



ORIGINAL ARTICLE / *Professional information*

# Analysis of subsequent publication of scientific orally presented abstracts of the French National Congress of Radiology. Part II: Focus on the French abstracts



V. Dangouloff-Ros<sup>a</sup>, M. Ronot<sup>a,\*,b,c</sup>, M. Lagadec<sup>a,b,c</sup>,  
V. Vilgrain<sup>a,b,c</sup>

<sup>a</sup> Department of Radiology, University Hospitals Paris-Nord – Val-de-Seine, Beaujon, 100, boulevard du Général-Leclerc, 92110 Clichy, France

<sup>b</sup> University Paris Diderot, Sorbonne Paris Cité, 75010 Paris, France

<sup>c</sup> INSERM U1149, centre de recherche biomédicale Bichat-Beaujon, CRB3, 75018 Paris, France

## KEYWORDS

Publication;  
Congresses as topic;  
Radiology;  
“Peer review, research”;  
“Geography, medical”

## Abstract

**Aim:** To evaluate the publication rate of scientific abstracts that were presented orally at the 2008, 2009, and 2010 annual meetings of the French Society of Radiology by French radiologists, and to perform a French regional analysis.

**Material and methods:** Orally presented abstracts were identified by examining online abstract books of the 2008, 2009, and 2010 annual meetings of the French Society of Radiology, and cross-checked by reviewing the paper version of abstracts for the same period. Only abstracts from French teams were selected. The administrative region of submission was noted for each abstract and for each region the total population, the number of active radiologists, the number of active members of the French Society of Radiology and the number of academic radiologists were noted. Imaging subspecialties were also noted.

**Results:** 625 abstracts were identified resulting in 268 publications (publication rate: 43%). The median number of presentations and publications per region was 18 (range: 1–255) and 7 (range: 0–101), respectively. The ratio per million inhabitants was 7.5 and 3 respectively. The median number of presentations and publications per 100 active radiologists (respectively members of the FSR) was 7 and 3 (respectively 10 and 4). The median number of presentations and publications per academic radiologist were 2.6, and 1.2, respectively. The regional variations for each indicator were high (40–180%). Three subspecialties had a publication rate of more than 50%: thoracic imaging (58%), abdominal imaging (52%), and genitourinary imaging (51%).

\* Corresponding author.

E-mail address: [maxime.ronot@bjn.aphp.fr](mailto:maxime.ronot@bjn.aphp.fr) (M. Ronot).

*Conclusion:* The publication rate of orally presented French scientific abstracts was high, with important variations according to the regions of origin and imaging subspecialties.

© 2015 Éditions françaises de radiologie. Published by Elsevier Masson SAS. All rights reserved.

## Abbreviations

CT	computed tomography
MRI	magnetic resonance imaging
US	ultrasound
FSR	French Society of Radiology

## Introduction

The impact of clinical and experimental research is mainly based on the publication rate. Scientific meetings and congresses are also very important because ongoing work and experimental studies can be presented. However, except for the associated reputation and prestige, it is difficult to rate meetings and, to date, there is no equivalent to the publication impact factor. Therefore, certain authors have suggested that the publication rate of orally presented scientific abstracts might be interesting criteria [1]. Several studies of radiological meetings have reported publication rates from 8 to 47% [2–12].

We analyzed the global publication rate and factors associated with publication of scientific abstracts that were presented orally at the annual meeting of the French Society of Radiology, which is the main French-speaking radiology meeting in the world, with nearly 18,000 participants [13]. The French national radiology meeting presents a great number of scientific presentations every year [14]. This publication rate was 40%, which is significantly higher than that reported by Arrive et al. in 1996 for the same meeting [8], and similar to other international imaging meetings [2–4,7].

Most scientific abstracts that are presented orally at the annual meeting of the French Society of Radiology are from French teams (84% for 2008–2010). To our knowledge, there are no studies reporting regional differences for these. We hypothesized that there might be differences according to the size of the population, which would reflect the patient population and the number of active and academic radiologists.

Thus, the aim of this study was to perform a regional analysis of the publication rates of scientific abstracts that were orally presented by French teams at the 2008, 2009, and 2010 annual meetings of the French Society of Radiology. We also evaluated whether the abstracts and subsequent publications were equally distributed by subspecialty in the regions.

## Material and methods

### Identification of scientific abstracts

Abstracts were identified by a junior radiologist (VDR), who examined online electronic abstract books for the

2008, 2009, and 2010 annual meetings of the French Society of Radiology and chose all original research studies that were oral presentations, excluding continuing medical education courses and electronic posters. To avoid errors, the information was cross-checked by reviewing the paper version of the abstracts for the same three years. Only abstracts from French teams were selected, others were excluded.

### Abstract characteristics

All identified abstracts were analyzed by one junior and one senior radiologist (VDR and MR). The following items were recorded for each individual abstract:

- radiological subspecialty (e.g. neuroradiology, abdominal and digestive imaging, etc.);
- diagnostic or interventional radiology;
- the main type of imaging (i.e. plan radiography, angiography, ultrasound (US), computed tomography (CT), magnetic resonance imaging (MRI), or nuclear medicine);
- human or animal study;
- retrospective or prospective design;
- number of included subjects;
- oncological study or not.

