

# Competitiveness of the Match for Interventional Radiology and Neuroradiology Fellowships

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**Purpose:** Overall resident interest in certain subspecialties changes with time. We sought to investigate the latest 6-year trend in interventional radiology (IR) and neuroradiology fellowship applications and how it has affected competitiveness in obtaining a position.

**Methods:** We analyzed statistics published by the National Resident Matching Program in *Results and Data: Specialties Matching Service* from 2008 to 2013. From these data, we calculated the positions per IR applicant (PPIRA) and positions per neuroradiology applicant (PPNRA) for each year.

**Results:** The number of positions per applicant is one way to assess specialty competitiveness on a supply-and-demand basis. A lower PPIRA or PPNRA indicates a more competitive year. PPIRA has decreased every year, from 1.71 to the present 0.84, and contributed to 52 applicants being unmatched in 2013, up from 9 in 2008. Accordingly, the number of unfilled positions has decreased from 86 in 2008 to 8 in 2013.

PPNRA waxed and waned from 2008 to 2010 but stabilized at around 1.15 thereafter. The number of unfilled positions has never dropped below 46. The number of unmatched applicants was consistently in the teens, except in 2011, when it increased to 23.

**Conclusions:** Interest in IR fellowship has increased significantly over the past 6 years, whereas interest in neuroradiology fellowships has plateaued. IR fellowships have become increasingly competitive, leading to many unmatched residents.

**Key Words:** Interventional radiology, neuroradiology, fellowship, application, match, competitive

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## INTRODUCTION

Overall resident interest in subspecialty fellowships changes with time. In 1997, interventional radiology (IR) was the most popular subspecialty in radiology, accounting for 22% of residents pursuing fellowship training [1]. The next most popular subspecialties were neuroradiology (NR) at 16% of fellowships, general body imaging at 15%, abdominal imaging at 9%, and musculoskeletal radiology at 6%. By 2000, interest in IR had grown even further, making up 28% of all fellowships [2]. NR fellowships remained the same at 16%, while musculoskeletal fellowships decreased to 3%. Five years after that, the landscape continued to change. By 2005, NR had grown to 22% and became the most popular type of fellowship [3]. Musculoskeletal radiology was third at 17%, and IR fell to 13%.

Today, the vast majority of residents pursue fellowship training, and the popularity of various subspecialties among diagnostic radiology graduates continues to

change. Resident preference among various fellowships is reflected in the yearly number of applicants and positions available. Currently, only IR and NR fellowship programs participate in the National Resident Matching Program (NRMP). The NRMP has fellowship match statistics dating back to 2008. We sought to investigate the latest 6-year trend in IR and NR fellowship applications, and how competitiveness for fellowship positions has changed over that time period.

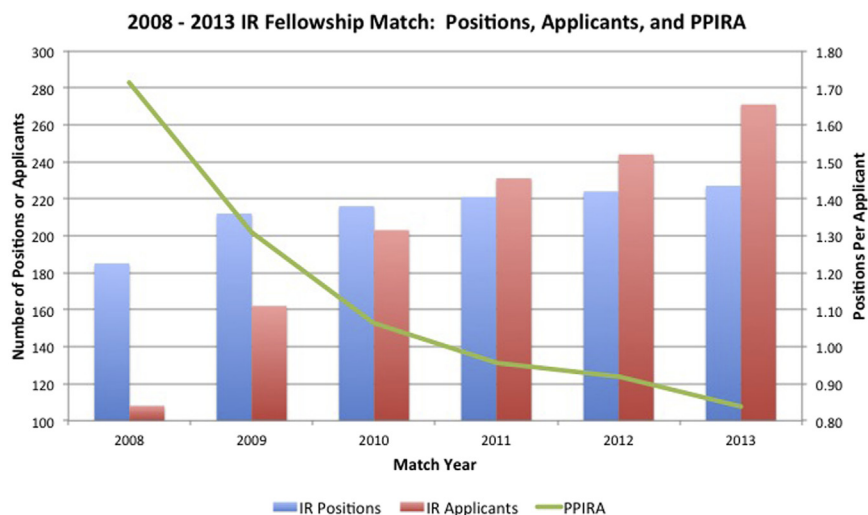
## MATERIALS AND METHODS

Both interventional radiology and neuroradiology fellowship programs participate in the NRMP. We analyzed statistics covering 2008-2013 published by the NRMP in *Results and Data: Specialties Matching Service* [4]. These data are available dating only from 2008. The matching within the NRMP occurs 1 year prior to the appointment year. For example, our 2013 match data represent the fellows who will start in 2014.

