

**Medical Student Experiences of Applying Into EM During the COVID-19
Pandemic: A Multi-institutional Survey of EM Bound Medical Students**

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Medical Student Experiences of Applying Into EM During the COVID-19 Pandemic: A Multi-institutional Survey of EM Bound Medical Students

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45 **Abstract**

46 **Background:** The COVID-19 pandemic added new and great uncertainty to the typical approach
47 to applying into emergency medicine (EM) for medical students. There is little data on students'
48 lived experience of applying during this time period. We performed a multi-institutional survey
49 of EM-bound students' experiences with preparing to apply into EM during the pandemic.

50

51 **Methods:** This was a cross sectional survey design study of fourth year students preparing to
52 apply into EM during the 2020-2021 academic year. All self-identified EM-bound students at
53 four participating institutions were recruited by email in June 2020 to participate in a 13-item, 5-
54 point Likert scale survey. Univariate descriptive statistics, response rate and non-response bias
55 were calculated.

56

57 **Results:** Sixty-seven of 125 eligible students responded for an overall response rate of 53.6%.
58 Nonresponse bias for specific survey items ranged from 0.01 to 0.12. Students rated the
59 importance of securing an EM rotation at their home institution the highest of any item (M =
60 4.81, SD = 0.68). Students indicated higher satisfaction with advice from their department of EM
61 (M = 4.28, SD = 0.75) than from their school of medicine (M = 3.52 , SD = 0.89). Students
62 indicated higher confidence in their home EM rotations' ability to assure adequate PPE (M =
63 3.91, SD = 0.83) than an away rotation (M = 2.82, 1.09). Students reported feeling between

64 moderately and quite stressed about applying into EM this year ($M = 3.49$, $SD = 1.01$), but
65 reported the financial stress the lowest of any item ($M = 1.46$, $SD = 0.84$). Students rated it
66 highly important that away rotations prioritize students from institutions without an EM
67 residency ($M = 4.51$, $SD = 0.93$).

68 **Conclusion:** Medical students applying into EM during the COVID-19 pandemic felt confident
69 in their EM advisors' recommendations and their home institution's PPE provision. Students
70 with EM residency programs at their schools recognized the importance of away rotations being
71 prioritized for students from schools without EM residency programs. Strong EM advising is
72 important to students.

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91 **Background**

92 The COVID-19 pandemic added new and great uncertainty to the seemingly ordered and typical
93 approach to applying into emergency medicine (EM) for medical students.¹ One of the most
94 significant disruptions from the pandemic was a sudden lack of access to away rotations for

95 medical students applying into EM. Traditionally, performance on an away EM rotation has been
96 very highly valued by EM residency program directors when evaluating an EM applicant's
97 portfolio.² On May 11th, 2020, the Coalition for Physician Accountability, a group of national
98 medical education organizations, recommended that away rotations be discouraged for the 2020-
99 2021 academic year except in specific circumstances.³ In addition, the CORD Advising Students
100 Committee In Emergency Medicine published a consensus statement encouraging students to go
101 on fewer, if any, away rotations.⁴ Because of the disruption to the clinical learning environment
102 and the ability to travel to away rotations, many institutions, including all four of our institutions,
103 cancelled away rotations for their students.⁵ Other than anecdotal reports, there is little data on
104 students' experiences with preparing to apply into EM given changes due to the COVID-19
105 pandemic or how our advising interventions in response to the pandemic were impacting them.
106 As such, we performed a multi-institutional survey of EM-bound students' experiences with
107 preparing to apply into EM during the pandemic.

108

109 **Methods**

110 Study design and population

111 This was a cross sectional survey design study. We considered all medical students self-reporting
112 to their respective institutions as applying into EM from a purposeful sample of four institutions
113 as eligible to participate in the survey. The University of Michigan (Michigan), OSU Wexner
114 Medical Center (OSU), Oregon Health & Science University (OSHU) and The University of
115 Washington (UW) all participated in the study. We surveyed students in June 2020, in the midst
116 of the COVID-19 pandemic, social distancing measures, and at a time of national uncertainty
117 about the future of medical students being permitted in the clinical environment.

118

119 We recruited participants by email. The initial survey invitation was sent out on June 1, 2020
120 with 2 reminders sent at 1 week intervals each. Data collection was completed by the end of June
121 2020. All participation was voluntary and there was no compensation for taking the survey. All
122 responses were anonymized. The Human Subjects Division at all four institutions deemed the
123 study to be exempt from IRB.