When the information on the study design was not available, the study was considered to be retrospective.

The administrative region of the abstract submission was also recorded for each abstract. To better analyze the factors associated with publication, the following data were noted for each French administrative region:

- total population according to the French Institute of Statistics and Economic Studies (INSEE);
- number of active radiologists according to the French National Medical Council (CNOM);
- number of active members of the French Society of Radiology;
- number of academic radiologists according to the French Academic College of Radiology (Collège des enseignants de radiologie de France [CERF]).

### Study search and data collection

Publication in Medline-indexed journals was identified by scanning the PubMed database (<http://www.ncbi.nlm.nih.gov/pubmed/>) for the period October 2008 to November 2013. Publications were identified using the last name and the first letter of the first name of the first author of the abstract. If there were no results to a search, the process was repeated using the second, and last authors of the abstract. If the result included more than 20 publications with an author, an additional criterion was used as such as another author or a key phrase from the title of the abstract to simplify the search.

Only original articles corresponding to the abstract were selected. Letters, reviews, and editorials were excluded. To avoid mistakes based on similar titles we confirmed the agreement between the information contained in the summary of the published article, and that cited in the abstract of the oral presentation. We selected articles that addressed more restricted subject matter compared to the information presented in the corresponding abstract, because truncation might have occurred during the review process. We also selected the articles with more patients described than in the oral presentation, if the oral presentation was a preliminary report of the same protocol.

## Statistical analyses

Values were expressed as means and standard deviations, or median and interquartile range, and percentages, as appropriate. The publication rate (PR) was defined as the ratio between the number of subsequently published articles in Medline-indexed journals, and the total number of oral presentations of scientific abstracts. The non-parametric Wilcoxon rank-sum test was used to compare quantitative variables, and the Chi-square or Fisher exact test for categorical variables. We calculated the number of presentations and publications for each region per million inhabitants. We assumed that most presentations and publications were made by academic radiologists and compared productivity of academic radiologists by calculating the median number of presentations (publications) per academic radiologist. Finally, we calculated the median number of presentations and publications per 100 active radiologists and per 100 members of the French Society of Radiology.

A *P*-value of 0.05 was considered to be significant. Analyses were performed with the Statistical Package for the Social Sciences (SPSS) software (version 20.0, SPSS Inc., Chicago, IL, USA).

## Results

### Characteristics of French scientific presentations and publications

During the study period, a total of 625 scientific presentations were identified from French teams (2008 = 210, 34%; 2009 = 200, 32%, and 2010 = 215, 34%, *P* > 0.05). **Table 1** summarizes the characteristics of the French teams.

Briefly, the studies were mostly retrospective (*n* = 376, 60%), in human subjects (*n* = 586, 94%) and focusing on diagnostic imaging (*n* = 528, 84%). The median number of subjects was 40 (18–88).

The most frequent imaging modalities were MRI (*n* = 296, 47%), then CT (*n* = 179, 29%) and ultrasound (*n* = 95, 15%). Twenty-nine percent of the abstracts (*n* = 178) were oncological studies. The most frequent radiological subspecialties were abdominal and digestive (*n* = 125, 20%), cardiovascular (*n* = 86, 14%), genitourinary imaging (*n* = 79, 13%), and musculoskeletal (*n* = 74, 12%),

Between October 2008 and November 2013, 268/625 scientific abstracts that were presented orally were developed into articles that were published in Medline-indexed

**Table 1** Abstract characteristics and factors associated with publication.

	Total
<i>Abstracts</i>	625
<i>Published (rate of publication)</i>	268 (43)
<i>Number of patients median (IQR)</i>	40 (18–88)
<i>Study design</i>	
Retrospective	376 (60)
Prospective	249 (40)
<i>Diagnostic imaging</i>	528 (84)
<i>Interventional imaging</i>	97 (16)
<i>Imaging modality<sup>a</sup></i>	
MRI	296 (47)
CT	179 (29)
US	95 (15)
Plain radiography	66 (11)
Angiography	52 (8)
Nuclear medicine	12 (2)
<i>Type of subjects</i>	
Humans	586 (94)
Non-humans	39 (6)
<i>Oncologic topic</i>	178 (29)
<i>Radiologic subspecialty</i>	
Abdominal/digestive	125 (20)
Cardiovascular	86 (14)
Genitourinary	79 (13)
Musculoskeletal	74 (12)
Pediatrics	60 (9)
Neuroradiology	53 (8)
Thoracic	48 (8)
Breast	43 (7)
Dose radiation	32 (5)
Head and neck	23 (4)
Management	2 (1)

<sup>a</sup> The total exceeds the sum of the different items because some studies analyzed several imaging modalities. Numbers in parentheses correspond to percentages.

journals, for a publication rate of 43%. The publication rate of the 2008, 2009, and 2010 meetings were 48% (101/210), 39.5% (79/200) and 40.4% (87/215) respectively (*P* = 0.15).

