



International Medical Graduate Resident Physicians in Psychiatry: Decreasing Numbers, Geographic Variation, Community Correlations, and Implications

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Abstract

Objectives The number of International Medical Graduate (IMG) physicians matching into categorical psychiatry decreased steadily over the past decade. The authors sought to understand if this trend was occurring in other specialties, if US IMG physicians and non-US IMG physicians were equally affected, and if certain regions of the USA were more affected by this decrease than others. Finally, the authors compared the proportion of foreign-born individuals within a US census region to the proportion of non-US IMG physicians within that region.

Methods The authors analyzed data from the National Resident Matching Program from the years 2014–2020. Statewide data was aggregated into nine geographic regions, as per the US Census Bureau. The number of foreign-born individuals within each US census region was calculated from the 2018 American Community Survey data.

Results In comparison to eight other specialties, psychiatry saw the greatest decrease (46.3%) in IMG physicians matching into PGY-1 positions. Both US IMG physicians and non-US IMG physicians were equally affected. The percentage of IMG physicians decreased in each of the nine US census regions. In six out of nine geographic regions, non-US IMG physicians were under-represented when comparing their proportion to the number of foreign-born people that lived within that region.

Conclusions Decreasing numbers of IMG physicians in psychiatry training may have long-term implications for cultural competency, serving underserved populations, and fellowship recruitment. We advocate for program directors to recognize IMG physicians as an important source of diversity and to recruit residents that reflect the communities they serve.

Keywords International Medical Graduates · NRMP · Psychiatry match

For decades, International Medical Graduate (IMG) physicians have made valuable contributions to the physician workforce. Approximately 30% of practicing psychiatrists in the USA are foreign trained [1]. IMG physicians bring diverse perspectives and experiences to psychiatry residency. However, the number of IMG physicians matching into

psychiatry residency decreased considerably over the past decade (Fig. 1). In 2010, 24.5% of the matched PGY-1 psychiatry residents were foreign-trained. In 2013, the percentage of IMG physicians reached a 10-year peak of 29.8%, then decreased steadily to just 16% in 2020. In 2020, in comparison to other large specialties, Psychiatry (15.9%) had a greater proportion of incoming IMG resident physicians than Obstetrics-Gynecology (6.5%), Emergency Medicine (7%), and Surgery (11.6%), but a smaller proportion of IMG physicians than Internal Medicine (38.9%), Family Medicine (27.6%), and Pediatrics (20%) [2]. The majority of active psychiatry residents from the years 2012–2017 were born in the United States ($N = 21,539$), followed by India ($N = 2385$), Pakistan ($N = 850$), China ($N = 563$), and Canada ($N = 534$) [5].

The National Resident Matching Program (NRMP) divides IMG physicians into two categories: (1) US citizens that attend an international medical school (US IMG physicians),

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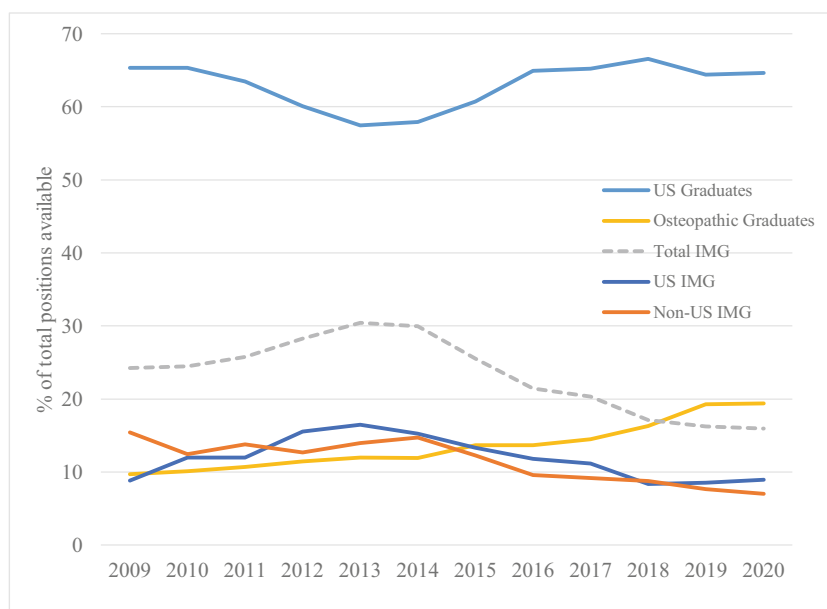
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Fig. 1 PGY-1 categorical psychiatry matches by applicant type, 2010–2019 [2–4]. *US graduates include fourth-year students of US allopathic medical schools and previous graduates of US allopathic medical schools



