

Understanding Motivations behind Medical Student Involvement in COVID-19 Relief Efforts

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ABSTRACT

Purpose: Although students were removed from patient-facing settings at the beginning of the COVID-19 pandemic due to concerns of burdening teaching physicians and depleting personal protective equipment, some leaders suggest students can be effectively utilized when personnel resources may be scarce. There have been narrative discussions surrounding medical student involvement, but no studies exploring the attitudes of these students. The authors aim to quantify the degree to which factors influenced a medical student's decision to or to not volunteer during the pandemic and to characterize medical students' attitudes towards medical professionals' duty to serve in a pandemic.

Method: The authors developed and tested a secure web-based survey before distribution to students at 23 different US allopathic medical schools that did not graduate medical students early to aid in pandemic efforts between April and June 2020.

Results: Of the 599 students who completed the survey, 67.6% volunteered in pandemic relief activities and a majority of those students volunteered in non-patient-facing roles. Community service, new skills, and time commitment were top 3 influencing factors for students who volunteered, while risk to other, time commitment, and risk to self were top 3 influencing factors for students who chose not to volunteer. Compared to other specialties, students interested in primary care specialties agreed to a greater degree that physicians have a duty to serve in pandemic relief efforts.

Conclusions: Medical students who volunteered cited self-serving factors and altruistic values as significant motivators. Students who did not volunteer were significantly more concerned with risks of COVID-19 exposure. However, medical students in general agreed that students should

be allowed to volunteer in COVID-19 related relief efforts. As large areas of the United States continue to experience increases in COVID-19 cases, institutions should involve medical students in balancing the level of acceptable risk with the educational benefits.

INTRODUCTION

Given the increased stress healthcare systems have faced from the COVID-19 pandemic, countries worldwide are facing the question of how to best utilize their resources, including personnel. Some medical schools in the UK and America graduated final year medical students early in an effort to alleviate the healthcare burden.^{1,2,3} However, the role of other clinical and preclinical medical students in the pandemic efforts is unclear.^{1,4} Some have argued that medical students are not prepared or obligated to accept personal risk in order to contribute to patient care, even under extraordinary circumstances. Conversely, others believe that medical students have a duty to contribute to the response efforts.⁵

The Association of American Medical Colleges (AAMC) initially endorsed medical student clinical involvement, but subsequently issued a statement on March 17th advocating for removal of all students from clinical settings.^{5,6} This has been argued as necessary: medical students deplete personal protective equipment (PPE), may function as vectors of disease, and place additional burden on teaching physicians.^{1,7,8,9} In the face of cancelled surgeries and medical appointments, the environment may have diminished educational value.^{4,8} There has been controversy surrounding the AAMC guidelines, as some argue trainees stand to learn a tremendous amount while mitigating workforce shortages.^{9,10} It has been suggested that medical students can assist with outpatient care, non-COVID-19 inpatient care, and even respiratory therapy.^{4,9} Outside of patient care, students have organized efforts to assist the community through providing childcare, grocery pick up, PPE collection drives, and public health department efforts.^{4,5,8,11}

The AAMC instructed that any medical student involvement in patient-facing activities should be voluntary.⁹ Interestingly, the surge of volunteerism from medical students was expected by

some who note students are intrinsically motivated by a strong sense of altruism.^{5,12} Others note that volunteers were motivated by concern about lower grades, exclusion from future research opportunities, and even a sense of coercion.⁷ Although narrative publications have discussed the ethical implications of medical student involvement in the pandemic, there have been no studies exploring the motivation behind medical student volunteering. Our aims were to quantify the degree to which factors influence a student's decision to participate in volunteer activities by different categorical measures, characterize student attitudes towards a choice or duty to serve based on volunteer status, and characterize student attitudes towards a physician's duty to serve based on future residency type. Understanding motivations and attitudes toward volunteering may not only provide an ethical framework in which to discuss medical student involvement in the pandemic, but also help inform future guidelines for medical student involvement in extraordinary situations.

METHODS

This research study was reviewed by the University of Michigan Institutional Review Board for Human Subjects Research and determined to be exempt under IRB #HUM00181078.

Student recruitment

Medical school student listserv administrators from 35 institutions were contacted via email between April and June 2020. The email included a detailed explanation of the study and a request to forward an email explaining how to voluntarily participate in the anonymous survey to the student listserv. Email information collected independently of survey responses would only

be collected if the participant elected to receive a \$10 Amazon gift card, which was offered to the first 100 participants as an incentive. After a medical school listserv administrator granted permission, a member of the study team or the listserv administrator emailed the medical student listserv the information on how to voluntarily participate in the anonymous survey. Twenty-three institutions distributed the survey to their medical school students (Supplemental Table 1).

Survey Creation

An anonymous online survey was developed using REDCap (2011), a secure, web-based survey application (Harris et al. 2009; REDCap Survey, Nashville, TN). The survey assessed the ways in which medical students were participating in COVID-19 pandemic relief efforts and their motivations. The survey was presented at the University of Michigan Center for Bioethics and Social Sciences in Medicine working group meeting, where specific feedback was provided on its content and format. The revised survey was then administered to 15 University of Michigan Medical School students who provided feedback on the clarity and readability of the questions. After another revision, the final survey (Appendix 1) was created and distributed to 23 schools (Supplemental Table 1).

Survey Topics

Survey questions included demographic questions (age, race, gender, year of medical school), multiple choice (yes/no) questions regarding specific volunteer involvement, and Likert scale 1 to 5 questions with 0 or 6 being does not apply.

Students were asked to rate a series of statements related to hypothesis-driven motivations concerning the decision to or to not volunteer in COVID-19 pandemic relief efforts. Students

were also asked to rate their agreement with working in various risk settings during a pandemic in two stages of medical training: clinical student and physician. The survey can be found in the appendix (Appendix 1).

Statistical analysis

Data analyses were conducted using R version 3.62 (r-project.org). Descriptive statistics were conducted using a Chi-Squared test for categorical variables and a one-way ANOVA for continuous variables (Table 1). For the remaining analyses, Tukey's test was used to evaluate differences of the mean response for various questions of interest. Statistical significance was evaluated at $p < 0.05$.

RESULTS

Volunteer Activities

Table 1 shows the distribution of demographic and involvement questions. There were 599 participants in this study, 65.5% of whom self-identified as female and were an average age of 25.94 years (SD = 2.5). 42.6% had completed their core clerkships, 34.2% had not, and 23.2% were currently on core clerkships. Only 3.5% of students reported that their medical school had required them to participate in activities that aid in the COVID-19 pandemic response. Although 3.0% of all students did not have any available opportunities to volunteer, 67.6% of students indicated that they volunteered with non-curricular activities that aided in the COVID-19 pandemic response. Of these students who chose to volunteer, 79.5% of students did not work in patient-facing activities but rather chose to work remotely to support relief efforts (Supplemental

Figure 1). Interestingly, of the 20.5% of students who chose to volunteer in patient-facing capacities, 44.6% were working with patients who had confirmed active COVID-19 infections (Supplemental Figure 1).

Motivations for Volunteer Activities

Results of students' rating of a series of statements related to hypothesis-driven motivations concerning the decision to or to not volunteer in COVID-19 pandemic relief efforts can be seen in Figure 1.

When the data is stratified by volunteer status of the student, students who volunteered indicated community service (mean=4.75 [SD=0.63], $p < 0.001$) and gaining new skills (mean=3.24 [SD=1.38], $p = 0.039$) were significantly greater factors in their decision than students who did not volunteer. Students who volunteered felt on average minimal pressure from faculty/staff, family/friends, and other medical school students (faculty/staff pressure: mean=1.32 [SD=0.85], $p < 0.001$; family/friends pressure: mean=1.39 [SD=0.93], $p < 0.001$; other medical school students pressure: mean=1.81 [SD=1.23], $p < 0.001$).