### French regional analysis

**Tables 2 and 3**, and **Figs. 1–4** summarize the French regional data analysis on presentations and publications.

The median number of presentations per region during the period was 18 (range: 1–255). There was a wide variation among regions, with a coefficient of variation of 180%. Île-de-France had the greatest number of presentations (*n* = 255, 41%), followed by Rhône-Alpes (*n* = 54, 9%), Nord-Pas-de-Calais (*n* = 45, 7%), and Provence-Alpes-Côte d'Azur (*n* = 38, 6%; **Fig. 1**). The median ratio of presentations per

**Table 2** Regional analysis of presentations and publications.

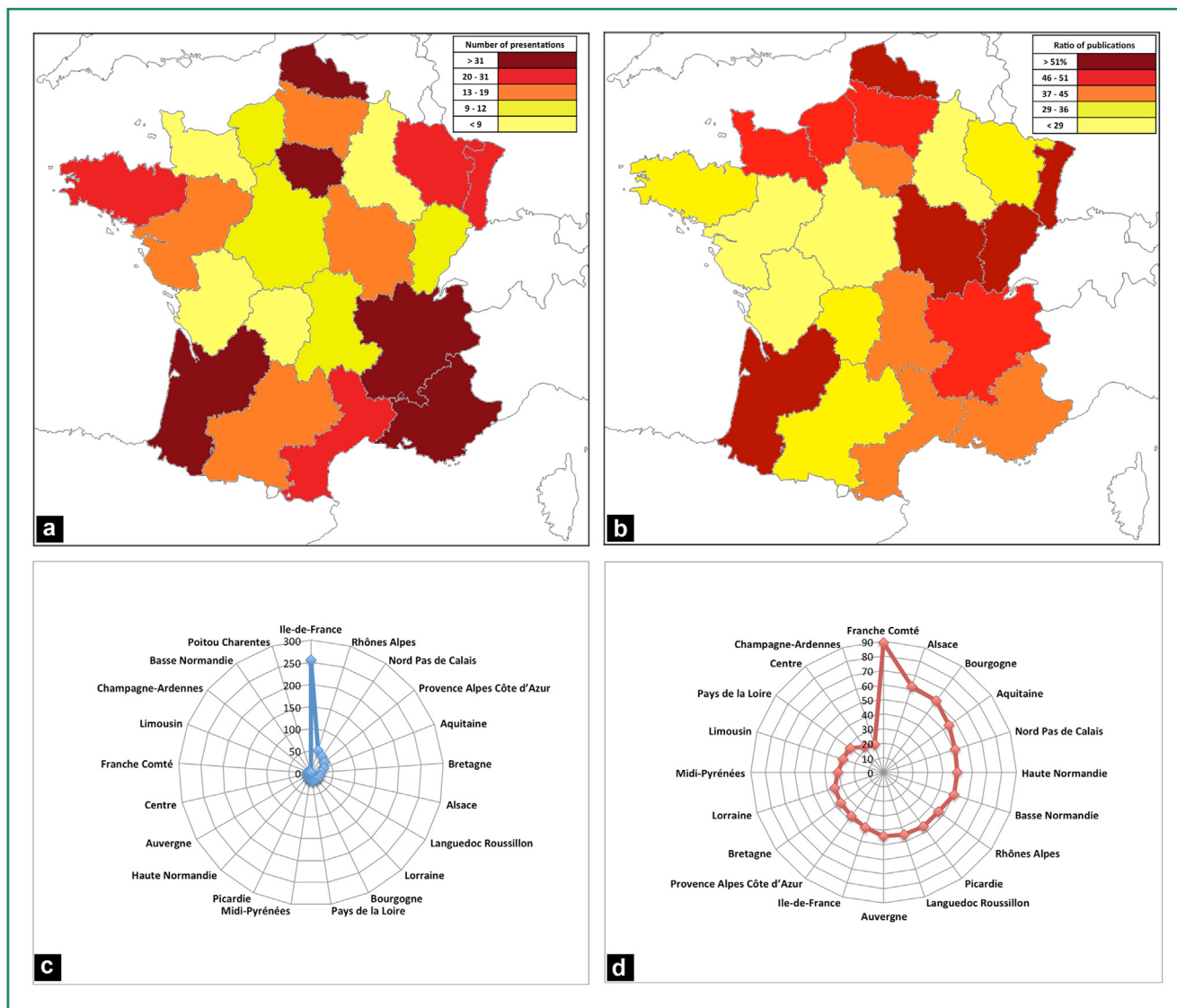
Region	Presentations					Publications					Publication ratio (%)
	All	/million inhabitants	% members of the FSR	% active radiologists	/academic radiologist	All	/million inhabitants	% members of the FSR	% active radiologists	/academic radiologist	
Total	625	7.5	10	7	2.6	268	3	4	3	1.2	43
CV (%)	180	56	44	48	40	167	67	55	52	57	44
Alsace	21	11.3	14	8	2.6	13	7.0	9	5	1.6	62
Aquitaine	31	9.5	10	8	3.4	17	5.2	5	4	1.9	55
Auvergne	9	6.7	9	7	3.0	4	3.0	4	3	1.3	44
Basse-Normandie	4	2.7	4	3	1.3	2	1.3	2	1	0.7	50
Bourgogne	18	11.0	17	11	4.5	11	6.7	10	7	2.8	61
Bretagne	22	6.8	11	7	5.5	8	2.5	4	3	2.0	36
Centre	9	3.5	5	4	1.5	2	0.8	1	1	0.3	22
Champagne-Ardennes	5	3.7	6	4	1.7	1	0.7	1	1	0.3	20
Franche-Comté	9	7.7	11	8	2.3	8	6.8	9	7	2.0	89
Haute-Normandie	10	5.4	7	6	2.5	5	2.7	4	3	1.3	50
Île-de-France	255	21.5	20	14	3.1	101	8.5	8	6	1.2	40
Languedoc-Roussillon	20	7.5	8	6	2.5	9	3.4	4	3	1.1	45
Limousin	7	9.5	14	17	3.5	2	2.7	4	5	1.0	29
Lorraine	20	8.5	13	8	2.2	7	3.0	5	3	0.8	35
Midi-Pyrénées	16	5.5	8	5	2.7	5	1.7	2	2	0.8	31
Nord-Pas-de-Calais	45	11.1	14	10	4.5	23	5.7	7	5	2.3	51
Provence-Alpes-Côte d'Azur	38	7.7	9	6	2.5	14	2.9	3	2	0.9	37
Pays de la Loire	18	5.0	9	6	2.6	5	1.4	3	2	0.7	28
Picardie	13	6.8	13	8	3.3	6	3.1	6	4	1.5	46
Poitou-Charentes	1	0.6	1	1	0.5	0	0	-	-	0	0
Rhône-Alpes	54	8.6	11	8	2.8	25	4.0	5	4	1.3	46

