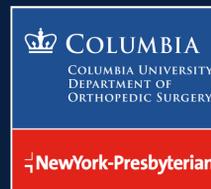


# The Impact of the COVID-19 Pandemic on Orthopaedic Surgery Residency Applicants During the 2021 Residency Match Cycle in the United States

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## BACKGROUND

**Problem Statement:** The coronavirus (COVID-19) pandemic changed orthopaedic education for medical students, with clinical rotations canceled and opportunities to gain exposure to the field curtailed. Yet we do not know which students nor what percentage have had their orthopaedic education adversely affected by of the pandemic, if students' plans to apply to residency in orthopaedic surgery have changed, or what their specific concerns about the application process are.

**Stakeholders:** Orthopedics Surgeons, Medical Mentors, Residents, Medical Students, Academic Administration

## AIMS

To quantify the impact of the COVID-19 pandemic on rising fourth-year medical students' plans to apply to residency in orthopedic surgery.

## METHODS

- Participants identified as **rising fourth-year medical students**
- Participation included the completion a **study-specific survey** wherein demographic variables of gender, race, geographic region of medical school, and specialty of interest were collected
- Primary Outcome** - if and to what extent the COVID-19 pandemic caused students to change their decision to apply to orthopaedic surgery as measured by Likert-scale response
  - Responses were stratified by gender, race, and geographic region of medical school
- Secondary Outcomes** - evaluation of students' concerns about applying to residency during the pandemic
- Data were analyzed using Pearson's chi-squared test, two-way Student *t*-test, and/or (ANOVA) where appropriate to compare groups

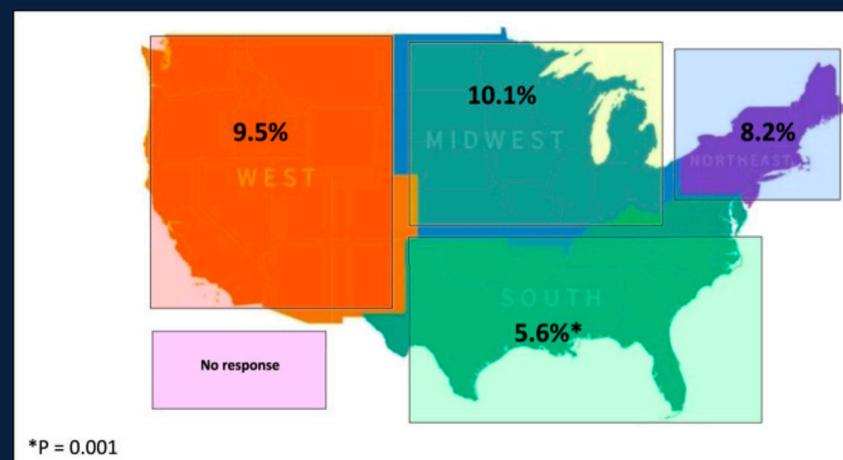
Factor	Total	Planning to Apply to an Orthopaedic Surgery Residency			
		Yes		No	
		Man	Woman	Man	Woman
<b>Total count</b>	<b>621</b>	<b>287</b>	<b>113</b>	<b>77</b>	<b>142</b>
I am much more likely to apply to orthopaedic surgery	0.9%	1.9%	0.8%	0.0%	0.0%
I am more likely to apply to orthopaedic surgery	1.9%	1.9%	4.1%	0.9%	1.0%
No change	69.9%	81.4%*	66.1%	57.9%	62.0%
I am less likely to apply to orthopaedic surgery	6.2%	5.5%	14.9%*	3.7%	3.0%
I am much less likely to apply to orthopaedic surgery	3.6%	0.6%	3.3%	9.3%	5.0%
I am planning to apply to orthopaedic surgery but will defer to a later cycle	1.1%	1.0%	4.1%*	0.0%	0.0%

§Participants could skip a question at their discretion.  
\*P > 0.001.