Students who did not volunteer indicated lack of research benefit, access to the relief effort, and COVID-19 related risks were significantly greater factors in their decision than students who volunteered (research benefit: mean=2.72 [SD=2.09], $p < 0.001$; access to the relief effort: mean=3.14 [SD=1.98], $p = 0.005$; risk of COVID-19 complication: mean=3.66 [SD=1.84], $p = < 0.001$; risk of COVID-19 to myself: mean=3.52 [SD=1.67], $p < 0.001$; risk of COVID-19 to others: mean=4.13 [SD=1.44], $p < 0.001$).

Students who volunteered most frequently rated community service, new skills, and time commitment as a top 3 primary factor in their decision, while students who did not volunteer most frequently rated risk to others, time commitment, and risk to myself as a top 3 primary factor in their decision (Figure 2).

Duty to Serve

Figure 3 shows the results from students' attitudes towards a choice or duty to serve in various risk settings during a pandemic as clinical students and physicians. Students who volunteered had a statistically significant higher average rating of agreement with the statement that clinical students should have the option to work in in-person patient care roles with a low risk of disease exposure, in-person non-patient care roles, and remote roles when compared to students who did not volunteer (Mean [SD]; low risk to self: 3.94 [1.16] vs 3.60 [1.17], $p = 0.002$; non-patient care: 4.15 [1.11] vs 3.76 [1.17], $p = 0.012$; remote work: 4.57 [SD=0.73] vs 4.12 [1.00], $p < 0.001$). Interestingly, students who volunteered also had a higher average rating of agreement with the statement that clinical students have a duty to work in in-person patient care roles with a low risk of disease exposure and in remote roles compared to students who did not volunteer (Mean [SD]; low risk to self: 3.27 [1.33] vs 2.92 [1.27], $p = 0.007$; remote work: 3.68 [1.25] vs 3.29 [1.21], $p = 0.012$). Further, students who volunteered had a higher average rating of agreement with the statement that they as future physicians have a duty to serve in settings of all risk levels compared to students who did not volunteer (Mean [SD]; high risk to self: 4.51 [0.77] vs 4.19 [1.01], $p = 0.011$; low risk to self: 4.75 [0.60] vs 4.50 [0.85], $p = 0.003$; non patient care: 4.29 [1.11] vs 3.95 [1.26], $p = 0.002$; remote work: 4.60 [0.80] vs 4.34 [0.92], $p < 0.001$). Students interested in primary care specialties agreed to a greater extent that physicians have a duty to serve in low risk settings and remote settings compared to radiology/pathology and other

specialties, respectively (Mean [SD]; low risk to self: 4.72 [0.63] vs 4.47 [1.25], $p = 0.027$; remote work: 4.58 [0.80] vs 4.23 [1.03], $p = 0.049$) (Figure 4).

DISCUSSION

Motivation for Volunteering

Our study found that a particular medical student's motivation for volunteering during the COVID-19 pandemic is a combination of altruism, available time, self-serving nature, and external pressures. In our study, 67.6% of medical students volunteered of their own volition without school-required participation in such efforts. Generally, medical school recruitment is contingent upon prospective students demonstrating altruism.¹³ Similarly, our findings suggest that altruism is a key motivator in students who volunteered, with 31.38% indicating serving the community as one of the three primary factors in their decision to volunteer (Figure 2).

Additionally, students who volunteered had statistically higher interest in serving the community than those who did not volunteer.

A sense of obligation to community is not the only motivation for students to volunteer. Self-serving motivators, including additional research opportunities, networking, and benefit to residency applications, account for almost one fifth of the key factors that influence a student's decision to volunteer. Interestingly, these motivations may explain the drastic difference in volunteering participation between third-year medical students, who experience the added pressure of residency applications, and fourth-year medical students, who have already secured residency positions: 80.7% of third-year medical students in the study cohort volunteered while

only 53.4% of fourth-year medical students volunteered (Supplemental Table 2). While both cohorts have substantial clinical training compared to their first- or second-year counterparts, their priorities may vary: the COVID-19 pandemic serves as an extraordinary opportunity for students to boost their curriculum vitae before applying to residency.

Extrinsic pressures to volunteer may result from fellow medical students, faculty, hospital staff, friends, and family members. These pressures were the least influential in a student's decision to volunteer (Figure 1); however, pressure from other medical students had a higher impact than from friends, family, faculty, or hospital staff. At most medical schools, volunteering efforts during COVID-19 were spearheaded by medical students.⁵ Thus, medical students may feel the greatest pressure to volunteer from their peers.

Time commitment is an important, yet often overlooked, aspect of volunteering. Interestingly, we found that 11.1% of students who volunteered and 17.11% of students who did not volunteer indicated that this was among the top 3 primary factors in their decision (Figure 2). In this survey, the time commitment variable could be understood as either having enough time or not having enough time for volunteer activities. With educational and clinical obligations, medical students are often limited on time for extracurricular activities and must consider opportunity costs in volunteering. Hours spent volunteering are fewer hours spent on academic development, including studying, research, and extracurricular activities. However, some students may view the time commitment as a necessary cost if they prioritize service or the potential leadership opportunities involved.

A student's self-selected specialty may reflect their obligation to serve and moral agency. Other studies have found that medical students with a lower degree of altruism are significantly more

likely to choose high-income specialties.¹⁴ When looking at a student's self-selected specialty in our study, primary care specialties agreed to a greater extent that physicians have a duty to serve in low risk settings and remote settings than radiology/pathology and other specialties respectively (Figure 3). Overall, altruism may be the main motivation behind student participation in COVID-19 relief efforts, but self-serving motivations are an important secondary consideration.

Assumption of Risk by Students

The AAMC released multiple guidance documents recommending that, where feasible, medical students should be excluded from direct patient care activities for a period of time while medical schools developed plans to safely re-integrate medical students into the clinical space.¹⁵

However, even voluntary COVID-19 pandemic relief efforts that do not require interface with patients ask participants to assume some risk. In our study, students who chose not to volunteer considered risk of exposure to themselves or others as significantly more important factors in their decision than students who did volunteer (Figure 1). The AAMC identified the following as barriers to reintegrating students in clinical settings: health insurance status, testing availability, and inadequate personal protective equipment (PPE). These same barriers may also deter students from volunteering in non-clinical settings. For example, medical trainees in the United States have an expectation that appropriate PPE will be available. A primary concern at the onset of the pandemic was PPE scarcity in all settings, as inadequate PPE exposes medical students to heightened risk of exposure to a range of infectious diseases. Similarly, the lack of appropriate masks when delivering groceries or collecting PPE may have also been influences on students' decisions not to volunteer.

Even with appropriate PPE, there is still a risk of serious illness or death. In April 2020, the Centers for Disease Control (CDC) estimated that approximately 55% of healthcare workers who developed COVID-19 contracted the virus at the hospital. The median age of our cohort is 25.94 (Table 1), which falls within an age group that carries up to 6.4% risk of hospitalization and up to 3% risk of death related to COVID-19.¹⁶ In addition to the risk of significant bodily harm students may assume in volunteering in patient-facing roles during the pandemic, hospitalization or other exclusion from the clinical environment due to COVID-19 may delay a student's ability to enter clinical rotations, obtain licensure, or even graduate from medical school.