CV%: coefficient of variation; Corse and overseas regions were not included in the table because no abstract was submitted from these regions.

**Table 3** French regional data analysis for the period of 2008–2010 regarding imaging subspecialties.

Region	Presentations (% publication)	Abdomen	Breast	CV	GU	Head and neck	Management	MSK	Neuro	Pediatrics	Dose radiation	Thorax
France	625 (43)	125 (52)	43 (30)	86 (35)	79 (51)	23 (35)	2 (0)	74 (39)	53 (49)	60 (40)	32 (16)	48 (58)
Alsace	21 (62)	1 (0)	0 (–)	0 (–)	5 (40)	4 (50)	0 (–)	6 (100)	2 (100)	0 (–)	2 (0)	1 (100)
Aquitaine	31 (55)	5 (40)	1 (0)	4 (50)	8 (88)	1 (100)	0 (–)	3 (33)	1 (0)	1 (0)	0 (–)	7 (57)
Auvergne	9 (44)	1 (0)	0 (–)	5 (40)	3 (67)	0 (–)	0 (–)	0 (–)	0 (–)	0 (–)	0 (–)	0 (–)
Basse-Normandie	4 (50)	0 (–)	1 (0)	1 (100)	0 (–)	0 (–)	0 (–)	0 (–)	2 (50)	0 (–)	0 (–)	0 (–)
Bourgogne	18 (61)	5 (80)	0 (–)	6 (83)	3 (67)	0 (–)	0 (–)	3	0 (–)	0 (–)	1 (0)	0 (–)
Bretagne	22 (36)	5 (0)	0 (–)	1 (100)	1 (0)	2 (0)	0 (–)	2 (50)	4 (75)	6 (50)	1 (0)	0 (–)
Centre	9 (22)	4 (0)	1 (0)	0 (–)	2 (50)	0 (–)	0 (–)	1 (0)	0 (–)	1 (100)	0 (–)	0 (–)
Champagne-Ardennes	5 (20)	0 (–)	0 (–)	2 (0)	3 (33)	0 (–)	0 (–)	0 (–)	0 (–)	0 (–)	0 (–)	0 (–)
Franche-Comté	9 (89)	7 (100)	0 (–)	2 (50)	0 (–)	0 (–)	0 (–)	0 (–)	0 (–)	0 (–)	0 (–)	0 (–)
Haute-Normandie	10 (50)	2 (100)	0 (–)	3 (33)	2 (50)	0 (–)	0 (–)	0 (–)	1 (0)	1 (100)	1 (0)	0 (–)
Île-de-France	255 (40)	49 (59)	22 (36)	30 (23)	19 (37)	10 (30)	1 (0)	30 (27)	22 (59)	35 (37)	21 (14)	16 (63)
Languedoc-Roussillon	20 (45)	5 (40)	1 (100)	3 (67)	4 (25)	0 (–)	0 (–)	1 (100)	1 (0)	0 (–)	0 (–)	5 (40)
Limousin	7 (29)	0 (–)	0 (–)	0 (–)	5 (40)	0 (–)	0 (–)	0 (–)	2 (0)	0 (–)	0 (–)	0 (–)
Lorraine	20 (35)	3 (67)	1 (0)	1 (0)	1 (0)	2 (50)	0 (–)	8 (25)	2 (0)	0 (–)	1 (100)	2 (50)
Midi-Pyrénées	16 (31)	2 (50)	0 (–)	5 (20)	1 (0)	0 (–)	0 (–)	5 (40)	1 (0)	2 (50)	0 (–)	0 (–)
Nord-Pas-de-Calais	45 (51)	4 (25)	4 (25)	3 (33)	9 (44)	1 (0)	0 (–)	4 (100)	2 (0)	4 (50)	2 (50)	12 (75)
Provence-Alpes-Côte d'Azur	38 (37)	8 (0)	7 (43)	7 (43)	5 (80)	2 (50)	1 (0)	3 (67)	1 (0)	1 (100)	1 (0)	2 (0)
Pays de la Loire	18 (28)	6 (50)	1 (0)	4 (0)	1 (100)	0 (–)	0 (–)	0 (–)	2 (0)	2 (50)	1 (0)	1 (0)
Picardie	13 (46)	4 (100)	1 (0)	2 (50)	0 (–)	0 (–)	0 (–)	0 (–)	3 (33)	3 (0)	0 (–)	0 (–)
Poitou-Charentes	1 (0)	0 (–)	0 (–)	0 (–)	1 (0)	0 (–)	0 (–)	0 (–)	0 (–)	0 (–)	0 (–)	0 (–)
Rhône-Alpes	54 (46)	14 (57)	3 (0)	7 (29)	6 (83)	1 (0)	0 (–)	8 (25)	8 (75)	4 (25)	1 (0)	2 (50)

