



Ameli 2018 Data Analysis

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2020.12.18



Presentation Structure

1. Preparing Data
2. Data Demonstration
3. Case Analysis
4. Conclusion



Leading Question

Can we establish a link between the density of physicians by specialty and by territory and the practice of exceeding fees?

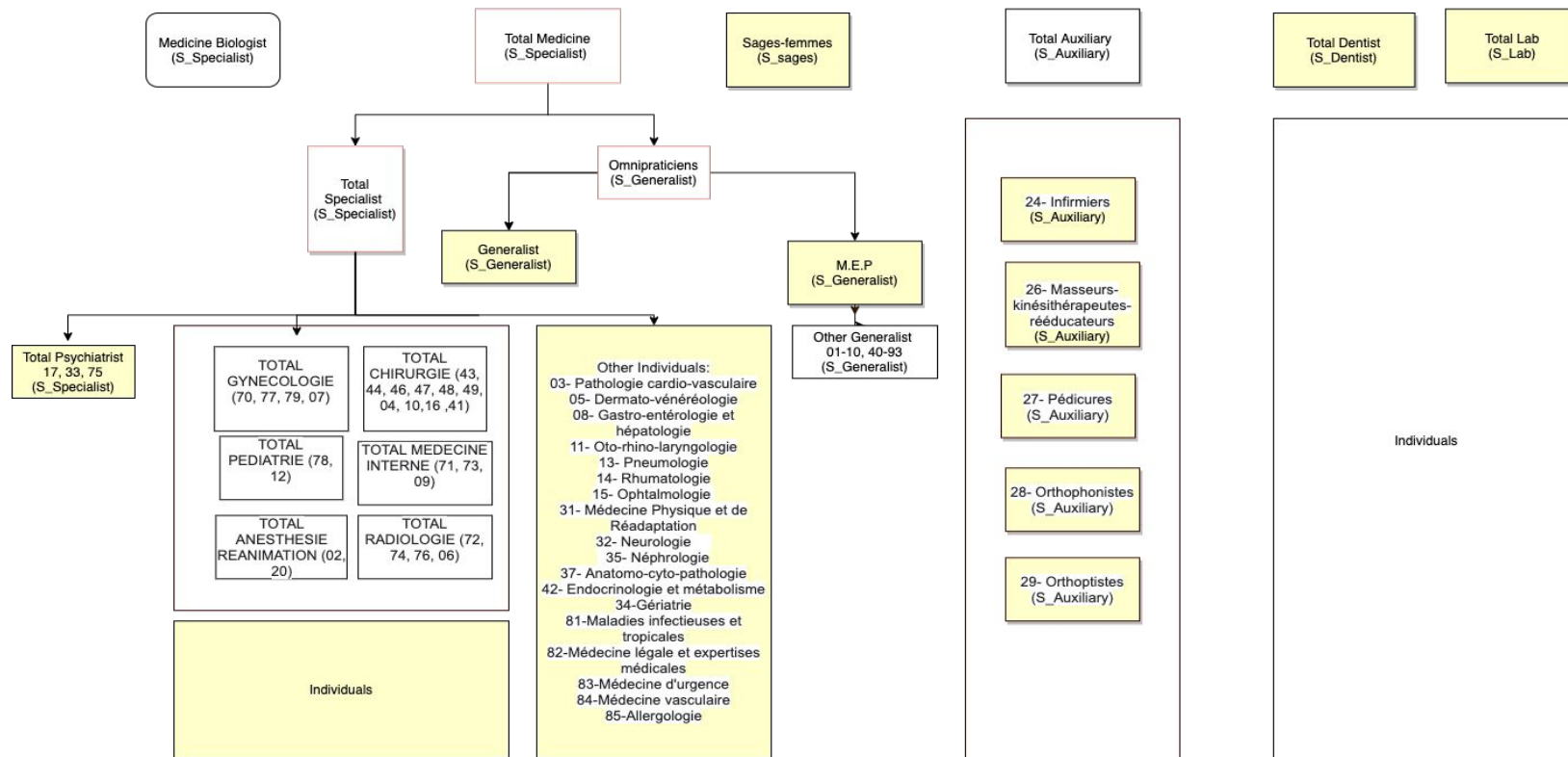
- **Density of the Physicians (Effective * 100000 / population)**
- **Specialty**
- **Territory**
- **Exceeding fees**

What does Specialist include?