Guidelines for Future Student Involvement

Regardless of whether or not students volunteered in COVID-19 pandemic relief efforts, this cohort of medical students largely believe that clinical students should have the opportunity to volunteer in such efforts. Institutions may utilize the data collected through this study to integrate student perspectives into future medical trainee involvement in pandemic response initiatives. Initiatives which require student presence in the hospital and regular contact with SARS-CoV-2 positive patients should consider balancing educational benefit with trainee risk exposure. Such initiatives should acknowledge the real and perceived pressures felt by medical students in both voluntary and required clinical experiences. Efforts should be made to identify risk mitigation strategies, reinforce institutional non-retaliation policies to protect trainees, and support trainees who require testing, medical care, or extended medical leave due to SARS-CoV-2 infection.

Future Directions

Our survey was distributed to students primarily in May 2020, when medical students were not in the clinical environment. By the end of July 2020, 68% of medical schools returned students

to clinical clerkships.¹⁷ Now that students are required to return to clinical spaces during a pandemic, their attitudes around serving patients, either in patient-facing or virtual roles, may be shifting and warrant further study. In addition, this survey left the interpretation of “risk” up to the student. Exploring further what trainees and institutions deem “acceptable” risk assumption in the course of medical training is important when considering a student’s duty to serve. As large areas of the United States continue to experience dramatic increases in COVID-19 cases,¹⁸ this study is important for directing future involvement of medical trainees in COVID-19 response initiatives.

Limitations

The limitations of this study include the small sample of medical schools to whom our survey was distributed: 23 of the 154 accredited US medical schools received our survey.¹⁹ Only 18 students who responded to the survey indicated that they had no opportunities available to volunteer in COVID-19 pandemic relief efforts, which likely does not represent the true proportion of students with this limitation. A few survey responders listed more than three factors in their indication of the top three factors that influenced their decision to volunteer or to not volunteer, and these answers were omitted from our final data analysis.

CONCLUSIONS

Overall, we found that there were different motivating factors for students who decided to volunteer compared to students who did not: community service, new skills, and time

commitment were primary factors for students who volunteered, while risk to other, time commitment, and risk to self were primary factors for students who did not volunteer. We also found that motivations for volunteering may change over the course of medical training: three-fourths of third-year medical students and half of fourth-year medical students volunteered for COVID-19 related relief efforts. Compared to students interested in radiology/pathology and other specialties, students interested in primary care specialties agreed to a greater extent that physicians have a duty to serve in low risk settings and remote settings. However, medical students in general agreed that students should be allowed to volunteer in COVID-19 related relief efforts. As large areas of the United States continue to experience increases in COVID-19 cases, institutions should involve medical students in evaluating what the acceptable risks are compared to the ethical educational benefits of student involvement in patient care.

CONFLICTS OF INTEREST STATEMENT

The authors have no conflicts of interest to disclose.

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REFERENCES

1. DeWitt DE. Fighting COVID-19: Enabling Graduating Students to Start Internship Early at Their Own Medical School. *Ann Intern Med*. Published online 2020. doi:10.7326/M20-1262
2. Harvey A. Covid-19: medical schools given powers to graduate final year students early to help NHS. *BMJ*. Published online 2020. doi:10.1136/bmj.m1227
3. Harvey A. Covid-19: medical students and FY1 doctors to be given early registration to help combat covid-19. *BMJ*. Published online 2020. doi:10.1136/bmj.m1268
4. Stokes DC. Senior Medical Students in the COVID-19 Response: An Opportunity to Be Proactive. *Acad Emerg Med*. Published online 2020. doi:10.1111/acem.13972
5. Soled D, Goel S, Barry D, et al. Medical Student Mobilization During A Crisis: Lessons From A COVID-19 Medical Student Response Team. *Acad Med*. Published online 2020. doi:10.1097/ACM.00000000000003401
6. Guidance on Medical Students' Clinical Participation: Effective Immediately. Association of American Medical Colleges. Published 2020. Accessed March 17, 2020. <https://lcme.org/wpcontent/uploads/filebase/March-17-2020-Guidance-on-Mediical-Students-ClinicalParticipation.pdf>
7. Kalet A, Jotterand F, Muntz M, Thapa B, Campbell B. Hearing the Call of Duty: What We Must Do to Allow Medical Students to Respond to the COVID-19 Pandemic. *Wis Med J*. 2020;119(1):6-7. <https://wmjonline.org/119no1/kalet/>

8. Rose S. Medical Student Education in the Time of COVID-19. *JAMA - J Am Med Assoc*. Published online 2020. doi:10.1001/jama.2020.5227
9. Miller DG, Pierson L, Doernberg S. The Role of Medical Students During the COVID-19 Pandemic. *Ann Intern Med*. Published online 2020. doi:10.7326/M20-1281
10. Ahmed H, Allaf M, Elghazaly H. COVID-19 and medical education. *Lancet Infect Dis*. 2020;20(7):777-778. doi:https://doi.org/10.1016/S1473-3099(20)30226-7
11. Bauchner H, Sharfstein J. A Bold Response to the COVID-19 Pandemic: Medical Students, National Service, and Public Health. *JAMA - J Am Med Assoc*. Published online 2020. doi:10.1001/jama.2020.6166
12. Wang JHS, Tan S, Raubenheimer K. Rethinking the role of senior medical students in the COVID-19 response. *Med J Aust*. Published online 2020. doi:10.5694/mja2.50601
13. Grother TW, Wilson DJ. Altruism – A Quality Required of Medical School Applicants. *Am J Med*. Published online 2019. doi:10.1016/j.amjmed.2018.09.016
14. Li J. Plastic surgery or primary care? Altruistic preferences and expected specialty choice of U.S. medical students. *J Health Econ*. Published online 2018. doi:10.1016/j.jhealeco.2018.09.005
15. Guidance on Medical Students' Participation in Direct In-person Patient Contact Activities. Association of American Medical Colleges. Published 2020. <https://www.aamc.org/system/files/2020-04/meded-April-14-Guidance-on-Medical-Students-Participation-in-Direct-Patient-Contact-Activities.pdf>

16. MMWR Morb Mortal Wkly Rep. *Characteristics of Healthcare Personnel with COVID-19 - United States, February 12-April 9, 2020.*; 2020.
https://www.cdc.gov/mmwr/volumes/69/wr/mm6915e6.htm?s_cid=mm6915e6_x
17. Weiner S. Excited, scared, ready: Medical students head back to clerkships. Association of American Medical Colleges. Published 2020. <https://www.aamc.org/news-insights/excited-scared-ready-medical-students-head-back-clerkships>
18. CDC COVID Data Tracker. Centers for Disease Control and Prevention. Published 2020. Accessed September 5, 2020. <https://covid.cdc.gov/covid-data-tracker/#cases>
19. Heiser S. U.S. Medical School Enrollment Surpasses Expansion Goal. Association of American Medical Colleges. Published 2019. Accessed July 10, 2020.
<https://www.aamc.org/news-insights/press-releases/us-medical-school-enrollment-surpasses-expansion-goal>

Table 1. Baseline demographic characteristics and COVID-19 student participation outcomes of study participants (N = 599).

