificate obtained by French students after their sixth training year in medicine). Then, they may submit a registration file to a commission in order to receive the individual authorization to practise. A limited number of candidates will obtain this authorization restricted to general practice. In 2001, about 2 800 holders of a non-European diploma had obtained the authorization to full practice through this way.²⁸

Over the past 10 years, health authorities have relaxed restrictions on the numbers of foreign-educated doctors who receive official permission to practise in France. From 1993 to 1997, the number of such doctors was limited by a quota of 40–100 per year, but between 1997 and 2002, the number increased to an average of more than 700 per year.²⁹

"Praticiens adjoints contractuels" (PAC)

Of non-European trained doctors, a substantial proportion have not been granted full working privileges, work under uncertain and constrained conditions in French hospitals. The French system allows few opportunities to practise in the public hospital system on a short-term contractual basis, and without the status of a fully medically qualified practitioner. Since 1995, a new status is proposed to these doctors, labelled "Praticien Adjoint contractuel".

The provisions have gradually broadened, and since 1999, include the possibility of authorisation to practise general medicine, but permission had been extended to very small numbers by 2001.²⁹

To be recognized as specialists, non-European doctors have to obtain a qualification delivered by a specific commission (according to the specialization). Since 1999 (Law of July, 27 1999) hospitals may not recruit new holders of a non-European diploma. Two exceptions remain: doctors who worked before the 1999 law in public hospitals and doctors who come in France to be trained as specialists (only during the training period).²⁸

Non-European trained doctors accounted for 25% of all doctors newly registered in 2000. Many of these have been drawn from the reservoir of those already in France who had not been granted full working privileges.²⁹

The National Medical Council maintains rosters indicating the nationality of physicians with full working privileges. Although these statistics on physician stocks are available for each year from 1998 to the present, they underestimate the number of immigrant health workers because they show current nationality rather than country of education.²⁹

Table I. Origin of doctors with foreign nationality in 2001

Home country or continent	French diploma		Non-European diploma		Non-European diploma		European diploma		TOTAL	
			Full exercise		PAC		Full exercise			
Europe	463	31%	21	2%	11	1%	2 120	100%	2 615	49%
Maghreb	824	55%	393	45%	545	63%	-	-	1 762	33%
Africa	153	10%	71	8%	136	16%	2	0%	362	7%
Middle East	7	0%	139	16%	124	14%	2	0%	272	5%
Asia	54	4%	113	13%	10	1%	-	-	177	3%
Eastern Europe	2	0%	81	9%	32	4%	-	-	115	2%
America and Caribbean	-	-	57	7%	13	1%	1	0%	71	1%
TOTAL	1 503	100%	875	100%	871	100%	2 125	100%	5 374	100%

Source: CNOM (01/01/01)²⁸

Table I reports the home country of non-native French doctors. However, the population of doctors having a foreign nationality does not coincide with that of doctors having a foreign diploma. The half of all foreign doctors comes from Europe and 33% from the Maghreb. More precisely, Belgian doctors represent 16% of all foreign doctors, followed by Moroccan (13%), Algerian (13%), German (11%) and Italian (8%).²⁸

Holders of a European diploma working in France are mainly surgeons or specialized in anaesthesiology-reanimation and in a lesser proportion specialized in internal medicine and stomatology. Holders of a non-European diploma are more often specialized in pneumology, paediatrics or nephrology. They concentrate mainly in departments bordering Germany, Belgium (74 foreign doctors for 1 000 French doctors in Ardennes) and Italy with two exceptions: Haute-Marne (31 foreign doctors for 1 000 French doctors) and Paris (24 foreign doctors for 1 000 French doctors). PAC are more numerous in the north of the country, working in non-teaching hospitals.²⁸

Admission to medical studies for foreign students

It is not possible to enter a medical school partway through. Foreign students who have not yet obtained a full degree in medicine in their country of origin must start with year one of the first cycle, regardless of the level they had attained at home. If they pass the competitive examination at the end of the first year, they will then be allowed to enter the year corresponding to the level attained in their country of origin (once the appropriate level has been determined).

In addition to the DES (Diploma in Specialized Medicine) examination for foreign doctors already practicing, there are specialized training programs available for foreign doctors and medical students: the *Attestation de Formation Spécialisée* (AFS) for young doctors who have already started the process of specialization (duration: two to four semesters) and the *Attestation de Formation Spécialisée Approfondie* (AFSA) for foreign students who have already specialized (duration: one or two semesters). Certain highly specialized university degrees are also available. All of these studies require a good level of French (see http://www.campusfrance.org/PDF_INFO/Choirir_EN.pdf).

1.1.4.6 *Percentage of emigrants*

Very few French-trained physicians seek employment abroad.³⁰

1.2 **HEALTH SYSTEM**

1.2.1 General organization

1.2.1.1 *Doctors type of payment*

In most cases, self-employed professionals are paid directly by patients at the time of the provision of the service; the statutory health insurance system usually only reimburses the patient at a later stage, and usually only partially. Health professionals from sector 1 are not free to fix the rates they charge for their services and are required to apply the official charges set out in the agreements. Professionals working in sector 2 (sector with free fee-for-services) are free to apply higher rates.

The arrangements governing health service contracts with doctors (*conventionnement*) applied to all doctors, except in cases of explicit refusal. In return, doctors were granted social and tax advantages and gained reaffirmation, in the agreement, of the principles of independent medical practice: free choice of doctor, freedom to prescribe, professional confidentiality and direct payment of fees by the patient.¹⁸

1.2.1.2 *Health insurance type and coverage*

An important reform took place in June 1999 in the form of the Universal Health Coverage Act (CMU), which came into force on January 1st 2000. This act establishes universal health coverage, opening up the right to statutory health insurance coverage on the basis of residence in France.

Furthermore, those whose income is below a certain level (currently 1.6% of the population) are entitled to free coverage.

The old system of individual insurance has now been replaced by a system based on the right to health insurance and the logic of social protection through insurance rather than state aid.¹⁸ The evolution in the French health insurance system can be summarized in 3 key points:

- universal health coverage based on residence;
- the substitution of a tax on income for wage contributions in the system funding;
- a more active role for parliament in determining policy directions and expenditure targets.

1.2.2 Services utilization

1.2.2.1 *Annual number of consultations per capita*

From 1985 to 2002, the number of acts realized by (self-employed) GPs increased by an annual mean rate of 1.5%, from 233 708 acts realized in 1985 to 304 203 in 2002 (CNAMTS, 2004). During the same period, an increase was registered in neurosurgery (+7.9% by year, from 64 acts to 234 acts), urology (+6.3% by year; from 536 acts to 1 546 acts), as well as in the number of X-ray (+4.7% by year, from 28 266 to 62 377). A decrease was registered in neuropsychiatry -6.2% by year, from 3 699 acts to 1 248 acts) and in surgery -1.3% by year, from 8 410 acts to 6 848 acts).²¹

From 2001 to 2002, the number of consultations increased by 2.2% whereas home visits decreased by 12.9%.²¹

I.3 REGULATION POLICIES

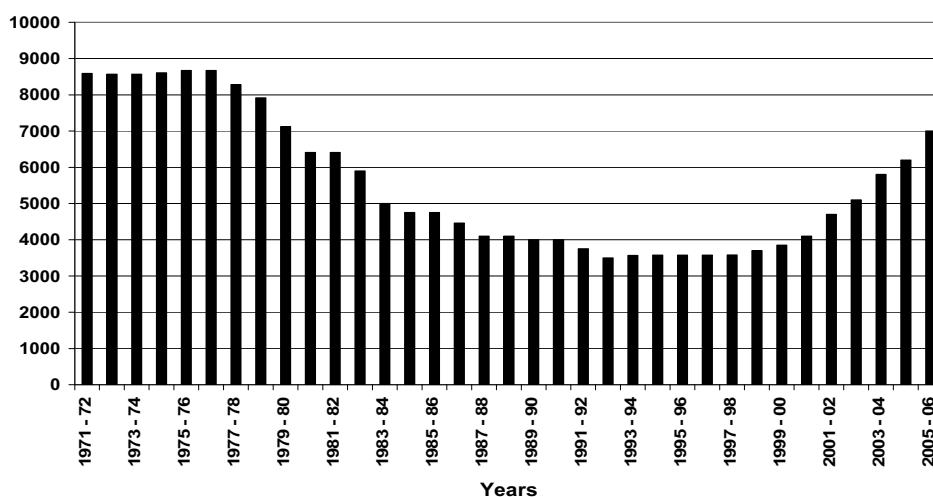
I.3.1 Numerus clausus

From 1965 onwards, the number of students entering the medical schools grew steadily. The *numerus clausus* system, established in 1971, became effective five years later. Currently, there are two main tools of medical demographic regulation: *numerus clausus*, which limits the number of students entering medical school, and the *Examen Classant National*, which ranks medical students after six years of study. These rankings determine what medical speciality a student may pursue.²²

I.3.1.1 Type

Any qualifying student may enrol for the first year of medical training. A competitive examination limits access to the second year. Every year, a ministerial decree specifies the number of places available (*numerus clausus*) for each of the 33 education and research units (Figure 3).

Figure 3. Evolution of the number of places in medical faculties from 1971 to 2006 (*numerus clausus*)



Source. ²⁴

The *numerus clausus* is fixed annually at national level both by the Ministry of National Education and by the Ministry of Health. Subsequent repartition of training posts by orientation, region and medical faculty at the end of classification exam is also determined annually. The regional distribution of training posts tries to take into account current inequalities in the geographical distribution of doctors and attempting to correct any imbalance by adjusting the flow of training.¹⁸ However, comparisons of ratios between *numerus clausus* and populations in each region point out imbalances. For example, in 2004, the proportion of training places devoted to Ile-de-France was 23.1% though its population was 18.2% of the country population. The opposite was observed in the Centre (part of *numerus clausus* = 2.6% for a part of population = 3.9%). The teaching system produces too many (unnecessary) specialists, who install in regions where they are in excess, and produces too few general practitioners who should install in regions where they are really needed.

To access medical speciality, trainees had to pass an entrance examination for hospital work (*concours d'internat*) until 2003. This examination consisted of 3 written exams testing for clinical and scientific knowledge.

Students were allowed to attempt the exams twice. This examination was first organized in 1984^e. The posts were divided into the main branches (medicine, surgery, psychiatry, biology and public health), but there was no system of regulation by specialty within medicine and surgery, so choice of specialty was dependent on vacant hospital training posts and students' preferences. In recent years, the lack of interest in certain specialties (anaesthesiology, intensive care, gynaecology and obstetrics and paediatrics) has led the government to reserve a number of places for these specialties in the entrance exams.¹⁸ If students passed the exam and became interns, then they get assigned a specialty and were placed within a regional university hospital. As the number of allowed specialists per region was fixed by the Ministry of Health, students' ranking determined which specialty and which region they ended up training in – and how well it may comply with their stated preferences for both. Specialist training lasted 4-5 years.

Since 2004, this “concours d'internat” was replaced by other ranking exams, labelled “Examen Classant National” (ECN). Whereas only future specialists had to pass the “concours d'internat” before 2004, all students who desire to access to the third cycle of their medical training have now to pass the “Examen Classant National”. This exam aims to rank students. According to their rank, students may choose the specialty (among 11 specialties including general practice) and the region where they will be trained among 28 regional parts. The numbers of posts by specialty and by region were fixed by the Ministry of Education and Health on a yearly basis (Table 2).

^e In practice, there existed two exams, one organised in the north, the other in the south of the country

Table 2. Number of posts opened for internship during the academic year 2006-2007

	Ile de France	North-East	North-West	Rhône-Alps	West	South	South-West	Total
Medical specialties	144	119	132	68	122	77	94	756
Surgical specialties	89	84	93	44	100	56	75	541
General practice	380	452	420	225	422	159	229	2 287
Anaesthesiology	35	39	43	26	38	26	33	240
Biology	11	10	7	4	12	5	8	57
Gynaecology	5	2	3	0	4	2	4	20
Gynaecology-obstetrics	30	21	28	11	27	14	17	148
Occupational medicine	10	11	16	4	8	4	7	60
Paediatrics	36	34	35	17	30	19	21	192
Psychiatry	40	53	61	22	56	26	41	299
Public health	15	12	8	5	10	4	15	69
Total	795	837	846	426	829	392	544	4669

Source: Official Journal – Decree on June 19 2006, Ministry of National Education and Ministry of Health

This reform was implemented in order to regulate the number of physicians by specialty. Nevertheless, this system did not succeed in regulating repartition of students between specialties, because the number of posts proposed to students is always beyond the number of posts selected. In 2006 however, the number of candidates (5 176) was beyond the number of posts (4 760). Nevertheless, students' absences during exams (276), non validation of second cycle of medical training (375) and students' withdrawals (95), led to an important decrease in fulfilled posts to 4 430. Consequently, 330 posts remained unfulfilled, mostly in general practice (Table 3).²³

Table 3. Fulfilled posts after the “Examen Classant National”

Examen Classant National	2004	2005	2006
Number of posts opened	3 988	4 803	4 760
Number of posts fulfilled	3 368	3 822	4 430
Number of posts unfulfilled	620	981	330
General practice (GP)			
Number of posts opened	1 841	2 400	2 353
Number of posts fulfilled	1 232	1 419	2 030
Number of posts unfulfilled	609	981	323
Ratio			
Posts opened in GP / Total number of posts opened	46%	50%	49%
Posts fulfilled in GP / Total number of posts fulfilled	37%	37%	46%

Source. Ministry of Health cited by Cour des Comptes
(<http://www.ccomptes.fr/CC/documents/RELFSS/Chap8-medecins-liberaux.pdf>)

1.3.1.2 Objectives pursued

Limiting supply rapidly came to be seen as an essential mechanism on the basis of the potential for “supplier-induced demand” in health care. Control of capacity was one of the first instruments introduced after 1970. Since then, the growth in the number of doctors has slowed down.¹⁸ It is estimated that the numbers will be at their maximum level in 2008, and then will decrease.

1.3.1.3 Year of implementation

The *numerus clausus* system was introduced for medical studies in 1971 and first applied in 1972. The number of new candidates was fixed at 8 588 doctors for 80 000 active physicians.

1.3.1.4 Subsequent adaptations

A drastic reduction in the *numerus clausus* took place (from 8 000 to 3 500 places between 1978 and 1992) in order to substantially limit the number of doctors (8 935 new physicians were registered in 1980).¹⁷

The *numerus clausus* policy has resulted in an overall stabilization of the number of doctors and regional disparities have diminished slightly over the last thirty years (the gap between regions has been reduced from 2.1 to 1.7). However, a significant decrease of working physicians is forecast for the next ten years, commonly explained by massive retirement of MDs graduated in the 60's (papy boom). This expected demographic decrease, combined with a predicted increase in health needs, currently generates fear of pending shortage. Difficulties occur in recruiting doctors in specialties such as anaesthesiology or gynaecology and obstetrics. As a result, the intake of students has been raised once again from 3 850 in 1998 to 4 100, 4 700 and 5 200 in 2002–2003–2004 and is raised to 7 000 in 2006 and 7 100 in 2007.

Depending on the level of the *numerus clausus* in the coming years, the doctor/population ratio in 2025 should be around 28–29 doctors per 10 000 inhabitants.¹⁶

1.3.1.5 *Management: actors and processes*

In 2003, the Ministry of Health created a National Observatory of Health Professions (Observatoire National de la Démographie des Professions de Santé, ONDPS). Its major responsibilities are to collect, analyse and communicate precise and objective information relating to all categories of health care professionals. The ONDPS also engages in research on working conditions, planning needs for health professionals and professional development. It also cooperates with regional Observatories of Health Professionals. These observatories bring together local representatives of doctors, state authorities, sickness funds, hospital agencies and medical schools. They also coordinate surveys and other initiatives to help ensure the health workforce matches demand.²²

1.3.2 *Attraction and retention policies*

1.3.2.1 *Geographical (national or international)*

There is a great imbalance in physicians supply between regions with even more marked differences for specialists than for general practitioners. Public authorities have tried to remedy this situation through differentiation within the *numerus clausus* system and the number of posts open for internship, giving priority to regions with a lower ratio. Although regional disparities have been reduced over the past 30 years, policies intended to influence the regional numbers of medical students have not always had the expected results. In fact, while in 1980, 80% of specialists having obtained their diploma 5 years ago did practise in the region where they did their training, this proportion fell in 2000 to 66%. Many specialists find internships in regions where there are fewer doctors ('mandatory migration') and then return to their region of origin to practise.¹⁸ In order to respect the free settlement of doctors, no disincentives are currently applied for doctors who want to locate in areas where there is already a high density of health professionals.²² Nevertheless, introducing coercive measures to oblige doctors installing in medically undersupplied areas seem to be appealing to public authorities. This idea is already being adopted for self-employed nurses. On June 21 2007, two agreements were signed between self-employed nurses and sickness funds. The first agreement concerns the task transfer from doctors to nurses in the field of influenza vaccine; the second agreement envisages the possibility to introduce regional restrictions for setting up a nursing practice with compulsory health insurance on regional levels of demand. According to this agreement, only self-employed nurses who would install in medical undersupplied areas would benefit from the national health contract leading to the reimbursement of nursing acts for patients. The signatory parts of this agreement envisage introducing this regulatory measure for a test period of 2 years. Until now, the implementation of this measure is impossible according to the current law which forbids the selective health contract. A positive political impulse could accelerate the process and extend it to doctors according to the affirmative reaction of the French president (allocution on September, 18 2007).²⁰

In order to improve the access to health care and reduce existing geographical variations in the distribution of health professionals a national demographic plan was introduced in January 2006. This includes the development of incentives to encourage doctors to practice in medically deprived areas, improvements in working conditions and actions to increase the supply of doctors.^{22,17} Deprived areas are defined by two criteria: low medical density (an area where the number of doctors is 30% below the national average) and high professional activity (an area where the per capita medical activity in terms of patient visits is 30% above the national average). In practical terms, the delimitation of deprived areas was done at the regional level (*Missions Régionales de Santé*) which used criteria presented in a decree signed by Ministry and sickness fund (CNAMTS), freely adapting them to local situations.

Currently, partners are revising the delimitation of deprived areas with a common method in order to harmonize rules adopted for all regions.

The plan provides several incentives to encourage group practices and to improve working conditions in these areas:²²

- The health insurance fund will pay a 20% higher rate of remuneration to doctors working in a group practice in medically deprived areas.

- A special fund (Fond d'Aide à la Qualité des Soins de Ville, FAQSV), which was set up within the national health insurance budget to finance innovations in ambulatory care organisations among other things, will be used to make capital investments to set up multi-speciality group practices. Additionally, a new status of 'associated partner' has been created for young doctors. This will allow them to join a practice without having to make a capital investment.
- The plan aims to improve the cooperation between doctors and paramedics. Pilot projects have been carried out since 2005 defining a number of very precise medical situations where specific tasks are distributed to other health professionals in practices. For example, management of dialysis is delegated to nurses, prescription of eye glasses to orthoptists.
- Local authorities in rural areas will be able to provide financial aid to doctors who wish to set up a practice (for a minimum period of three years) in deprived areas, or provide them with professional facilities or personal housing. They can also give a study allowance of up to €24 000, offer a housing grant up to € 400 per month or provide accommodation to medical students in their sixth year of study if these students commit to work for a minimum period of five years in a medically deprived area.
- Doctors participating in out-of-hour services in such areas will benefit from a tax revenue rebate on their income from this activity for up to a maximum of 60 days or € 9 000 per year.
- The plan also has abolished the difference in the maternity leave period allowed to female doctors compared to that enjoyed by other employed women. This will facilitate a better balance between family and professional life, and is essential given the increasing number of female doctors.

The evaluation of these initiatives is not currently reported. However, the Commission for medical demography (2005) indicated two weaknesses: first, these initiatives were not accompanied by a large diffusion of information among those GPs who could be interested by these advantages; second, financial incentives alone are not sufficient to attract GPs without local and regional development of infrastructures. In low-developed areas where the spouse has many difficulties to find a job and children have difficulties to find a school and sportive or cultural activities, financial incentives alone show their limits.²⁶

Another feature is the promotion of the greater delegation of clinical activities from doctors to other medical staff such as nurses.^{22,17} Five experimentations in cooperation between physicians and non-medical professionals (nurses and paramedics) were implemented in 2005; they concerned haemodialysis, follow-up of patients with chronic Hepatitis C, consultation in ophthalmology, dietetic follow-up of diabetic patients, recording of doses in radiotherapy. Evaluations of these experimentations are currently realized. Ten new experimentations were proposed, most of them by delegating the follow-up of chronic patients to non-medical practitioners.²⁶ However, these new experimentations have emphasized the need in continuous teaching of these practitioners. Delegating technical tasks or follow-ups of chronic patients without complementary training rapidly lead to stress non-medical professionals.