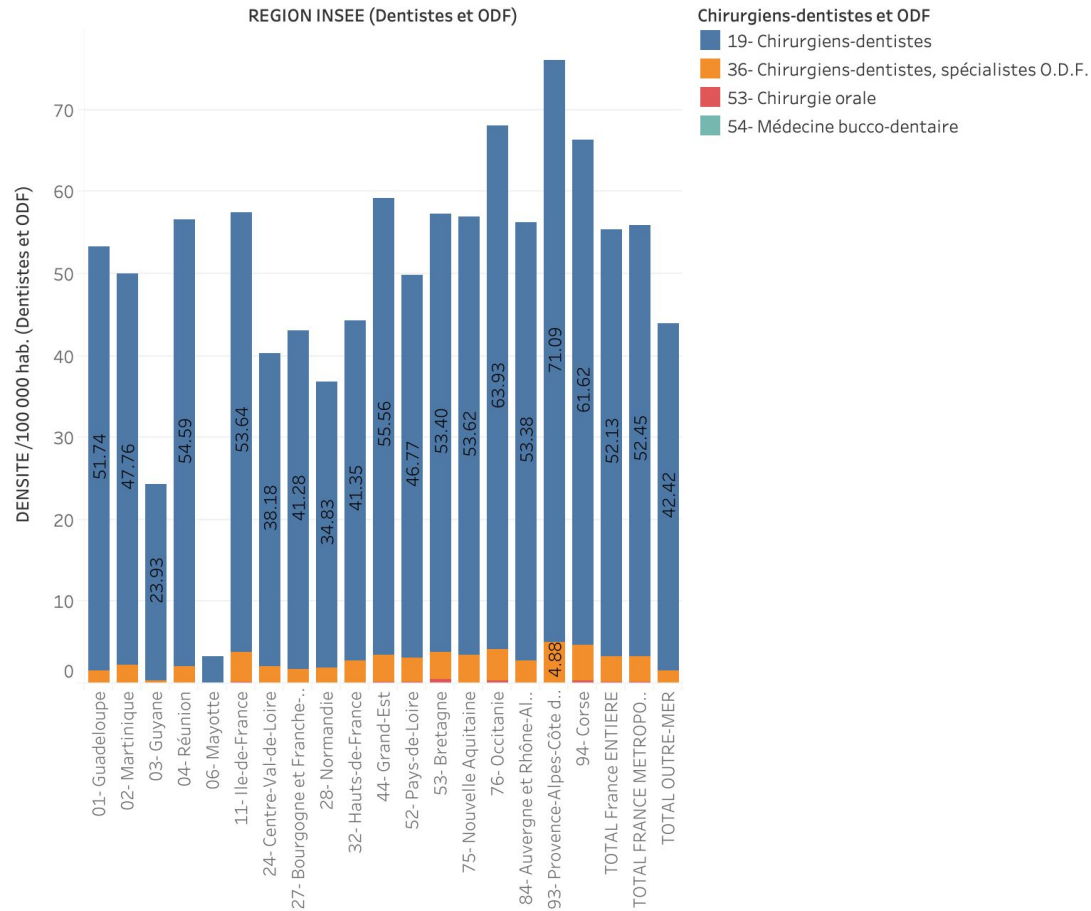
69- Chirurgie orale	75- Paris (Ville)	0	2.140.526	0,0
45- Chirurgie maxillo-faciale et stomatologie	75- Paris (Ville)	18	2.140.526	0,8
18- Stomatologie	75- Paris (Ville)	86	2.140.526	4,0
TOTAL STOMATOLOGIE (69, 45, 18)	75- Paris (Ville)	104	2.140.526	4,9
31- Médecine Physique et de Réadaptation	75- Paris (Ville)	33	2.140.526	1,5
32- Neurologie	75- Paris (Ville)	62	2.140.526	2,9
TOTAL PSYCHIATRIE (75, 33,17)	75- Paris (Ville)	1.300	2.140.526	60,7
35- Néphrologie	75- Paris (Ville)	22	2.140.526	1,0
37- Anatomie-cyto-pathologie	75- Paris (Ville)	51	2.140.526	2,4
42- Endocrinologie et métabolisme	75- Paris (Ville)	87	2.140.526	4,1
34-Gériatrie	75- Paris (Ville)	12	2.140.526	0,6
81-Maladies infectieuses et tropicales	75- Paris (Ville)	0	2.140.526	0,0
82-Médecine légale et expertises médicales	75- Paris (Ville)	0	2.140.526	0,0
83-Médecine d'urgence	75- Paris (Ville)	0	2.140.526	0,0
84-Médecine vasculaire	75- Paris (Ville)	0	2.140.526	0,0
85-Allergologie	75- Paris (Ville)	7	2.140.526	0,3
TOTAL SPECIALISTES	75- Paris (Ville)	5.273	2.140.526	246,3
TOTAL MEDECINS	75- Paris (Ville)	7.615	2.140.526	355,8

56 different Physicians

Data by Physicians



<Dentists Region>



Sum of DENSITE /100 000 hab. (Dentistes et ODF) for each REGION INSEE (Dentistes et ODF). Color shows details about Chirurgiens-dentistes et ODF. The marks are labeled by sum of DENSITE /100 000 hab. (Dentistes et ODF). The view is filtered on Chirurgiens-dentistes et ODF, which excludes TOTAL CHIRURGIE DENTAIRE.



Data Demonstration (Overview 2018)

Total France Population: 66,992,699

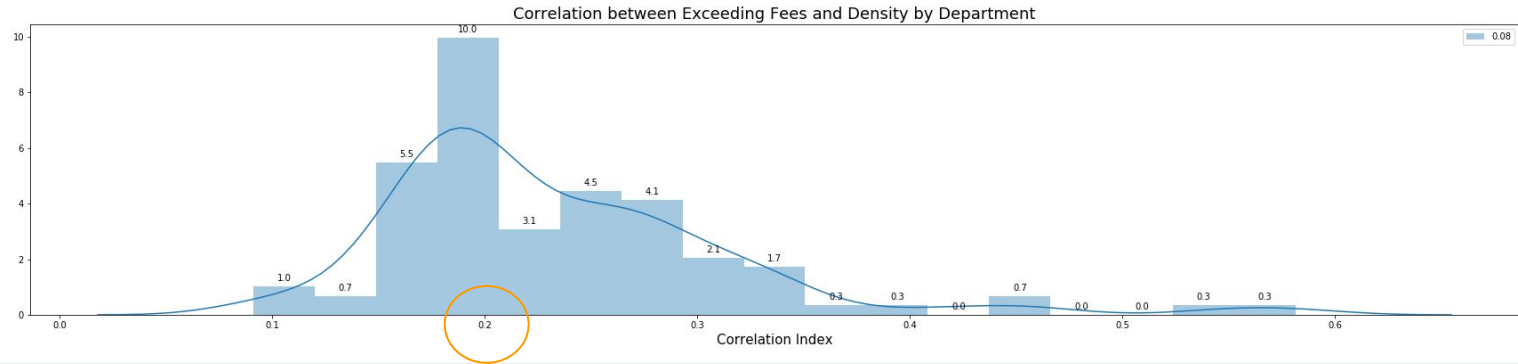
Current total active specialist: 349,446

France specialist density: ~521/100,000 habitants

Total exceeding fee(unreimbursed): 7,800,283,769 (~8 billions)