	OVERALL (N = 599)
AGE (MEAN (SD))	25.94 (2.5)
GENDER IDENTITY (%)	
MALE	201 (33.8)
FEMALE	389 (65.5)
NON-BINARY	4 (0.7)
YEAR OF SCHOOL (%)	
MEDICAL SCHOOL YEAR 1	117 (19.5)
MEDICAL SCHOOL YEAR 2	135 (22.5)
MEDICAL SCHOOL YEAR 3	181 (30.2)
MEDICAL SCHOOL YEAR 4	131 (21.9)
MEDICAL SCIENCE TRAINING PROGRAM	24 (4.0)
ORAL AND MAXILLOFACIAL SURGERY	2 (0.3)
LEAVE OF ABSENCE	9 (1.5)
CORE CLERKSHIP STATUS (%)	
COMPLETED	255 (42.6)
NOT COMPLETED	205 (34.2)
CURRENTLY ON	139 (23.2)
REQUIRED PARTICIPATION (%)	
YES	21 (3.5)
NO	578 (96.5)
VOLUNTEER STATUS (%)	
YES	405 (67.6)
NO	176 (29.4)
NO OPPORTUNITIES AVAILABLE	18 (3.0)
PATIENT FACING VOLUNTEER ACTIVITY (%)	
YES	95 (15.9)
NO	430 (71.8)
NO OPPORTUNITIES AVAILABLE	74 (12.4)

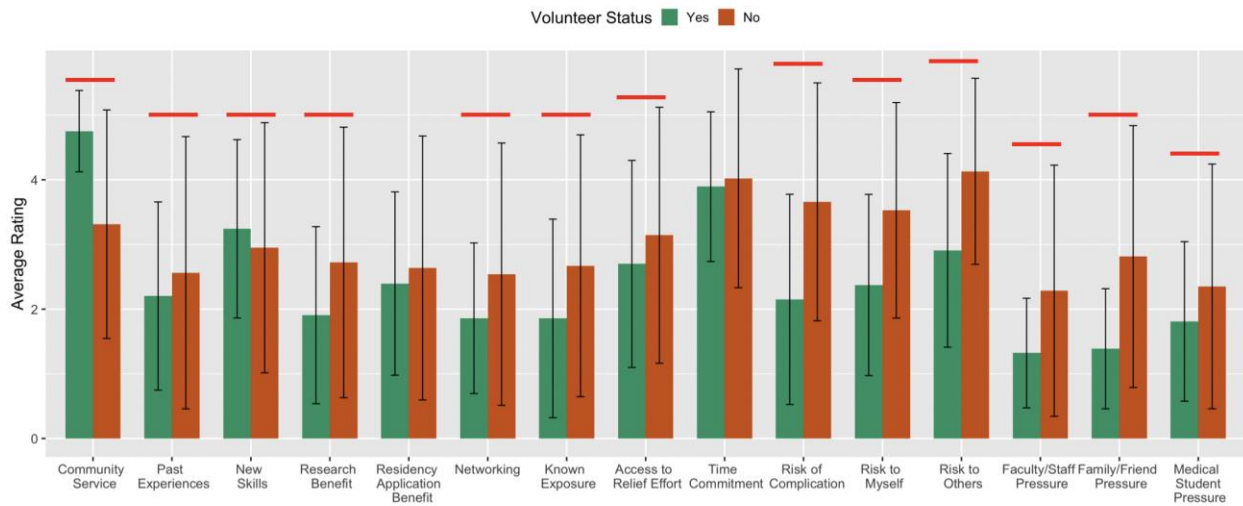


Figure 1. Average ratings to 15 questions pertaining to medical students' motivation towards volunteering for COVID-19 efforts. Likert scale with 1 representing not a factor and 5 representing a primary factor in the decision to volunteer. Red brackets signify a statistically significant difference ($p < 0.05$) between the volunteer statuses. Medical students who indicated there were opportunities available to volunteer ($n = 581$).

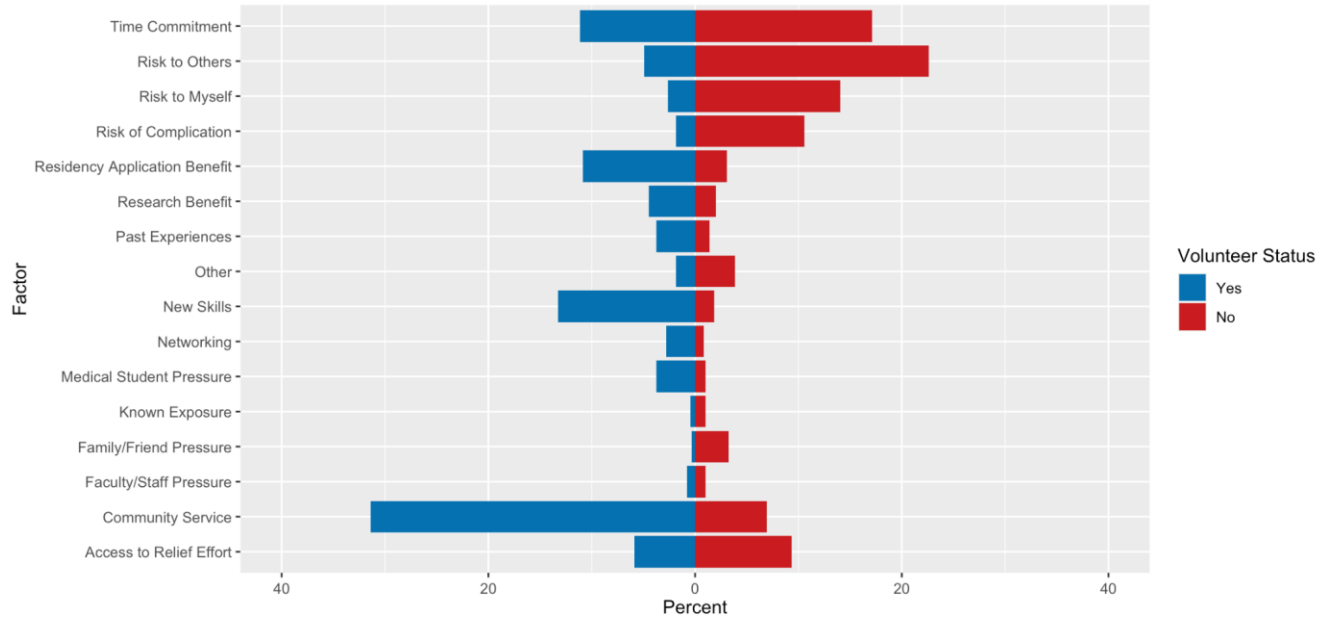


Figure 2. The frequency of each factor was ranked as a student’s top 3 primary factors in their volunteer decision. Blue: Students who chose to volunteer in COVID-19 response initiatives. Red: Students who chose not to volunteer in COVID-19 response initiatives. Medical students who indicated there were opportunities available to volunteer (n = 581).