1.3.2.2 *Per specialty*

Since 2004, 50% of all training places were devoted to general practice. In 2005 this proportion was increased to 60% according to the fall in active GPs numbers.²⁶ Since 2006, a two-month training period in general practice has become mandatory to medical students in at least third year of study,

in order to improve their knowledge about general practice.²⁰ Previously, medical students did not have any training period in general practice before choosing their specialty.²²

To attract candidates in particular specialties such as gynaecology, anaesthesiology, intensive care and paediatrics, these specialties were identified as individualized pathways ('filières'), i.e. they were not coupled with other specialties in medical or surgical training pathways.

Consequently, these specialties remained highly visible for students. Moreover, a specific number of training places were reserved for each of these specialties, protecting them from competition. Other specialties, grouped in more global pathways were less visible and thus considered as less attractive. A global quota of training places leads to competition between specialties in a pathway.²⁶

1.3.2.3 *Per age range (in particular retirement policy)*

In order to rapidly reduce the number of doctors, a plan was introduced to encourage doctors to early retire. The so-called plan "Mécanisme d'Incitation à la Cessation d'Activité" (MICA) contained a financial incentive to retire early. It was set up in 1988 and reinforced in 1996.^{18,27}

The 2003 law reforming retirement rules allows individuals to have an activity based income on top of their pensions. The cap on the additional income has also been raised from € 30 000 to € 40 000 for doctors retiring beyond age 65. Moreover, doctors older than 60 are exempt from out-of-hour shifts.²² In June 30, 2006, 1 007 retired doctors choose to go back to work.¹⁷

1.3.3 *Functioning regulation*

1.3.3.1 *Expenditure ceilings*

In 2005, total expenditure on health care in France was estimated at 11.5% of gross domestic product (GDP) (OECD Health Data, 2007).

1.3.4 *Controlling demand*

1.3.4.1 *Patient's contributions to health care costs*

In the past 25 years a succession of cost containment policies (both on the demand side and the supply side) has attempted to balance the accounts of the health insurance system.

However, it has not been easy to implement cost control policies in a system characterized by fee-for-service payment of doctors, retrospective reimbursement and unrestricted freedom of choice for patients.¹⁸

Measures to limit demand include consumer responsibility fostered through cost sharing. The portion of the costs of treatment not reimbursed by the health insurance system was named "*ticket modérateur*". Over the years, the patient's share of treatment costs has steadily increased, by means of progressive increments, the introduction of a daily charge in hospitals and authorizations for Sector 2 doctors and for certain services, such as dentures and artificial limbs, to exceed standard charges. The share of treatment costs reimbursed by health insurance diminished from the mid-1980s to the middle of the following decade, but has been stable since then.¹⁸

More recently, the debate has shifted towards steering demand and organizing channels of treatment to limit free choice. For example, general practitioners are provided with financial incentives to become 'referring doctors' (that is, a kind of gatekeeper, with voluntary registration of patients).¹⁸

1.3.4.2 *Medical records*

The creation of a comprehensive electronic patient record, coupled with "the preferred doctor system in primary care" (see 1.3.4.3.), is presented as a core component of the Health Insurance Reform Act, while quantitative targets and indicators are the backbone of the Public Health Policy Act.³¹

1.3.4.3 *Gate-keeping*

Patients have a free choice of doctor, regardless of specialty, and do not need a referral from a general practitioner in order to consult a specialist.¹⁸

A first attempt at introducing a gate-keeping system was implemented in 1998 following a national agreement signed by MG France (Union for general practitioners) and the French health insurance funds. Under this scheme, doctors who volunteer to be 'referring doctors' invite patients to sign an individual contract. The patient acknowledges the contracting GP as their first point of entry into the health care system. In exchange for a per capita annual payment (€ 46 in 2001), these referring doctors commit themselves to respect specific rules: applying the prices listed in the agreement, using the third party payment system, keeping patients' medical records, providing continuous service, ensuring continuity of care, participating in public preventive programmes, complying with practice guidelines and ensuring that at least 15% of prescribed drugs are cheap drugs and 5% are generic. Patients undertake to consult their general practitioner in the first instance (except in emergencies), to bring their medical record to each consultation and to comply with recommendations on prevention and screening.¹⁸

In January 2005, the CSMF (Confédération des Syndicats Médicaux Français) and two other representative professional associations signed the new national agreement introducing the preferred doctor scheme.

The main features of the preferred doctor scheme are:³²

1. A contract between the preferred doctor and the patient. Each patient over the age of sixteen is invited to choose a primary care doctor, with whom he/she signs a contract. This physician will then be the first point of contact with the health system. The regular physician provides primary care and if appropriate, will make a referral to specialised secondary care services. In the case of a referral, the patient remains free to choose a specialist without any constraints. While the preferred doctor typically is a GP, the possibility of choosing a specialist is not excluded.

2. Financial incentives principally directed at patients

The preferred doctor scheme is not compulsory but is based on incentives directed at patients rather than physicians. The physician does not receive any per capita payment for the follow-up of registered patients, except for those suffering from severe chronic diseases (including those with diabetes, severe hypertension, HIV etc), all of whom are exempt from co-payments. In this case, the attending physician receives an annual payment of €40 per registered patient for drafting a care protocol.

If an individual chooses not to register with a preferred doctor, then the rate of reimbursement he is entitled to from his health insurance fund is reduced from 70% to 60%. The same applies if a patient visits a GP other than his/her preferred doctor (except in emergency situation) or if the patient consults a specialist without a referral. In the case of specialist consultations, the maximum fee level on which reimbursements rates are based is also reduced. Direct access to gynaecologists, ophthalmologists, psychiatrists, neuro-psychiatrists and neurologists is permitted without penalty in certain circumstances (for instance, for contraception advice, cervical cancer screening, and the prescription of eye glasses). As the coordinated care pathway does not apply to children under sixteen, consultation with a paediatrician is also not dependent upon a referral from a preferred doctor. So far, patients seem to comply with the access restrictions introduced under the preferred doctor reform, with 80% of the insured signing up to contracts.³¹

The new preferred doctor scheme is not clearly orientated towards a strict gate-keeping system but regulates patient choice of physician through financial incentives rather than compulsory patient pathways. This 'soft gate-keeping' is seen as a compromise between the original patients' freedom of choice and the regulators' desire to encourage a more rational consumption of health care.³²

2 CASE STUDY :THE NETHERLANDS

2.1 HUMAN RESOURCES

2.1.1 General supply

2.1.1.1 Number of physicians

A difference has to be made between the whole number of physicians who are entitled to practise and the number of physicians really active in curative sector. In 2004, 25 921 physicians were entitled to practise (9 844 GPs and 16 077 specialists). Of those, 19 929 were actively involved in health care, i.e. 76.9% of all registered physicians. The physicians actively involved in care were 8 209 GPs and 11 720 specialists (Table 4).

Among GPs, two categories have to be distinguished: 7 583 GPs are independent GPs and 626 are qualified GPs working for an independent GP. These absolute numbers do not really represent the workforce, according to part-time work. For example, the 8 209 GPs (head counts) correspond to 6 961 FTE GPs.³³ For specialists, the same observation could be made, not all specialists are working full-time. In 1996, 26% of the medical specialists worked part-time.³⁴

Table 4. Physician supply in the Netherlands in 2004

	GPs	Specialists
Entitled to practise	9 844	16 077
Practising (absolute numbers)	8 209	11 720
Practising (FTE)	6 961	10 782

Source: NIVEL 2005

From 1993 to 2003, the total number of GPs increased by 16.3%, i.e. a yearly increase by 1.5%.³⁵ Comparing with numbers from 2005, 87 GPs were added in 2006, i.e. an increase by 1%.

2.1.1.2 Percentage of physicians not involved in curative activities

According to data from NIVEL (2005), there were 23.1% of registered physicians who were not involved in curative activities in 2004.

2.1.1.3 Ratio specialists / general practitioners

In 2004, the physicians actively involved in care were 8 209 GPs and 11 720 specialists (Source: NIVEL 2005), for a ratio specialists / GPs being equal to 1.43.

2.1.1.4 Ratio specialists / hospital beds

In 2001, there were 140 hospital locations in the Netherlands. At this moment, the total number of beds was 53 247 ranging from 138 beds for the smallest hospital to 1 368 for the largest one. The number of beds was 4.7 per 1 000 inhabitants.³⁶

In 2004, 11 720 medical specialists were working in the Netherlands. Within the Dutch system of health care most medical specialists work in a hospital setting, although they are usually not employed by the hospital. The majority are self-employed, working with other specialists of the same specialty in a partnership.³⁴

The ratio between specialists and hospitals beds was 0.22 specialists per hospital bed.³⁶

2.2 IMBALANCES

2.2.1.1 Mean physician density

On 1 January 2004, there were 8 209 GPs and 11 720 specialists for 16 334 210 inhabitants, i.e. 12.2 practising physicians per 10 000 inhabitants.

2.2.1.2 Ratio highest / lowest density

Concerning general practice, the GP density equals 5 GPs for 10 000 inhabitants in the whole country. Regional differences are not really important between provinces, the lowest density being observed in Overijssel (4 GPs / 10 000 inhabitants), the highest in Drenthe (4.6 GPs / 10 000 inhabitants).³³

2.2.1.3 Specialty imbalances

Table 5. Number of medical specialists in 2001 (absolute numbers and FTE)

Specialty	Number of medical specialists (abs)	Number of medical specialists (FTE)
Internal medicine	1 539	1 462.2
Pneumology	362	344.3
Cardiology	577	551.8
Rheumatology	159	146.92
Gastroenterology	171	163.5
Paediatrics	894	788.0
Geriatrics	79	69.9
Dermatology	312	278.2
Neurology	598	556.3
Sub-total medical specialties	4 691	4 360.5
Surgery	855	829.2
Orthopaedics	419	408.3
Urology	261	248.6
Plastic surgery	144	132.6
Neurosurgery	86	81.3
Thoracic surgery	92	87.2
Gynaecology	700	638.4
Ophthalmology	509	432.9
Ear-Nose-Throat	383	342.6
Anaesthesiology	941	884.4
Sub-total surgical specialties	4 390	4 085.6
Support physicians (microbiology, radiology revalidation ...)	1 785	1 678.7
Psychiatry	1 910	1 673.7
TOTAL	12 776	11 798.5

Source: NIVEL / PRISMANT (2001)

The largest group of specialists is represented by psychiatrists (14.9%), and internal physicians (12%), followed by anaesthesiologists (7.4%), paediatricians (7.0%) and surgeons (6.7%). The specialties which have the lower number of professionals are geriatrics (0.6%), neurosurgery (0.67%) and thoracic surgery (0.72%) (see Table 5).

2.2.1.4 Institutional or services imbalances

Employment indicators

A typical Dutch GP is independent, the owner of the premises and assisted by a receptionist, a practice assistant and increasingly by a practice nurse. GPs are responsible for 7 * 24 h services. This was usually achieved on a rota basis in small local or regional tenancy groups.

To make out-of-office-hours healthcare more efficient and lower the workload for GPs, so-called out-of-hours GP centres have been initiated. In these centres, GPs are on duty by turn. Their service is not local but regional with up to 150 000 people per out-of-hours centre.³⁶

In 2000, 71% of the medical specialists in the Netherlands were self-employed; in 2002, this figure was 75%. A small proportion of medical specialists were employed by the hospital, usually working in academic hospitals.³⁴ It is most common for medical specialists to work in only one hospital.³⁷

2.2.1.5 Percentage of part-timers

On January, 1st 2006, 47% of all GPs worked part-time, while in 1987 approximately 10% of the GPs worked part-time. Mostly female GPs choose the part-time work (84%); nevertheless, 28% of all male GPs also work part-time. Distinguishing between independent GPs and GPs employed by another GP, it is remarkable that a higher proportion (98%) of employed GPs works part-time, compared to independent GPs (40%) (Table 6).³³

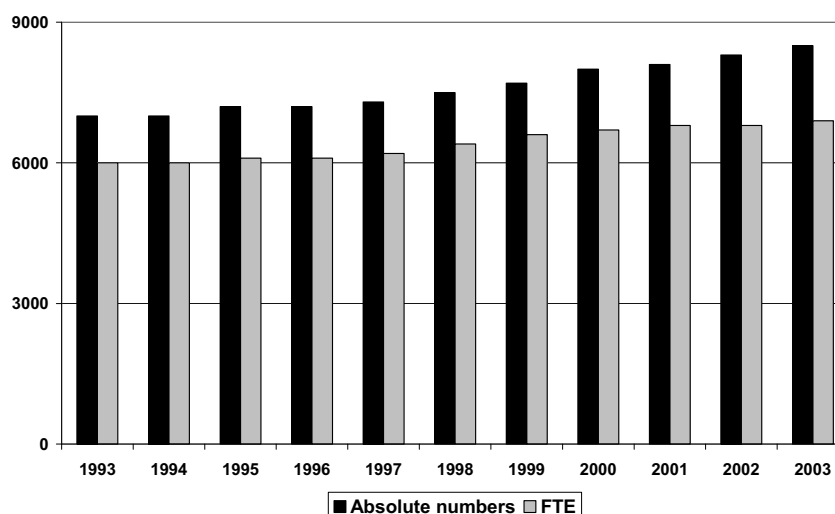
Table 6. Proportion of all GPs working part-time or full-time according to function and gender

	Independent GPs			Employed GPs			Total		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
% part-time	25.8	78.4	40.2	93.2	99.1	98.1	27.7	84.2	46.7

Source: NIVEL (2006)

In 2003, male GPs on average worked 0.91 FTE whereas female GPs worked 0.63 FTE. The number of practising GPs increased by 16% in ten years but the number of FTE only increased by 11% in the same time (Figure 4).³⁵

Figure 4. Evolution of the number of GPs and FTE GPs from 1993 to 2003



Source: NIVEL (2003)

Specialists have also different schemes of working time according to gender. Considering all specialties, male on average equal 0.96 FTE whereas female equal 0.80 FTE.³⁸ Per specialty, differences are more important between males and females (NIVEL / PRISMANT 2001):

- For ENT, female equal 0.72 FTE whereas male equal 0.91 FTE
- For dermatology, female equal 0.75 FTE whereas male equal 0.95 FTE

- For paediatrics, female equal 0.76 FTE whereas male equal 0.97 FTE
- In only one specialty (ophthalmology), male are under 0.90 FTE (0.89 FTE).

2.2.1.6 Mean weekly effective work hours

In 1987, a full-time GP worked weekly a mean number of 58.6 hours. According to the Dutch National Survey of General Practice (2000), the mean number of hours a week worked by full-time GPs was 49h (+/- 11).³⁶ GPs over 45 years of age worked even longer hours (53h).³⁹ One third of female GPs work less than 0.60 FTE and a half of all female GPs work less than 0.80 FTE.³⁶

In 2001, 75.4% of male GPs were full-time whereas only 21.6% of female GPs worked full-time (Table 7).

Table 7. Number of hours worked per GP in 2001

% of full-time	Male (%)	Female (%)	All (%)
< 0.40	0.2	2.2	0.7
0.40 – 0.60	4.6	28.3	10.4
0.60 – 0.80	8	33.5	14.2
0.80 - 1	11.8	14.4	12.5
1 (full-time)	75.4	21.6	62.2
	100	100	100

Source: NIVEL 2001

De Jong et al. (2006) presented the mean hours worked by 3 groups of medical specialists (internists, surgeons and radiologists) according to their working time (part-time or full-time) (Table 8).

Table 8. Hours worked per week (corrected for age and gender)

	Hours worked per week ^a
internists	
part-time	41.64 (1.10)
full-time	51.96 (0.75)
surgeons	
part-time	42.96 (1.66)
full-time	53.04 (0.58)
radiologists	
part-time	38.15 (3.62)
full-time	46.33 (1.81)

^a standard error in parentheses

Source: de Jong et al. (2006)

Internists and surgeons work on average ten hours per week less in a part-time than in a full-time position. For radiologists, the difference between full-time and part-time working hours is eight hours per week.³⁷

2.2.1.7 Mean weekly desired work hours

For single-handed GPs (working 53h) and female GPs (working 43h), the discrepancy between actual workload and preferred workload was even more than 6h (8 and 9h respectively).³⁹

The mean number of hours a week worked by full-time GPs was 49h (+/- 11);³⁶ this was on average 6 h more than they would prefer to work.

2.2.1.8 Number of annual consultations per physician

The average number of patients per family physician is 2 300. The number of registered patients per FTE GP increased by 10% between 1987 (n = 2 297 patients) and 2001 (n = 2 529 patients).⁴⁰ Although the average list size per FTE has increased, the GP density has stayed more or less the same in this period.

The rise in list size per FTE is mainly due to a decrease in the number of weekly working hours, from 55 to 44 hours a week.⁴⁰

The number of group practices and health centres (staffed by family physicians, social workers, physiotherapists and, sometimes, midwives) is increasing rapidly. While in 1970, 91% of GPs worked in individual practises, this percentage had decreased to 42% in 2001 (Table 9).

Table 9. Number of GPs working in a practice in 2001

	GPs		GP practices	
	Absolute number	%	Absolute number	%
Single-handed practice ^a	3 059	42	3 059	64
Partnership (Duo) ^b	2 400	33	1 210	26
Group practice ^c	1 811	25	481	10
TOTAL	7 270	100	4 750	100

Source: NIVEL in ³⁶

^a Practice with one independent GP who might or might not have employed a qualified GP working in the practice

^b Practice with two independent GPs working in one building

^c Practice with at least three independent GPs working in one building

A change in the activities of GPs was observed between 1987 and 2001. The most striking changes are a drop in the percentage of home visits from 17% to 9% of all contacts with GPs and the fact that more work is done by telephone and more tasks are performed by assistants. Nevertheless, GPs and their assistants remain efficient gatekeepers, dealing with 96% of all contacts themselves; in 4% of all contacts, referrals are made.⁴¹

2.2.2 Demography

2.2.2.1 Ratio male / female

During the period of 1996-2006, the number of female GPs was multiplied by two, from 1 427 in 1996 to 2 884 in 2006. In 2006, 34% of GPs were female (26% of all GPs were female in 2001) (Table 10).

Table 10. Number of GPs in 2006 according to professional category and gender

	Absolute numbers	% of all GPs
Independent GPs	7 583	89.3
male	5 460	
female	2 123	
Employed GPs	912	10.7
male	151	
female	761	
All	8 495	100
male	5 611	66
female	2 884	34

Source: NIVEL 2006

In 2001, 22.0% of all medical specialists were women, i.e. 2 811 female specialists. The proportion of women varies according to specialty. They were proportionally more numerous in genetics (59%; n=36), geriatrics (49.4%; n=39), paediatrics (42.2%; n=377), revalidation (38.1%; n=104), and less numerous in urology (1.5%; n=4), orthopaedics (2.9%; n=12) and thoracic surgery (4.3%; n=4) (NIVEL / PRISMANT 2001).

2.2.2.2 Mean age

In 2006, 21% of GPs are less than 40 years old; this percentage is lower than ten years ago, when 26% of GPs were less than 40 years old. Nevertheless, the proportion is somewhat different according to gender: 40% of female GPs and only 11% of male GPs were less than 40 years old (Table 11).³³

Table 11. Age distribution of GPs (independent GPs and employed GPs) on 1 January 2006

Age (years)	Male		Female		All	
	n	%	n	%	n	%
< 35	184	3.3	469	16.3	653	7.7
35 – 39	408	7.3	678	23.5	1086	12.8
40 – 49	1824	32.5	1118	38.8	2942	34.6
50 – 59	2793	49.8	597	20.7	3390	39.9
> 60	402	7.2	22	0.7	424	4.9
	5611	100	2884	100	8495	100

Source: ³³

According to this table, the mean age of all GPs could be approximated at 47 years age, mean age for female GPs at 43 years age, and mean age for male GPs at 49.6 years age.

No data has been found for medical specialists.

2.2.2.3 Percentage of physicians in 30-50 years range

On 1st January 2006, 54.8% of all GPs were in 30-50 years range. In 2001, 64% of all specialists were younger than 50 years age (88% of the female specialists and 57% of male specialists).³⁸

2.2.2.4 Mean age at retirement

The number of GPs leaving practice varied in 1990 to 2004 between 200 and 300 per year. Outflow rates are different for men and women. Of all male GPs aged 50 years, about 20% have already left practice. For women this is 33%. The outflow of GPs is not restricted to outflow for pensioning. In fact, almost no GP continues working until the official pensioning age of 65 years. Almost 60% of all men and 80% of all women have already ceased working as a GP at the age of 60 years. Most GPs, who stop working as a GP at an early age, start working as a physician in another specialty (e.g. nursing home care). Most GPs who stop working around the age of 60 years, retire from work.⁴²

2.2.2.5 Percentage of immigrants

The inflow from other countries concerns 50 GPs and 40 medical specialists per year.⁴³ They mainly come from Belgium and Germany. These are often Dutch people who studied in these two countries and came again in Netherlands to practise.

Since November 1st, 2006 onwards foreign doctors completing their studies in the Netherlands to become a specialist have easier access to the Dutch labour market. Also, it becomes easier for non-European students to do apprenticeships in the Netherlands. For both groups employers no longer need to apply for a work permit.