and (2) non-US citizens that attend an international medical school (non-US IMG physicians) [2]. For the purposes of this article, the term IMG physicians will refer to the sum of US IMG physicians plus non-US IMG physicians, unless otherwise specified. To more fully examine changing trends in the IMG physician workforce, the authors sought to understand the following: (1) if the decrease in IMG physicians was also occurring in other large specialties outside psychiatry, (2) if the decrease in matched residents affected both US IMG physicians and non-US IMG physicians in psychiatry equally, and (3) if there was regional variation in the number of IMG physicians matching per US census region, and if there were trends that emerged over time. Finally, based on the idea that patients should have the right to see physicians who they feel better represent their race or culture, we conducted an exploratory analysis to understand if there was a relationship between the number of foreign-born residents and the number of non-US IMG physicians within each US census region.

Methods

The authors conducted a retrospective observational review of NRMP data for eight specialties including pediatrics, surgery, internal medicine, family medicine, emergency medicine, neurology, pathology, and psychiatry. Psychiatry NRMP data was examined for each state, with the exception of Alaska, Idaho, Montana, and Wyoming, which did not have psychiatry residency training programs. The study period was 2014–2020. IMG physicians were analyzed together and analyzed separately for US IMG physicians and non-US IMG physicians. The state data was aggregated and grouped into nine

geographic regions (Pacific, Mountain, West North Central, East North Central, West South Central, East South Central, Middle Atlanta, South Atlantic, and New England), as defined by the US Census Bureau [6]. Puerto Rico was grouped with the South Atlantic region for the purpose of this analysis. The foreign-born population in each geographic region was calculated using US census data from the 2018 American Community Survey, 1-Year Estimates [7]. Geocoding census regions were performed with Tableau 2019.1.0. To compare differences between IMG physician psychiatry match rates in the various US census regions, the chi-square test for homogeneity was used. *Z* scores were calculated for two population proportions to assess for differences between groups, where applicable. The data was publicly available, and therefore the authors did not seek Institutional Review Board review.

Results

IMG Matching Rates for Psychiatry in Comparison to Other Specialties

When compared to seven other large specialties, psychiatry saw the largest decrease of matching IMG physicians. There was a 46.3% decrease of IMG physicians from 2014 (30%) to 2020 (16.1%). Four specialties including family medicine (22.3% decrease), internal medicine (7.3% decrease), surgery (4.6% decrease), and neurology (4.6% decrease) saw fewer IMG physicians matching into PGY-1 positions. Three specialties saw increases in IMG physicians over the study period which included pathology (37.8% increase), pediatrics (10.5% increase), and emergency medicine (5.7% increase).

US IMG Physicians Versus Non-US IMG Physicians in Psychiatry

Over the study period, on average 10.8% ($N = 1143$) US IMG physicians matched into PGY-1 categorical psychiatry programs, in comparison to 9.7% ($N = 1032$) non-US IMG. This difference was not statistically different ($Z = 1.12$, $p = 0.26$). From 2014 to 2020, US IMG decreased 41.5% and non-US IMG decreased by 51.2%. The percentage of US IMG physicians was higher than non-US IMG physicians for all years in the study period with the exception of 2018, when the percentage of non-US IMG physicians was slightly higher than US IMG physicians (8.8% to 8.4%, respectively).

Geographic Variation

IMG physicians matched into psychiatry positions unevenly across the 9 US census regions. Using a chi-square test of homogeneity, there was a statistically significant difference in the multinomial probability distributions between the IMG physician group and the group that were not IMG physicians ($p < 0.001$). Figure 2 depicts the average percentage of IMG physicians in each census region over the study period. The regions with the highest percentages of IMG physicians matching into PGY-1 positions were the Middle Atlantic (31.1%) and West North Central (30.6%) regions, and the regions with the lowest percentages of IMG physicians were the Mountain (7.2%) and Pacific regions (7.8%). Over time, the percentage of IMG physicians matching into categorical PGY-1 positions decreased in each of the nine regions (Fig. 3). The greatest decreases from 2014 to 2020 occurred in the Mountain (79.6%) and East North

Central (78%) regions. Although they both declined during the 7-year period, the Pacific (19%) and Middle Atlantic (32.6%) regions were least affected.