CV: cardiovascular; GU: genitourinary; MSK: musculoskeletal; Neuro: neuroradiology; Corse and overseas regions were not included in the table because no abstract was submitted from these regions.



**Figure 1.** Maps (a, b) and radar chart (c, d) showing the number of presentations (a and c), and the publication rate (b and d), for the different regions of France. Results in maps are presented as quintiles.

million inhabitants in France was 7.5 with a coefficient of variation among regions of 56%. Île-de-France was the leader ( $n=21.5$ ) followed by Alsace, Nord-Pas-de-Calais, and Bourgogne (11.3, 11.1, and 11.0, respectively; Fig. 2).

The median number of abstract-derived publications per region was 7 (range: 0–101) during the study period. Île-de-France had the highest number of publications ( $n=101$ , 38%), followed by Rhône-Alpes ( $n=25$ , 9%), Nord-Pas-de-Calais ( $n=23$ , 9%), and Aquitaine ( $n=17$ , 6%; Fig. 1). The percentage of abstract-derived publications varied greatly among the regions with a coefficient of variation of 44%. The highest rate was observed in Franche-Comté (89% for 9 abstracts), followed by Alsace (62% for 21 abstracts), Bourgogne (61% for 18 abstracts), and Aquitaine (55% for 31 abstracts; Fig. 1). The median ratio of publications per million inhabitants in France was 3.0. The highest ratios were found in Île-de-France ( $n/i=8.5$ ) followed by Alsace, Franche-Comté, and Bourgogne (7, 6.8, and 6.7, respectively).

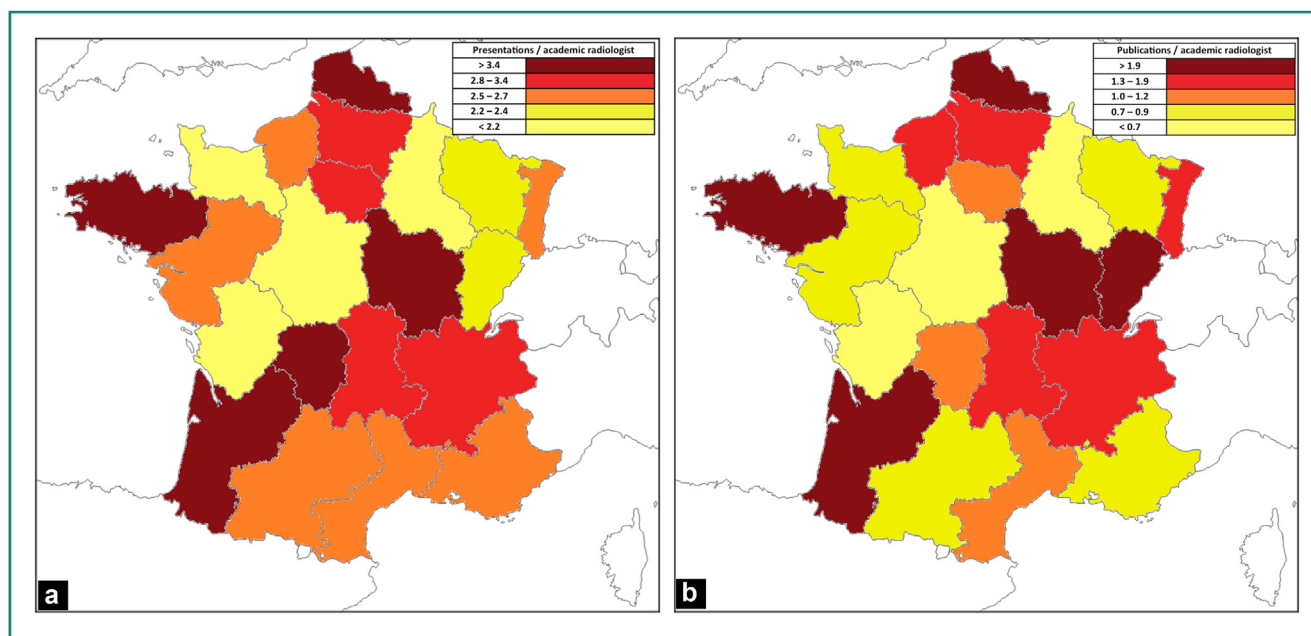
## Analysis according to radiologists' demographics