Employers must normally apply for a work permit if they want to take on an employee from outside the EEA. The Centre for Work and Incomes (CWI), which issues these permits, then first checks whether the employer has tried hard enough to find an employee from the EU. This is intended to prevent the Dutch and people from other EU countries being squeezed out.

However, foreign doctors training as specialists will come under the existing Knowledge Migrants scheme. Under this scheme, highly-qualified foreigners can work in the Netherlands for five years via a speeded-up procedure at the Immigration and Naturalisation Service (IND). Employers do not have to apply for a work permit for them (Ministry of Social Affairs and Employment, 2006).

2.2.2.6 *Percentage of emigrants*

No data could be found not for GPs not for medical specialists.

2.3 **HEALTH SYSTEM**

2.3.1 *General organization*

2.3.1.1 *Public/private mix in services delivery*

Health services are for the most part private and organized around self-employed doctors, generalists and specialists, as well as hospitals and clinics which are mainly private not-for-profit organizations.

2.3.1.2 *Doctors type of payment*

The introduction of the Health Insurance Act on 1st January 2006 affects GPs' remuneration. Under the old system, there was a difference between sickness fund insureds (GP received a fixed contribution per year) and private insureds (GP were remunerated per consult). In the new system, the GPs are funded through a mix of the previous system, i.e. a fixed contribution of € 54 per enrolled patient and € 9 per consultation.⁴⁴

Since 2005, specialist services are reimbursed by the Diagnosis Treatment Combinations system. Efforts to cut the level of specialist fees have been of limited effect due to a provider-led compensatory increase in the volume of services provided (supply-led demand).

University and municipal hospital medical specialists are salaried employees. Sometimes this also applies to specialists in general hospitals.

2.3.1.3 *Health insurance type and coverage*

After 30 years of discussions to reform the Dutch health insurance system, a new scheme came into effect on 1 January 2006: the Health Insurance Act. A standard package was introduced, compulsory for everyone. All Dutch residents are obliged to take out health insurance. The residents will pay a nominal premium, irrespective of income, age or health status. The residents can choose with which insurer they want to take out health insurance, and are free to change every year.⁴⁴

The difference between sickness funds and private health insurers dissolves. They are now referred to as "health insurers". The health insurers operate under private law and can make profits and pay dividend to shareholders. This implies that the old sickness funds lose their public status and have to compete with private insurers. The actual level of the premiums can be defined by the health insurers. Furthermore, health insurers are obliged to accept everyone in their area of activity.⁴⁴

Price competition between insurers and health care providers, as well as freedom of choice for consumers were introduced or extended. In the new system of managed competition consumer mobility plays an important role. Consumers are free to change their insurer and insurance plan every year. The idea is that consumers who are not satisfied with the premium or quality of care provided will opt for a different insurer. This would force insurers to strive for good prices and quality of care for their insured.⁴⁵

The health care system consists of three parallel compartments of insurance, each under different regulatory regimes, governed by different bodies:³⁶

- The AWBZ (De Algemene Wet Bijzondere Ziektekosten) was created to cover "exceptional medical expenses" (associated with either long-term care or high-cost treatment). It refers to areas such as nursing homes, care for the disabled, home care and care for the mentally ill. All inhabitants of the Netherlands participate compulsory in the AWBZ. In this compartment, there is no competition or operation of market forces. The government is responsible for cost control. The budget comes from compulsory payment of taxes plus governmental payments plus co-payments by patients.

- The second compartment concerns curative care. In principle, insurers are free to contract care providers. Premiums to be paid by citizens consist for 50% of a fixed amount and for 50% an income-dependent amount. The compulsory insurance covered basic medical care, such as GPs and medical specialists, hospital care, drugs and dental treatment for children.
- The third compartment is voluntary and complementary and concerns all care that is not covered by the first two, for instance, physiotherapy, dental care for adults, prostheses, hearing aids, psychotherapy, glasses etc.

The second compartment has particular repercussions on the funding side with regard to equity and has been the impetus for various reform initiatives over the last 15 years that are still being debated.

Total health care expenditure was estimated to account for 9.1% of gross domestic product (GDP) in 2002 (OECD, 2005). Hospital care is far by the most expensive service in healthcare. In 1999, 30% of the budget for healthcare was consumed by hospital-delivered care. In comparison, GP care consumed only 3% of the total budget for healthcare.³⁶

2.3.2 Services utilization

2.3.2.1 *Annual number of consultations per capita*

The demand for GP care has raised compared to 20 years ago. In 2005, more or less 80% of the population has minimum one contact by year with a GP. While this fraction remained unchanged since 1987, the number of annual contacts per patient has increased, particularly among older patients. Globally, in 2005, a GP has 6.7 contacts by patient during a year (4.5 contacts-patients in 1987).⁴¹ Patients aged over 75 years had an average of 16 contacts with their GP's surgery during a year.

In 2001, of all GP contacts, 74% take place in the surgery whereas 9% are home visits and 17% of GPs contacts are telephone calls. The percentage of home visits has dropped from 17% in 1987 to 9% of all contacts in 2001.⁴¹

2.3.2.2 *Mean waiting time for accessing to a specialist*

In March 2000, around 150 000 patients were waiting for treatment in general hospitals, with more than 92 000 of them waiting for longer than a month. By October 2001, the number – excluding psychiatry and paediatrics – had increased to 185 000. The specialities of orthopaedics (35 000), general surgery (35 000), ophthalmology (34 000) and plastic surgery (24 000) had the largest waiting lists; plastic surgery had the longest waiting time: 12 weeks for diagnosis and 23 weeks for treatment (both figures about twice as high as the average).⁴⁶

To counter the problem of waiting lists, the Dutch government implemented a policy of providing extra funding where waiting lists were cleared. This had some success: in May 2004, a new report issued by the Ministry of Health Welfare and Sport showed that the Netherlands has shorter waiting lists for hospitals than previously assumed: 95 000 (68%) of 139 000 people, currently on waiting lists for hospitals, can be treated within four to five weeks. Twenty per cent (28 000) of people on waiting lists cannot be treated due to capacity problems in hospitals and nearly 17 000 people (12%) cannot or do not want to be treated because of personal or for medical reasons.⁴⁶

The notion of long waiting lists could be more relative if one country is compared with others. Hurst and Siciliani (2004) conducted a study explaining waiting-time variations for elective surgery across OECD countries.⁴⁷ The definition of waiting time was “the time elapsed for patients on the elective surgery waiting list from the date they were added to the waiting list for the procedure, after specialist assessment, to the date they were admitted to an inpatient or day-case surgical unit for the procedure”. This definition is commonly referred to as “the waiting time of the patients admitted” or “inpatient waiting time”. For ten elective surgical procedures, the countries with highest waiting times were the United Kingdom and Finland, followed by Denmark, Norway, Australia and Spain (Insalud).

The country with the shortest waiting times was the Netherlands. In each country, however, the waiting times for less urgent procedures (for example hip and knee replacement, cataract surgery) are systematically higher than the waiting times for more urgent procedures (for example hysterectomy, Coronary Artery Bypass Graft, Percutaneous Transluminal Coronary Angioplasty). This provides evidence that specialists do prioritise patients according to their urgency.

2.4 REGULATION POLICIES

2.4.1 Numerus clausus

The number of students is restricted by the government on a numerus clausus basis (numerus clausus is labeled numerus fixus in the Netherlands).

The definition and rules of numerus fixus is a recurrent tension between the government and general practitioners, the last ones accusing the government to be responsible for the shortage and the high workload of GPs. In 2001, there were some important strikes.

2.4.1.1 Type

Three types of *numerus fixus* exist: a *national quota*, a *labour market-related quota*, and an *institution quota*, either based on labour market considerations or on the total capacity for a program at the system level.

When the number of applicants exceeds the national teaching capacity, the Minister decides upon the number of places (nationally and at the institutional level) which will be available (national quota).⁴⁸

The Minister of Education, Culture and Science may also limit the intake of students if it can be shown that the supply of graduates from a particular programme exceeds the need of the labour market by a substantial amount and when this is expected to be the case for a number of years (labour market-related quota).⁴⁸

A third type of *numerus fixus* is the institutional quota. If the number of applicants exceeds the expected enrolments in such a way that the teaching capacity of a particular institution is insufficient (in fact endangering the quality of teaching), the institution can apply for selection.⁴⁸

General practitioners are confronted to a double numerus fixus: 1) at the beginning when they enter at the university; 2) to be admitted in the specialization “family medicine” (the access to family medicine is limited by the number of places to the training course). Training as a medical specialist is received by means of hospital internships under the supervision of senior specialists. Only physicians licensed to practise medicine in the Netherlands are eligible for this specialist training.

The current legislation on the various professions in the field of health care provides no regulation for specialities in public health care. Currently, there are 29 recognized specialisations.

2.4.1.2 Objectives pursued

The manpower planning policy for physicians was always directed at limiting the total number of doctors in order to limit the costs of medical care.⁴² A numerus fixus determined the number of students who could enter in universities for medical training.

This numerus fixus evolved as following (NIVEL, 2006):

Years	Numerus fixus
	1 485
1992	
1993	1 485
1994	1 686
1995	1 686
1996	1 750
1997	1 750
1998	1 813

1999	1 813
2000	2 010
2001	2 140
2002	2 550
2006	2 850

2.4.1.3 Year of implementation

The system of *numerus fixus* was introduced for the first time in 1972.

2.4.1.4 Subsequent adaptations

Over these last years, the number of places in medical training institutes was revised in order to raise the intake of physicians. The number of students admitted to medical school in the Netherlands has grown from less than 1 500 in 1992 to over 2 800 in 2006. During the 1999-2004 period, the number of students increases by 4.2% a year. For academic year 2002-2003, the number of places was 2 550 and increased to 2 850 in 2006.

2.4.1.5 Management: actors and processes

Healthcare manpower policy in the Netherlands is characterised by a highly fragmented structure. Many organisations play a part in it and organisations involved in planning are not the same as those involved in financing the educational system.

In the Netherlands there was no comprehensive government medical or general workforce planning as of 1989 and the early 1990s. This changed with the introduction in 1999 of what is known the Capacity Body for physician workforce planning.⁴²

The organization, funded by government, has a tri-partite composition with representatives from the professional groups, the health insurance companies, and the training institutions. The three participating organizations are responsible for establishing the model. The Capacity Organization provides physicians workforce advice on an annual basis regarding the number of doctors to be trained. The Capacity Body uses experienced research institutes like the Netherlands Institute for Health Services Research (NIVEL), to examine both supply and demand within the health system with 10 to 20 year planning horizons. The first report in March 2001 proposed recommendations, supported by government to increase the number of medical students admitted to universities, increase the number of training positions for general practitioners and additional funding has been set aside for training medical specialists. NIVEL also conducts various studies for health professions.⁴⁹

The admission of students is administered by an independent agency, the *Informatie Beheer Groep* (IBG). For each academic year, the *fixus* programs are announced (based on forecasts and information of the higher education institutions). If the choice pattern of the future students indeed turn out that there is a mismatch between the number of places and applications, the selection mechanism is applied. The main characteristic of this mechanism is that a lottery decides on admission to courses with entrance restrictions (irrespective the type of *fixus*). However, it is a weighted lottery, which provides greater chances for admission by candidates with higher average examination results in secondary education. Candidates are divided into five lottery categories. Category A, which is the highest, includes candidates with the highest examination grade point average (8.5 or higher). Category F, the lowest one, includes students with an average examination grade of 6 to 6.5. A sixth category is added for foreigners. In general it can be stated that the higher the lottery class, the higher the chance on admission. Since September 1999, all candidates with an average grade of 8 or higher in secondary education are directly admitted to the programme of their choice. The other applicants will have to go through the weighted lottery procedure.⁴⁸

The distribution of candidates over the locations where the *numerus fixus* program is offered takes place on the basis of the preferences of the candidates, as far as possible, but it could turn out that students are admitted to a university which was not preferred by the student. Students who are not placed may reapply in a later year but do not receive any credit for the waiting period.⁴⁸

A maximum of 10% of the total places available can be used by the higher education institutions to grant admission to applicants on basis of for example motivation, working experience, or talent.⁴⁸

2.4.2 Attraction and retention policies

In 2005, the outflow of care professionals is limited; the emphasis is put on the inflow of professionals in order to support active workers. One strategy is to give a good image of the care sector by improving the working conditions of workers and the opportunities of growth and development (continuous education).

2.4.3 Functioning regulation

2.4.3.1 *Expenditure ceilings*

Total health care expenditure was estimated to account for 9.1% of gross domestic product (GDP) in 2002 (OECD, 2005). Hospital care is far by the most expensive service in healthcare.

2.4.4 Controlling demand

2.4.4.1 *Patient's contributions to health care costs*

Each insured is required to pay a mark-up of € 255 on his/her insurance premium. This pre-payment is refunded by the end of the year proportional to the medical consumption in that year. If an insured does not consume medical care, the prepayment is fully refunded. If an insured uses medical services, the costs of that care are subtracted from the refund (thus, an insured does not get a refund when his medical costs exceed €255). The costs of a visit to a general practitioner are excluded from the so-called no-claim arrangement system.⁵⁰

2.4.4.2 *Gate-keeping*

Primary health care is well developed and is provided mainly by family physicians (GPs), who are the gatekeepers and dominant figures in the system. The *gate-keeping* principle is one of the main characteristics of the system (he was applied since 1941) and denotes that patients do not have free access to specialists or hospital care. All non-institutionalised inhabitants are registered on a GP's patient list and must be referred to specialist physicians or the hospital by the GP (except for emergency care). Only patients with complex problems or complaints needing specialised treatment are referred to other healthcare workers in primary or secondary care.³⁶ Although pregnant women are monitored by independently working midwives in primary care, general practitioners may also provide this care. In former days, GPs delivered obstetric care, but in 2001 only 11% of all GPs were still active in obstetric care.⁵¹

The comprehensive role of gate-keeping GPs is illustrated by the low referral rate (only 4% of contacts), as the majority of medical problems are treated by GPs (primary care constitutes two thirds of all ambulatory care contacts).⁴¹ Another impact of gate-keeping is the high diversity of healthcare realized by the GP: 90% of all care is fulfilled by the GP, including minor surgical procedures (e.g. in dermatology).⁵²

Walk-in consultations are being increasingly replaced by consultations-by-appointment; some GPs adopt a policy of phone consultations by return phone call, and over half of the practice assistants and practice nurses independently advise by phone for routine and daily problems. Increasingly, patients cannot see their GPs on the same day of their requests.⁴⁰

3 CASE STUDY : GERMANY

3.1 HUMAN RESOURCES

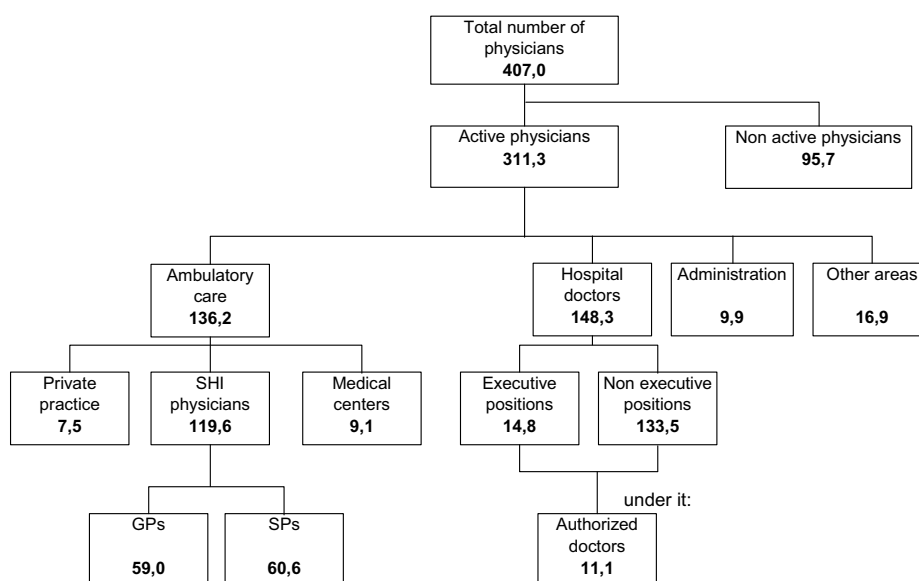
3.1.1 General supply

3.1.1.1 Number of physicians

Data on the number of physicians vary significantly according to data source. The OECD, for example, excludes physicians outside the inpatient and outpatient sectors from the category of “active physicians”, i.e. physicians working for public health services, administration or corporatist bodies, and in other areas such as the pharmaceutical industry. By contrary, the Federal Physicians Chamber considers them as active physicians.⁵³ “Active physicians” refer to holders of a diploma of medicine who currently work whatever the professional field (curative sector, administration, research centre...) whereas “practising physicians” refer to physicians who practise in the curative sector.

Readers of German official documents have also to be cautious that some sources only consider the evolution of medical density in West Germany (before and after 1990) whereas other data sources consider West Germany before 1990 (date of reunification) and the whole reunified country after 1990, presenting a figure of exponential increase in number of physicians in a short period. According to the Federal Physicians Chamber, the number of practising physicians increased by about 20% during the 1990 and rose again by 11% between 1998 and 2006. Detailed repartition of physicians according to their activity and their practice are available from the German Federal Physicians Chamber.⁵⁴

Figure 5. Structure of German medical workforce (in thousands)



Source: Statistik der Bäk (2006)

Of a total of 407 000 physicians in 2006, 311 300 were active (exercised their profession), i.e. 76.4%. Of these, 91.4% were *practising physicians* (148 300 practised in hospitals and 136 200 practised in ambulatory care) whereas 8.6% were *non practising physicians* (9 900 worked in public health services, administration or corporatist bodies and 16 900 in other areas, such as the pharmaceutical industry). Practising physicians thus account for 69.6% of the registered physician workforce (Figure 5).

Even if the total number of physicians substantially increases over time (+14% in 8 years), the proportions of respectively active physicians and practising physicians decrease in the same period (Table 12). Consequently, the real increase is lesser, and is about 9%. This underlines the importance of considering level of professional activities rather than head counts.

Table 12. Evolution of active and practising physicians between 1998 and 2006

Year	The total number of physicians	Proportion of active physicians (in %)	Proportion of practising physicians (in %)	Number of practising physicians
1998	357 700	80.0	72.8	260 400
2001	375 200	79.4	72.6	272 300
2006	407 000	76.4	69.6	284 500

Source: Statistik der Bäk (1998, 2001, 2006)

3.1.1.2 *Percentage of physicians not involved in curative activities*

According to data from Federal Physicians Chamber (2006), 8.6% of all active physicians are not involved in curative activities.⁵⁴

3.1.1.3 *Ratio specialists / general practitioners*

Doctors caring for patients who have sick funds must be registered by law by the regional association of Statutory Health Insurance (SHI) Physicians (Kassenärztliche Vereinigung). Of the 116 065 SHI-affiliated physicians practising in 2002, 58 884 practised as family physicians (51%) and 57 221 as specialists (49%). Until 1993, specialists in internal medicine and paediatricians could work as specialists or could opt to practise as family physicians.⁵⁵ Consequently, the higher proportion of GPs was explained by the inflow of specialists in internal medicine and paediatricians who would like to practise as family physicians following policy interventions to strengthen the professional influence and income of family physicians. Currently, this possibility does not exist anymore. Only physicians having followed the training to become GPs can practise as family physicians. In 2006, the ratio has reversed to reach 49% of GPs for 51% of specialists practising in ambulatory care. If we include specialists working in hospitals, the ratio specialists / general practitioners equals to 2.8.

3.1.1.4 *Ratio specialists / hospital beds*

In 2005, there were 2 139 hospitals with 523 600 beds (64 beds per 10 000 inhabitants). Of these, 92.2% belonged to general (or acute) hospitals and 7.8% to psychiatric hospitals.⁵⁴ In 2006, there were 148 300 medical specialists in Germany. The ratio medical specialists / hospital beds could be estimated to 0.28 specialists per hospital bed and 0.31 specialists per acute bed.