Average exceeding fee(unreimbursed): ~116 Euros

Correlation Distributions



Data Featuring

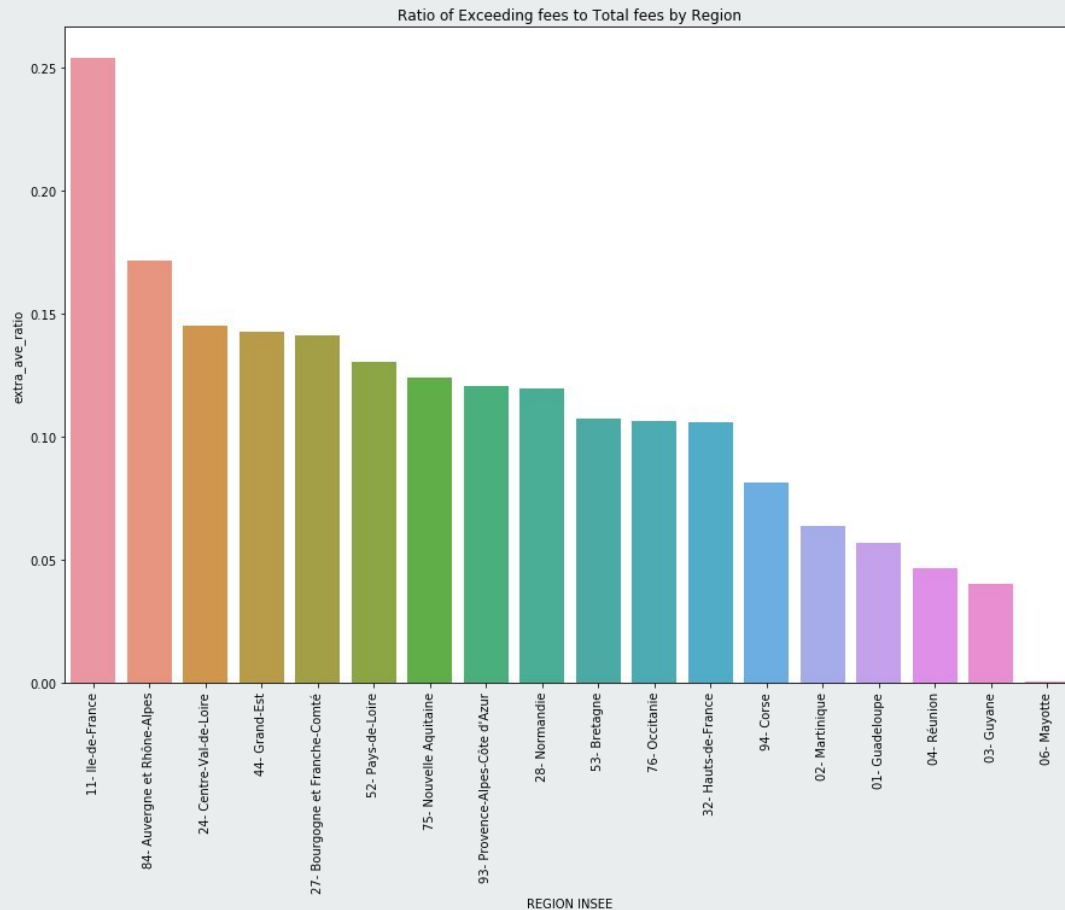
- Extra_Average = Exceeding Fees / Total Fees

```
group["ave_fee"] = group["TOTAL DES HONORAIRES (Euros)"]/18  
group["ave_extra"] = group["DEPASSEMENTS (Euros)"]/18  
group["extra_ave_ratio"] = group["ave_extra"]/group["ave_fee"]
```

```
group.head()
```

rs	TOTAL DES HONORAIRES (Euros)	EFFECTIF	POPULATION FRANCAISE	DENSITE /100 000 hab.	ave_fee	ave_extra	extra_ave_ratio
47	3.497184e+08	2781	21431424	726.671266	1.942880e+07	1.108082e+06	0.057033
39	3.202480e+08	2559	20403824	702.338934	1.779155e+07	1.131853e+06	0.063617
50	1.099315e+08	661	16615816	222.775698	6.107303e+06	2.460838e+05	0.040293
98	8.277409e+08	5729	48524336	661.161031	4.598561e+07	2.142520e+06	0.046591
38	2.913255e+07	259	15140832	95.793943	1.618475e+06	5.179656e+02	0.000320