### Academic radiologists

In France, the median number of scientific presentations and publications per academic radiologist during the 2008–2010 period were 2.6 and 1.2, respectively. Bretagne had the leading number of presentations ( $n=5.5$ ), followed by Bourgogne, Nord-Pas-de-Calais, and Limousin ( $n=4.5$ ,  $n=4.5$ , and  $n=3.5$ , respectively; Fig. 3). Bourgogne had the leading number of publications ( $n=2.8$ ), followed by Nord-Pas-de-Calais, Bretagne, and France-Comté ( $n=2.3$ ,  $n=2$ , and  $n=2$ , respectively; Fig. 3).

### Active radiologists

In France, the median number of presentations per 100 active radiologists was 7. Limousin was leader (AR=17%), followed by Île-de-France, Bourgogne and



**Figure 2.** Maps showing the mean number of presentations (a), publications (b) per academic radiologist for the different regions of France. Results are presented as quintiles.

Nord-Pas-de-Calais (AR = 14, 11 and 10%, respectively; Fig. 2). The median number of publications per 100 active radiologists was 3. Bourgogne and Franche-Comté were the leaders (AR = 7% for both), followed by Île-de-France, Nord-Pas-de-Calais and Alsace (6, 5, and 5%, respectively; Fig. 2).

### Members of the French Society of Radiology

In France, the median number of presentations per 100 members of the French Society of Radiology was 10. The leading region was Île-de-France (FSR = 20%), followed by Bourgogne, Alsace, and Nord-Pas-de-Calais (17, 14, and 14% respectively; Fig. 2).

Finally, in France, the median number of presentations per 100 members of the French Society of Radiology was 4. Bourgogne the leader (FSR = 10%), followed by Franche-Comté and Alsace (FSR = 9% for both), and Île-de-France (FSR = 8%; Fig. 2).

### Analysis according to the imaging subspecialty

The median number of presentations per imaging subspecialty was 53, and the median rate of publication was 39%. The number of presentations varied greatly among subspecialties, ranging from 125 for abdominal imaging, to 2 for management (Table 3, Fig. 4). The publication rate varied less, ranging from 58% for thoracic imaging to 0 for management (Table 3, Fig. 4). In addition to thoracic imaging, two other subspecialties had a publication rate of more than 50%: abdominal imaging (52%), and genitourinary imaging (51%).