3.1.2 *Imbalances*

3.1.2.1 *Mean physician density*

According to Kopetsch (Federal Physician Chamber, 2004), the number of practising physicians increased by 20% during the nineties, reaching a ratio of 36 per 10 000 population in 2002.⁵⁶ Since then numbers have increased, with 37 practising physicians per 10 000 inhabitants in 2006.⁵⁷

3.1.2.2 *Ratio highest / lowest density*

There are important imbalances between geographical areas (Table 13). The density of physicians is much lower in rural areas and in the eastern states. The lowest density of practising physicians, at 29 per 10 000 population, was recorded in the state of Brandenburg, while in Hamburg there were 48 physicians per 10 000 population. In rural areas, there are up to five times more patients per physician than in urban areas.⁵³

Table 13. Comparison between density of active physicians (including physicians working outside care system) and density of practising physicians (only physicians working in ambulatory care or in hospitals) by Länder (2006)

Länder	Population in thousands	Density of active physicians (per 10 000 inh)	Density of practising physicians (per 10 000 inh)
Baden-Württemberg	10 736	37	34
Bayern	12 469	40	36
Berlin	3 395	50	44
Brandenburg	2 559	31	29
Bremen	663	50	46
Hamburg	1 744	55	48
Hessen	6 092	38	34
Mecklenburg-Vorpommern	1 707	37	34
Niedersachsen	7 994	33	30
Nordrhein-Westfalen	18 058	37	34
Rheinland-Pfalz	4 059	36	32
Saarland	1 050	40	37
Sachsen	4 274	34	31
Sachsen-Anhalt	2 470	32	31
Schleswig-Holstein	2 833	38	35
Thüringen	2 335	34	32

Sources: Statistische Ämter des Bundes und der Länder 2006 (population) - Bundesärztekammer, 2006 (active physicians)

3.1.2.3 Distribution of specialists

Specialist trainees are full-time employed doctors and remunerated as assistant or junior doctors (Assistenzarzt). Such assistant doctors have to organize their own practical training so as to attain the legal quotas of services necessary for diploma (about 30% of the catalogue of ambulatory services). The Federal Physician Chamber has claimed that such requirements could lead to multiply medical services not fully related to patients needs.⁵⁷ This level of requirement and the insufficient number of places in hospitals to organize the postgraduate training limit the access to specialty.⁵⁵

In 2006, there were:

Specialty	Current number of medical specialists (head counts)
Internal medicine	40 337
Surgery	19 508
Anaesthesiology	17 418
Gynaecology	15 811
Paediatrics	11 640
Orthopaedics	8 906
Psychiatry	7 148
Ophthalmology	6 544
Radiology	6 456
Ear-Nose-Throat	5 527
Dermatology	5 071
Urology	4 883
TOTAL	149 249

Source: Statistik der BÄK, 2006

This classification by head counts (from the largest group to the smallest group) is somewhat similar than Belgian and Dutch ones. Since now, no data is available concerning the fit between the number of each group of specialists and the population needs.

3.1.3 Employment indicators

3.1.3.1 *Unemployment among physicians*

Between 1980 and 1995, unemployment quadrupled among German hospital doctors. The worst affected were postgraduate hospital trainees and those working in regions belonging to the former West Germany. Figures produced by Germany's central employment bureau showed that at the end of 1995, 5 800 trainees and 1 900 fully trained specialists were registered unemployed. This represented a fourfold increase from 1982. As a result, many German doctors went to countries such as Norway, Sweden or UK, which actively recruit physicians from Germany.⁵⁸

Nevertheless, this situation is changing. Between 1999 and 2000, there was a 6% drop in unemployment among GPs; in 2001, 1.9% of German doctors were without work, and some hospitals were having trouble filling vacancies for senior consultants (according to the Central Placement Office in Bonn).⁵⁹ In 2006, 4 616 physicians were registered as unemployed (2 788 women and 1 828 men), the lowest number since 1990 (1.5% of all active physicians).⁵⁷

3.1.3.2 *Unfilled (unoccupied or unallocated) vacancies*

According to the Marburger Bund, the largest German association of doctors, in 2005, there were 5 000 vacancies in Germany, most of them in eastern Germany, where young doctors are continuing to move to western Germany for better pay and working conditions.⁶⁰

Every second hospital in western Germany has unfulfilled vacancies; in the eastern part of the country, the proportion of posted hospital positions which remain unfulfilled is as high as 4/5. Consequently, more hospitals start to look abroad for doctors particularly in Eastern Europe.⁵⁶

The German Medical Association (Bundesärztekammer) and the National Association of SHI physicians (Kassenärztliche Bundesvereinigung) prepared a prognosis based on data of the year 2000. This forecast predicted a probable fall in numerous specialties, earlier and more marked in the eastern Germany, where one third of GPs will retire in the next few years. It will be very difficult for these GPs to have successors since western Germany, where two thirds of areas are open for GPs, offers more attractive remuneration conditions (it is already the situation experienced in Saxony-Anhalt).⁵⁶

The replacement requirement for doctors in the curative sector for the country would be 28 000 by 2008 and 62 000 by 2013 without considering European directive on working time.^f Taking this directive into consideration, the difference in head count between 2000 and 2008 is estimated at about 18 000.⁵⁶

3.1.4 Demography

3.1.4.1 *Ratio male / female*

The number of women accepted for registration has increased continuously over the last decades, reaching 45.6% in 1999, although, for reasons that remain unclear, women still constitute only 36.8% of working physicians.⁵³

Among general practitioners, 39.5% are women, i.e. 16 690 female GPs.⁵⁴ Among specialists, the proportion is lower, i.e. 34.7% of all specialists (Table 14). The proportion of women is particularly low in some specialties, such as surgery, where only 15.3% of specialists are female.

^f Council Directive No 93/104/EC of 23 November 1993 concerning certain aspects of the organisation of working time (except for doctors in training) specifies that a) the average working time for each seven-day period, including overtime, does not exceed 48 hours and b) every worker is entitled to a minimum daily rest period of 11 consecutive hours per 24-hour period.

In gynaecology and paediatrics, half of the medical workforce is female. This result has to be interpreted according to the preferences of physicians for their career orientation.

Predominantly more women express a preference for paediatrics and obstetrics and gynaecology, while predominantly more men preferred surgery. This observation is made in other countries such as France, UK and The Netherlands.⁶¹

Table 14. Proportion of women among medical specialists in 2006

Specialty	Current number of medical specialists (head counts)	Percentage of women (%)
Internal medicine	40 337	27.5
Surgery	19 508	15.3
Anaesthesiology	17 418	39.7
Gynaecology	15 811	51.2
Paediatrics	11 640	50.7
Psychiatry	7 148	45.7
Ophthalmology	6 544	41.9
Radiology	6 456	29.6
ENT	5 527	30.5
Dermatology	5 071	47.9
TOTAL	135 460	47 013 (34.7%)

Source: Statistik der BAK, Statistisches Bundesamt 2006; calculation: KCE 2007

3.1.4.2 Mean age

In 2006, mean age of general practitioners was 51.1 years while mean age of specialists was 40.9 years. In both groups, the mean age increases over time, and is 3 years higher for GPs and 2 years higher for specialists than 2 years ago.

The proportion of active doctors aged over 59 years has risen sharply, from 6.7% in 1993 to 10.9% in 2002. Among SHI-doctors, this increase is particularly marked, from 8.8% in 1993 to 15.6% in 2002. In eastern Germany, a six fold increase is reported in the same time lag, from 4.1% to 23.9%, probably due to migration of youngest professionals.⁵⁶

By contrast, the proportion of doctors under 35-year-old has dropped rapidly from 27.4% in 1991 to 15.9% in 2006.

3.1.4.3 Percentage of physicians in 30-50 years range

The age structure of physicians, working in ambulatory care or in hospitals, is presented in Table 15. Whereas 46.3% of all physicians working in ambulatory care were in 30-50 years range (respectively 45.8% of GPs and 46.5% of SPs), 80.2% of specialists working in hospitals were in the same age range.⁵⁴

Table 15. Age structure of physicians working in ambulatory care or in hospitals in 2006

Age categories	GPs in ambulatory care	SPs in ambulatory care	SPs in hospitals
< 35 years	2 153	508	44 934
35 – 39 years	4 328	5 822	29 107
40 – 49 years	17 439	32 726	44 985
50 – 59 years	19 581	29 431	22 251
> 60 years	8 651	15 466	7 045
Total	52 152	83 953	148 322

Source: Statistik der BAK, Statistisches Bundesamt 2006

3.1.4.4 Mean age at retirement

The mandatory age of retirement is fixed at 68 years old.⁶²

3.1.4.5 Percentage of immigrants

At the end of the year 2006 there were 19 153 foreign physicians working in Germany (Table 16). This represents an increase by 34% over year 2000. The number of foreign hospital doctors reached 11 186 and ambulatory practice doctors reached 4 894. The most common countries of origin are the former Soviet Union, Greece, Austria, Turkey, Poland, Iran and Syria.⁵⁴

This migration is being fuelled by the recruitment activities of German institutions in response to the emerging shortage of doctors in some areas of East Germany.⁶³

An influx of doctors from former communist states, such as Poland, the Czech Republic, and the Ukraine is observed in the East Germany. The Marburger Bund estimates that around 2 000 eastern European doctors, mainly Poles, already work there and more continue to arrive. According to figures from the Saxony Chamber of Doctors in the federal state of Saxony, the number of doctors from eastern European countries has more than doubled since 2002. For instance the number of Polish doctors has risen from 22 to 119, the number of Slovak doctors from 11 to 60, and the number of Russian doctors has increased from 38 to 80.⁶⁰

According to the Czech medical chamber, Czech physicians, mostly anaesthesiologists, prefer to emigrate in Germany than working in their own country, since Germany became, in 2002, the first European country to begin hiring Czech physicians with automatic recognition of diploma.⁶⁴

Table 16. Number of foreign doctors working in Germany in 2006

Country of origin	Active doctors	Increase compared to year 2005 (%)	Practising physicians	Practising physicians in hospitals
European Union	8 156	8.0	6 937	4 783
Belgium	228	2.7	206	100
Denmark	62	5.1	46	18
Estonia	27	3.8	23	22
Finland	112	2.8	85	46
France	383	0.3	308	127
Greece	1 453	7.1	1 202	858
Ireland	32	0.0	24	12
Italy	694	5.2	567	371
Latvia	37	-7.5	32	20
Lithuania	51	6.3	48	37
Luxembourg	137	6.2	116	81
Malta	4	0.0	2	2
Netherlands	500	0.0	438	178
Austria	1 438	13.3	1 251	988
Poland	1 283	9.6	1 150	863
Portugal	73	7.4	58	42
Sweden	91	0.0	69	35
Slovakia	375	26.3	351	328
Slovenia	24	9.1	18	16
Spain	338	3.7	268	170
Czech Republic	263	10.0	238	196
Hungary	305	12.5	254	166
UK	200	5.3	144	84
Cyprus	46	9.5	39	23
Extended Europe	5 639	3.1	4 574	3 352
Russia	1 616	2.8	1 304	1 009
Africa	832	2.3	708	520
America	685	4.6	535	347
Asia	3 937	3.1	3 124	2 062
Iran	1 165	-3.0	747	366
Syria	608	7.6	557	387
Oceania	15	0.0	12	6
Total	19 153	5.0	16 080	11 186

When migration does occur, it is quite rare for health care professionals to become self-employed (as physicians in private practice, for example) in a foreign country. They usually work in hospitals or nursing institutions. Only 3 437 foreign doctors run private practices (2.7% among the total of 126 252 office-based doctors). The share of foreign doctors is considerably higher in the hospital sector: 10 309 out of 146 511 (7%).⁶³

3.1.4.6 *Percentage of emigrants*

An increasing number of German health professionals are going abroad (more than 12 000 German physicians are now working abroad, mostly in the UK, Sweden, and USA).⁶³

Emigration of German doctors to NHS in Great Britain began when there was an oversupply of physicians in Germany. Although this situation changed in recent years and there are even fears of a future lack of doctors, German doctors continue to be recruited for the NHS. The increasing number of physicians deciding to work in Great Britain can be attributed to effective push factors in Germany.

Work strain and widely spread dissatisfaction towards pay lead an increasing number of German physicians to decide to work in Great Britain, at least temporarily.⁶³

3.2 **HEALTH SYSTEM**

3.2.1 **General organization**

3.2.1.1 *Public/private mix in services delivery*

In Germany, the provision of healthcare can be broadly separated into ambulatory and in patient sectors.

Ambulatory health care is mainly delivered by sickness fund-contracted GPs and specialists in private practice (93% of GPs are sickness fund contracted). In order to encourage more integrated regimes of care for patients, the government, in agreement with the order of doctors, created a new form of provision of ambulatory care in 2003: medical activity centres (Medizinische Versorgungszentren). These groups may involve different health professions (doctors, physiotherapists, nurses, pharmacists), and hospitals as well. Doctors may work in these with conventional contracts (in which case they are shareholders), or on a salaried basis.⁶⁵

Acute inpatient care is delivered by a mix of public and private providers, with the public sector accounting for 53%, non-profit-making organizations for 39% and the private sector for 8% of acute hospital beds in 2001.⁶⁶

Outpatient services supplied to the public are largely the responsibility of independent doctors practising on a freelance basis under contract to the statutory health insurance. Doctors caring for patients who have sick funds must be registered by law by the regional association of Statutory Health Insurance (SHI) Physicians (Kassenärztliche Vereinigung).

3.2.1.2 *Doctors type of payment*

In ambulatory physician care, a regional physicians' association negotiates a collective contract with a single sickness fund in the form of a quasi-budget for physician services. The physicians' association distributes the funds among the general practitioners (GPs) and specialists who claim reimbursement mainly on a fee-for-service basis.

In order to contain costs, Germany has experimented with regulated fees or point schedules with limits on the total value of payments. Global budgets are negotiated between associations of sickness funds and primary care physicians, with physicians being reimbursed on the basis of points per service. At the end of the reimbursement period, the value of a point is determined according to the volume of services to keep total expenditures within the global budget. However, this system can create an incentive for individual physicians to maintain their income by expanding even more the volume of services, which in turn further reduces the monetary conversion factors. To counteract such behaviour, regional physician associations monitor the volume of services provided by primary care physicians and financially penalize those physicians

with higher-than-average service volumes that cannot be attributed to case mix. Moreover, a lump-sum component is added to the remuneration package of primary care physicians to avoid an excessive expansion of physician activity.⁶⁷ Hospital doctors are salaried.

3.2.1.3 *Health insurance type and coverage*

Until they reach the retirement age of 65, people must, by law, pay into health insurance plans (and, since 1994, an additional long-term care plan). The health insurance plans are either state-regulated or private. The statutory health insurance, the so-called “Gesetzliche Krankenversicherung” (GKV), occupies a central position in the healthcare system in Germany. After retirement, contribution payments for the state-regulated plans stop (although private patients continue payments), but coverage is continued until death.

The 292 sickness funds collect the contributions of the statutory insurance for health and long-term care. They also negotiate contracts with the health care providers. Since 1996 almost every insured person has had the right to choose a sickness fund freely, while funds are obliged to accept any applicant. Since 2004, decision-making in statutory health insurance has been integrated into a trans-sectoral joint federal committee that is supported by an independent institute for quality and efficiency.⁶⁸

There are several types of state-regulated plans. Some large companies and guilds offer their employees in-house plans. Other groups – notably people working in technical and scientific environments, employees in medium-sized and small firms, or blue-collar workers – often prefer the so-called self-governing substitute plan (*Ersatzkassen*). The state covers health insurance contributions for the unemployed and those with low income.

Contributions to the state-regulated health plans (currently around 14% of the employee's gross income and shouldered equally by the employee and the employer) cover up to 68% of overall healthcare costs. Income taxes, funds derived from those with private health insurance, and out-of-pocket payments (e.g., for prescriptions where the insurance covers only 90% of the charges) attempt to cover the remainder.

The government regulates the use of private insurance. There are three main types of people who use private insurance plans. Persons with a monthly income exceeding € 3 862.50 (in 2004) may legally opt out of state-regulated plans and switch to private insurance. The self-employed are excluded from the state-regulated plans and so must take private insurance. Public sector employees (e.g., police, teachers) are reimbursed for part of their health costs by the state but have to be privately insured to cover the rest.

Currently, the seven million patients insured by the 52 private health insurance providers are billed directly by physicians, dentists, and hospitals, and are reimbursed by the insurance companies. Doctors may charge higher fees for private patients and it is at the insurer's discretion to refuse to cover unreasonable amounts.

Both types of insurance cover physician fees, hospital fees, chronic care, and part of dental care. Patients within the state-regulated insurance plans may consult any general practitioner or specialist officially contracted and recognized by their insurance provider. The doctor then settles the fees directly through the insurance provider. Hospital bills for diagnostic tests, treatment, and drugs are settled directly between the insurance providers and the hospitals. In order to keep costs down, the government is forcing pharmaceutical firms to give insurance providers a higher discount on medicines.

3.2.2 *Services utilization*

3.2.2.1 *Mean waiting time for accessing to a specialist*

Beyond transplantation services, there are no formal waiting lists in German health care. Institutions use lists for organizational purposes. The little literature available shows evidence of institutional waiting lists for cardiac interventions and ambulatory eye surgery in the early nineties which were reduced substantially when capacities were expanded in the mid-nineties (personal communication, R. Busse).

3.3 REGULATION POLICIES

3.3.1 Numerus clausus

The German post-war constitution stressed individual rights and limited rights of intervention and regulation by the state. One right included the right to free choice of an occupation and corresponding educational opportunities. This meant that the government was not able to approach workforce planning by controlling the number of students in medical schools at university.⁶⁶

In the 1980s, the growth in the number of physicians was considered to be a major cause for spiralling health expenditures. Sickness funds and physicians' associations demanded a reduction in the supply of physicians by reducing the number of medical students and limiting access of physicians to the mandatory health insurance system.

3.3.1.1 Type

At all universities of the Federal Republic of Germany, medical training is subject to a restriction on admission according to an admission procedure established by the Federal Länder. Moreover, the universities themselves can select applicants.⁶⁹

Access to German universities is usually limited to people with an A-level equivalent (12 or 13 years of school) plus completing a special Medical School-entry test. Admittance is according to academic records in conjunction with the test result, waiting times and special quotas (for example, foreigners or the disabled). Fifteen per cent (15%) of medical students are accepted by means of interviews at universities.⁶⁹

Every German state must honour an Abitur passed in any other of the states. As an illustration, if a candidate wanted to study medicine in 2003, then the qualifying Abitur grade s/he would need would depend in part on the state in which s/he applied: to secure a place at a university in Baden-Württemberg the candidate would need a minimum score of 1.8 on a scale of 1.0 (best) to 4.0 (worst); to secure a place in Mecklenburg-Vorpommern, 2.4 could be a qualifying score. About a quarter of those admitted, however, are selected from a waiting list of unsuccessful applicants from previous years. The numerus clausus in medicine is nationwide, with enrollment handled centrally by the Central Office for the Allocation of Study Places (ZVS, Zentralstelle für die Vergabe von Studienplätzen).

3.3.1.2 Objectives pursued

Since the beginning of the 1980s cost considerations have motivated health policy-makers to try to reduce university places for health care studies, while educators have not generally agreed according to the respect of freedom of access to knowledge, and to the potential of students in universities (under the responsibility of the Länder).

Consequently, teaching ministers from Länder are opposed to the number of students decrease whereas Health Minister and the Chamber of Physicians consider this decrease as essential to preserve the quality of medical training and to avoid physician oversupply.

3.3.1.3 Year of implementation

A control in students' admission in universities has existed at least since the 1970s.

3.3.1.4 Subsequent adaptations

In April 2002, a revised set of licensing regulations was introduced, implying a statutory reduction in the number of new registrations. This reduction as well as new regulations covering courses and examinations has to apply in the start of the academic year of 2003/2004. The number of available places for studying medicine will decrease as the size of the groups of students being trained in hospitals. The aim is to obtain a reduction of up to ten percent in the number of places to study medicine in Germany.⁵⁶

3.3.1.5 Management: actors and processes

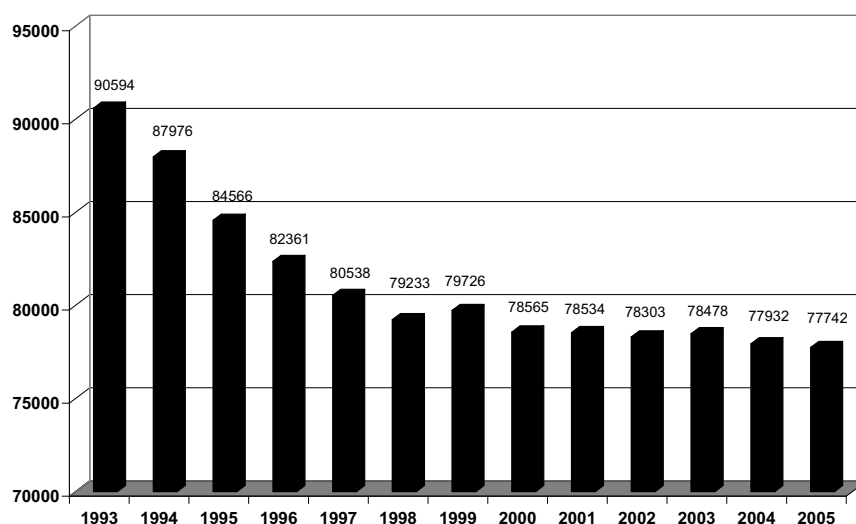
Basically, responsibility for the implementation of the Federal Medical Code (Bundesärzteordnung - BÄO) and the Regulation on the Licensing of Doctors (ÄAppO) lies with the Federal Länder.

For matters concerning the admission to examinations and the law governing examinations, the authorities responsible are generally the Land examination offices of the Länder. The Federal Ministry of Health and Social Security has no direct influence on their decisions.