124

125 Survey content and protocol

126 We developed an original 13-item survey instrument guided by Messick's validity framework.⁶
127 The content validity for the survey instrument was based on the CORD student advising guide
128 and the timely Council of Residency Directors in EM (CORD) Advising Students Committee in
129 EM (ASC-EM) consensus statement.^{2,4,7} All authors are EM clerkship directors and iteratively
130 contributed to the development of the survey. We intentionally avoided including more
131 demographic questions in the survey to maintain strict anonymity of all participants. We
132 performed cognitive, "think aloud" interviews with two senior medical students who had
133 recently matched in EM and two rising fourth year medical students pursuing non-EM specialties
134 for response process validity evidence and for clarity. We incorporated all feedback into the final
135 instrument, which we determined via consensus of all authors (see appendix). We rated each
136 item on a 1 to 5 point Likert scale ranging from "Not at all" to "Extremely," with response
137 anchors intentionally worded to emphasize the construct being measured rather than simple
138 agreement.⁸

139

140 Data Collection and Analysis

141 We collected and managed the study data using REDCap electronic data capture tools hosted at
142 the University of Washington. REDCap (Research Electronic Data Capture) is a secure, web-
143 based software platform designed to support data capture for research studies, providing 1) an
144 intuitive interface for validated data capture; 2) audit trails for tracking data manipulation and
145 export procedures; 3) automated export procedures for seamless data downloads to common
146 statistical packages; and 4) procedures for data integration and interoperability with external
147 sources.

148

149 We conducted data analysis using Microsoft Excel 2018 (Redmond, Washington) with which we
150 calculated univariate descriptive statistics including the mean (M) and standard deviation (SD) of
151 each item, a response rate according to the AAPOR definition of response rate 5 (RR5) and the
152 non-response bias for each item to estimate the difference between those who responded and
153 those who did not, using wave analysis.⁹⁻¹²

154

155 **Results**

156 We electronically delivered the survey via email to 125 medical students applying into EM at our
157 four institutions. Of those, 67 students responded to the survey for an overall response rate of
158 53.6%. Response rates for each participating institution ranged from 38.1%-70% (Table 1).

159
160 The descriptive statistics and nonresponse bias for 11 of the 13 survey items are displayed in
161 Table 2. The nonresponse bias was minimal, ranging from 0.01 to 0.12 on the 5-point scale. The
162 other two items inquired about whether students perceived that they were still permitted to do
163 away rotations. Of all respondents, only one student reported that their institution was allowing
164 them to do away rotations despite their institution's policy against it. The same student also
165 reported that they were "Not at all Confident" that they would secure an away rotation despite
166 their perceptions they were allowed to do so.

167
168 EM-bound medical students rated the importance of securing an EM rotation at their home
169 institution prior to submitting residency applications this year the highest ($M = 4.81$, $SD = 0.68$).
170 Students also indicated that they were more satisfied with the advice from their department of
171 EM ($M = 4.28$, $SD = 0.75$) than from their respective schools of medicine ($M = 3.52$, $SD =$
172 0.89). Not surprisingly, students reported feeling between moderately and quite stressed about
173 applying into EM this year ($M = 3.49$, $SD = 1.01$) and at least moderately concerned that they
174 needed to do an away rotation at a particular institution to get an interview there ($M = 3.27$, $SD =$
175 1.14). However, they also reported that the rationale for not permitting away rotations was quite
176 clear to them ($M = 4.34$, $SD = 0.90$) and that they were moderately to quite confident in their
177 advisors plan to support them through the process of applying this year ($M = 3.68$, $SD = 0.98$).
178 Students rated the financial stress they were experiencing the lowest of any item ($M = 1.46$, $SD =$
179 0.84). In addition, they indicated that they were much more confident in their home EM
180 rotations' ability to assure them adequate PPE ($M = 3.91$, $SD = 0.83$) than an away EM rotations'
181 ability to do so ($M = 2.82$, 1.09). It was highly important to students that away rotations prioritize
182 spots for students at institutions without an EM residency program ($M = 4.51$, $SD = 0.93$).

183 **Discussion**

184 These results illustrate the stressors that medical students experienced while preparing to apply
185 in EM during the COVID-19 pandemic and illuminate areas where we can focus our support for
186 students in response. They underscore the importance of effective advising that has been

187 previously demonstrated in the literature and add to the paucity of data we have on students'
188 experience with advising.¹³

189
190 Students identified that their EM departmental advising inspired more confidence than the
191 general career advising from their medical schools. These results highlight the importance of
192 having engaged and involved specialty-specific advising, in addition to the more generalized
193 residency application advising from a school of medicine. Although students applying in all
194 specialties faced similar challenges with lack of away rotations and upended schedules, our EM-
195 bound students placed a higher value on the career advising from EM faculty than the
196 generalized school of medicine advising. These findings may have implications for medical
197 students at institutions without an EM residency program to provide directed career advising,
198 where students may face even more challenges than usual during a time when specialty-specific
199 career advising and support is viewed as critical by EM-bound students. Furthermore, students
200 from an institution without an EM residency program are much more likely to be from
201 historically excluded in medicine backgrounds.¹⁴ The different advising and EM experiential
202 opportunities that students have access to at these institutions may further exacerbate existing
203 inequities in our field.