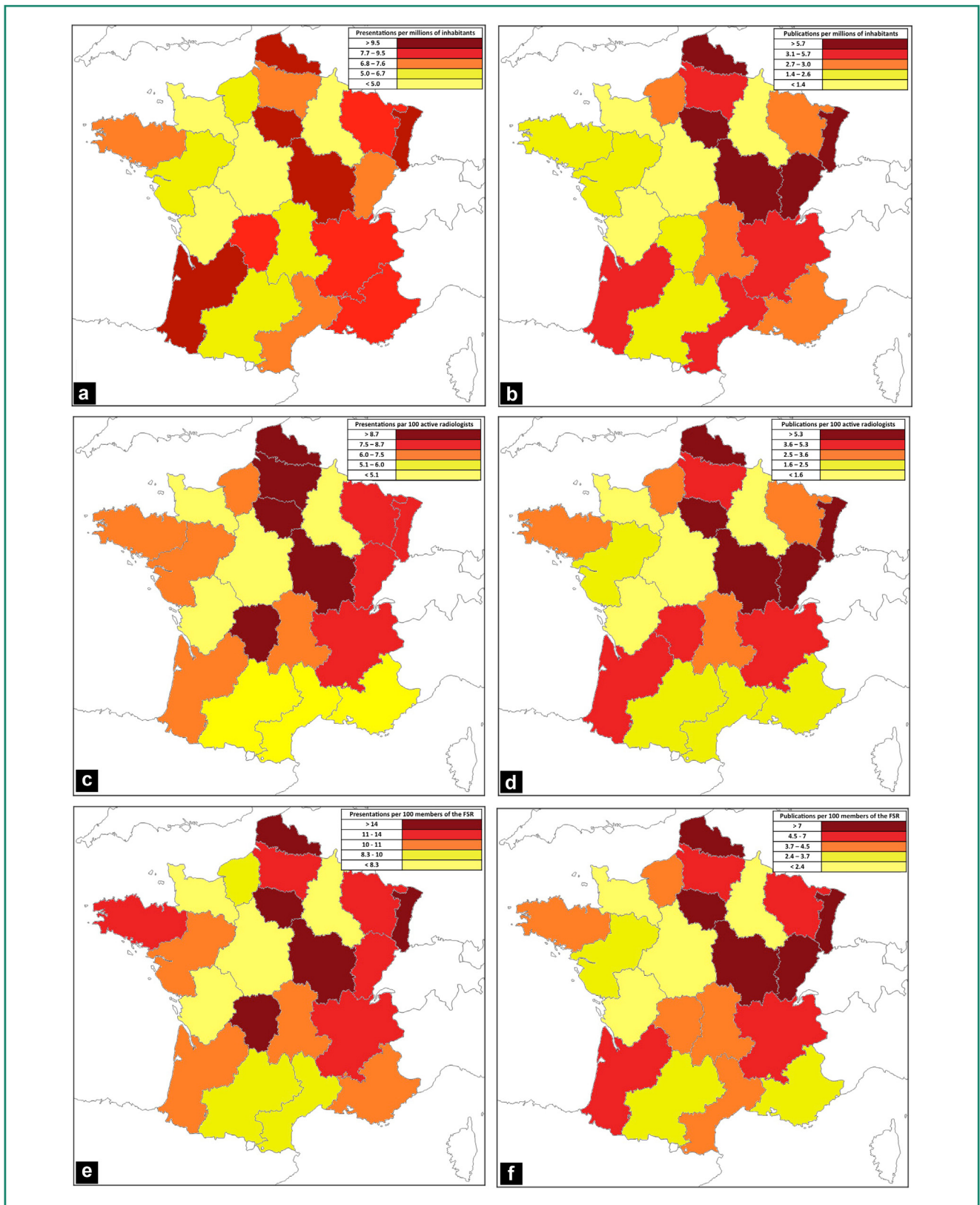
## Discussion

The publication rate of orally presented scientific abstracts is an interesting criterion to evaluate the scientific value

of a medical congress. Our results show that a mean 43% of French scientific abstracts presented by French teams at the annual meeting of the French Society of Radiology resulted in publications over a period of three years which is similar to the publication rate (40%) of all abstracts presented at this meeting during the same time period.

The analysis of the distribution of presentations and publications by French region is interesting but difficult to interpret. Indeed, the results suggest that there is no regional leader of French academic radiology. As expected the greatest number of presentations was found in Île-de-France. However, it ranked 12th in the publication rate, well behind the top three regions (Franche-Comté, Alsace, and Bourgogne). This could partly be explained by the geographic location of the meeting, which is traditionally held in Paris. Indeed, authors from Île-de-France may be more apt to send abstracts for presentation due to the lower cost of the attendance. On the other hand, authors working far from Paris may send fewer abstracts for presentation while choosing more advanced or scientifically valid studies. Interestingly, interregional variations were lower when the population of each region was taken into account, as shown by the coefficient of variation for both presentations and publications. This was also true for the number of presentations/publications per 100 active radiologists or members of the FSR. This suggests that local demographics and socio-economic factors clearly influence the academic activity of each region.

Nevertheless, these factors do not fully explain the regional discrepancies of our results. Indeed, the results for all of France were more consistent for academic radiologists, as shown by the lowest regional coefficient of variation for both presentations and publications. For instance, despite a greater number of academic radiologists in Île-de-France compared to Bretagne, the mean number of presentations and publications *per capita* were



**Figure 3.** Maps showing the number of presentations (a) and publications (b) per million inhabitants of the different regions of France. Maps showing the number of presentations (c) and publications (d) per 100 active radiologists for the different regions of France. Maps showing the number of presentations (e) and publications (f) per 100 members of the French Society of Radiology from the different regions of France. Results are presented as quintiles in maps.





**Figure 4.** Radar chart showing the number of presentations (a) and publication rate (b) for the different imaging subspecialties.

higher in Bretagne. Similar results were observed for Bourgogne or Nord-Pas-de-Calais. Overall, this analysis shows that the influence of leading academic radiology teams with national and international reputations probably plays an important role in on both the number of presentations and publications. Therefore, we suggest that regional academic activity should be seen as a complex interaction between the healthcare needs of the local population associated with socioeconomic and demographic factors on one hand, and local academic dynamism on the other hand. In this case significant modifications can be expected in the upcoming years, depending on whether existing high-level regional academic centres can maintain their activity, as new centres emerge.