The 34 medical schools in Germany notify the Central Office for the Allocation of Places in Higher Education (Zentralstelle für die Vergabe von Studienplätzen, in Dortmund) of the places they have available, but this central agency cannot influence capacity. Study places are centrally allotted by this agency according to an admission procedure established by the Federal Länder. The "general certificate of aptitude for higher education" was replaced with the "university entrance qualification" of the Länder. Consequently, the Länder were given the right to also grant persons who do not hold a general certificate of aptitude for higher education access to studies in health professions. Responsibility for implementation lies with the individual Federal Länder. Students are shared out between Länder and between universities. In the mid-seventies, there were almost seven times as many applicants as places available in medical faculties.⁵⁶

A decline on the total number of medical students is currently observed from 90 594 in 1993 to 77 742 in 2005 (Figure 6).

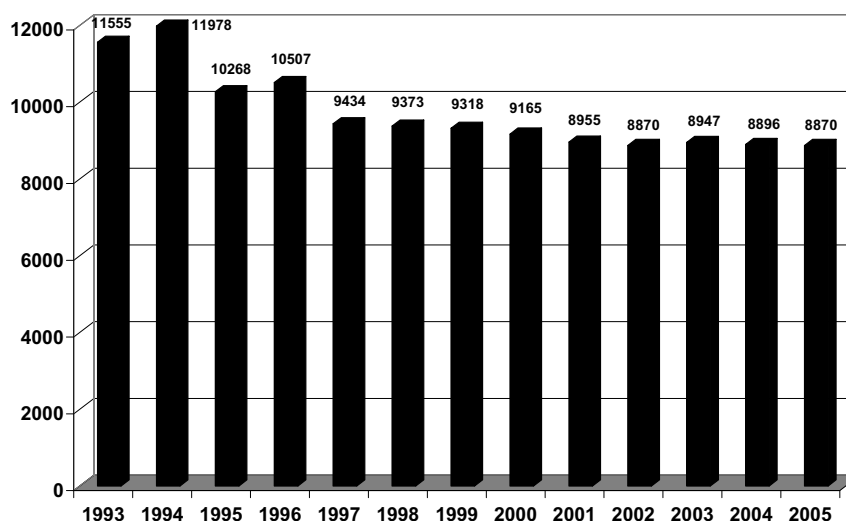
Figure 6. Evolution of the total number of medical students (1993-2005)



Source. Statistisches Bundesamt, 2006

The number of physicians graduated in 1993 was 11 555 whereas in 2005, this number declined to 8 870, representing a drop of 23.2% (Figure 7; Federal Statistical Office, 2006).

Figure 7. Evolution of graduated physicians (1993-2005)



Source. Statistisches Bundesamt, 2006

Moreover, the loss of medical students in the course of their training has grown steadily within the last 3 years: from 38% in 2000, it has increased to 45% in 2002.⁵⁶ According to Reinhardt Busse (personal communication), these percentages could be even higher. Hypotheses for explaining this decline are: the high dissatisfaction of students towards the medical training (highly theoretical training without practical experiences and exchanges between teachers and students); the temporary restrictions on new practices; the unattractive working conditions in hospitals (many working hours, bureaucratic work, academic establishment, lack of supervision) combined with the lack of hope to practice a subsequent career.⁵⁶

3.3.2 Controlling supply

3.3.2.1 Geographical (national or international)

Since 1976, there are regional restrictions for setting up a medical practice with compulsory health insurance based on overall levels of demand and supply. According to Social Code Book V, needs-based plans^g have to be developed to regulate the number of SHI-affiliated office-based physicians. Originally, the intention was to guarantee that the less common specialties would also be available in rural areas. Since the 1980s, however, the focus has been on avoiding over-supply.

One of the most profound changes in SHI medical care was brought about by the complete reorganisation of needs-related planning in the Health Structure Act, which came into effect on 1 January 1993. The Social Code Book has stipulated that new practices may not be opened in areas where supply exceeds 110% of the average number for a given specialty. This form of needs-related planning was stricter than the previous one, considering its implementation as indispensable to save the SHI system. Accordingly, the Federal Committee of Physicians and Sickness Funds developed directives defining these limits. Needs-related planning was intended to ensure that in the long run fewer doctors than in the past would establish their own practice.⁵⁶

The Government Ministry of Health delegated specific tasks to the Federal Committee of Physicians and Health Insurance Funds.

^g It is not really needs-based/-oriented plans, but much rather "benchmarking-oriented" plans. This is one of the factors, which led Aktionsprogramm Umwelt und Gesundheit Nordrhein-Westfalen to establish so-called health-conferences on district level (Kommunale Gesundheitskonferenzen => www.loegd.nrw.de). In theory these round-tables are designed to contribute to needs-assessment in terms of epidemiological analysis.

This Committee, then replaced by the Federal Joint Committee, is responsible for establishing the guidelines for medical workforce planning to be carried out at the regional/local level. The Federal workforce plan operates under the following guidelines:⁴⁹

- regulations on workforce planning - with emphasis on how to determine the content of workforce plans and the delimitation of planning areas;
- standards, basis and procedures for the determination of the general degree of supply of medical care and oversupply;
- standards of determination of special need related to quality aspects as a precondition for granting exemptions from admission restrictions (i.e. admission or acceptance of application to work in a panel of physicians);
- standards, basis and procedures for the determination of impending or existing under-supply; and,
- standards of a balanced provision structure for general and specialist medical care.

Based on these guidelines, the Federal Committee establishes the doctor/patient ratios per specialty, including General Practitioners, and submits these to the Ministry of Health. The German Federal Ministry of Health can and has demanded revisions to these guidelines where they feel they do not meet the budgetary and health need requirements of the system. Currently the government is insisting on the use of 1990 numbers as the 'authoritative' reference point. Based on agreement, the guidelines are then passed to a 'local' or regional Associations of Panel Doctors and Regional Federations of Social Insurance Funds.⁴⁹

For planning purposes, Germany is divided into four types of regions which are in turn divided into 10 planning categories (based on the land division model used by the Federal Office of building and Land Resources).⁴⁹

They include:

1. Agglomerated areas: regions with large conurbation and towns with populations of 300 000 inhabitants and/or with a density of 300 inhabitants per square kilometre. Planning categories 1 to 4 (cities / high density counties / normal density counties / rural counties).
2. Urban areas: regions with a smaller density and population of from 100 000 to 300 000 inhabitants and partly characterized by very rural surroundings and/or a density of 150 inhabitants per square kilometre. Planning categories 5 to 7 (towns / normal density counties / rural counties).
3. Rural areas: characterized by rural surroundings. Planning categories 8 and 9 (counties with concentrations of population / rural counties).
4. Special areas: applies to towns that are administrative districts as well as administrative districts for the Ruhr area only. Planning category 10 (The Ruhr).

Initially, 12 groups of specialists were included (ophthalmologists, surgeons, specialist internists, gynaecologists, ENT specialists, dermatologists, paediatricians, neurologists, orthopaedic specialists, radiologists, urologists, GPs). On 1 January 1999, 2 further groups of specialists were added (anaesthesiologists and psychotherapists) (Table 17). For specialties with less than 1 000 SHI doctors nationwide, no ratio is developed since they are not subject to needs-related planning.⁵⁶

Table 17. Needs-based population ratios defined as covering 100% of need per specialty - highest and lowest ratios (defined as one physician per X population; based on current calculations from 2003)

	Highest planning category ratio	Lowest planning category ratio	Relative difference highest/lowest
Family physicians ^a	1/ 1 474	1/ 2 134	1.45
Specialist internists	1/ 9 574	1/ 44 868	4.69
Anaesthetists	1/ 18 383	1/ 137 442	7.48
Dermatologists	1/ 16 996	1/ 60 026	3.53
Ear-nose-throat physicians	1/ 16 419	1/ 42 129	2.57
Gynaecologists	1/ 6 711	1/ 14 701	2.19
Orthopaedists	1/ 13 009	1/ 34 214	2.63
Neurologists/ Psychiatrists	1/ 11 909	1/ 47 439	3.98
Ophthalmologists	1/ 11 017	1/ 25 778	2.34
Paediatricians ^b	1/ 12 860	1/ 27 809	2.17
Psychotherapists	1/ 2 577	1/ 23 106	8.97
Radiologists	1/ 24 333	1/ 156 813	6.44
Surgeons	1/ 21 008	1/ 62 036	2.95
Urologists	1/ 26 017	1/ 69 695	2.68

Source: Upcoming HiT profile 2007 based on calculations based on Federal Association of SHI Physicians, 2006

Note: ^aincluding general practitioners, practitioners, and family internists; ^bincluding family paediatricians.

There are two levels in the process. In the first level, the general or current doctor / population ratio is determined using the current populations and numbers of doctors by specialty (including General Practitioners) per planning category. The 'established' ratios for given specialists and general practitioners are then applied to the population in the planning area to determine the number of physicians "needed" by specialty to serve the population. The process then examines the actual number of general practitioners and specialist physicians per planning category by dividing the actual number of physicians by GP/specialty by the need with 100 representing the correct amount. Initially under supply is considered to be when there are 75% or less of the number of GPs required and 50% or less for specialists. An oversupply is when the percent of physicians of any category are 10% or more over the required number.⁴⁹

The reference number is the physicians to population ratio by counties in the same planning category. This ratio is that on 1990. Thus, over-supply is defined as 110% of that figure. Factors such as age, gender, morbidity or socioeconomic status of the population or the supply of hospital beds are not taken into account. Due to this definition, the "need" for certain specialties varies widely. Some exceptions were applied allowing specialists to practise, even in "closed areas" (or saturated), for example by taking over an existing practice or when the registration of a further doctor is imperative to ensure adequate care provision. Plans are developed every three years. In open areas, SHI doctors are free to establish new practices.⁴⁹

In the second level of assessment, the regional committees examine the results and carry out additional examinations. In the case of under supply, the committees carry out additional assessments to further guide their recommendations concerning admission of additional physicians to the panels. For physicians, they look at the areas of activity, productivity, age structure of the physicians, the structure of the medical practice and whether there are any specially authorized physicians. They then look further at the population numbers, age structure, demand for services, and other factors. In case of oversupply, they look at specific issues such as special population needs, special services offered by an applicant but by none or few of the established practices, the level of group practice, and profiles of ambulatory surgery.

If the determination does not change the earlier assessment, additional physicians will be blocked from joining the physician panel in the given specialty or general practice.⁴⁹

Simultaneously, SHI doctors who had had their practices for at least 20 years must resign their registration with the health insurance funds upon reaching their 68th year.⁵⁶

In practice, this regulation was really effective: before its introduction (from 1984 to 1992), the average rate of increase in specialisations subject to needs-related planning was 2.7%; this rate decreased to 1% after the implementation of this regulation (from 1994 to 2002). In comparison, the average rate of increase in specialisations which were not subject to needs-related planning was 7.7% (from 1994 to 2002). However, this last group of physicians only represents 3.1% of all SHI doctors. The geographical distribution of doctors has become more even, although the existing oversupply in specific areas, like large cities, was not resolved since it contains no instrument for closing practices or preventing others from taking over the practices and SHI registrations of retiring doctors.⁵⁶ While this would be theoretically possible, there is a real issue about property rights which usually prevents closings (as the practice including equipment – and especially an established number of patients – would be de facto worthless).

Although there is almost no possibility to establish new practices for specialists (with the exception of psychotherapists), general practitioners are free to set themselves up in practice in two-thirds parts of the country.⁵⁶

The access to hospitals is narrowly linked to budget constraints and human resources ratios defined by German hospital association. Fewer possibilities of establishing own practice after specialty qualification mean that more qualified (and older) physicians stay in hospitals.

3.3.2.2 *Per specialty*

General practitioners amounted to only about 20% of the physicians receiving their specialty diplomas from physicians' chambers during the 1990s. The low generalist/specialist ratio has been interpreted as a result of lower income prospects, but also of a lack of training facilities in ambulatory care and lower prestige due to the socialization of medical doctors in secondary and tertiary hospital care. Therefore, sickness funds, private health insurers and regional physicians' associations have been obliged since 1999 to finance half of the GP-trainees' salaries during the office based training period (minimum two out of five years). However, in practice, the subsidy often is the trainee's only income, which may explain why in 2003, of the 12 107 physicians obtaining a specialist degree, only 13% were general practitioners while specialist internists were the largest group (15%).⁶⁶

3.3.2.3 *Per age range (in particular retirement policy)*

The retirement at age 68 is really mandatory. It has been strictly applied until recently (except in the exceptional circumstances given above, i.e. where a minimum number of years in private practice was not reached – a clause which was done for physicians in the Eastern part of the country), and enforcement was easy: the contract with the sickness funds expired (which did not mean that the physician lost his/her licence to practice, i.e. they still can, and do, treat private patients). Most recently, through the "Vertragsarztänderungsgesetz", staying on beyond 68 is possible in underserved areas (Reinhard Busse, personal communication).

3.3.3 *Functioning regulation*

3.3.3.1 *Expenditure ceilings*

In 2005, health expenditure in Germany comprised 10.7% of its gross domestic product (GDP). (OECD Health Data, 2007)

3.3.4 Controlling demand

3.3.4.1 *Patient's contributions to health care costs*

There is a practice fee of € 10 per quarter. Children, hardship cases and chronically ill persons benefit from exemptions or reduction of participation.⁷⁰

3.3.4.2 *Gate-keeping*

The bypassing of general practitioners by those consulting specialists was identified as an upward pressure on costs, as the typical consultation with specialists is much more expensive than a consultation with a general practitioner. The gatekeeper function of general practitioners has subsequently been strengthened.⁵³ Since the 1st of January 2004 patients have to pay – if they are insured with a sickness fund – a practice fee of 10 euros each time they visit their doctor for the first time within each yearly quarter. This is regardless of whether they are visiting a general practitioner, a specialist doctor or a psychotherapist. They do not have to pay a fee if they have been referred by another doctor. Children and juveniles under the age of 18 are generally exempt from paying any additional charges and the practice fee. No practice fee is charged for two dental check-ups per year. Patients also do not have to pay a practice fee for precautionary check-ups and immunisations.⁶⁵ Patients have to pay a new (second etc.) practice fee if they go to any physician without a referral.

The duration of specialization in general medicine was increased from three to five years in 1998 in order to strengthen the quality and professional status of future family practitioners. The new general practitioners will be trained to become gatekeepers, referring to the Danish and French models.

4 CASE STUDY :AUSTRIA

4.1 HUMAN RESOURCES

4.1.1 General supply

4.1.1.1 Number of physicians

In 2004 there were 38 730 doctors in Austria. Of these, 11 600 were general practitioners (specialists in general medicine), 20 900 specialists and 6 153 "Turnusärzte", i.e. doctors completing postgraduate hospital residencies (Table 18).⁷¹ The number of doctors authorised to practice has more than doubled since 1975. The trend is clearly towards specialisation. Whereas the number of medical specialists has almost trebled in the last 25 years, the number of general practitioners has risen considerably more slowly.⁷²

Table 18. Evolution of the numbers doctors according to their specialty from 1975 to 2004

Year	Doctors completing residencies	General practitioners	Medical specialists (incl. dentists)	Total
1975	3 145	5 506	7 202	15 853
1985	5 269	6 781	9 671	21 721
2000	5 585	10 939	18 069	34 593
2004*	6 153	11 600	20 900	38 730

Source: Austrian medical Chamber ⁷²

Source*: ⁷¹

All Medical Doctors (MDs) are compulsory members of one Austrian Medical Chamber (AMC). The Austrian Medical Chamber is the body representing doctors in training, general practitioners and specialists. In 2007, numbers of MDs registered by AMC are:⁷³

- Total: 35 354 MDs
- Employed MDs: 20 169 (including 6 531 MDs in internship)
- Self-employed MDs: 15 185 (including 1 717 retired MDs practising on a reduced scale)
- General practitioners: 12 299
- Medical specialists: 18 001

4.1.1.2 Ratio specialists / general practitioners

According to numbers presented above, the ratio specialists/GPs could be estimated to 1.46 medical specialists for one GP.

4.1.1.3 Ratio specialists / hospital beds

In 2003, there were 67 708 hospital beds in Austria.⁷⁴ The ratio medical specialists / beds could be estimated to 0.26 specialists per hospital bed.

Since 1990, the number of practising specialists in Austria has almost doubled (19 962 including dentists / 15 925 excluding dentists in 2003). The specialties with the highest rates of increase compared to 1990 include plastic surgery, physical medicine, neurosurgery, anaesthesiology and psychiatry. The largest proportion of practising specialists in 2003 worked in internal medicine (17.5%), anaesthesiology (10.8%) and gynaecology and obstetrics (8.7%).⁷⁴ By 2020, therefore, the Austrian Medical Association expects some 9 500 doctors to be unemployed. Such pressure on the medical labour market is likely to increase supplier induced demand for health care and thus expenditure on health care.⁷⁵

4.1.2 Imbalances

According to Eurobarometer (1999), 73.2% of surveyed people said "I go to the GP by foot" (1999; Eurobarometer 52.1 CE).

4.1.2.1 Mean physician density

In 1980 and 1990 Austria had still been around 25% below the average value for Europe with ratios of 23 and 30 physicians per 10 000 inhabitants respectively. In 2004, the density of practising physicians was 35 per 10 000 inhabitants and thus average for the EU (35). Compared to 1980, the number of practising physicians has increased at double the rate. The number of specialists has grown in particular, doubling between 1990 and 2003.⁷⁴

4.1.2.2 Ratio highest / lowest density

Patients are free to choose from among contracted physicians and can select a physician of their choice without geographical restrictions.⁷⁴

The structure of offers is characterized by inequalities between the Länder and also between urban and rural areas (65.8% of the population lived in urban areas in 2002). Practices in remote rural areas occasionally remain vacant, even though health insurance fund contracts would be available.⁷⁴

Whereas there were 546 people per physician in 1970, this ratio had changed to 218:1 in 2003. The density of provision by practising physicians is subject to considerable variations across the country. Rural regions such as the Land of Burgenland in the east (32 physicians per 10 000 inhabitants), Vorarlberg (34 per 10 000) or Upper Austria (36 per 10 000) have the lowest density ratios. In contrast to this, Vienna, the federal capital and the largest city by far, has 70 practising physicians available per 10 000 inhabitants and thus more than twice as many as the above-mentioned largely rural areas.

These considerable regional variations, however, do not necessarily imply that there is an excess or lack of physicians. In Vienna in 2002 there were, for example, 72% more practising physicians per capita than in Austria as a whole (on a global amount of 8 032 926 inhabitants, 1 550 123 persons had their main residence in Vienna, i.e. 19% of the population). At the level of contracted physicians, the surplus amounts to 47% and is thus significantly lower. The higher density of physicians in the cities cannot be explained purely by the fact that they are also serving the surrounding areas. In Vienna and its surroundings (Lower Austria and Burgenland) there are 30% more practising physicians per capita and 22% more contracted physicians than in the rest of Austria. In spite of the surplus compared to Austria as a whole, Vienna has a lower density of physicians than Hamburg, Berlin, Lyon and Paris for example.⁷⁴

What these five cities do have in common is the fact that their ratio of physicians per inhabitant is higher than that of the rest of the respective country. In Austria this difference is greater than in Germany, with Vienna having 72% more physicians per inhabitant than the rest of the country. In the two French cities – Lyon and Paris – the gap is even more pronounced: Paris, for example, has two-and-a-half times more physicians than the rest of France. In cities, also the health insurance's per-capita spending for medical services is higher than in the country. In this case, however, the difference is not as big as with the density of physicians.⁷⁶

The fact that Vienna and Paris have particularly high physician densities is probably a kind of "metropolis effect": both cities are singular in terms of number of inhabitants within the two countries (1.5 and 13 million inhabitants respectively).

The Vienna surplus is almost exclusively due to the surplus of specialists, as in the two other countries: Vienna has twice as many specialists per capita as the whole country, and the higher density of specialists is reflected in practically all the specialties. In Paris the number is even three times, in Lyon two-and-a-half times as high as in France. Hamburg and Berlin each have one-and-a-half times more specialists than Germany. The density of general practitioners, on the other hand, is not that much higher than in the rest of the country for Vienna, Hamburg and Berlin.⁷⁶

This shows that Austria's rural areas have significantly less physicians with social health insurance fund contracts than rural areas in Germany, and illustrates the effect created by the fact that the health insurance funds in Austria can award contracts selectively according to a location plan agreed upon with the physicians' chambers.

4.1.3 Employment indicators

4.1.3.1 Mean weekly effective work hours

OECD Health data indicate the average weekly work hours of physicians according to age and gender (Table 19).

Table 19. Average weekly work hours of physicians according to age and gender

Age range	Female doctors	Male doctors
25 – 34 years	37	52
35 – 44 years	35	50
45 – 54 years	39	50
> 55 years	42	42

Source: OECD Health Data, 2000

4.1.3.2 Number of annual consultations per physician

A post for a general practitioner with contracts is in general being created for approximately 2 000 patients in the catchment's area. The actual number of patients varies due to the free choice of the doctor by the patient and depending on the popularity of the doctor.