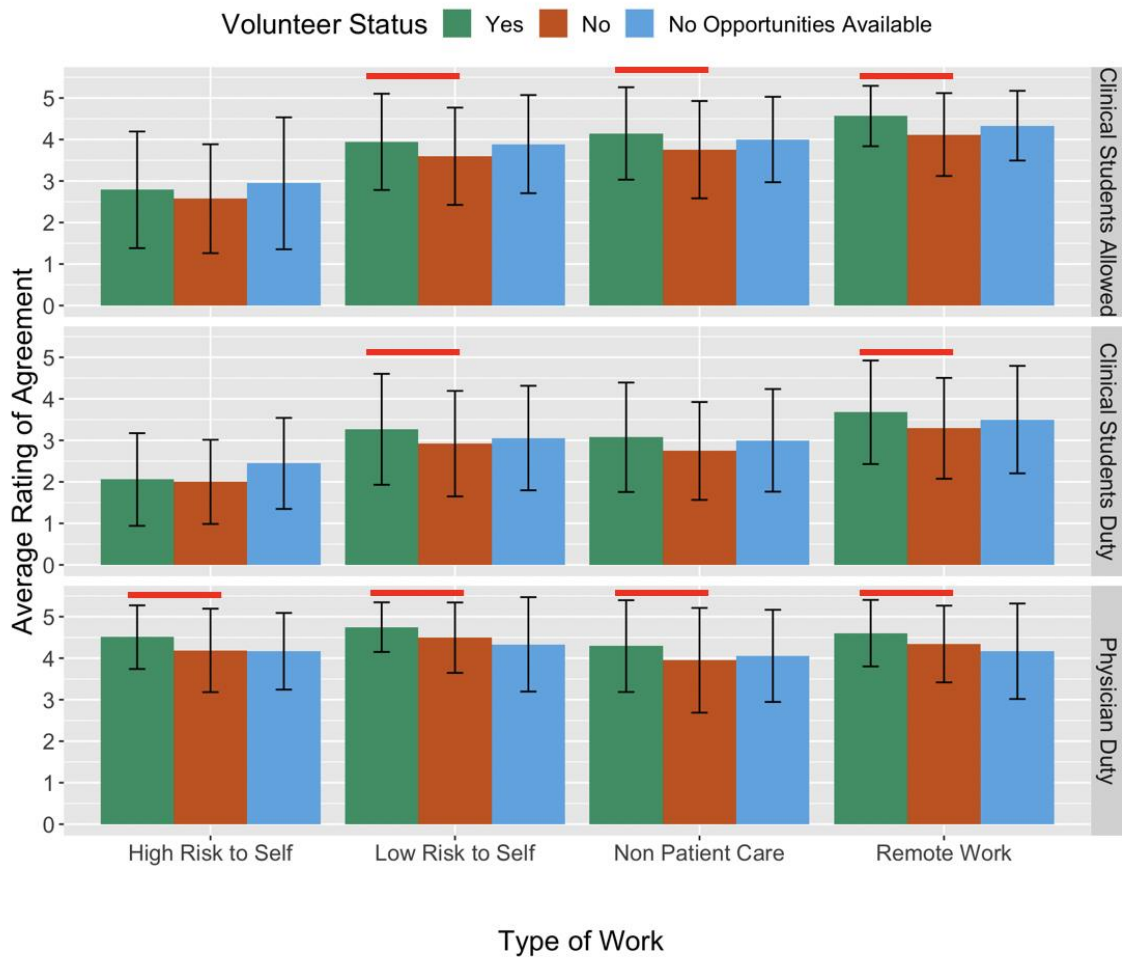


Figure 3. Medical students' average rating of agreement with working in various risk settings during a pandemic based on stage of medical training (A-C). Stratified by whether or not student volunteered during COVID-19 pandemic. Likert scale with 1 representing strongly disagreeing and 5 representing strongly agreeing with working in various risk settings. Red brackets signify a statistically significant difference ($p < 0.05$) between the volunteer statuses. A. Should Clinical students be allowed to work in these settings? B. Do clinical students have a duty to work in these settings? C. Do physicians have a duty to work in these settings?



Figure 4. Medical students’ average rating of agreement with whether physicians have a duty to work in various risk settings during a pandemic. Stratified by student’s self selected future residency type. Likert scale with 1 representing strongly disagreeing and 5 representing strongly agreeing with working in various risk settings. Red brackets signify a statistically significant difference ($p < 0.05$) between the residency type.

Supplemental Table 1. Participating institutions that distributed the survey to their medical students.

PARTICIPATING SCHOOLS

CLEVELAND CLINIC LERNER COLLEGE OF MEDICINE

COOPER MEDICAL SCHOOL OF ROWAN UNIVERSITY

JOHNS HOPKINS UNIVERSITY

MICHIGAN STATE UNIVERSITY

MISSISSIPPI MEDICAL CENTER

NORTHWESTERN UNIVERSITY

OHIO STATE UNIVERSITY

STANFORD UNIVERSITY

TEXAS A&M UNIVERSITY

UNIVERSITY OF ARIZONA

UNIVERSITY OF CALIFORNIA DAVIS

UNIVERSITY OF CALIFORNIA IRVINE

UNIVERSITY OF CALIFORNIA SAN DIEGO

UNIVERSITY OF CALIFORNIA SAN FRANCISCO

UNIVERSITY OF CHICAGO

UNIVERSITY OF MARYLAND

UNIVERSITY OF MIAMI

UNIVERSITY OF MICHIGAN

UNIVERSITY OF MINNESOTA

UNIVERSITY OF PITTSBURGH

UNIVERSITY OF SOUTHERN CALIFORNIA

UNIVERSITY OF TEXAS SOUTHWESTERN

UNIVERSITY OF WISCONSIN

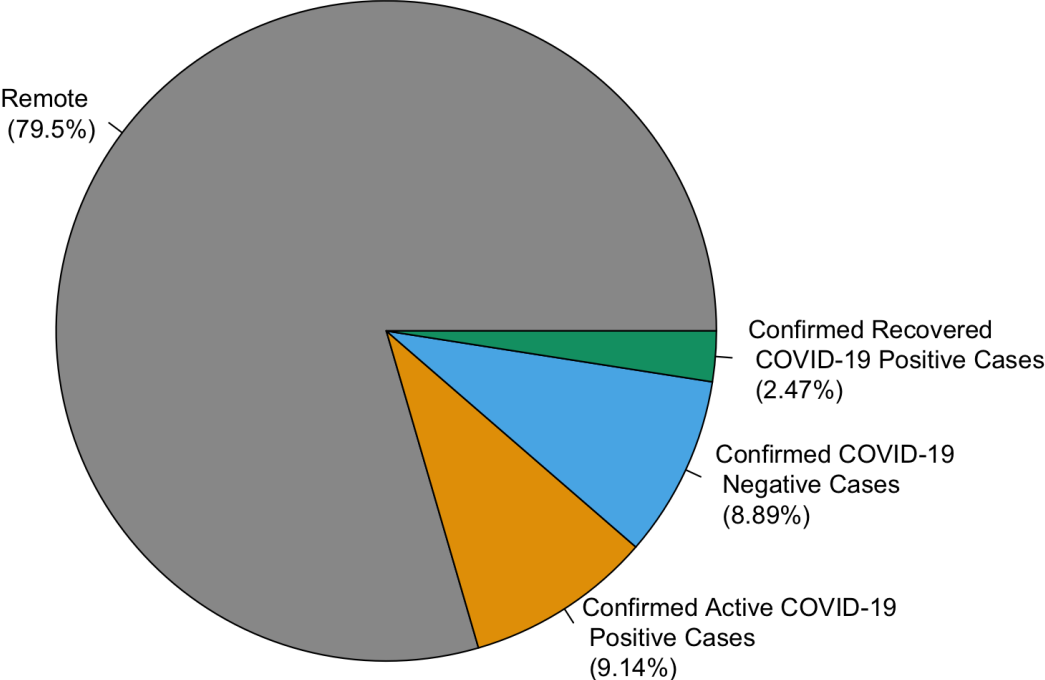
WAYNE STATE UNIVERSITY

ZUCKER SCHOOL OF MEDICINE AT HOFSTRA/NORTHWELL

Supplemental Table 2. Selected baseline demographic characteristics of study cohort stratified by volunteer status (N = 599).

