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# Geographic Preference in the Residency Match Before and After the Emergence of the COVID-19 Pandemic

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## RESEARCH AND QUALITY IMPROVEMENT BRIEF

# Geographic Preference in the Residency Match Before and After the Emergence of the COVID-19 Pandemic

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**G**eographic location is a top factor that medical students consider in their application to residency programs and rank-order list,<sup>1,2</sup> and geographic preference in the residency match has been well-documented across medical specialties.<sup>3-5</sup> One study found that approximately 25% of all categorical residency positions in general surgery are filled with home-program graduates.<sup>6</sup> Furthermore, location of a residency program strongly predicts where physicians end up practicing. More than half of physicians who completed their residency training from 2010 through 2019 practice in the state where they did their training.<sup>7</sup>

The emergence of the COVID-19 pandemic disrupted medical school rotations, the residency interview season, and the match for both programs and applicants. This disruption included cancelling most in-person away rotations and implementing virtual interview formats.<sup>8</sup> Given these changes, increased geographic preference in the match may be of concern among applicants and program directors. The purpose of this exploratory study was to determine if disruptions from the COVID-19 pandemic were associated with increased geographic preference in the residency match.

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## METHODS

We identified match lists from allopathic and osteopathic medical schools in New England states (i.e., Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont) from the years 2020 and 2021, when publicly available. Medical schools that did not provide publicly available match lists were excluded from analysis. We quantified the number of medical students with at least a partial match to a home program, defined as a residency program affiliated with a primary or major teaching hospital for the medical school or by the school website. We also quantified the number of medical students with at least a partial match to a residency program located in New England (“regional”).

With the samples sizes obtained in this study ( $n = 824$  and  $n = 880$ ), an alpha of .05, power of .80, and a 2020 match rate to a regional program of 39.8%, a one-tailed significant difference would be detected at a 2021 regional program match rate of at least 45.8% or an absolute difference of 6.0%.

A chi-square test compared the proportion of medical students matching to home and regional programs between the 2020 and 2021 match years. All statistical analyses were performed using a Chi-Square Test Calculator (available from: <https://www.socscistatistics.com/tests/chisquare2/default2.aspx>). A sensitivity power analysis was conducted using G\*Power (v 3.1.9.6). This study used publicly available data; therefore, the study is exempt from IRB approval.

## RESULTS

Match lists were identified on the websites of 6 medical schools in New England, which included 880 matches for 2020 and 824 matches for 2021. Match lists for 5 medical schools in New England were not identified. Count data and the proportion of students matching at home and regional programs by medical school are displayed in Table 1. The number of geographic matches between 2020 and 2021 did not significantly differ for either home residency programs (14.2% in 2020 vs 14.0% in 2021;  $P = .88$ ) or programs located in New England (41.8% in 2020 vs 39.8% in 2021;  $P = .40$ ).

## DISCUSSION

Our results suggest the emergence of the COVID-19 pandemic did not significantly influence the proportion of medical students in New England matching into programs at their home institution or within the region. This study supports that transitioning to virtual residency interviews may not significantly influence geographic preference in the match. Although virtual residency interviews may have other drawbacks, this virtual format offers a cost savings for applicants, especially related to

travel and lodging for in-person interviews. This cost savings should be strongly considered in continuing virtual interviews, even after resolution of public health concerns related to the pandemic.

This study has several limitations. First, potential geographic preference due to students not completing in-person interviews may have been offset by an increased number of applications and completed interviews at programs further away from their home institution. Further, students not completing away rotations due to the pandemic may have affected match rates and significantly confounded our results. However, recent studies have not associated away rotations with matching at the host program.<sup>9-11</sup> Fewer barriers to interviews may have increased the geographic diversity of completed interviews compared to previous years. Additional limitations include differences between class years unrelated to the pandemic, such as new admissions initiatives that influenced the geographic composition of a class. Lastly, our study only includes medical schools in New England that had publicly available match data. Therefore, our results may not be generalizable to other areas of the country.

**Table 1.** Number of Medical Students from New England Medical Schools Who Matched to Residency Programs by Geographic Region and Match Year

School	2020 Match location			2021 Match location		
	Regional,* No. (%)	Home program,† No. (%)	Total, No.	Regional, No. (%)	Home program,† No. (%)	Total, No.
The Warren Alpert Medical School of Brown University	53 (35)	19 (13)	152	33 (29)	14 (13)	112
Boston University School of Medicine	71 (39)	27 (15)	183	56 (36)	19 (12)	155
Frank H. Netter MD School of Medicine at Quinnipiac University	28 (31)	7 (8)	90	21 (22)	2 (2)	95
Larner College of Medicine at The University of Vermont	36 (32)	14 (12)	114	37 (38)	13 (13)	102
Tufts University School of Medicine	99 (48)	37 (18)	206	85 (44)	31 (16)	192
University of Massachusetts Medical School	81 (60)	22 (16)	135	95 (57)	36 (21)	168
<b>Total</b>	<b>368 (41.8)</b>	<b>125 (14.2)</b>	<b>880</b>	<b>328 (39.8)</b>	<b>115 (14.0)</b>	<b>824</b>

\*Matching at a residency program located in New England.

†Residency programs affiliated with major teaching hospitals of the medical school or as defined by the school website.

## CONCLUSIONS

This study supports that recent changes to the residency application and interview process, including virtual interviews, did not increase the rate at which residency applicants matched at their home institution or in the same region as their medical school. Given the cost savings to applicants, continuation of virtual residency interviews should be strongly considered.

**Conflicts of Interest:** None

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