4.1.3.3 Unfulfilled vacancies

There is no shortage of qualified doctors in Austria. On the contrary, the number of graduates from its medical universities has more than saturated the labour market. The number of physicians who finish general practice or specialist training exceeds the number of the vacancies available under the national health system by about 500 physicians each year. This leaves room only for highly qualified personnel and specialists in particular fields.⁷⁷

It is really hard for junior medical doctors to get a position as a trainee doctor (Turnusarzt) and the competition is really high among candidates. Once the training came at end, graduates are most often unemployed; in ideal situations, they can continue their student job, in the worst situations they work as auxiliary workers. The mean waiting period for a rotation place in Vienna is more than two years (personal communication with Wolfgang Spiegel, Department of General Practice, Centre of Public Health, Medical University of Vienna, July 2007).

4.1.4 Demography

4.1.4.1 Ratio male / female

According to ÖBIG Data, 39.8% of all practising physicians in 2004 were female doctors, for a ratio male /female equals to 2 (see Table 20).⁷¹

Nevertheless, the proportion of women is higher before 40 years old and falls under 20% after 60 years old.

Table 20. Part of male and female physicians according to age category (in 2004)

Gender	< 30 years	30 - 39 years	40 – 49 years	50 – 59 years	60 – 69 years	≥ 70 years	Total
Male	1 053	4 515	9 112	5 761	2 286	604	23 331
Female	1 810	4 569	6 226	2 158	477	159	15 399
Total	2 863	9 084	15 338	7 919	2 763	763	38 730
% women	63.2	50.3	40.6	27.3	17.3	20.8	39.8

Source: ⁷¹

4.1.4.2 *Percentage of physicians in 30-50 years range*

According to ÖBIG data, 63% of all physicians are in 30-50 years range.⁷¹

4.1.4.3 *Mean age at retirement*

There is no mandatory age of retirement (personal communication with Wolfgang Spiegel, Department of General Practice, Centre of Public Health, Medical University of Vienna, July 2007).

4.1.4.4 *Percentage of immigrants*

In 2001, 3.3% of all practising physicians are foreign physicians. Of those, 84.3% came from Germany and 7.3% from Italy.⁷⁸

A limited number of opportunities exist for non-EEA doctors, especially for GPs and specialists.

4.1.4.5 *Percentage of emigrants*

There are few emigrants from Austria to other countries (personal communication with Wolfgang Spiegel, Department of General Practice, Centre of Public Health, Medical University of Vienna, July 2007).

4.2 **HEALTH SYSTEM**

4.2.1 **General organization**

4.2.1.1 *Public/private mix in services delivery*

Primary healthcare is provided to a large extent by physicians that are in private practice, most of whom are under contract with the health insurance agencies. Outpatient clinics owned by hospital providers or statutory health insurance funds deliver secondary outpatient and dental care. General practitioners coordinate care and referrals. Acute secondary and tertiary inpatient care is provided by fund hospitals accredited in hospital plans or by private for-profit hospitals. In 2001, 28% of beds were provided by private hospitals and 73% by fund hospitals owned by municipalities, the Länder and religious or other not-for-profit organizations.⁶⁸

4.2.1.2 *Doctors type of payment*

Each insured person receives a certificate that is valid for three months, patients pay a contribution on each certificate and this certificate enables the patient to visit any general practitioner or ambulatory specialist having a contract with the insurance fund. In general the patient does not have to pay the doctor for treatment; the payment is made by the insurance fund. The physician indicates that he/she has provided a consultation service during that quarter and records all the billable services performed, at the end of the quarter the doctor sends the certificate to the fund and receives payment for the case plus fees for the services rendered.⁷⁴

Health insurance funds conclude individual contracts selectively with a proportion of physicians in private practice (43% in 2005). These contracts are largely determined by the general agreements. According to these, contracted physicians receive a mixture of payments per capita payments for basic services and fee for service payment for services which go beyond the scope of basic services. The distribution of these payment elements varies according to specialty, Land and partly owing to the type of health insurance fund. In some Länder there are limitations on service amounts with sliding scale of payments for physicians' services.⁷⁴

The services of non-contracted physicians are reimbursed up to a level of 80% of the fee which a contracted physician would charge for the same service; all other fees are paid directly by private households or by private supplementary insurance. The fees of non-contracted physicians are usually significantly higher than the fees negotiated for contracted physicians. The payment of physicians in private practice is set so that operating costs and investments for the practice can be amortized.

For services provided in hospital out-patient departments, doctors are paid on a yearly 'one off' payment scheme via social insurance, irrespective of the number of patients treated.

Because the deficit of all Austrian social insurance bodies increased dramatically, primary care doctors have an incentive to refer patients to the hospitals instead of treating them in the primary care sector; the deficit of public hospitals is not paid by the social insurance agencies.⁷⁵

4.2.1.3 *Health insurance type and coverage*

The Austrian health system is shaped by statutory health insurance (SHI) that covers about 95% of the population on a mandatory basis and 2% on a voluntary basis. This means that only a maximum of 160 000 people are outside the scope of the national compulsory insurance scheme. However, the major part of this group benefits from social health insurance coverage having been granted the status of "asylum seekers in need of support and protection" by an ordinance, which has brought about considerable improvement in this area.

The 26 SHI funds are organized in the Federation of Austrian Social Security Institutions and do not compete with each other since membership is mainly mandatory and based on occupation or domicile. Since 2001 family co-insurance has required a (reduced) contribution but many household members remain exempt for example children, child-raising spouses or individuals in need of substantial nursing care.⁶⁸

Social health insurance does not only cover all medical services and income losses arising from ill health but also includes prophylactic and preventive measures. The health-insured have to make co-payments for specific services, e.g. prescription charges, shares in the cost of remedies and medical aids. In general, all forms of cost-sharing are socially compatible, i.e. people with low incomes or people furnishing evidence of extraordinary expenses caused by illness are exempted from prescription charges and, linked to it, from all other co-payments (people in special need of social protection).⁶⁸

4.2.2 *Services utilization*

While the number of hospital beds had been reduced to 61 beds per 10 000 population in 2002, the density of beds in Austria remains high compared with the average for the EU-15 (42 per 10 000 inhabitants). In addition, Austria had by far the highest admission rate (28.8 per 100 inhabitants) whereby a proportion of hospital outpatient cases are included in this figure.⁷⁴ The exceedingly high admission rates are partly owing to the procedure and diagnosis-based inpatient reimbursement system and to a lack of incentives to shift services to outpatient settings. At the same time, the average length of stay was reduced from 13 days in 1990 to 6 days in 2002 when the occupancy rate was 76%.

4.2.2.1 *Annual number of consultations per capita*

The number of outpatient contacts was 6.8 per person in 2002.⁷⁹

4.2.2.2 *Mean waiting time for accessing to a specialist*

Waiting times for medical treatment are rarely discussed in public and can be viewed as short in comparison to other countries, although there has been no precise evaluation of this. This may be related to the fact that waiting lists are only kept for transplants.⁷⁴

The high density of medical practitioners in Vienna means that a physician can be reached relatively quickly. However, the Viennese need longer to get to an internist's or dentist's practice than the national average – possibly due to the large choice. In Vienna, 60 percent of the population have a travel time of no more than a quarter of an hour to and back from their general practitioner or gynaecologist. The travel time to outpatient departments or health care centres and to internists and other specialists is longer. While the time needed to visit medical practitioners – with the exception of gynaecologists – has scarcely changed since 1991, the waiting time – except for internists – has decreased significantly due to the increased density of practitioners and the higher organizational efficiency in the practices. Not only the travel time, but also the waiting time lies – with a few exceptions – below the Austrian average.

The longest waiting time in Vienna is in outpatient departments or health care centres as well as at internists and other specialist's practices, while it is lowest for patients at dentists, paediatricians, gynaecologists and general practitioners. However, the travel and waiting time vary from district to district.⁸⁰

4.3 REGULATION POLICIES

4.3.1 Numerus clausus

4.3.1.1 Type

The access to medical studies is still free and not limited by a numerus clausus. Since the academic year 2001/2002, both domestic students and those from EU countries and EEA countries have had to pay course fees of €363.36 per semester (whatever the cursus). Students from non-EU/non-EEA countries have to pay course fees of twice this amount. For health professions **except for physicians**, access is limited depending on the subject; this limitation takes the form of entrance examinations and available capacity. Indirect market barriers for physicians are created by the waiting list for specialist training places, but also with regard to the award of contracts with the health insurance funds.

Starting in 2006, the three medical universities (in Vienna, Innsbruck and Graz) did introduce entrance exams, according to new Bologna Regime Bachelor's degree programmes (Bachelorstudium). Admission to a bachelor's degree programme at a university is granted upon the basis on the Austrian higher secondary school leaving certificate (Reifezeugnis), its foreign equivalent, or the successful completion of a special university entrance examination (Studienberechtigungsprüfung). Students of compulsory lower schools who have completed additional schooling in the form of apprenticeships as skilled workers may take a vocationally based examination acknowledged as equivalent to the higher secondary school leaving certificate (Berufsreifeprüfung).⁸¹

In its report published in 2000, ÖBIG recommended to reduce the medical supply (training places) by 48%.⁸² Nevertheless, no measure was taken in this direction and there are no intentions to introduce a numerus clausus in any subject field.⁸¹

In the 2004/2005 academic year, 2 416 candidates began studying medicine, and 1 581 received the title of doctor of human medicine and 167 that of dental medicine. The attainment of the doctor title is a prerequisite for beginning the second part, a three-year general medical internship or a six-year internship in the desired specialisation (44 areas of specialisation). As part of the practical training ("Turnus") for general medicine, the requirement since the beginning of 1995 has been for at least six months in institutions of primary medical care (teaching practices, outpatient teaching clinics, outpatient departments), with the rest of the time served in hospital departments.⁷²

4.3.1.2 Other restrictive measures

In 2003, an action was brought before the European Court of Justice (ECJ) by the Commission of European Communities because Austria failed to fulfil its obligations under Articles 12 EC, 149 EC and 150 EC (Conditions of access to university education — Discrimination). The Austrian legislation required that the holders of secondary education diplomas from other Member States had to prove that they met conditions governing access to the higher education in their home country (e.g. passing the entrance exams). The justification presented was that, without a filter system, the massive influx of German students into faculties of medicine would endanger the Austrian health system. After graduating, the students, in most cases, return to their country of origin, something that could, in five or six years' time, lead to a serious shortage of doctors in Austria. The Court held that Austria's legislation discriminated against holders of secondary education diplomas awarded in another Member State, since they could not gain access to Austrian higher education under the same conditions as holders of the equivalent Austrian diploma (Article 12, 149, 150 of the EC Treaty).

As regards a possible justification of such discrimination, the ECJ stated in particular that Austria "failed to demonstrate that [...] the existence of the Austrian education system in general and the safeguarding of the homogeneity of higher education in particular

would be jeopardized”, in the absence of restrictive measures, by the number of students coming from other countries, mainly Germany.⁸³

Following the Court's decision, Austria provisionally amended the relevant Universities Act twice, firstly in July 2005 to abide the Court's decision then, in June 2006, to re-establish restrictions to the access. The latter amendment specified that, for some studies, 75 % of the study places could be reserved to applicants with a secondary education diploma acquired in Austria (and 20 % to other EU students, the remaining 5% to third-countries students). A subsequent decree stipulated that these quotas were to be introduced for medicine and dental studies till the end of 2007.⁸³

A letter of formal notice – based on Article 228 of the Treaties (i.e. non-application of an ECJ ruling) – was written on January 24, 2007 indicating that the Commission, having analysed the justifications put forward so far by the Austrian authorities, considers at this stage that Austria has still not complied with the ECJ's ruling and invites accordingly Austria to submit its observations. Commission wants Austria to demonstrate that massive influx of foreign students endangers its health system (October 17, 2007).

4.3.1.3 *Management: actors and processes*

At federal level, the Österreichisches Bundesinstitut für Gesundheitswesen (ÖBIG), a research organization, generates policy-relevant knowledge and expertise for policy-makers. The executive agency produces studies and analyses on different themes related to health care provision and health care management. The agency also is actively planning health care provision and allocation in Austria.

There is a Physicians' Chamber in each Land. Every medical doctor who is authorized to practice in accordance with the Physicians' Act is automatically a member of this chamber. The regional physicians' chambers negotiate a capacity plan (the so-called “location plan” which regulates the number and local distribution of contracted physicians) with the Federation of Social Insurance Institutions for outpatient care provision by contracted physicians, on the basis of which the health insurance funds selectively award individual contracts to a proportion of physicians in private practice. The remaining physicians in private practice do not have contracts with any health insurance fund. The cost of their services, however, can be partially reimbursed (80% of the fee usually charged by a contracted physician) by the funds upon application by the insured.⁷⁴

In cooperation with its associations at Länder level, the Austrian Physicians' Chamber administers the applications of physicians to exercise their profession and maintains a list of authorized physicians. A physician may only start working after registering on this list. Every physician who is authorized to carry out his/her profession can open a practice (freedom of establishment).⁷⁴

Austrian Medical Law does not require trainees for medical specialties to undergo general practice training, as general practice is not a recognized specialty in Austria. However, most hospital authorities require graduates to start as trainees for general practice regardless of their preferred specialty. Because universities produce too many graduates, candidates for postgraduate medical education— for both general practice and specialties— must reckon with a years long waiting period, especially in large cities like Vienna. During this time, graduates are put on waiting lists for general practice training regardless of their individual specialty preference. The average waiting period for a general practice training position in Vienna is at present 2.5 years.⁷⁷

In contrast to general practice training, there are no official waiting lists for specialist training posts. According to Austrian Medical Law the number of posts for specialist and general practice training are allocated to specific departments by the Federal Ministry responsible, based on the number of beds and the fully trained specialists working in that department.

In Austria heads of clinical departments commonly have the freedom to allocate specialist training posts to graduates based on their own personal selection criteria or preferences. As a rule, department heads select from among the physicians who, under a rotation system, train in their departments as general practice trainees.⁷⁷

4.3.2 Attraction and retention policies

4.3.2.1 *Geographical (national or international)*

Austria has adopted a regulatory policy that imposes conditions on the choice of practice location. Physicians are not able to get a contract with a regional health insurance fund if the threshold number of physicians is reached in a region. Other policies that provide financial support for establishing practice in a rural area have been implemented.⁸⁴

4.3.3 Functioning regulation

4.3.3.1 *Expenditure ceilings*

In 2005, health expenditure accounted for 10.2 % of gross domestic product.⁷¹ Austria spent 9.6% of its gross domestic product (GDP) on health care in 2004 (€23 billion), ranking above the EU average (OECD, 2006). In Austria there is a general consensus on “mixed financing”. About half of the health expenditure in Austria is financed from health insurance contributions, about one fifth is raised by tax revenue and approximately three tenth come from private households (including private health insurance).

Health reforms have primarily dealt with cost containment and with structural reforms. In the acute care sector, organizational tasks have been partly privatized. The reimbursement of services and medicines has been more strongly linked to health technology assessment.

4.3.4 Controlling demand

4.3.4.1 *Patient's contributions to health care costs*

For those insured according to the ASVG (General Social Security Act; 79.1% of all directly insured individuals) and their family members, employers have issued certificates of entitlement to services to employees (known as *Krankenscheine* or health vouchers) upon demand since 1997, and continued to do so until mid-2005. For each accounting period, the patient can choose between a health voucher for general practitioners and a health voucher for specialists. During the accounting period (three months), the patient may only change from one contract physician to another with the agreement of the health insurance fund. If a patient wishes to use the services of a contract physician, he/she has to prove entitlement with a health voucher. A direct deductible of €3.63 has to be paid for the issue of a health voucher.

Around 57% of physicians in private practice do not have a contract with a health insurance fund, and taking advantage of their services thus does not require a health voucher. If these physicians are consulted, 80% of the fees, which the health insurance funds would pay for the same service by a contracted physician, are reimbursed. The fees for contracted physicians are mostly considerably lower than those of private physicians.

4.3.4.2 *Gatekeeping*

In Austria, the patient has the free choice of his or her doctors. There is no system of lists in which the patient has to be registered. The patient also has the right to change his or her doctor on a regular basis. The free choice of the doctor concerns also specialists, who are consulted by patients after transferral by the general practitioner, but there is also open access for the patient to the specialist. General practitioners in rural areas also have the right to dispense medicines. With the exception of emergencies, only patients who have a transferral by a self-employed doctor are entitled to hospital care.

To some extent, contracted physicians have a “gatekeeper” function, as they can control patient flows by referrals. This is the case when several specialists are consulted in one accounting period or when hospital stays and/or treatment in hospital outpatient departments is required.⁷⁴

Nearly all hospital departments also have outpatient departments. These outpatient departments, however, are only authorised to provide those services which are not in reasonable reach for the patient outside the hospital. In general, these outpatient departments provide exclusively specialised services, which cannot be offered by the self-employed doctor due to the high costs relating to investments and continuing medical education. Free choice of medical practitioner and largely free choice of hospital, as well as a lack of waiting lists, are main features of the Austrian health care system.⁸⁵

5 CASE STUDY : AUSTRALIA

5.1 HUMAN RESOURCES

5.1.1 General supply

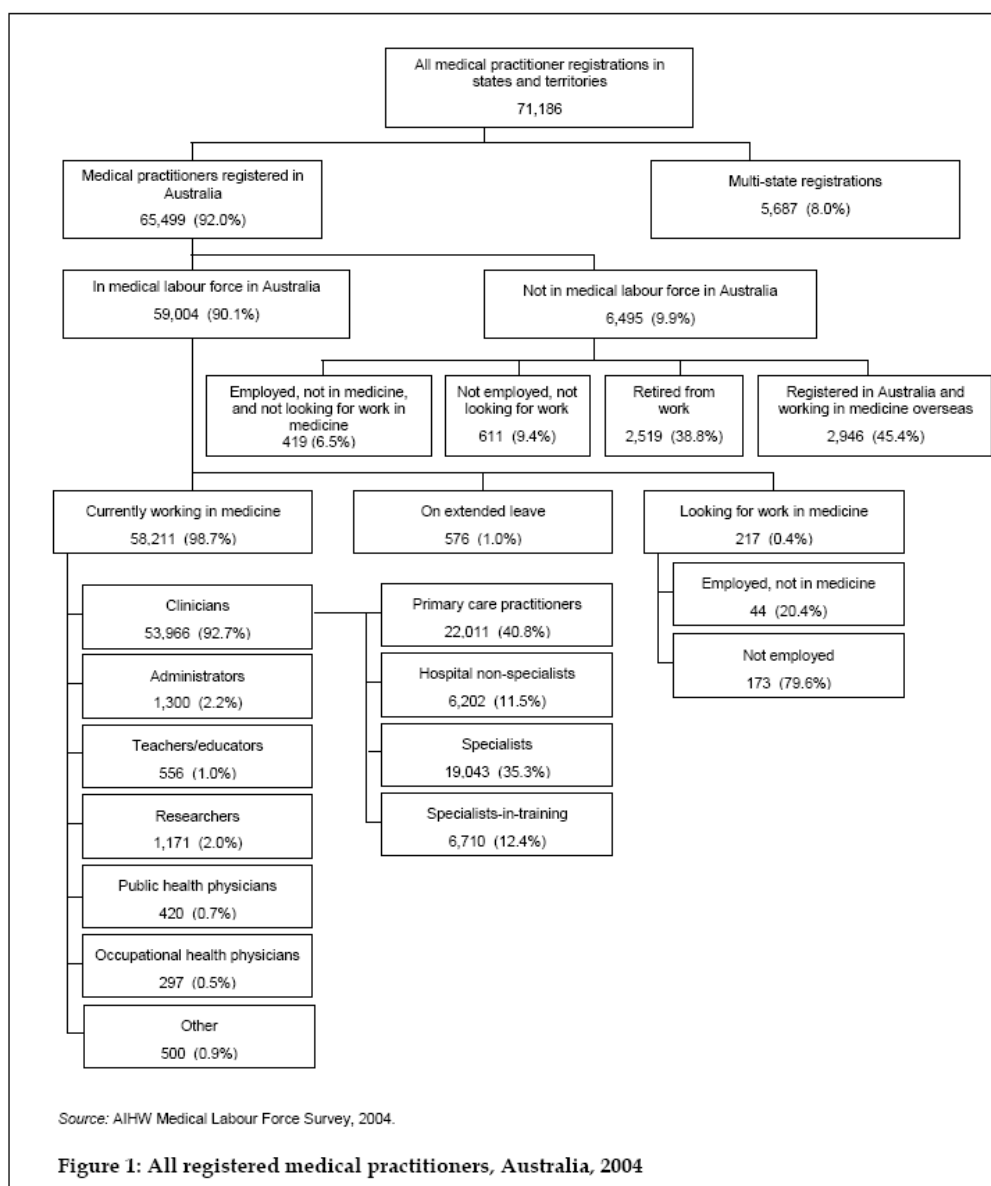
5.1.1.1 *Number of physicians*

In 2004, there were 65 499 medical practitioners registered in Australia and most of these (58 211 or 88.9%) were working in medicine in Australia. In 2000, there were 58 867 registered medical practitioners, of whom 51 106 (or 86.8%) were working in medicine.