Factor	Total	Non-Hispanic white	Black/African American	Hispanic/Latino	Asian	Other
	<b>39§</b>	<b>262</b>	<b>25</b>	<b>29</b>	<b>68</b>	<b>13</b>
I am much more likely to apply to orthopaedic surgery		0.8%	0.0%	0.0%	7.4%*	0.0%
I am more likely to apply to orthopaedic surgery		1.5%	8.0%*	3.4%	2.9%	0.0%
No change		86.3%*	76.0%	69.0%	80.9%	84.6%
I am less likely to apply to orthopaedic surgery		8.8%	16.0%*	13.8%*	4.4%	15.4%*
I am much less likely to apply to orthopaedic surgery		0.4%	0.0%	10.3%*	2.9%*	0.0%
I am planning to apply to orthopaedic surgery but will defer to a later cycle		2.3%	0.0%	3.4%*	1.5%	0.0%

§Participants could skip a question at their discretion.  
\*P > 0.001.

How has the COVID-19 pandemic impacted your ability to get adequate exposure to orthopaedic surgery to make a specialty choice?	Total	411
I have many fewer opportunities for exposure to orthopaedic surgery		50.9%
I have somewhat fewer opportunities for exposure to orthopaedic surgery		38.0%
No change		10.0%
I have somewhat more opportunities for exposure to orthopaedic surgery		0.7%
I have many more opportunities for exposure to orthopaedic surgery		0.5%



\*P = 0.001

**Table 1.** Response of Rising Fourth-Year Medical Students to the Question “Has the COVID-19 Pandemic Impacted Your Decision to Apply for a Residency in Orthopedic Surgery?” by Sex

**Table 2.** Response of Rising Fourth-Year Medical Students Applying to Orthopaedic Surgery to the Question “Has the COVID-19 Pandemic Impacted Your Decision to Apply for a Residency in Orthopedic Surgery?” by Race.

**Table 2.** Applicants to Orthopaedic Surgery and Opportunities to Decide on Career Choice.

**Figure 1.** Demonstrating the percentage of students applying to orthopedic surgery responding “less likely to apply” to the question “Has the COVID-19 pandemic impacted your decision to apply for a residency in orthopaedic surgery?”

## RESULTS

- 442 participants completed the survey and were included for analysis
  - 311 (70.4%) were applying to residency in orthopedic surgery
- More women than men said they were “less likely” to apply** to orthopedic surgery because of the pandemic (17.2% versus 4.1%)
- More students identifying as **Black/African-American said they were “less likely” to apply** to residency in orthopedic surgery because of the pandemic (18.8% compared to 8.3% of non-Hispanic white, 9.1% of Hispanic/Latino students, 3.7% of Asian)
- Geographically, students applying west coast medical schools reported being “much less likely” to apply compared to students in other regions because of the pandemic.
- 32.2% of students applying said they considered taking a year off because of the pandemic

## Major Concerns

- 91.0% of students said they had “somewhat fewer” or “many fewer” opportunities** for adequate exposure to orthopedic surgery in order to make a specialty choice
- 75.8% of orthopedic applicants had a high level of concern** about their ability to obtain meaningful letters of recommendation because of the pandemic.

## CONCLUSIONS, IMPLICATIONS, AND INTERVENTIONS

Based on this data, we support the development of robust student advising and mentorship networks to address the uncertainty inherent in applying to residency during a global pandemic. Such networks should also aim to curtail the racial and gender disparities discovered in this survey:

- Given the lack of gender and racial diversity in orthopaedics surgery, this effort should be paramount.
- Departmental incentivizing of faculty mentorship for and sponsorship of female and underrepresented minorities (URIM) in medical school interested in orthopaedics
- Pairing with women- and URIM-oriented pipeline programs (Perry Initiative, Nth Dimensions, the Ruth Jackson Orthopaedic Society, Women in Ortho, the Society of Black Academic Surgeons, and the J. Robert Gladden Orthopaedic Society to increase mentorship opportunities
- Create women- and URIM-specific internship and scholarships opportunities to learn more about orthopaedics
- Increase access to mentorship by fostering an online presence with webinars and social media
  - A diverse, potentially inter-institutional, panel of faculty members should be represented

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