- Average Ratio Exceeding Fees to Total Fees: 10.8%

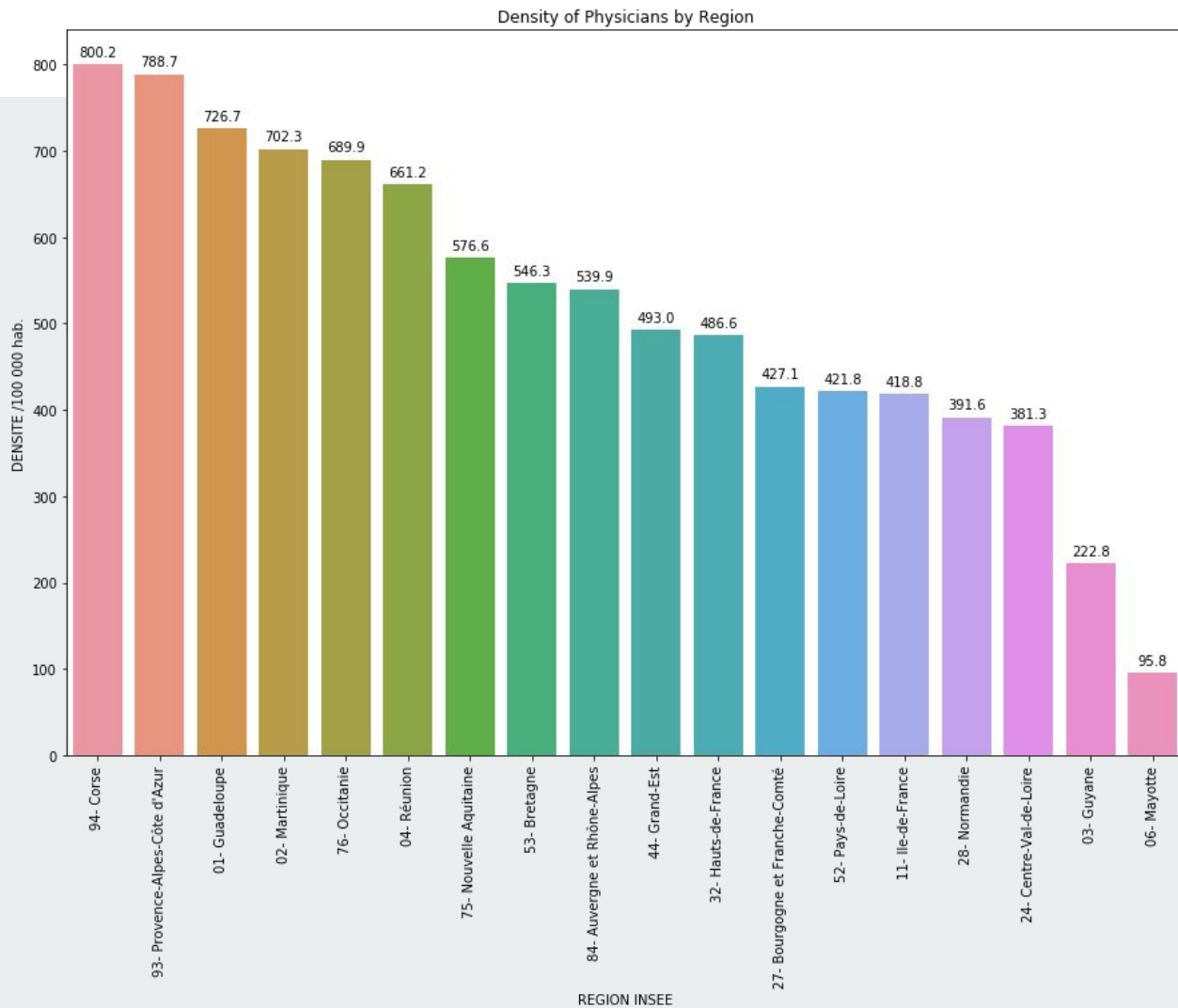


Density of Physicians by Region

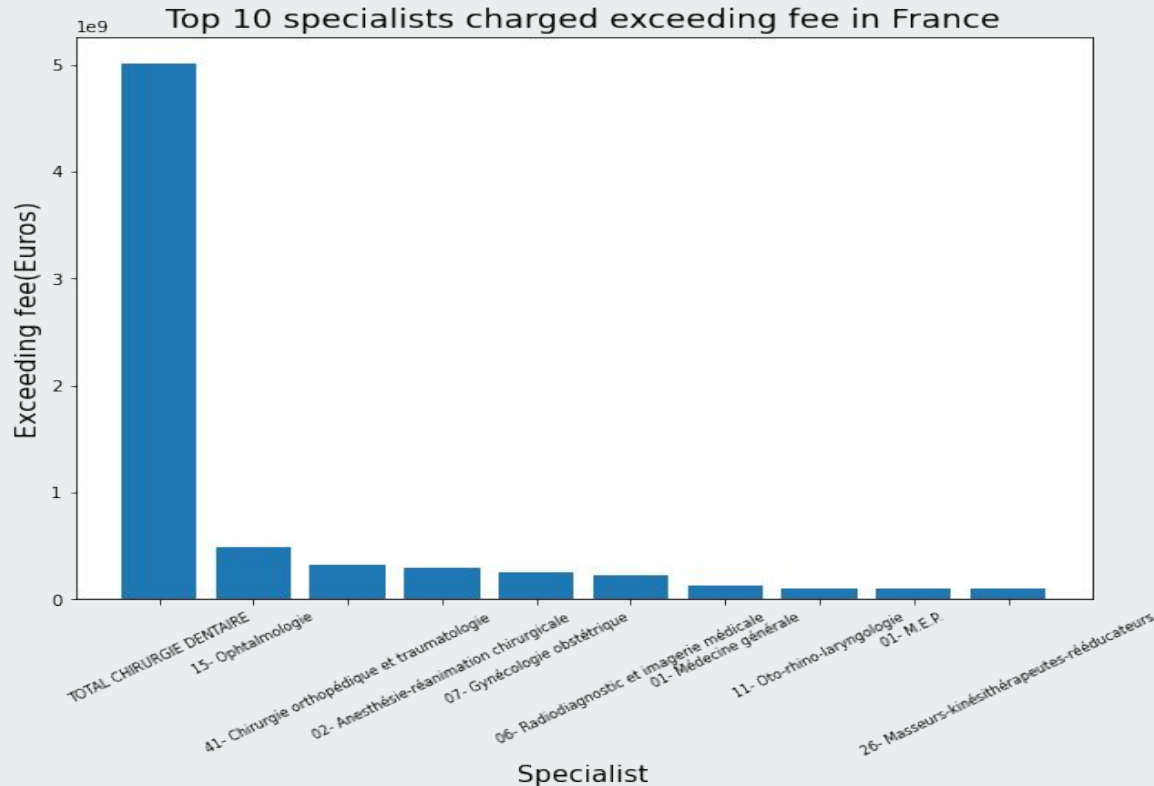


Std by Region: 109.2

High disparities
in the density
across regions



Quick facts: Specialists



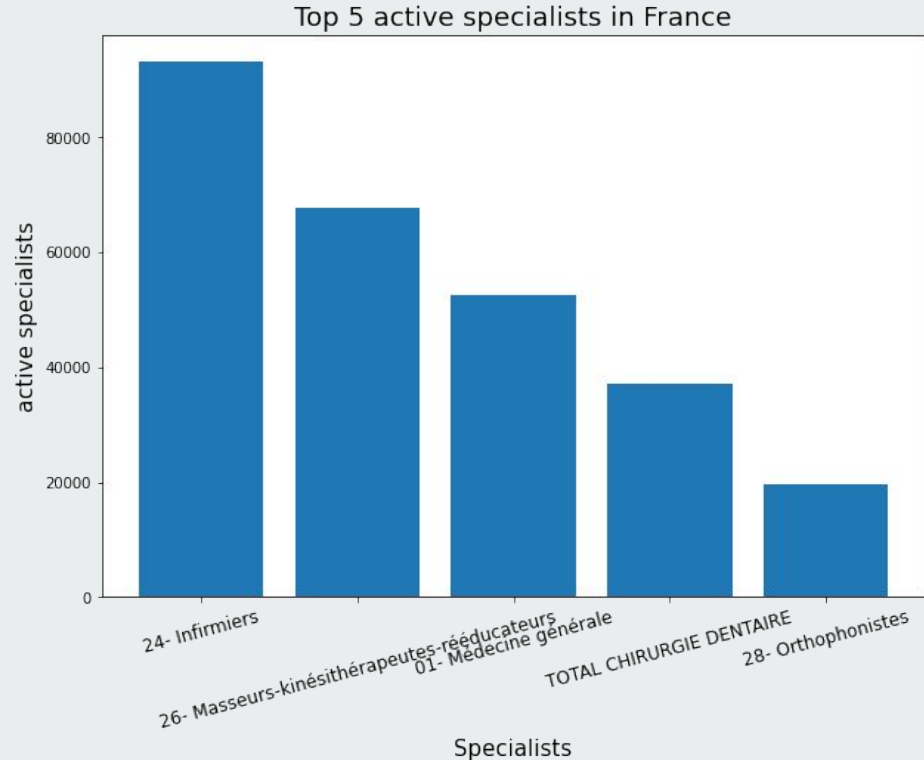
**64% exceeding
fees come from an
appointment with
DENTISTS!**

**5,011,865,915
Euros**

(5 billions)

Quick facts: Specialists