Most of the practitioners working in medicine in 2004 were clinicians (92.7%), of whom 40.8% were primary care practitioners (mainly general practitioners), followed by specialists (35.3%), specialists-in-training (12.4%) and hospital non-specialists (11.5%).⁸⁶

Between 2000 and 2004, the overall rise in the number of all medical practitioners was by 13.9%. More precisely, AIHW registered a 4.4% growth in primary care practitioner numbers (from 21 081 to 22 011), a 21.1% increase in the hospital non-specialist labour force (from 5 121 to 6 202) and a 19.0% increase in specialist numbers (from 16 008 to 19 043).⁸⁶

The Figure 8 was estimated using practitioner registrations from the registration boards. To remove duplicates (those practitioners registered in more than one jurisdiction), the estimated number of multiple registrations (5 687) was subtracted from the total registrations (71 186).⁸⁶

Figure 8. All registered medical practitioners, Australia, 2004Source: ⁸⁶

5.1.1.2 *Percentage of physicians not involved in curative activities*

From doctors active in 2004, 4 245 doctors were not involved in the curative sector, i.e. 7.3%. Of this non-clinical workforce, administrators (30.6%) and researchers (27.6%) were the largest groups. Non-clinicians also included teachers/educators, public health physicians and occupational health physicians (13.1%, 9.9% and 7.0%, respectively).⁸⁶

5.1.1.3 *Ratio specialists / general practitioners*

According to figure 8, 40.8% of all clinicians were primary care physicians in 2004, i.e. 22 011 whereas 35.3% were specialists, i.e. 19 043, for a ratio of 0.86 medical specialists for one GP.

5.1.1.4 *Ratio specialists / hospital beds*

Medical specialists provide ambulatory secondary care, either in private consulting rooms or in outpatient departments of public hospitals.

There were 54 601 beds in public acute hospitals⁸⁷ and 26 589 beds available in private acute hospitals during 2003-04.⁸⁸ At the same period, there were 16 008 medical specialists in Australia. The ratio medical specialists / hospital beds could be estimated to 0.20 specialists per hospital bed.

5.1.2 *Imbalances*

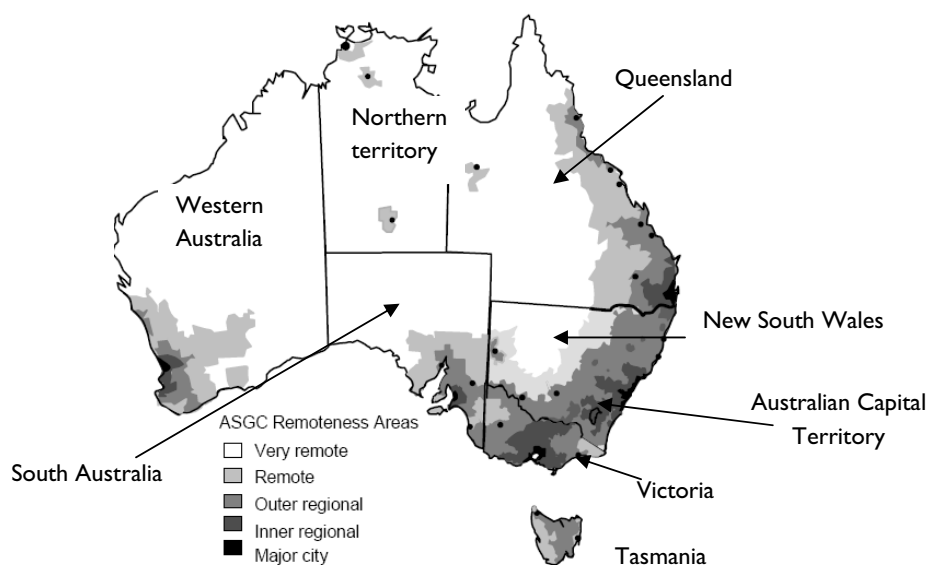
5.1.2.1 *Mean physician density^h*

In 2004, there were an estimated 20.1 million resident Australians (Australian Bureau of Statistics, 2004), and 58 211 medical practitioners working in medical field. The overall density of medical practitioners can be estimated at 29 medical practitioners per 10 000 population. In the same year, Australia had 27 clinicians (practising doctors) per 10 000 population.⁸⁶

5.1.2.2 *Ratio highest / lowest density*

The distribution of general practitioners by states and territories is very similar to the distribution of the Australian population. On average, there were 9.6 general practitioners for every 10 000 persons in Australia (based on the estimated resident population for December 2001). The representation of general practitioners was lower than the national average in Queensland (8.9 per 10 000 persons), Western Australia (8.8 per 10 000 persons) and the Northern Territory (6.2 per 10 000 persons). Historically, services in these areas have been provided by often-isolated practitioners, supported by small bush hospitals providing a limited range of services. While improved telecommunications now support health professionals, new medical graduates can find themselves out of range of mobile telephone networks in rural and remote areas.⁸⁹ The representation of general practitioners was higher than the national average in South Australia (10.8 per 10 000 persons) and Tasmania (10.4 per 10 000 persons).

^h It should be noted that the term "physician" in Australia is not a generic term for doctor but refers to a medical specialist.⁸⁹ Because of this ambiguity, we do not use the term "physician" in this chapter.



According to a report in 2005 by the Australian Bureau of Statistics, Indigenous Australians face a number of barriers to accessing services including distance from services, lack of transport (particularly in remote areas), financial difficulties, lack of proximity of culturally appropriate services, and a lack of Indigenous health professionals. Commonwealth and State governments therefore fund Indigenous specific health services, controlled by local communities in order to offer more accessible and responsive services to Indigenous Australians.⁸⁹

According to Australian Bureau of Statistics (2004), most practitioners are in major cities (79.9%), providing services for two-thirds (66.3%) of the Australian population, while those working in Inner regional areas (14.0%) are providing for one fifth (21.0%) of the population. By comparison, the non-metropolitan regions (Outer regional, Remote and Very remote), had a relatively low proportion of the practitioner workforce, with 6.1% for the remainder (12.7%) of the Australian population.

Between 2000 and 2004, overall practitioner supply increased in metropolitan regions and decreased in non-metropolitan regions. In the metropolitan regions (Major cities and Inner regional areas), there was a rise in the rate of supply from 30.9 to 32.9 FTE per 10 000 population, and from 17.2 to 18.3 FTE per 10 000, respectively.

The decreases in the rates of supply in the three non-metropolitan regions were: (per 10 000 population) from 14.7 to 14.3 FTE in Outer regional areas, from 15.2 to 13.3 FTE in Remote areas and from 13.8 to 9.5 FTE in Very remote areas.⁸⁶

Moreover the characteristics (feminisation rate, age and number of working rates) are different according to regions and states (Table 21).

Table 21. Employed medical practitioners: selected characteristics, states and territories, 2004

Characteristics	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Total
Number	21 143	15 513	8 632	4 814	4 945	1 392	1 283	487	58 211
% female	32.4	32.8	31.6	32.6	30.9	33.1	36.4	40.2	32.4
Average age	45.4	44.8	46.1	46.9	45.2	48.5	46.9	43.0	45.5
FTE rate ^a	31.2	30.6	21.7	23.0	31.0	26.8	38.3	23.7	28.3

^aNumber per 10 000 population; FTE based on total weekly hours

NSW: New South Wales; Vic: Victoria; Qld: Queensland; WA: Western Australia; SA: South Australia; Tas: Tasmania; ACT: Australian Capital Territory; NT: Northern Territory

Source: AIHW Medical Labour Force Survey, 2004

Practitioners in Tasmania were more likely to be older, on average (48.5 years) and those in the Northern Territory were more likely to be younger (43.0 years), than practitioners overall (45.5 years, nationally). The proportion of female practitioners is also most important in the Northern Territory than in other Australian States, and particularly more important comparing to South Australia. Finally, the FTE rate significantly varies per 10 000 population from 21.7 in Queensland to 38.3 in Australian Capital Territory (including Canberra).

General practitioners in metropolitan areas tended to be older than general practitioners in rural and remote areas. In metropolitan areas 29% of general practitioners were aged 55 years or more, compared with 24% in rural and remote areas in this age range. A high proportion of general practitioners in remote areas were aged less than 45 years (53%), compared to 39% of general practitioners in rural areas and 38% of general practitioners in metropolitan areas.⁹⁰

5.1.2.3 Specialty imbalances

Quantitative work undertaken by the Australian Medical Workforce Advisory Committee (AMWAC) and the Australian Health Workforce Advisory Committee (AHWAC) found ⁹¹:

- an estimated shortage of between 800 to 1 300 GPs in 2002 (or around 4 to 6 % of the current GP workforce) (AMWAC 2005);
- current and emerging shortages in the majority of medical specialties (AMWAC 2004).

For example, a 1999 AMWAC study into the psychiatry profession noted that the overall supply of psychiatrists was inadequate and that shortages existed in all geographic areas other than capital cities. The majority of medical specialties reported shortages and subsequently increased their intake of training places, although progress has been slow in ear nose and throat surgery, emergency medicine, gastroenterology, obstetrics and gynaecology, orthopaedic surgery, pathology, psychiatry and radiology (AMWAC 2004).⁹¹

Also in other health occupations, the Department of Employment and Workplace Relations (DEWR) has identified shortages of dentists, hospital and retail pharmacists, occupational therapists, physiotherapists, speech pathologists, podiatrists, diagnostic radiographers, radiation therapists, nuclear medicine technologists, pathologists, psychiatrists, registered nurses and sonographers.⁹¹

5.1.3 Employment indicators

The number of full-time equivalent (FTE) practitioners equals the number of practitioners multiplied by the average weekly hours worked, divided by the number of hours in a 'standard' full-time working week.

Australian Institute of Health and Welfare considers a standard week of 45 hours to enable practical FTE measures of service delivery by practitioners.

That is, FTE measures the number of 45-hour week workloads provided by the practitioner workforce. Clinicians spent over 3 hours per week, on average, working in non-clinical areas. In order to gauge the supply of practitioners providing direct patient care, the calculation of supply in this section is based on the average clinical hours worked by clinicians.⁸⁶

5.1.3.1 Percentage of over-timer

The proportion of practitioners working 50 or more hours in total per week decreased between 2000 and 2004 (Table 22), and by 6.9 percentage points overall (from 48.0% to 41.1%). The largest decrease in the proportion working 50 or more hours per week was 10.7 percentage points for specialists-in-training and the smallest decrease occurred for hospital non-specialists, down 6.0 percentage points.⁸⁶ An important decrease is observed in all medical fields, including doctors working as researchers, teachers, administrators, or in occupational medicine.

Table 22. Employed clinicians: average weekly working hours and proportion working 50 hours or more (2000 and 2004)

	2000			2004		
	Average weekly total hours	Average weekly clinical hours	% working 50 hours or more	Average weekly total hours	Average weekly clinical hours	% working 50 hours or more
Primary care	41.9	39.7	37.7	40.4	37.9	31.2
Hospital non-specialist	47.4	46.1	51.2	46.3	44.8	45.2
Specialist	48.3	42.2	56.4	46.2	40.0	48.1
Specialist-in-training	50.7	48.4	60.2	49.1	46.6	49.5
All clinicians	45.6	42.2	48.0	44.2	40.5	41.1

Source: ⁸⁶

Around half (50.1%) of male practitioners worked 50 or more hours per week in 2004; the proportion had decreased from 55.8% in 2000. The proportion of females working 50 or more hours per week decreased by 5 percentage points (from 29.5% in 2000 to 24.5% in 2004), similar to the decrease for males (down by 5.7 percentage points).⁸⁶

The average hours worked by medical practitioners increased from 44.2 per week in Major Cities to 50.0 per week in Very Remote areas.⁸⁸

5.1.3.2 Mean weekly effective work hours

The total number of weekly hours worked is self-reported by practitioners, and relates to the number of hours worked in all medical fields.

Medical practitioners worked an average week of 44.0 hours in 2004, a decrease from 45.5 hours in 2000. In 2004, on average, 39.4 of these weekly hours were in clinical work; a decrease from 41.0 hours in 2000.⁸⁶

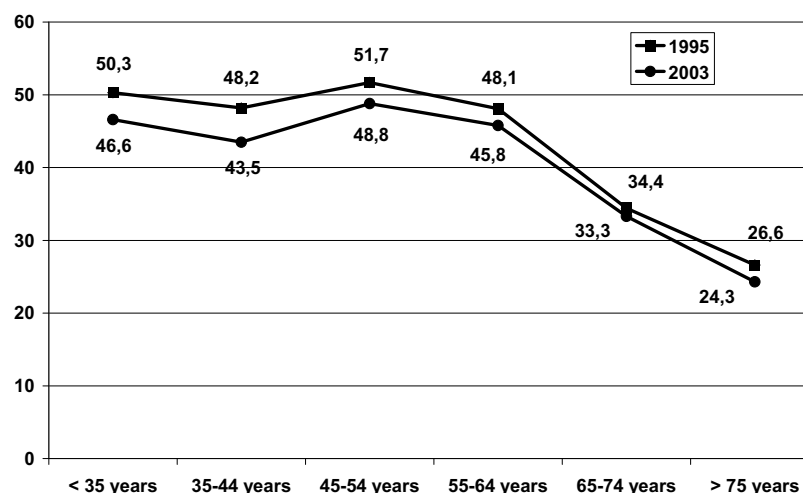
- General practitioners
 - In a normal working week, general practitioners worked an average of 47 hours per week. Most time was spent on private patient activities (40 hours per week) with 3 hours per week spent on private practice administration and management, 1 hour per week on hospital work and 3 hours per week on other medical related activities (such as continuing medical education, advisory board or committee meetings, and time spent in medical teaching or research). A substantial number of general practitioners were working long hours, with 28% working 60 hours or more in an average

- week. In comparison, 31% worked less than 40 hours in an average week.⁹⁰
- Male general practitioners were more likely to work longer hours than female general practitioners, with only 17% of male general practitioners working less than 40 hours in an average week compared with 60% of female general practitioners. While 37% of male general practitioners worked 60 hours or more in an average week, only 11% of female general practitioners worked these long hours.
 - For the GP workforce, working hours for young male GPs are shorter now than for young male GPs in the past. This suggests that decreases in working hours are not just due to more females in the workforce (who are more likely to be part time), but cohort effects. In other words, younger GPs are working shorter hours than their older colleagues did at the same age.⁹²
 - Specialists working in private practice
 - Specialists mainly working in private practice worked an average of 54 hours per week. Most time was spent on private patient activities (39 hours per week) with 7 hours per week on hospital work, 4 hours per week spent on private practice administration and management and 4 hours per week on other medical related activities (such as continuing medical education, advisory board or committee meetings, and time spent in medical teaching or research).⁹⁰
 - The specialties recording the highest averages of total hours worked per week were surgery (59 hours per week), obstetrics and gynaecology (59 hours per week), and paediatrics (58 hours per week).
 - Long working hours were found to be common, with 41% of specialists working 60 hours or more in an average week. Only 13% of specialists worked less than 40 hours in an average week, and most (69%) of these were aged 55 years or more.
 - Male specialists were more likely to work long hours than female specialists, with 43% of males and 23% of female specialists working 60 hours or more in an average working week. Also, 10% of male specialists and 31% of female specialists worked less than 40 hours in an average week.⁹⁰
 - Doctors in hospitals: the Australian Medical Association has been running a “Safe Working Hours” campaign to reduce the traditionally very long hours worked by junior doctors in hospitals. This is similar to the European working time directives but is not legislated (see <http://www.ama.com.au/web.nsf/doc/WEEN-6EPV92>)

Male practitioners have traditionally worked more hours per week than females; a pattern that continued between 2000 and 2004. Throughout this period, males worked, on average, between 9.5 and 10.4 hours per week more than females, and males most commonly worked 50–64 hours per week. Despite the shift towards working fewer hours, the distribution of hours worked by male practitioners remained skewed towards long working weeks. Females most commonly worked 35–49 hours per week (37.6% in 2004, up from 34.9% in 2000). In 2004, female practitioners were more likely to have worked less than 35 hours per week (38.0%) than males (13.8%). This proportion of female practitioners working less than 35 hours per week was an increase over the period (35.6% in 2000).⁸⁶

Practitioners aged 45–54 years worked the highest average hours per week in 1995 and 2003 (51.7 and 48.8 hours, respectively), followed by those under 35 years (50.3 and 46.6 hours respectively) (Figure 9).

Figure 9. Average hours worked by employed medical practitioners, by age groups (1995 and 2003)



Source: ⁸⁶

Based on clinical hours worked, primary care practitioner supply decreased between 2000 and 2004 from a rate of 9.7 to 9.2 FTE per 10 000 population. The supply of hospital non-specialists rose from 2.7 FTE to 3.1 FTE (per 10 000 population). The supply of specialists increased between 2000 and 2004 (from a rate of 7.8 to 8.4 FTE per 10 000 population).⁸⁶

5.1.3.3 Number of annual consultations per physician

In 2004, 43% of GPs worked in groups of five or more practitioners, and only 16% in solo practices.⁸⁶ This is in contrast to the mid 1990s, when 43% of GPs were in solo practices and 14% in large group practices (six or more GPs).⁹³ There has been a trend in recent years towards the “corporatization” of general practice. In other words, there has been a shift to large group practices rather than solo or small practices. Many of the new, larger practices are owned by companies rather than GPs self-employed in small business.

General practitioners had an average of 136 private patient contacts per week. A substantial number of general practitioners had a very large number of private patient contacts in an average working week, with 22% reporting 200 or more private patient contacts a week, and a further 22% reporting between 150 and 199 private patient contacts a week. Male general practitioners were more likely to have a high number of private patient contacts per week than female general practitioners, with 56% of male general practitioners reporting 150 or more private patient contacts in an average week, compared to 22% of female general practitioners.⁹⁰

Specialists working mainly in private practice had an average of 81 private patient contacts per week, with 49% reporting less than 60 contacts in an average working week. The specialties of anaesthesia and psychiatry had the highest proportion of specialists who had less than 60 contacts in an average working week, with 93% and 82% respectively. Dermatology and ophthalmology had the highest proportion of more than 100 private patient contacts per week with 75% and 57% respectively.⁹⁰

5.1.3.4 Unfulfilled vacancies

The question of equal access to health services in rural and remote regions is currently at the agenda in Australia. In fact, 34% of Australians live in rural and remote areas. Rural and remote populations are those outside cities having populations greater than 250 000 people.

They comprise a range of environments: large regional centres, coastal settlements, small inland towns, farms and so-called 'outback' Australia. Compared with people in Major Cities, those living elsewhere have less access to specialist medical services and a range of other health services.

The shortage of general practitioners as well as specialist physicians is recognized by the Government. Remote areas have half the workforce of capital cities per capita.⁹⁴ Moreover, while the Australian Medical Workforce Advisory Committee recommendation is 1 medical specialist per 10 000 inhabitants regions such as Victoria had 52 specialist physicians for 1.3 million people (a physician to population ratio of 1:25 000).

Consequently, the national (Federal or Commonwealth) government can declare a location to be a "District of Workforce Shortage". State and Territory governments can also declare areas to be an "Area of Need" in part based on unfilled vacancies. This designation allows the recruitment of medical practitioners from overseas to fill positions in these locations. An Area of Need (AON) is any location in which there is a lack of specific medical practitioners or where there are medical positions that remain unfilled even after recruitment efforts have taken place over a period of time. Area of Need applies to both public and private sector positions and most overseas trained doctors are required to work in an Area of Need when they first come to Australia (Australian Government, Department of Health and Ageingⁱ).

5.1.4 Demography

5.1.4.1 *Ratio male / female*

The proportion of female doctors has risen from 11% in 1961, to 19% in 1981, to 32.4% in 2004, and will continue to rise with more female medical students, and as more male doctors reach retirement age (Figure 10).^{89,86}

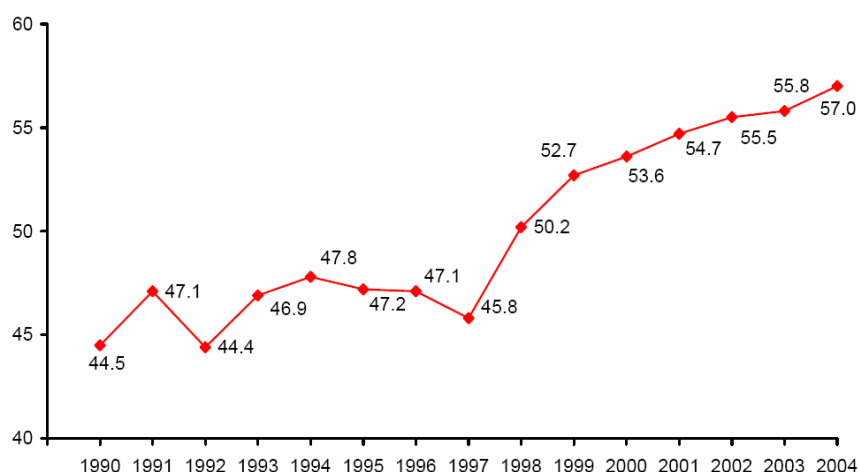
The proportion of female primary care practitioners increased from 34.0% in 2000 to 36.5% in 2004. Among hospital non-specialists, the proportion of females grew from 42.6% in 2000 to 45.4% in 2004. In the proportion of female specialists also slightly increased from 18.0% to 20.3% except for surgery where this proportion decreased from 6.5% to 5.9%. This low proportion of female surgeons is observed in the other study countries.