	OVERALL (N)	VOLUNTEER STATUS N (%)		
		Yes	No	No Opportunities Available
YEAR OF SCHOOL				
MEDICAL SCHOOL YEAR 1	117	74 (63.2)	37 (31.6)	6 (5.1)
MEDICAL SCHOOL YEAR 2	135	92 (68.1)	40 (29.6)	3 (2.2)
MEDICAL SCHOOL YEAR 3	181	146 (80.7)	33 (18.2)	2 (1.1)
MEDICAL SCHOOL YEAR 4	131	70 (53.4)	55 (42.0)	6 (4.6)
MEDICAL SCIENCE TRAINING PROGRAM	24	16 (66.7)	7 (29.2)	1 (4.2)
ORAL AND MAXILLOFACIAL SURGERY	2	1 (50.0)	1 (50.0)	0 (0.0)
LEAVE OF ABSENCE	9	6 (66.7)	3 (33.3)	0 (0.0)
CORE CLERKSHIP STATUS (%)				
COMPLETED	255	169 (66.3)	80 (31.4)	6 (2.4)
NOT COMPLETED	205	126 (61.5)	70 (34.1)	9 (4.4)
CURRENTLY ON	139	110 (79.1)	26 (18.7)	3 (2.2)

Supplemental Figure 1. Patient populations students encountered for those who chose to volunteer. 405 medical students that volunteered in COVID-19 response initiatives.



Appendix: REDCap survey distributed to medical students.

Do you attend an allopathic medical school in the United States of America?	radio, Required <table border="1"> <tr><td>1</td><td>Yes</td></tr> <tr><td>2</td><td>No</td></tr> </table>	1	Yes	2	No		
1	Yes						
2	No						
Is your medical school graduating students early to aid in COVID19 response?	radio, Required <table border="1"> <tr><td>1</td><td>Yes</td></tr> <tr><td>2</td><td>No</td></tr> </table>	1	Yes	2	No		
1	Yes						
2	No						
Section Header: <i>Please answer the following questions</i>							
Does your medical school require you to participate in activities that aid in the COVID-19 pandemic response?	radio, Required <table border="1"> <tr><td>1</td><td>Yes</td></tr> <tr><td>2</td><td>No</td></tr> </table>	1	Yes	2	No		
1	Yes						
2	No						
Are you involved with COVID-19 response initiatives that require you to work in person with patients?	radio, Required <table border="1"> <tr><td>1</td><td>Yes</td></tr> <tr><td>2</td><td>No</td></tr> <tr><td>3</td><td>No opportunities available</td></tr> </table>	1	Yes	2	No	3	No opportunities available
1	Yes						
2	No						
3	No opportunities available						
What patient population are you working with? Check all that apply.	checkbox <table border="1"> <tr><td>1</td><td>Patients with confirmed or suspected active COVID-19 infection</td></tr> <tr><td>2</td><td>Patients without suspected COVID-19 infection</td></tr> <tr><td>3</td><td>Patients with resolved COVID-19 infection</td></tr> </table>	1	Patients with confirmed or suspected active COVID-19 infection	2	Patients without suspected COVID-19 infection	3	Patients with resolved COVID-19 infection
1	Patients with confirmed or suspected active COVID-19 infection						
2	Patients without suspected COVID-19 infection						
3	Patients with resolved COVID-19 infection						
Section Header: Did you decide to volunteer with any non-curricular volunteer activities that aid in the COVID-19 pandemic response?	radio, Required <table border="1"> <tr><td>1</td><td>Yes</td></tr> <tr><td>2</td><td>No</td></tr> <tr><td>3</td><td>No opportunities available</td></tr> </table>	1	Yes	2	No	3	No opportunities available
1	Yes						
2	No						
3	No opportunities available						
Keeping in mind your response to the previous question, rate the degree to which the following factors influenced your decision on a scale of 1-5 (1 being not a factor at all to 5 being a primary factor, N/A = Not Applicable)							
The possibility of publishing papers related to my COVID response activities, or presenting this work at a conference	radio (Matrix), Required <table border="1"> <tr><td>1</td><td>1 - Not a factor at all</td></tr> <tr><td>2</td><td>2</td></tr> <tr><td>3</td><td>3</td></tr> </table>	1	1 - Not a factor at all	2	2	3	3
1	1 - Not a factor at all						
2	2						
3	3						

	<table border="1"> <tr><td>4</td><td>4</td></tr> <tr><td>5</td><td>5 - Primary factor</td></tr> <tr><td>6</td><td>N/A</td></tr> </table>	4	4	5	5 - Primary factor	6	N/A						
4	4												
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Pressure from faculty and staff at my home institution	radio (Matrix), Required <table border="1"> <tr><td>1</td><td>1 - Not a factor at all</td></tr> <tr><td>2</td><td>2</td></tr> <tr><td>3</td><td>3</td></tr> <tr><td>4</td><td>4</td></tr> <tr><td>5</td><td>5 - Primary factor</td></tr> <tr><td>6</td><td>N/A</td></tr> </table>	1	1 - Not a factor at all	2	2	3	3	4	4	5	5 - Primary factor	6	N/A
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Interest in serving the community	radio (Matrix), Required <table border="1"> <tr><td>1</td><td>1 - Not a factor at all</td></tr> <tr><td>2</td><td>2</td></tr> <tr><td>3</td><td>3</td></tr> <tr><td>4</td><td>4</td></tr> <tr><td>5</td><td>5 - Primary factor</td></tr> <tr><td>6</td><td>N/A</td></tr> </table>	1	1 - Not a factor at all	2	2	3	3	4	4	5	5 - Primary factor	6	N/A
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Interest in acquiring new skills afforded by volunteer opportunities	radio (Matrix), Required <table border="1"> <tr><td>1</td><td>1 - Not a factor at all</td></tr> <tr><td>2</td><td>2</td></tr> <tr><td>3</td><td>3</td></tr> <tr><td>4</td><td>4</td></tr> <tr><td>5</td><td>5 - Primary factor</td></tr> <tr><td>6</td><td>N/A</td></tr> </table>	1	1 - Not a factor at all	2	2	3	3	4	4	5	5 - Primary factor	6	N/A
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Personally at risk for or live with someone who is at risk for COVID-19 complications	radio (Matrix), Required <table border="1"> <tr><td>1</td><td>1 - Not a factor at all</td></tr> <tr><td>2</td><td>2</td></tr> <tr><td>3</td><td>3</td></tr> <tr><td>4</td><td>4</td></tr> <tr><td>5</td><td>5 - Primary factor</td></tr> <tr><td>6</td><td>N/A</td></tr> </table>	1	1 - Not a factor at all	2	2	3	3	4	4	5	5 - Primary factor	6	N/A
1	1 - Not a factor at all												
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Networking afforded by volunteer opportunities	radio (Matrix), Required <table border="1" data-bbox="878 237 1198 562"> <tr><td>1</td><td>1 - Not a factor at all</td></tr> <tr><td>2</td><td>2</td></tr> <tr><td>3</td><td>3</td></tr> <tr><td>4</td><td>4</td></tr> <tr><td>5</td><td>5 - Primary factor</td></tr> <tr><td>6</td><td>N/A</td></tr> </table>	1	1 - Not a factor at all	2	2	3	3	4	4	5	5 - Primary factor	6	N/A
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Pressure from friends, family, or loved ones	radio (Matrix), Required <table border="1" data-bbox="878 619 1198 945"> <tr><td>1</td><td>1 - Not a factor at all</td></tr> <tr><td>2</td><td>2</td></tr> <tr><td>3</td><td>3</td></tr> <tr><td>4</td><td>4</td></tr> <tr><td>5</td><td>5 - Primary factor</td></tr> <tr><td>6</td><td>N/A</td></tr> </table>	1	1 - Not a factor at all	2	2	3	3	4	4	5	5 - Primary factor	6	N/A
1	1 - Not a factor at all												
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4	4												
5	5 - Primary factor												
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The ability to put pandemic response experiences on a residency application	radio (Matrix), Required <table border="1" data-bbox="878 1001 1198 1327"> <tr><td>1</td><td>1 - Not a factor at all</td></tr> <tr><td>2</td><td>2</td></tr> <tr><td>3</td><td>3</td></tr> <tr><td>4</td><td>4</td></tr> <tr><td>5</td><td>5 - Primary factor</td></tr> <tr><td>6</td><td>N/A</td></tr> </table>	1	1 - Not a factor at all	2	2	3	3	4	4	5	5 - Primary factor	6	N/A
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Prior work experience or formal education	radio (Matrix), Required <table border="1" data-bbox="878 1383 1198 1709"> <tr><td>1</td><td>1 - Not a factor at all</td></tr> <tr><td>2</td><td>2</td></tr> <tr><td>3</td><td>3</td></tr> <tr><td>4</td><td>4</td></tr> <tr><td>5</td><td>5 - Primary factor</td></tr> <tr><td>6</td><td>N/A</td></tr> </table>	1	1 - Not a factor at all	2	2	3	3	4	4	5	5 - Primary factor	6	N/A
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Not enough time to volunteer	radio (Matrix), Required <table border="1" data-bbox="878 1766 1198 1881"> <tr><td>1</td><td>1 - Not a factor at all</td></tr> <tr><td>2</td><td>2</td></tr> </table>	1	1 - Not a factor at all	2	2								
1	1 - Not a factor at all												
2	2												