Among 349,446 physicians,
26.7% are nurses, and
19.5% MKR
15% medical generalist,
10.6% dentist

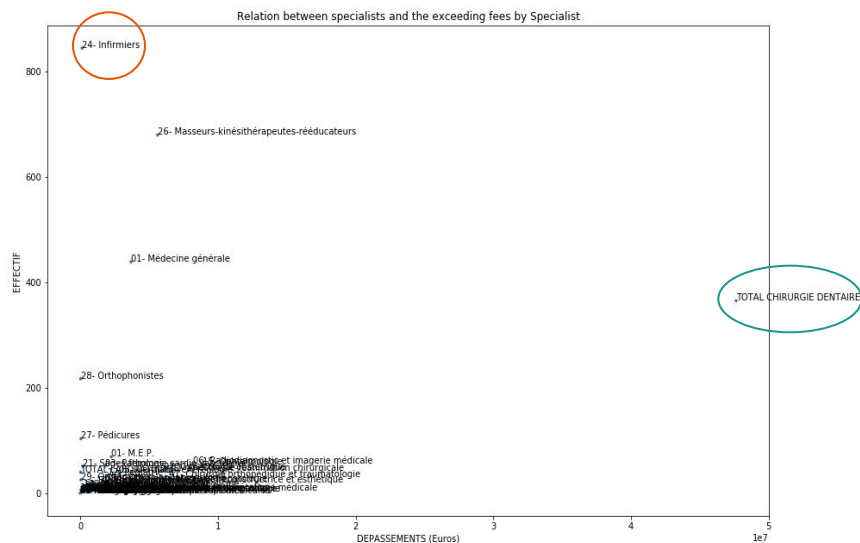


Relations by specialists

There are a lot of dentist with a huge amount of exceeding fee, but a lot of nurses with a very low sum of exceeding fee

- **“TOTAL CHIRURGIE DENTAIRE”:**
64%exceeding fee with 10.6%of specialists
- **"24- Infirmiers":**
0.26%exceeding fee with 26.7%specialists