Feminisation of the medical workforce has been a major change over the past 20 years. The sex ratio in Australian medical schools is now 50:50, or with a slight excess of women. The flow-on effects of this change are particularly obvious in specialties like general practice, in which more than 50% of current trainees are female.⁹⁵

ⁱ Available from <http://www.health.gov.au/internet/wcms/publishing.nsf/Content/health-workforce-otdt-aon.htm>

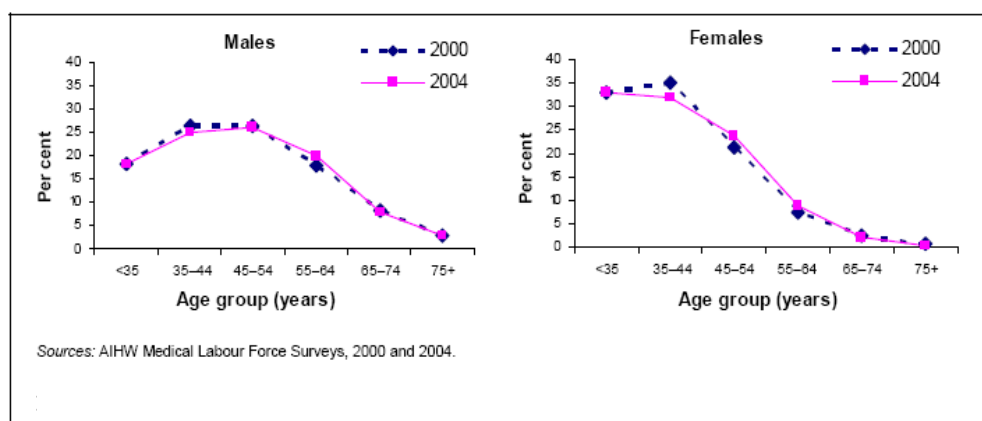
Figure 10. Percentage of female medical students, 1990-2003

Greater female practice has particular impact on practice, female general practitioners having longer consultations than male general practitioners.⁹⁶



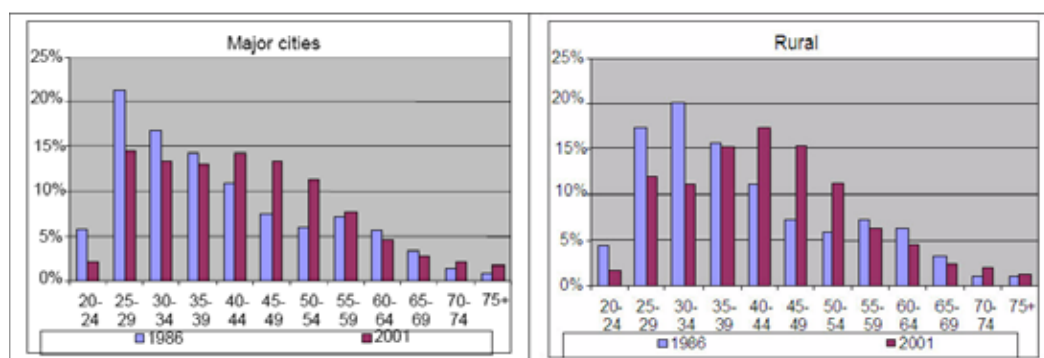
5.1.4.2 Mean age

The mean age of primary care practitioners increased between 2000 and 2004 (from 47.8 years to 49.0 years). Female primary care practitioners were, on average, younger than their male colleagues (44.6 years for females and 51.4 years for males in 2004) (Figure 11). Among specialists, females were also more highly represented in younger age categories, accounting for 25% of specialists aged less than 45 years, but only 7% of specialists aged 55 years or more.

Figure 11. Employed medical practitioners by age group and sex, 2000 and 2004

Between 1986 and 2001 both the rural and city GP workforce were ageing, with the rural GPs being significantly older than city GPs by 2001 ($p < 0.001$) (Figure 12). During this period, the percentage of rural GPs aged over 40 years rose from 40% to 60%, compared with 43% to 57% for city GPs.⁹⁴

Figure 12. Age distribution of GPs, 1986 and 2001

Source: ⁹⁴

Analysis of census data indicates that rural GPs are older than city GPs, and they cease work earlier. Other studies suggest that some rural doctors are not necessarily retiring from the workforce when they are older, but are moving to other areas. Exit interviews such as those by the Rural Workforce Agency of Victoria in 2002 reveal that rural GP workforce attrition due to retirement constitutes just 7.5% to 25% of the total, while relocation to urban or overseas areas constitutes 36% to 49%.⁹⁴

5.1.4.3 Mean age at retirement

Medical practitioners are mostly independent workers and do not respect a legal age of retirement. Nevertheless, their number clearly declines with age and the proportion of doctors having more than 65 years goes under 5%. Female practitioners retire earlier than their male counterparts. The same curve was observed in 2002 and 2004.

5.1.4.4 Percentage of immigrants

Since the late 1990s Australian employers have recruited an increasing number of overseas-trained doctors (OTDs) also labelled International Medical Graduates (IMGs) to hospital and “area of need” general practice positions. The main pathways by which they have entered Australian medical practice are as temporary resident OTDs, occupational trainees or permanent resident OTDs (Table 23).⁸⁹

Table 23. Main designations for entry to Australian medical practice for overseas-trained doctors

Designation	Visa subclass	Limit of term	Conditions
Temporary residents	422	4 years (with option of renewal)	Require a sponsoring employer who must demonstrate that the position is in an identified “area of need” and that they have been unable to recruit an Australian resident to fill the position
Occupational trainees	442	2 years (with option of renewal)	Appointed as junior doctors and as trainee specialists in hospitals. Requirement for a visa to be issued is that the Department of Immigration and Multicultural and Indigenous Affairs receives a letter from the relevant medical college stating that a training program has been prepared and a letter signed by the medical director and training director attesting that the overseas-trained doctor will be trained in the hospital. Occupational trainees do not have to work in an “area of need”.
Permanent residents			Enter medical practice either through successful completion of the Australian Medical Council examinations or through employment as provisionally registered junior hospital doctors, or as GPs in “area-of-need” locations.

Source: ⁹⁷

By 2004 there were some 2 000 temporary residents and a further 1 500 – 2 000 occupational trainees working in medical positions in Australia (estimates based on unpublished Department of Immigration and Multicultural and Indigenous Affairs [DIMIA] stock counts and numbers of occupational trainees registered with state medical boards).⁹⁷

Temporary residents

The numbers of temporary residents increased from 670 in 1993–94 to 1 419 in 1999–2000, and 2 249 in 2003–04. By September 2003, according to DIMIA stock counts, there were 1 950 OTDs in Australia who were holders of a 422 visa (temporary residents) (unpublished data from DIMIA). From these, 43% come from the United Kingdom and Ireland, 10% from India, 9% from South Africa and 38% from elsewhere (USA, Europe and Asia).

The greatest use of “422 visas” was in Queensland, Western Australia and Victoria, where OTDs have been recruited to fill “area-of-need” vacancies, primarily in regional general practice positions, but also in locum services and in some junior hospital positions. These visas are now being issued for 4 years (previously 2 years) with the option of renewal and OTDs are currently being encouraged to stay permanently in Australia; one way to achieving this is successful completion of the Royal Australian College of General Practitioners’ Fellowship examinations.⁹⁷

Permanent residents

More than 500 OTDs arrived each year and hold permanent residence. Most of those coming as New Zealand citizens were third-country entrants who first migrated to New Zealand, subsequently obtained New Zealand citizenship, and thereby the right to move to Australia on a permanent basis.

There is no national standard in Australia for assessing OTDs before they are permitted to practise. Assessment standards vary by state and area of medical practice. With a few exceptions, OTDs are permitted to practise without having to pass a test of medical knowledge and clinical skills like that required in the UK, Canada and the USA.⁹⁷

5.1.4.5 *Percentage of emigrants*

An estimated 3 000 Australian registered medical practitioners, or 4.5% of the medical workforce, are currently working overseas. This proportion of Australian doctors working overseas evolved from 4.0 to 4.8% over the period 1997 to 2003. Many of these doctors worked temporarily overseas and will return to the Australian medical workforce with enhanced skills and experience.⁹⁸

5.2 HEALTH SYSTEM

5.2.1 General organization

5.2.1.1 *Public/private mix in services delivery*

The majority of doctors in Australia are engaged in private practice. Private general practitioners (GPs) provide most primary care. Private medical specialists provide most ambulatory secondary health care, either in private consulting rooms or in outpatient departments of hospitals and may also contract their services to public and to private hospitals.⁸⁹

5.2.1.2 *Doctors type of payment*

Almost all of the expenditure on medical services in Australia is related to services provided by private medical practitioners who operate on a fee-for-service basis.⁹⁹

Australia’s universal health insurance scheme came into operation on 1 February 1984. Administered by Medicare Australia (formerly the Health Insurance Commission), the scheme provides for free or subsidised treatment by medical practitioners, participating optometrists, services delivered by a practice nurse on behalf of a GP and, for certain services, eligible dentists and allied health practitioners. All Australian residents are eligible for Medicare.

Medicare has established a schedule of fees for medical services provided by private practitioners.

The benefits that Medicare contributes for those services are based on those fees. Practitioners are not obliged to adhere to the schedule fees, except in the case of participating optometrists and when bulk-billing incentives are paid. However, if they direct-bill (bulk-bill) Medicare Australia for any service rather than issuing a patient with an account, the amount then payable is the Medicare benefit; additional charges cannot be raised for the service and the patient pays nothing for it.

For private patients who are admitted in hospitals or day-hospital facilities, the Medicare benefit is 75% of the schedule fee. For non-hospital services, Medicare pays up to 100% of the schedule fee for GP consultations and up to 85% for services provided by medical specialists. The patient is responsible for the gap between the benefit paid and the schedule fee, up to a maximum of \$61.50 (from 1 January 2006), indexed annually. Patients are also responsible for payments of amounts charged above the schedule fee.⁸⁸

The contractual terms and conditions and rates of payment of doctors employed by public hospitals vary across States. There are two main categories. Salaried medical officers are engaged as employees of the hospital and paid a salary to work at the hospital full time. Visiting medical officers are engaged as independent contractors to the hospital and can be paid a fee-for-service for each procedure or on a sessional basis for a certain amount of time per week.⁸⁹

5.2.1.3 *Health insurance type and coverage*

Australia has a mainly publicly funded health system financed through general taxation. Medicare, the tax-funded national health insurance scheme, offers patients subsidized access to their doctor of choice for out-of-hospital care, free public hospital care and subsidized pharmaceuticals. About 68% of total health expenditure comes from public sources, with the Australian Government financing 46% and the States 22%; the remaining 32% comes from private sources.⁸⁹

Many Australians purchase health insurance provided by health benefits organisations (more commonly known as private health insurance funds). Unlike other countries such as the United States of America and Germany, Australia has virtually no employer-based health insurance schemes. Australians have a choice of a wide range of private health insurance schemes. Hospital insurance schemes cover services in private hospitals as well as services provided in public hospitals for private patients and associated medical services. These are supplemented by additional schemes that cover a wide range of allied health and other professional services, including some alternative/complementary health services.

In response to a significant decline in health insurance membership towards the end of the last century, the Australian Government introduced various incentives to encourage uptake and retention of private health insurance, the most notable being a 30% rebate on membership fees and the introduction of lifetime cover. As of late 2005, around 8.8 million Australians (43% of the population) were covered by private health insurance for hospital treatment.⁸⁸

5.2.2 *Services utilization*

5.2.2.1 *Annual number of consultations per capita*

Consultations with doctors (clinic visits), have steadily decreased since reaching a peak of 6.7 consultations per year per head of population in 1995–1996 to 5.85 in 2002–2003, a rate similar to other industrialized countries.⁸⁹

5.2.2.2 *Mean waiting time for accessing to a specialist*

Public patients requiring elective surgery are assigned to one of three categories of urgency.⁸⁷

CATEGORY 1. Admission within 30 days desirable for a condition that has the potential to deteriorate quickly to the point that it may become an emergency.

CATEGORY 2. Admission within 90 days desirable for a condition causing some pain, dysfunction or disability but which is not likely to deteriorate quickly, or become an emergency.

CATEGORY 3. Admission at some time in the future for a condition causing minimal or no pain, dysfunction or disability, which is unlikely to deteriorate quickly, and which does not have the potential to become an emergency. For the purposes of the Australian Health Care Agreements, Category 3 is reported on the basis that admission is desirable within 12 months.

Nationally, in 2005–06, 83% of Category 1 patients were admitted within 30 days, 74% of Category 2 patients within 90 days and 88% of Category 3 patients within one year. The median waiting time for all elective surgery procedures was 32 days, 5 days longer than in 2000–01. Waiting times for some elective surgery procedures continued to exceed one year. For example, of the fifteen selected surgical procedures reported on, 20 per cent or more of admissions for septoplasty (a surgical procedure to correct the septum, the separation between the nostrils), total knee replacement and varicose vein procedures waited more than a year.⁸⁷

Nationally, the surgical procedure with the largest proportion of admissions (23%) waiting more than a year was a total knee replacement. Although only 8% of people waiting for a cataract procedure were waiting longer than a year, this was nearly 3 500 people. The median waiting time for cholecystectomy (removal of the gall bladder) varied from 29 days in South Australia to 71 days in the Northern Territory.⁸⁷

5.3 REGULATION POLICIES

5.3.1 Numerus clausus

Medical school intake is controlled by the Commonwealth Government through the funding of university places. In 1973, the Report of the Committee on Medical Schools to the Australian Universities Commission recommended an increase in medical school intake, including the establishment of two new medical schools to provide 1 560 graduates per year by 1991. Graduations from medical schools rose steadily from 851 in 1970 to 1 278 in 1980.¹⁰⁰

In 1988, the Committee of Inquiry into Medical Education noted a surplus of GPs in urban areas. In the mid-1990s, AMWAC advises to contain the growth of the medical workforce. Since 1996, the Commonwealth Government has imposed a cap on medical school places to assist in controlling the supply of the medical workforce. The cap applies to domestic medical students only.⁶⁷

5.3.1.1 Type

Three limitations came into force since 1996: first, limiting entry to medical schools; second, limiting the immigration of doctors; and third, restricting the number of medical practitioners eligible to bill Medicare.⁸⁹

5.3.1.2 Objectives pursued

On the advice of AMWAC, the Australian Health Minister's Advisory Council (AMHAC) in 1996 called for a reduction in the annual intake from 1 200 to 1 000.⁸⁹

5.3.1.3 Year of implementation

In 1996.

5.3.1.4 Subsequent adaptations

When doctor shortages became evident a few years later, the previous Australian government policy of limiting the number of medical school places has been completely reversed to again expand medical school intakes, with an extra 234 students in place in the 2004 intake, increasing to an extra 246 in 2005 (AHWAC 2004). Fourteen universities offer medical degrees in Australia and additional 5 new medical schools have opened since 2000. A further seven programs are planned by 2008, doubling the number of medical schools since 2000.

Combined with increases to intake numbers in existing medical schools, this represents a wave shift which contrasts to the static pattern of graduate numbers over the previous two decades.¹⁰⁰

Over the period 1997 to 2004, the total number of first year advanced vocational training places has increased by 30%, to 1 782 positions in 2004.

The major areas of increase have been in surgery (an increase of 231 positions) and adult medicine (an increase of 219 trainees), with smaller increases in intensive care, radiodiagnostic, psychiatry, rehabilitation medicine and occupational medicine. From 2004, there was also an increase of one third in general practice training places from 450 to 600, reflecting additional Australian Government funding for this area.⁹⁹

The number of Australian medical graduates is set to increase by 60% in the next few years, from 1 300 in 2005 to more than 2 100 after 2010.⁴

Overall by 2007, Australian medical school intake is expected to be at least around 1 860 –1 900, representing nearly a 100% increase in intake compared to a decade earlier.⁴

5.3.1.5 *Management: actors and processes*

The Australian Health Ministers' Advisory Council (AHMAC) established the Australian Medical Workforce Advisory Committee (AMWAC) in 1995 advising on national medical workforce matters, including workforce supply, distribution, and future requirements.

AMWAC oversaw a medical workforce research program which is linked with the broader health workforce research agenda. Its roles included: to provide advice to the Australian Health Ministers' Advisory Council on a range of medical workforce matters (structure, balance and geographic distribution of the medical workforce; number and distribution of education and training places needed to meet future demand; models for predicting future medical workforce requirements,...). The increase in training places is generally based on targets recommended in the Australian Medical Workforce Advisory Committee's (AMWAC) specialty workforce report. Overall, 87% of AMWAC recommendations for additional training places have been fully met.⁹⁹

AMWAC was disbanded in 2006 and has been replaced by a new national workforce planning structure, The Health Workforce Principal Committee (HWPC). This new structure provides a forum for reaching agreement on key national level health workforce issues requiring government collaborative action and provides advice on health workforce issues to the Australian Health Ministers' Advisory Council (AHMAC) (see <http://www.health.nsw.gov.au/amwac/ahwoc/index.html>).

5.3.2 *Attraction and retention policies*

5.3.2.1 *Geographical (national or international)*

The maldistribution of the medical workforce is problematic in Australia, the distribution of doctors being weighted heavily towards metropolitan areas. The government has several strategies underway to increase the supply of doctors in rural and remote areas. These include:

- additional places and financial incentives for GP registrar training in dedicated Rural Pathways;
- the funding of Rural Clinical Schools aimed at encouraging medical students to take up careers in rural practice;
- financial incentives for students to remain in rural medical practice, including Medical Rural Bonded Scholarships and the Australian Medical Undergraduate Scholarships;
- incentives through the Higher Education Contribution Scheme Reimbursement Scheme;
- recruitment initiatives to assist employers to obtain permanently or on a temporary basis, appropriately qualified IMGs to fill vacancies in districts of workforce shortage.⁹⁸

- legislative changes were introduced in 1997 that limited International Medical Graduates to districts of workforce shortage if they wish to access a Medicare provider number.⁹⁸

Other measures include relocation grants to assist practitioners and their families to move to rural areas, and higher rebates for GPs who bulk-bill in regional, rural and remote Australia. It is still too early to determine whether these initiatives have led to long-term improvements in the distribution of practitioners.⁸⁹

5.3.3 Functioning regulation

5.3.3.1 *Expenditure ceilings*

The estimated total expenditure on health in Australia in 2003–04 was \$78,598 million or 9.7% of gross domestic product (GDP). This was up from the previous year, when health accounted for 9.6% of GDP. A decade earlier, expenditure on health was 8.3% of GDP.⁸⁸

5.3.4 Controlling demand

5.3.4.1 *Patient's contributions to health care costs*

Out-of-pocket payments by patients represent 20% of total health expenditure, mainly for pharmaceuticals not covered by government subsidies and for pharmaceutical co-payments, dental treatment, the gap between the Medicare benefit and fees charged by doctors, and payments to other health professionals.⁸⁹

This last decade, out-of-pocket expenditures have been rising both in real terms and as a percentage of sources of health expenditures by 4.2% per year. The rise in out-of-pocket expenditure partly reflects a strategy to utilize co-payments as a demand-side cost containment strategy.⁸⁹

5.3.4.2 *Gate-keeping*

In Australia, primary care physicians are trained as general practitioners.¹⁰¹

GPs are often the first point of contact that people have with the health system. In addition to providing direct treatment – prescribing, advising on and supplying medications or providing non-pharmacological treatments – GPs act as ‘gatekeepers’, linking primary care patients with the wider health system. This may include ordering investigative tests and making referrals to other health care workers or support services. The role of rural or remote GPs is often broader than that of their urban counterparts. This may be because of geographic and professional isolation and a lack of nearby supporting or complementary services such as medical specialists. GPs also practise a range of special skills including procedural work (anaesthetics, obstetrics and surgery), emergency care and Aboriginal health care.⁹²

Individuals are free to choose which general practitioner they wish to consult, restricted only by availability. Patients may consult more than one general practitioner, since there is no requirement to enrol with only one practice. However, they need to obtain a referral from a general practitioner before consulting a specialist physician or surgeon. Recognized specialists can claim a higher rebate when the patient is referred by a medical practitioner.⁸⁹

Patients may exert a choice over the referral made by their general practitioner to a specialist or to a hospital. They can also choose the private hospital they wish to attend, assuming they are prepared to pay.

Seeing a doctor is a very common health-related action in Australia: the 2004–05 National Health Survey shows that, over any two-week period, 23% of the population visited a doctor (ABS 2006). Further, administrative data from Medicare suggest that around 85% of the population see a doctor at least once in a year (Medicare Australia 2005).⁸⁸

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