Comparison of Foreign-Born US Population to Non-US IMG Physicians

Per the 2018 ACS data, the combined population of the 46 US states with psychiatry residencies, Washington DC, and Puerto Rico was 326,230,904 people, and of those, 46,607,163 (13.6%) were foreign born. Foreign-born IMG physicians over the 7-year study period made up 9.7% of incoming PGY-1 residents in psychiatry. Table 1 compares the foreign-born population within the US census region to the numbers of non-US IMG physician psychiatry residents within the census region.

Discussion

These trends are cause for concern. In comparison to other specialties, the decrease in IMG physicians matching into PGY-1 positions over the past 7 years was greatest in psychiatry. Both US IMG physicians and non-US IMG physicians seemed to be equally affected by this decrease. We anticipate this shift in workforce to have significant implications in several key areas: cultural competence, supply of psychiatrists in underserved areas, and subspecialty recruitment.

Cultural competence is a cornerstone of diagnosis, therapeutic alliance formulation, and treatment plan execution [8]. IMG physicians, by virtue of their medical training

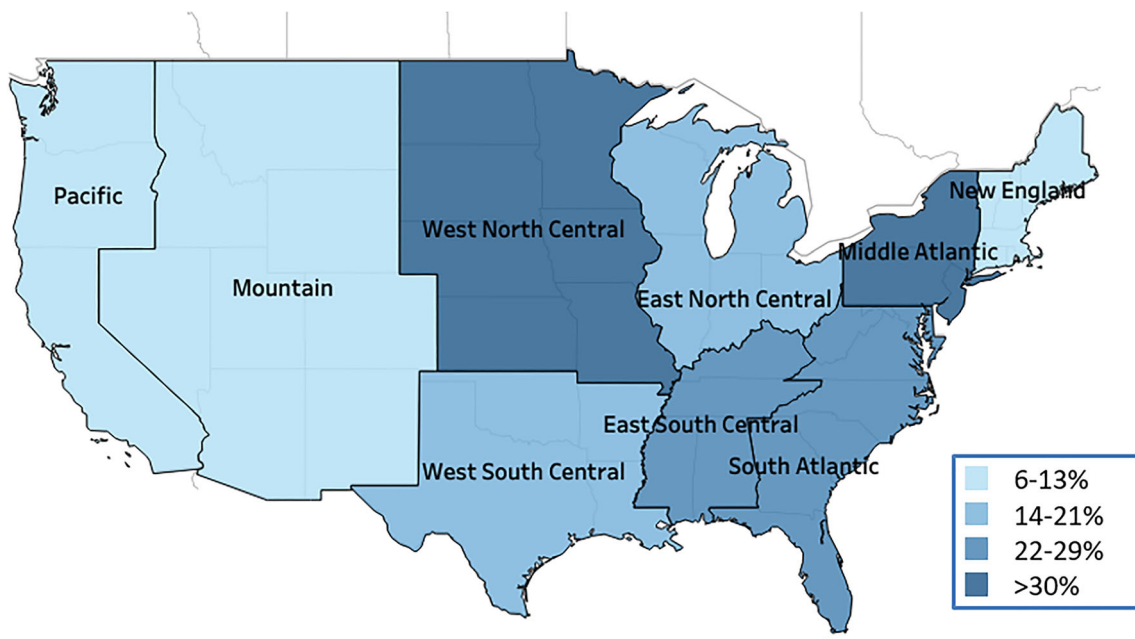
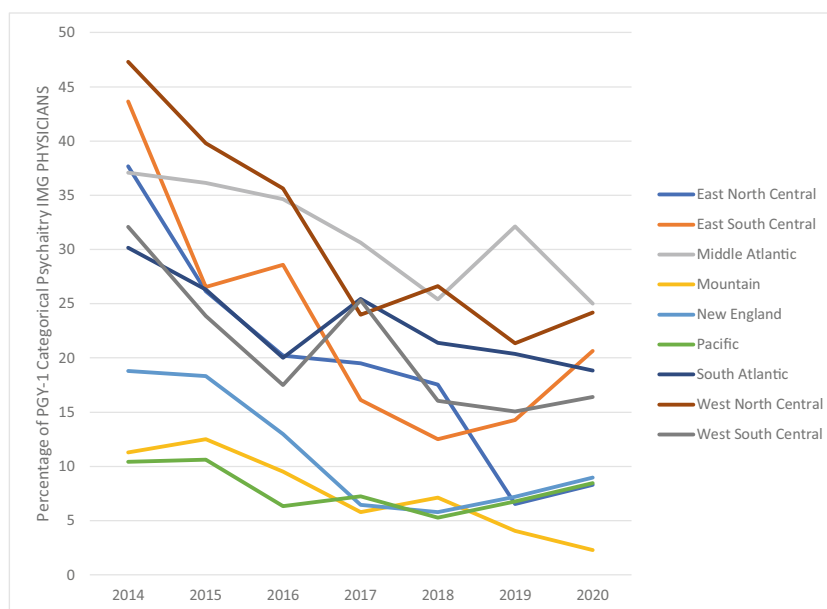