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The possibility of exposing people around me to unnecessary risk	radio (Matrix), Required <table border="1"> <tr><td>1</td><td>1 - Not a factor at all</td></tr> <tr><td>2</td><td>2</td></tr> <tr><td>3</td><td>3</td></tr> <tr><td>4</td><td>4</td></tr> <tr><td>5</td><td>5 - Primary factor</td></tr> <tr><td>6</td><td>N/A</td></tr> </table>	1	1 - Not a factor at all	2	2	3	3	4	4	5	5 - Primary factor	6	N/A
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Personal or close contact with a suspected or confirmed COVID-19 infection	radio (Matrix), Required <table border="1"> <tr><td>1</td><td>1 - Not a factor at all</td></tr> <tr><td>2</td><td>2</td></tr> <tr><td>3</td><td>3</td></tr> <tr><td>4</td><td>4</td></tr> <tr><td>5</td><td>5 - Primary factor</td></tr> <tr><td>6</td><td>N/A</td></tr> </table>	1	1 - Not a factor at all	2	2	3	3	4	4	5	5 - Primary factor	6	N/A
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Geographic proximity to my medical school during the pandemic	radio (Matrix), Required <table border="1"> <tr><td>1</td><td>1 - Not a factor at all</td></tr> <tr><td>2</td><td>2</td></tr> <tr><td>3</td><td>3</td></tr> <tr><td>4</td><td>4</td></tr> <tr><td>5</td><td>5 - Primary factor</td></tr> </table>	1	1 - Not a factor at all	2	2	3	3	4	4	5	5 - Primary factor		
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Pressure from medical students	radio (Matrix), Required <table border="1"> <tr> <td>1</td> <td>1 - Not a factor at all</td> </tr> <tr> <td>2</td> <td>2</td> </tr> <tr> <td>3</td> <td>3</td> </tr> <tr> <td>4</td> <td>4</td> </tr> <tr> <td>5</td> <td>5 - Primary factor</td> </tr> <tr> <td>6</td> <td>N/A</td> </tr> </table>	1	1 - Not a factor at all	2	2	3	3	4	4	5	5 - Primary factor	6	N/A						
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6	N/A																		
Section Header: Of the choices listed in the pervious question, what were the top 3 influencing factors in your decision? (select only three choices)	checkbox, Required <table border="1"> <tr> <td>1</td> <td>The possibility of publishing papers or presenting work at a conference</td> </tr> <tr> <td>2</td> <td>The ability to put pandemic response experiences on a residency application</td> </tr> <tr> <td>3</td> <td>Pressure from medical students</td> </tr> <tr> <td>4</td> <td>Pressure from faculty and staff at my home institution</td> </tr> <tr> <td>5</td> <td>Pressure from friends, family, or loved ones</td> </tr> <tr> <td>6</td> <td>Interest in serving the community</td> </tr> <tr> <td>7</td> <td>Time commitment</td> </tr> <tr> <td>8</td> <td>Interest in acquiring new skills afforded by volunteer opportunities</td> </tr> <tr> <td>9</td> <td>Networking afforded by volunteer opportunities</td> </tr> </table>	1	The possibility of publishing papers or presenting work at a conference	2	The ability to put pandemic response experiences on a residency application	3	Pressure from medical students	4	Pressure from faculty and staff at my home institution	5	Pressure from friends, family, or loved ones	6	Interest in serving the community	7	Time commitment	8	Interest in acquiring new skills afforded by volunteer opportunities	9	Networking afforded by volunteer opportunities
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	10	Prior work experience or formal education
	11	The possibility of exposing myself to unnecessary risk
	12	The possibility of exposing people around me to unnecessary risk
	13	Personally at risk for or live with someone who is at risk for COVID-19 complications
	14	Personal or close contact with a suspected or confirmed COVID-19 infection
	15	Geographic proximity to my medical school during the pandemic
	16	Other
If you selected "other", please specify your reason here:		text
Section Header: <i>Please rate how much you agree with each statement</i>		
<i>A medical student with clinical experience has a duty to serve in the following roles during a pandemic:</i>		
In-person patient care roles with high risk of exposure to pandemic infectious disease	radio (Matrix), Required	
	1	Strongly disagree
	2	Somewhat disagree
	3	Neither agree nor disagree
	4	Somewhat agree
	5	Strongly agree
In-person patient care roles with low risk of exposure to pandemic infectious disease	radio (Matrix), Required	
	1	Strongly disagree
	2	Somewhat disagree
	3	Neither agree nor disagree
	4	Somewhat agree
	5	Strongly agree
In-person non-patient care roles	radio (Matrix), Required	
	1	Strongly disagree
	2	Somewhat disagree
	3	Neither agree nor disagree

	<table border="1"> <tr> <td>4</td> <td>Somewhat agree</td> </tr> <tr> <td>5</td> <td>Strongly agree</td> </tr> </table>	4	Somewhat agree	5	Strongly agree						
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Remote roles	radio (Matrix), Required <table border="1"> <tr> <td>1</td> <td>Strongly disagree</td> </tr> <tr> <td>2</td> <td>Somewhat disagree</td> </tr> <tr> <td>3</td> <td>Neither agree nor disagree</td> </tr> <tr> <td>4</td> <td>Somewhat agree</td> </tr> <tr> <td>5</td> <td>Strongly agree</td> </tr> </table>	1	Strongly disagree	2	Somewhat disagree	3	Neither agree nor disagree	4	Somewhat agree	5	Strongly agree
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Section Header: <i>Please rate how much you agree with each statement</i>											
<i>A medical student with clinical experience should be allowed to serve in the following roles during a pandemic:</i>											
In-person patient care roles with high risk of exposure to pandemic infectious disease	radio (Matrix), Required <table border="1"> <tr> <td>1</td> <td>Strongly disagree</td> </tr> <tr> <td>2</td> <td>Somewhat disagree</td> </tr> <tr> <td>3</td> <td>Neither agree nor disagree</td> </tr> <tr> <td>4</td> <td>Somewhat agree</td> </tr> <tr> <td>5</td> <td>Strongly agree</td> </tr> </table>	1	Strongly disagree	2	Somewhat disagree	3	Neither agree nor disagree	4	Somewhat agree	5	Strongly agree
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Section Header: <i>Please rate how much you agree with each statement</i>											
<i>In the future I, as a board-certified physician, will have a duty to serve in the following roles during a pandemic:</i>											
In-person patient care roles with high risk of exposure to pandemic infectious disease	radio (Matrix), Required <table border="1"> <tr><td>1</td><td>Strongly disagree</td></tr> <tr><td>2</td><td>Somewhat disagree</td></tr> <tr><td>3</td><td>Neither agree nor disagree</td></tr> <tr><td>4</td><td>Somewhat agree</td></tr> <tr><td>5</td><td>Strongly agree</td></tr> </table>	1	Strongly disagree	2	Somewhat disagree	3	Neither agree nor disagree	4	Somewhat agree	5	Strongly agree
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Section Header: <i>Demographics</i>											
What is your year of medical school?	radio, Required										