Relations between physicians and the exceeding fees by specialists

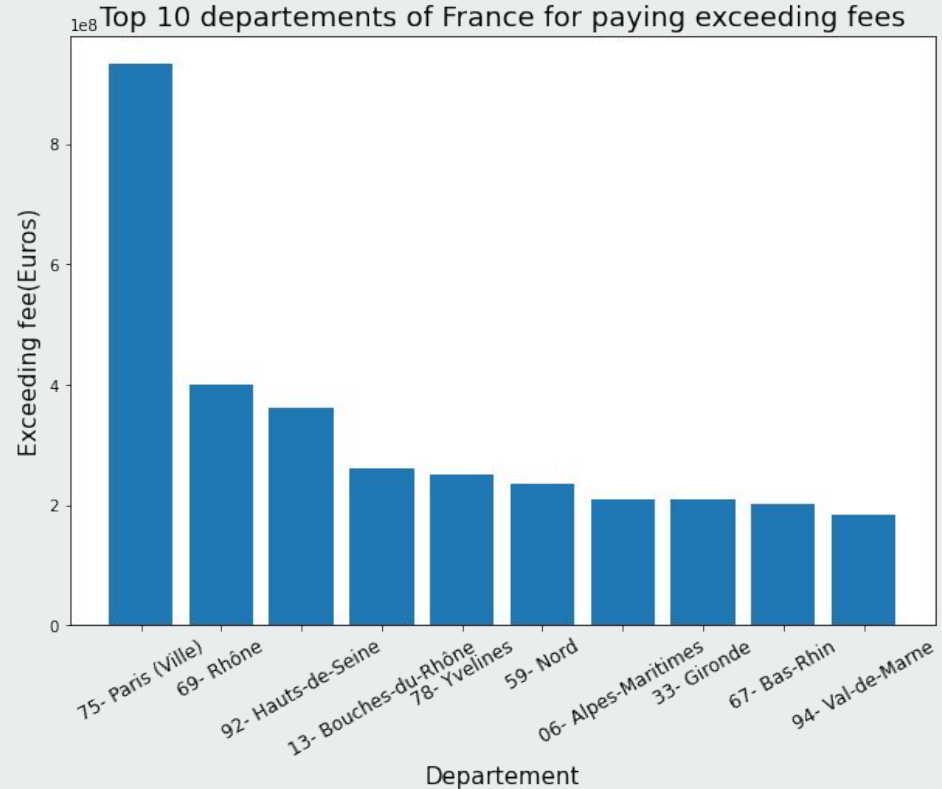


Quick facts: department

Parisians contributed around
12% to the exceeding fee of the
whole country

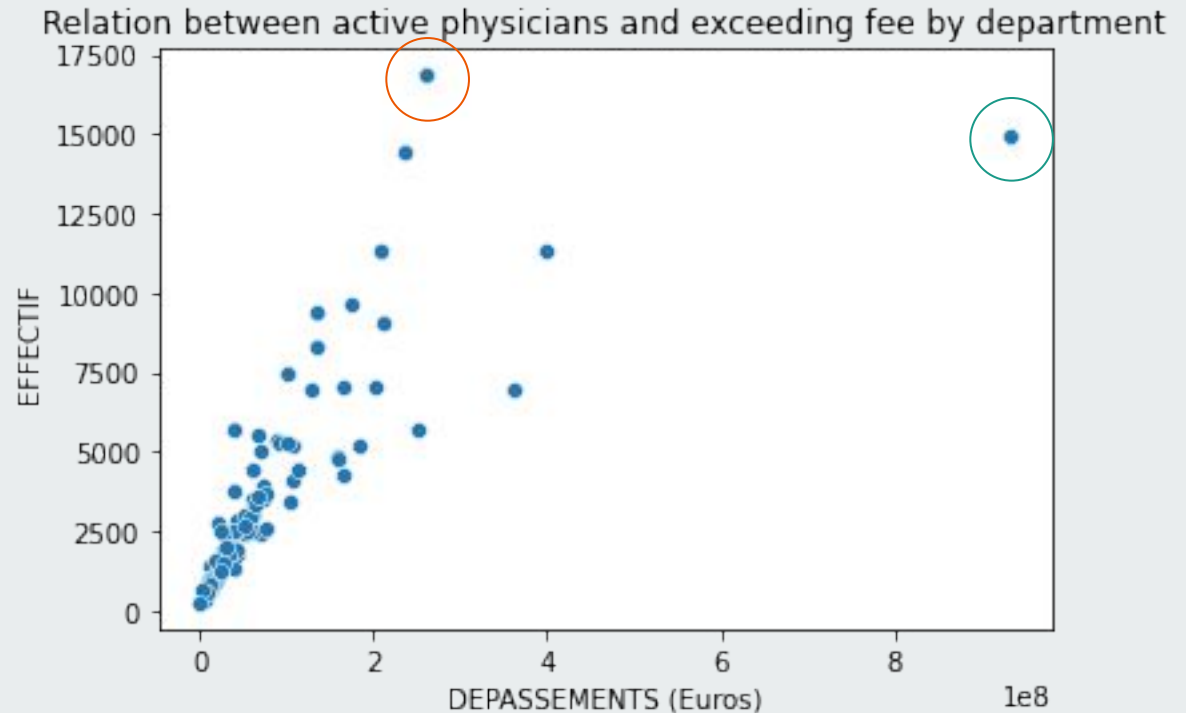
934,118,361 Euros

(900 millions)



Relations by departments

- **Paris,**
3.2% of population
4.3% active physicians,
paid 12% exceeding fee
- **Bouches-du-Rhône,**
3% of population,
4.8% active physicians,
3.3% exceeding fee



Case Analysis

- Paris
- Nurse in region scale

Who are working in Paris?