Fig. 2 Rates of international medical graduates matching into PGY-1 psychiatry positions by US census region, averaged over 2014–2020

Fig. 3 Rates of international medical graduates matching into PGY-1 psychiatry positions by US census region, 2014–2020



environment, upbringing, and transition into the US medical system come into residency programs, cross-cultural knowledge, global perspectives of population health and an understanding of disparities that exist in disadvantaged communities across wide geographic locations [1].

In comparison to US medical graduates, IMG physicians are more likely to work in the public sector, treat a greater proportion of individuals with psychotic disorders, and receive more of their income from treating individuals receiving Medicare and Medicaid [9]. The rules surrounding certain types of visas could contribute to this. For instance, the receipt of a J-1 visa waiver must agree to be employed in a health care facility that is designated a Health Professional Shortage Area, Medically Underserved Area, or Medically Underserved Population for a minimum of 3 years after the completion of

training [10]. It is possible that the decrease in IMG physicians in the psychiatric workforce could disproportionately affect the most underserved areas.

IMG physicians often choose to pursue further training after residency and are well-represented among psychiatry's five fellowships accredited by the Accreditation Council for Graduate Medical Education (ACGME). In 2020, IMG physicians made up 16% general psychiatry residents [2] but 35% of child fellows, 40% of addiction fellows, and 47% of geriatric fellows [5]. With decreased recruitment of IMG physicians in residency, there may be a decrease in the fill rate of subspecialty fellowships. In order to address the shortage in specialty providers, various strategies have been proposed and may need to be revisited. Some options include augmenting education about specialty topics during graduate and post-graduate education,

Table 1 Comparison of proportion of US foreign-born population and proportion of IMG physicians PGY-1 residents, by US census region

Geographic region	Proportion US Foreign Born 2018 ACS	Total population 2018 ACS	Proportion IMG PGY-1 psychiatry residents 2014–2020	Total matched PGY-1 psychiatry residents 2014–2020	Z	p
East North Central	0.0787	46,931,883	0.0912	1404	- 1.71	0.09
East South Central	0.0393	19,112,813	0.0916	404	- 5.41	< 0.01
Middle Atlantic	0.1794	41,257,789	0.1481	2221	3.84	< 0.01
Mountain	0.1213	21,158,135	0.0286	489	6.28	< 0.01
New England	0.1359	14,853,290	0.0701	956	5.94	< 0.01
Pacific	0.2358	52,703,840	0.0173	1332	18.79	< 0.01
South Atlantic	0.1299	68,517,561	0.0918	1950	5.00	< 0.01
West North Central	0.0625	21,376,866	0.1746	733	- 12.54	< 0.01
West South Central	0.1365	40,318,727	0.1148	1106	2.10	0.03
Total	0.1367	326,230,904	0.0974	10,595	11.78	< 0.01

ACS, American Community Survey; *IMG*, International Medical Graduate; *PGY-I*, post-graduate year-1

developing mini-fellowships, and completing fellowship training during the fourth year of residency for fellowships not including child and adolescent psychiatry [11, 12].

Should a residency class reflect the population it treats? The demographics of the USA are rapidly changing, and the psychiatric workforce must keep pace. In 1970, 4.7% of the US population was foreign born, a number which steadily increased to 13.7% in 2018 [7, 13]. In our study, certain geographic areas were affected more than others, but the percentage of IMG physicians matriculating into psychiatry residencies in all 9 US census regions decreased from 2014 to 2020. Since residents tend to practice in the geographic region in which they train [14], these decreases will likely have downstream effects, and could decrease the diversity of practicing psychiatrists in these regions for years to come.