	<table border="1"> <tr><td>1</td><td>M1</td></tr> <tr><td>2</td><td>M2</td></tr> <tr><td>3</td><td>M3</td></tr> <tr><td>4</td><td>M4</td></tr> <tr><td>5</td><td>Medical Scientist Training Program (MSTP)</td></tr> <tr><td>6</td><td>Oral & Maxillofacial Surgery (OMFS)</td></tr> <tr><td>7</td><td>Leave of Absence (LOA)</td></tr> </table>	1	M1	2	M2	3	M3	4	M4	5	Medical Scientist Training Program (MSTP)	6	Oral & Maxillofacial Surgery (OMFS)	7	Leave of Absence (LOA)		
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Have you completed your core clerkships?	radio, Required <table border="1"> <tr><td>1</td><td>Yes</td></tr> <tr><td>2</td><td>No</td></tr> <tr><td>3</td><td>Currently on core clerkships</td></tr> </table>	1	Yes	2	No	3	Currently on core clerkships										
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Gender Identity:	radio, Required <table border="1"> <tr><td>1</td><td>Male</td></tr> <tr><td>2</td><td>Female</td></tr> <tr><td>3</td><td>Non-binary</td></tr> <tr><td>4</td><td>Prefer to self-describe</td></tr> <tr><td>5</td><td>Prefer not to answer</td></tr> </table>	1	Male	2	Female	3	Non-binary	4	Prefer to self-describe	5	Prefer not to answer						
1	Male																
2	Female																
3	Non-binary																
4	Prefer to self-describe																
5	Prefer not to answer																
Self-describe gender:	text																
What is your age in years?	dropdown, Required																
Do you have prior work experience or formal education in any of the following areas? Check all that apply.	checkbox, Required <table border="1"> <tr><td>1</td><td>Public health</td></tr> <tr><td>2</td><td>Engineering</td></tr> <tr><td>3</td><td>Allied health medical professional</td></tr> <tr><td>4</td><td>Social work</td></tr> <tr><td>5</td><td>Mental health services</td></tr> <tr><td>6</td><td>Military</td></tr> <tr><td>7</td><td>Teaching</td></tr> <tr><td>8</td><td>Government service organization (ex, Americorps, peace corps, Teach for America)</td></tr> </table>	1	Public health	2	Engineering	3	Allied health medical professional	4	Social work	5	Mental health services	6	Military	7	Teaching	8	Government service organization (ex, Americorps, peace corps, Teach for America)
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If you had to apply to residency now, what would be your top specialty of interest? Select one.	<p>dropdown, Required</p> <table border="1"> <tr> <td data-bbox="865 604 930 699">1</td> <td data-bbox="930 604 1430 699">Anesthesiology</td> </tr> <tr> <td data-bbox="865 699 930 825">2</td> <td data-bbox="930 699 1430 825">Surgery (General, Neurosurgery, Colorectal, Orthopaedic, ENT, Plastic, Thoracic)</td> </tr> <tr> <td data-bbox="865 825 930 877">3</td> <td data-bbox="930 825 1430 877">Oral & Maxillofacial Surgery</td> </tr> <tr> <td data-bbox="865 877 930 930">4</td> <td data-bbox="930 877 1430 930">Dermatology</td> </tr> <tr> <td data-bbox="865 930 930 982">5</td> <td data-bbox="930 930 1430 982">Emergency Medicine</td> </tr> <tr> <td data-bbox="865 982 930 1035">6</td> <td data-bbox="930 982 1430 1035">Family Medicine</td> </tr> <tr> <td data-bbox="865 1035 930 1087">7</td> <td data-bbox="930 1035 1430 1087">Internal Medicine</td> </tr> <tr> <td data-bbox="865 1087 930 1140">8</td> <td data-bbox="930 1087 1430 1140">Obstetrics & Gynecology</td> </tr> <tr> <td data-bbox="865 1140 930 1192">9</td> <td data-bbox="930 1140 1430 1192">Ophthalmology</td> </tr> <tr> <td data-bbox="865 1192 930 1245">10</td> <td data-bbox="930 1192 1430 1245">Pathology</td> </tr> <tr> <td data-bbox="865 1245 930 1297">11</td> <td data-bbox="930 1245 1430 1297">Pediatrics</td> </tr> <tr> <td data-bbox="865 1297 930 1350">13</td> <td data-bbox="930 1297 1430 1350">Physical Medicine & Rehabilitation</td> </tr> <tr> <td data-bbox="865 1350 930 1402">14</td> <td data-bbox="930 1350 1430 1402">Psychiatry</td> </tr> <tr> <td data-bbox="865 1402 930 1455">15</td> <td data-bbox="930 1402 1430 1455">Neurology</td> </tr> <tr> <td data-bbox="865 1455 930 1507">16</td> <td data-bbox="930 1455 1430 1507">Radiology</td> </tr> <tr> <td data-bbox="865 1507 930 1560">17</td> <td data-bbox="930 1507 1430 1560">Urology</td> </tr> <tr> <td data-bbox="865 1560 930 1675">18</td> <td data-bbox="930 1560 1430 1675">I do not plan on applying to residency</td> </tr> <tr> <td data-bbox="865 1675 930 1749">19</td> <td data-bbox="930 1675 1430 1749">None of the above</td> </tr> </table>	1	Anesthesiology	2	Surgery (General, Neurosurgery, Colorectal, Orthopaedic, ENT, Plastic, Thoracic)	3	Oral & Maxillofacial Surgery	4	Dermatology	5	Emergency Medicine	6	Family Medicine	7	Internal Medicine	8	Obstetrics & Gynecology	9	Ophthalmology	10	Pathology	11	Pediatrics	13	Physical Medicine & Rehabilitation	14	Psychiatry	15	Neurology	16	Radiology	17	Urology	18	I do not plan on applying to residency	19	None of the above
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<p>Thank you for taking the survey. You will now be redirected to a survey where you may choose to enter your email address for a gift card and/or to participate in future studies. This is optional and will not affect your survey results. Your email will not be linked to the responses you provided in this survey. If you do not wish to be directed to this survey, click "submit" then close your browser window.</p>	
<p>Here you may provide your email address to receive a gift card and/or to be contacted in the future for participation in focus groups or additional surveys. Your email will not be linked to your survey results. If you choose not to provide your email address, this will not affect your participation or survey results.</p>	<p>descriptive</p>
<p>Please enter your email address to be eligible to receive a \$10 gift card. The first 100 participants will receive a gift card. This is optional, will not be linked to your survey results, and will not affect your participation in this study.</p>	<p>text (email), Identifier</p>
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