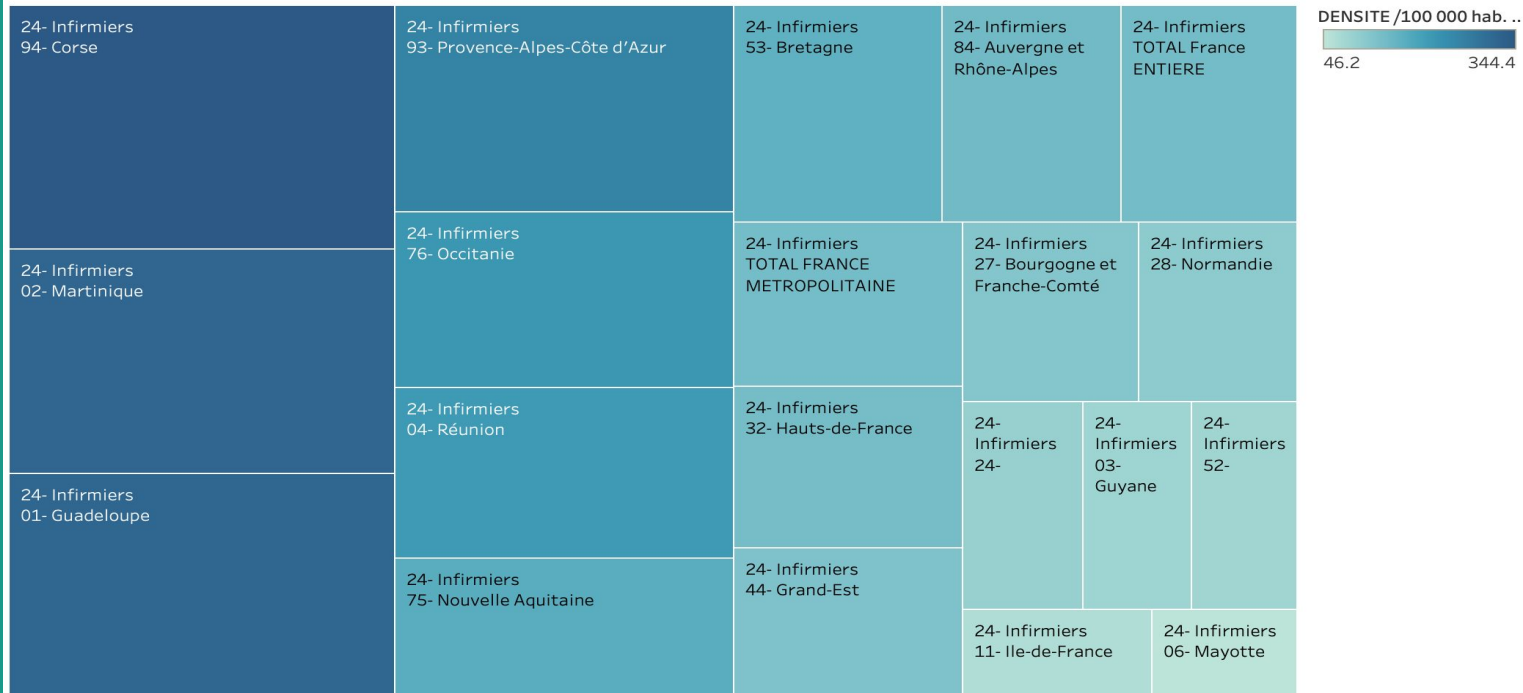
Paris	EFFECTIF	DENSITE /100 000 hab.
Spécialistes		
26- Masseurs-kinésithérapeutes-rééducateurs	3014	140.806512
TOTAL CHIRURGIE DENTAIRE	2223	103.852978
01- Médecine générale	1787	83.484153
24- Infirmiers	1530	71.477758
28- Orthophonistes	767	35.832314
27- Pédicures	568	26.535534
01- M.E.P.	555	25.928206
15- Ophtalmologie	398	18.593561
06- Radiodiagnostic et imagerie médicale	340	15.883946
07- Gynécologie obstétrique	321	14.996314

France average	DENSITE /100 000 hab.
Spécialistes	
24- Infirmiers	152.0
26- Masseurs-kinésithérapeutes-rééducateurs	95.0
01- Médecine générale	78.0
TOTAL CHIRURGIE DENTAIRE	51.0
28- Orthophonistes	25.0
27- Pédicures	17.0
01- M.E.P.	9.0
21- Sages-femmes	9.0
06- Radiodiagnostic et imagerie médicale	7.0
15- Ophtalmologie	6.0

- MKR has the highest density, and it is higher than the mean of the country.
- For 24- Infirmiers, its density serves half of the average
- for dentist, it serves twice of the average.
- As other regions, they share the similar rank of the density

Density of Nurse by Region

Nurse Density

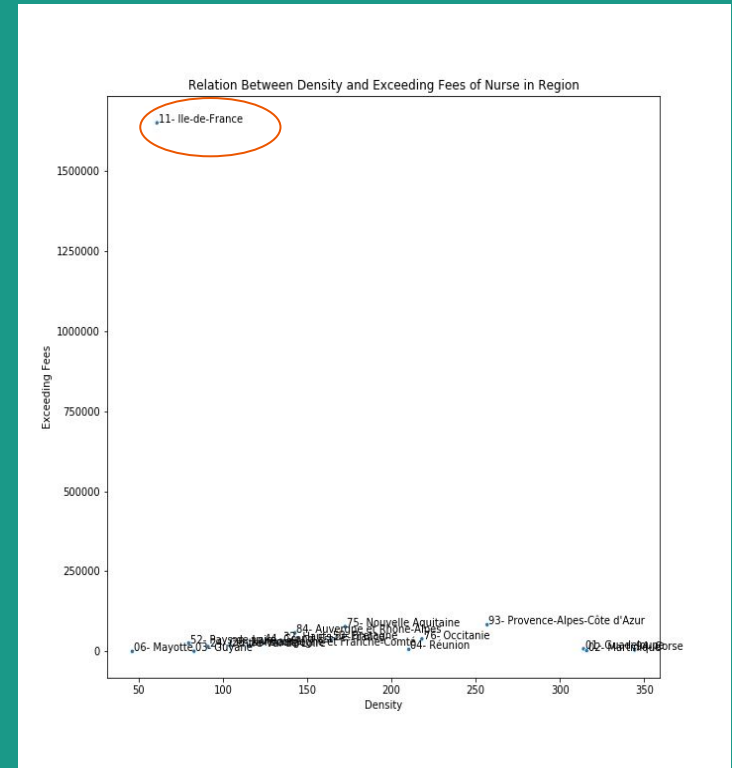


Auxiliaires médicaux (Auxiliaires médicaux) and REGION INSEE (Auxiliaires médicaux). Color shows sum of DENSITE/100 000 hab. (Auxiliaires médicaux). Size shows average of DENSITE/100 000 hab. (Auxiliaires médicaux). The marks are labeled by Auxiliaires médicaux (Auxiliaires médicaux) and REGION INSEE (Auxiliaires médicaux). The view is filtered on Auxiliaires médicaux (Auxiliaires médicaux), REGION INSEE (Auxiliaires médicaux) and REGION INSEE (Auxiliaires médicaux) as an attribute. The Auxiliaires médicaux (Auxiliaires médicaux) filter keeps 24- Infirmiers. The REGION INSEE (Auxiliaires médicaux) filter excludes TOTAL OUTRE-MER. The REGION INSEE (Auxiliaires médicaux) as an attribute filter keeps 21 members.