In eight of nine US census regions, there was a statistically significant mismatch in the number of foreign-born people within a region and the number of IMG PGY-1 psychiatry residents. IMG residents were over-represented in two census regions and under-represented in six census regions. This under-representation was particularly evident in the Pacific region, the second largest US census region by population (527 million people). Of note, the Pacific region had the highest percentage of foreign-born individuals within the census region (24%) but the lowest number of IMG residents over the study period (2%). There are a number of methodological limitations when comparing the number of foreign people within a region to the number of non-US IMG resident physicians within that same region. First, US census regions cover extremely large parts of the country and may not be fully representative of the diversity (or lack of diversity) within smaller communities, cities, or even states. Second, foreign-born individuals represent many nations and types of diversity, and it was impossible to determine if the national background of the residency training group matched the background of the foreign-born individuals in the census regions. Third, by looking at non-US IMG physicians alone, we may be missing other foreign-born doctors that attended a US medical school, although these numbers are small. During the 2019–2020 academic year, only 272 (1.2%) of the 21,869 matriculants to allopathic US medical schools were not US citizens [15]. Finally, we were also unable to look at first or second-generation immigrants, which may be highly attuned to the population needs.

Concerns about decreasing numbers of IMG physicians in psychiatry are not new to this epoch. Over 20 years ago, Balon et al. concluded that psychiatry as a discipline was trying to limit the influx of international medical graduates even at the pre-application stage [16]. Though we cannot draw conclusions as to why this decrease in IMG physicians is occurring from this data, several factors may contribute. Interest in psychiatry has been strong from US graduates, and every year since 2016, greater than 5% of US graduates have chosen psychiatry as a specialty [2, 3]. Additionally, the percentage of osteopathic

medical students matching into psychiatry in first year residency classes over the past decade has nearly doubled (10.0% in 2010 to 19.4% in 2020) [2, 3]. The rise in osteopathic students is likely due to the new shared accreditation system and a rapidly growing number of osteopathic medical schools [17, 18]. Moreover, some academic institutions are reporting delays in finalizing J-1 visas for incoming PGY-1 residents, and due to this trend, program directors might not want to risk a resident not being present on July 1 [19]. It takes a tremendous amount of paperwork required for the filing of both kinds of visas, and this could possibly discourage program directors (especially in smaller residency programs with fewer resources, as is typical of many psychiatry training programs in the country) to invest time, money and put in the effort to recruit and select IMG physicians. Furthermore, not all institutions sponsor H1-B visas.

There are several unknowns that may further affect (either positively or negatively) IMG physician recruitment in the future. The future of immigration policy, specifically around J-1 and H1-B visas, is uncertain. The impending 2022 change to USMLE to pass/fail may bolster some applicants but may put more pressure to attain a strong USMLE Step 2 CK score to stand out. Organizational commitment to recruit diverse residents at the Accreditation Council for Graduate Medical Education (ACGME) level may be helpful. In July 2019, the ACGME revised the Common Program Requirements such that programs must engage in practices that focus on mission-driven, ongoing, and systematic recruitment and retention of a diverse and inclusive workforce of residents [20]. In this context a diverse workforce could refer to many characteristics, including but not limited to gender identity, race, cultural background, location where someone trained, and national origin. It is unclear how this mandate will affect IMG physician recruitment. Finally, with the 2021 application cycle taking place virtually, IMG residents may be more easily able to connect with programs and not have to endure the cost of traveling overseas, but it is unclear how program directors may respond to IMG physician applicants over a virtual format.

In conclusion, the decrease in IMG physicians in psychiatry is poised to have long-standing impacts in cultural competency, meeting the needs of underserved and minority populations, and fellowship recruitment. The reasons for this decrease need further research, but it appears the decrease in IMG physicians is particularly relevant to psychiatry, occurs equally in both US and non-US IMG physicians, and is taking place across all nine US geographic regions. To better understand these trends, future research could include surveys of program director attitudes, IMG physician applicant attitudes, and applicant application strategies. By understanding which geographic areas are most affected by the decrease in IMG physician recruitment, further research can target the areas that have been most impacted by the decrease.

Efforts should be made at the institutional, regional, and professional levels address the trend of fewer IMG physicians

entering psychiatry residency. Greater awareness of the dwindling number of IMG physicians is a necessary but insufficient step alone. Program directors may consider applying the Association of American Medical College's holistic review framework when selecting residency applicants. Holistic review takes into multiple domains of the person's application, including their experiences, attributes, competencies, and metrics [21]. To help provide unmatched applicants guidance and experience, Meharry Medical College developed a structured externship program in which all 15 participants that completed the survey ultimately matched into psychiatry [22]. Professional organizations like the American Association of Directors of Psychiatric Residency Training should continue to educate program directors in psychiatry on best practices for how to select and support IMG physicians. Where an applicant completed their medical training is an important consideration when creating a diverse workplace. Program directors should seek to create residency classes that reflect the communities they serve.

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Compliance with ethical standards

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