These observations can be analyzed by region as well as by different imaging subspecialties. As stated in part I of the analysis, the highest publication rate was reported in thoracic imaging (58%), followed by abdominal and digestive imaging (52%), genitourinary imaging (51%), and neuroradiology (49%). This supports the study by Miguel-Dasit et al. on the European Congress of Radiology, which reported publication rates of 56% for chest and cardiac studies [4]. However, an overview of the different publications on this topic in the literature shows that the ranking of the subspecialties varies, making it impossible to draw any overall conclusions or even trends [2–12]. Moreover, no single French region was found to be a leader in all imaging subspecialties. Île-de-France was the leader for the number of presentations in all imaging subspecialties. However, careful analysis of the geographic distribution of the publication rate shows that the number of publications and the regional academic centres led by internationally recognized teams were scattered throughout the country. Here again, the development of these different teams can only be partially explained by local elements.

Our study has several limitations. First the number of publications does not include all publications from French teams over the study period. Indeed, publications that were not presented at the meetings were not included. This

potential underestimation and associated bias must be taken into consideration. Also, this study did not analyze the outcome of abstracts presented as posters, or abstracts submitted to the scientific committee that were rejected, and therefore we may have missed some publications resulting from these materials. Indeed, previous studies have shown that their publication rate is significantly lower than that of orally presented abstracts, but not null [15]. In addition due to the study period, we only analyzed publications that appeared three to five years after the meetings. Therefore, more recent publications might have been excluded resulting in an underestimation bias. Other authors have reported mean publications delays ranging from 14 to 24 months, and Arrivé et al. showed that 94% of the articles were published within the three years after a meeting [2–12]. Therefore, we believe that the influence of this potential bias is limited. Finally, our identification process for publication was limited to Medline-indexed journal.

In conclusion, the publication rate of French orally presented scientific abstracts was high, with significant variations by regions and imaging subspecialty.

## Disclosure of interest

The authors declare that they have no conflicts of interest concerning this article.

## References

- [1] Goldman L, Loscalzo A. Fate of cardiology research originally published in abstract form. *N Engl J Med* 1980;303:255–9.
- [2] Secil M, Ucar G, Dicle O. Scientific papers presented at the 2000–2001 European Society of Gastrointestinal and Abdominal Radiology (ESGAR) meetings: publication rates during the period 2000–2004. *Eur Radiol* 2007;17:2183–8.
- [3] Miguel-Dasit A, Marti-Bonmati L, Sanfeliu-Montoro A, Alexandre R, Valderrama JC. Scientific papers presented at the

- European Congress of Radiology: a two-year comparison. *Eur Radiol* 2007;17:1372–6.
- [4] Miguel-Dasit A, Marti-Bonmati L, Sanfeliu P, Aleixandre R. Scientific papers presented at the European Congress of Radiology 2000: publication rates and characteristics during the period 2000–2004. *Eur Radiol* 2006;16:445–50.
- [5] Miguel-Dasit A, Marti-Bonmati L, Aleixandre R, Sanfeliu P, Bautista D. Publication of material presented at radiologic meetings: authors' country and international collaboration. *Radiology* 2006;239:521–8.
- [6] Secil M, Ucar G, Senturk C, Karasu S, Dicle O. Publication rates of scientific presentations in Turkish national radiology congresses. *Diagn Interv Radiol* 2005;11:69–73.
- [7] Arrive L, Boelle PY, Dono P, Lewin M, Monnier-Cholley L, Tubiana JM. Subsequent publication of orally presented original studies within 5 years after 1995 RSNA Scientific Assembly. *Radiology* 2004;232:101–6.
- [8] Arrivé L, Dono P, Lewin M, Dahan H, Monnier-Cholley L, Tubiana JM. Publication rate of original papers orally presented at the Journées françaises de radiologie 1996. *J Radiol* 2001;82:1719–22.
- [9] Bydder SA, Joseph DJ, Spry NA. Publication rates of abstracts presented at annual scientific meetings: how does the Royal Australian and New Zealand College of Radiologists compare? *Australas Radiol* 2004;48:25–8.
- [10] Marx WF, Cloft HJ, Do HM, Kallmes DF. The fate of neuroradiologic abstracts presented at national meetings in 1993: rate of subsequent publication in peer-reviewed, indexed journals. *AJNR Am J Neuroradiol* 1999;20:1173–7.
- [11] Ha TH, Yoon DY, Goo DH, Chang SK, Seo YL, Yun EJ, et al. Publication rates for abstracts presented by Korean investigators at major radiology meetings. *Korean J Radiol* 2008;9:303–11.
- [12] Parkar AP, Vanhoenacker FM, Adriaensen van Roij ME. Publication rate of scientific abstracts presented at ESSR 2008 and 2009. *Skeletal Radiol* 2013;42:561–5.
- [13] SFR. Bulletin de la Société française de radiologie; 2013.
- [14] Pruvo JP, Meder JF. Journées françaises de radiologie 2014: changes planned. *Diagn Interv Imaging* 2014;95:1.
- [15] Varghese RA, Chang J, Miyanji F, Reilly CW, Mulpuri K. Publication of abstracts submitted to the annual meeting of the Pediatric Orthopaedic Society of North America: is there a difference between accepted versus rejected abstracts? *J Pediatr Orthop* 2011;31:334–40.