We evaluated the number of positions and applicants for all years in both subspecialties. There are a few residents who applied to both fields, leading to a small overestimation of the applicant pool. To correct for

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**Fig 1.** Bar graph (left vertical axis) represents number of IR fellowship positions and applicants from 2008 to 2013. Line graph (right vertical axis) shows PPIRA during the same period.

double counting, we included residents as applicants to a subspecialty only if they ranked only that one subspecialty or if they ranked that subspecialty first of 2 (ie, as first choice), which the NRMP refers to as the “preferred” subspecialty. This method counts only applicants who intended on matching into that subspecialty.

From these data, we calculated the positions per IR applicant (PPIRA) and positions per NR applicant (PPNRA) for each year, by simple division. These values represent an assessment of subspecialty competitiveness on a supply-and-demand basis [5]. We also recorded the number of unfilled positions, number of unmatched applicants, and percentage of applicants matching their first choice for each year and both subspecialties.

## RESULTS

Eighty-one IR fellowship programs participated in the NRMP matching [4]. The number of accredited positions has increased every year (Fig. 1). The number of applicants increased dramatically from 108 in 2008 to 271 in 2013. In 2008, there were 77 more positions than applicants; in 2013, however, applicants outnumbered positions by 44. A lower PPIRA or PPNRA indicates a more competitive year. PPIRA has decreased every year from 1.71 to the most recent factor of 0.84. This led to 52 unmatched applicants in 2013, up from just 9 in 2008 (Fig. 2). Accordingly, the number of unfilled positions has decreased from 86 in 2008 to only 8 in 2013. The percentage of applicants who matched to their first choice has decreased from 65% to 37%. Seventeen programs (21%) filled every position from 2008 to 2013.

Seventy-two NR fellowship programs participated in the NRMP matching [4]. The number of positions increased every year except for a small decline in 2012 (Fig. 3). The number of applicants trended up from 139 to plateau in the 180s during the most recent 3 years; however, available positions have always outnumbered applicants by at least 26. PPNRA was somewhat variable

but stabilized at approximately 1.15. The number of unfilled positions has never dropped below 46 (Fig. 4). The number of unmatched applicants was in the teens, except in 2011, when it increased to 23. Approximately 50%-65% of applicants received their first choice over the years. Thirteen programs (18%) filled every position from 2008 to 2013.

## DISCUSSION

### IR

IR fellowship has become fiercely competitive from 2008 to 2013, owing to a 151% increase in applicants, whereas positions have increased by only 23% (Fig. 1). PPIRA has decreased by half, and there were more than 50 unmatched residents in the latest year. Most fellowship programs filled in 2013, compared with 46% unfilled just 5 years earlier (Fig. 2). Now, only about one-third of all residents are matched to their first-choice fellowship program. Presently, programs generally are not in danger of having unfilled positions and benefit from a large pool of high-quality candidates. The demand for future careers in IR outstrips the supply of fellowship positions. This is a golden opportunity for programs to recruit the best residents into their field.

Why has IR fellowship become so popular over the past few years? We theorize that it is a response to the job market. Overall, the radiology job market is stagnant, for multiple reasons. Use of CT, MRI, and cardiac nuclear imaging has decreased since 2010, along with payments for those services [6]. Senior radiologists are deferring retirement, resulting in limited vacancies to add new trainees [7]. Anticipated further decreases in reimbursement cause unease in future projections. We might also be training too many residents, which could oversaturate the workforce [5].

Finally, some forces affect not just radiology but all facets of the US economy. In any recession, businesses

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