Nurse in region scale

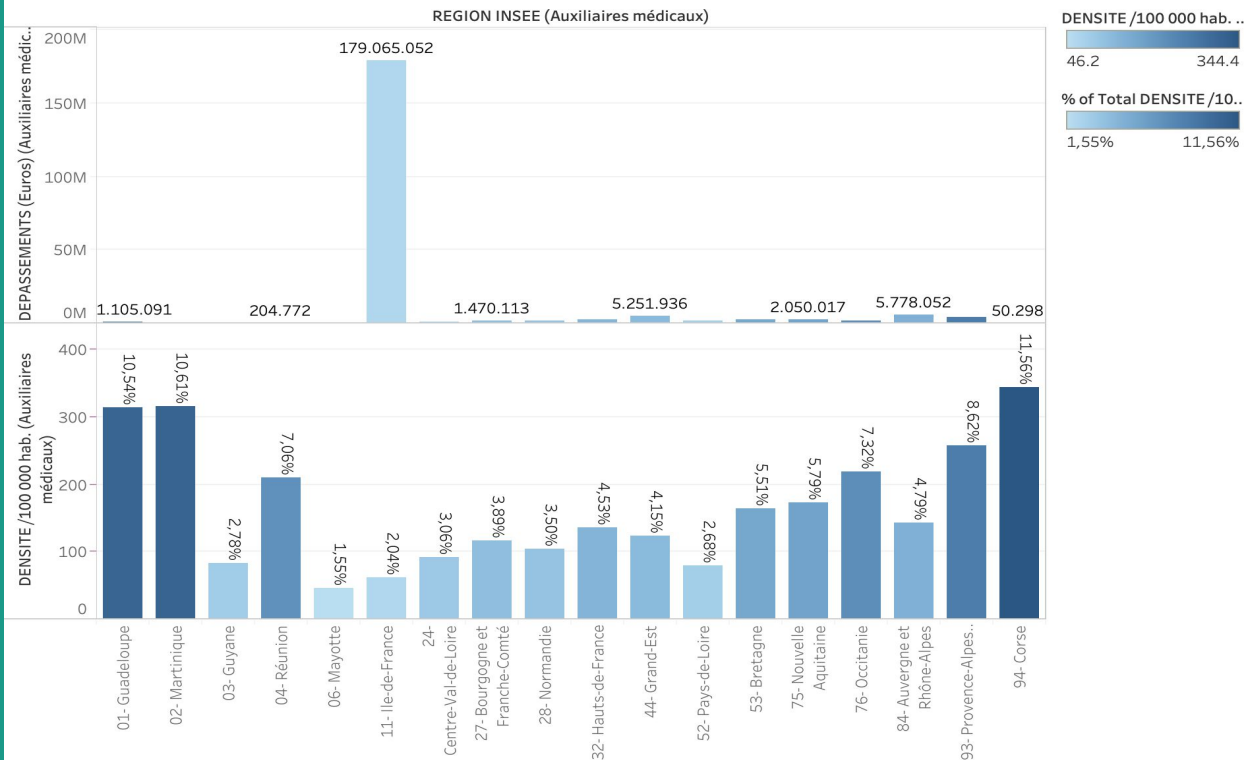
Spécialistes		region	EFFECTIF	exceeding_fees	TOTAL DES HONORAIRES (Euros)	population	DENSITE /100 000 hab.
12	24- Infirmiers	94- Corse	1168	4421	1.24566e+08	339178	344.361957
14	24- Infirmiers	02- Martinique	1151	2417	1.29182e+08	364354	315.901568
13	24- Infirmiers	01- Guadeloupe	1202	8140	1.36291e+08	382704	314.080856
11	24- Infirmiers	93- Provence-Alpes-Côte d'Azur	12996	83435	1.27126e+09	5059473	256.864697

15	24- Infirmiers	03- Guyane	246	599	3.00571e+07	296711	82.908959
6	24- Infirmiers	52- Pays-de-Loire	3018	26001	2.23916e+08	3786545	79.703265
0	24- Infirmiers	11- Ile-de-France	7436	1649692	6.73369e+08	12213364	60.884127
17	24- Infirmiers	06- Mayotte	125	241	1.68388e+07	270372	46.232598



Standard Deviation of Density in Nurse: 92

<Nurse Region>



Sum of DEPASSEMENTS (Euros) (Auxiliaires médicaux1) and sum of DENSITE/100 000 hab. (Auxiliaires médicaux) for each REGION INSEE (Auxiliaires médicaux). For pane Sum of DEPASSEMENTS (Euros) (Auxiliaires médicaux1): Color shows % of Total DENSITE/100 000 hab. (Auxiliaires médicaux). The marks are labeled by Moving Sum of DEPASSEMENTS (Euros) (Auxiliaires médicaux1). For pane Sum of DENSITE/100 000 hab. (Auxiliaires médicaux): Color shows sum of DENSITE/100 000 hab. (Auxiliaires médicaux). The marks are labeled by % of Total DENSITE/100 000 hab. (Auxiliaires médicaux). The data is filtered on Auxiliaires médicaux (Auxiliaires médicaux), which keeps 24-Infirmiers. The view is filtered on REGION INSEE (Auxiliaires médicaux), sum of DENSITE/100 000 hab. (Auxiliaires médicaux) and % of Total DENSITE/100 000 hab. (Auxiliaires médicaux). The REGION INSEE (Auxiliaires médicaux) filter excludes TOTAL France ENTIERE, TOTAL FRANCE METROPOLITAINE and TOTAL OUTRE-MER. The sum of DENSITE/100 000 hab. (Auxiliaires médicaux) filter includes everything. The % of Total DENSITE/100 000 hab. (Auxiliaires médicaux) filter includes everything.

Key Findings:

- A high ratio of voluntary insurances apart from SHI (Exception Ile-de-France)
 - In France, there are high disparities in the density of physician across regions. (maybe caused by geographical and socioeconomic inequalities)
 - Imbalance of exceeding fees to density for Nurses
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