204
205 Our results also highlight that students feel between moderately and quite stressed, but not
206 extremely so. We imagine that the clear EM national consensus guidelines and collaborative
207 leadership from EM specialty societies also contributed to a sense of security and community in
208 the EM applicant group.¹⁵ It would be interesting to compare our results to students applying into
209 other specialties, particularly those which did not release clear national guidelines to guide and
210 support programs and applicants during this time.

211
212 Students expressed confidence in their advisors' plans and in the clarity from their advisors for
213 the rationale of not permitting away rotations this year. Supporting this, they strongly understood
214 the importance of rotating at their home institution in EM prior to applying to residency.
215 Students recognize that an away rotation is important to getting an interview and nonetheless still
216 agree with the rationale of the no away rotation policy. To us, this demonstrates that our EM

217 bound students understand the seriousness of the pandemic and importance of shared sacrifice. It
218 also reinforces the importance of strong and timely leadership through consensus guidelines.

219
220 Predictably, and positively, students expressed very low financial stress from away this year--
221 further supporting the fact that they understand the policies and rationale for no away rotations.
222 The low financial stress is of benefit during a time of great stress and it will likely also be an
223 unintended benefit of having remote interviewing for residency this year. Given the well
224 documented financial burden of applying to residency, it would be wise to consider ways that we
225 can maintain some of the decreased financial stress of applying that has resulted from this years'
226 upheaval.¹⁶ In addition, further research evaluating the effectiveness of virtual interviewing in
227 light of the financial burden of traveling to traditional in-person interviews would also help us
228 better understand ways we may be able to address financial inequalities in applying into EM.

229
230 Additionally, students were more confident that their home EM rotation would be able to provide
231 them adequate PPE than an away EM rotation (figures 3 and 4). Students seem to be more
232 apprehensive about the safety of away rotations and more comfortable with the safety of their
233 home institution. It is not surprising to be more comfortable with what is familiar. However, it
234 also illustrates the challenges of variance among local and regional specific policies when
235 students are expected to move between different hospital systems nationally.

236
237 Finally, students reported that it was highly important that away rotations prioritize spots for
238 students without home EM residency programs. This highlights a sense of shared community and
239 generosity among EM-bound students, who recognize that the limited available away rotations
240 should go to students most in need of a core EM rotation. It is clear that students have strong
241 confidence in their EM advisors, even in a time of great uncertainty, and it follows that our EM
242 educational community has an opportunity to evaluate all medical students' access to EM
243 specific advising including the need to prioritize away rotations for those students at institutions
244 without EM residency programs. Given that there are over 80 medical schools without EM
245 residency programs, we would suggest implementing practical, nationally collaborative
246 processes such as creating more formal partnerships between schools without an EM residency
247 program and other geographically proximate institutions with EM residency programs. Other

248 ideas include increasing virtual advising, either from these formal partnerships, or through
249 professional society sponsored national advising teams.¹⁷

250 **Limitations**

251 This study is limited by the nature of it being a convenience sample of medical students from 4
252 institutions rather than a sample of the entire population of students applying into EM in the
253 2020-2021 academic year. These 4 institutions also have departments of emergency medicine
254 with established EM residency programs, which may make it difficult to generalize the results to
255 all, especially to students at schools without EM residency programs. Future work in this area
256 should certainly expand to a wide range of institutions to include the important perspectives of a
257 broader range of medical students. Furthermore, while the nonresponse bias was minimal and the
258 response rate was adequate, our results may not be fully representative of all the students we
259 recruited. We also recruited students who self-identified as pursuing EM as a career in June
260 2020, which may have changed over time and a small percentage of responses may no longer be
261 from students still applying into EM.

262

263 **Conclusions**

264 This multi-institutional study of 4th year medical students applying into EM during the COVID-
265 19 pandemic demonstrates that the communication and rationale for no away rotations this year
266 was clear, and that students felt confident in their EM advisors' recommendations and their home
267 institution's ability to provide them adequate PPE. Students with EM residency programs at their
268 schools recognized the importance of away rotations being prioritized for students from schools
269 without EM residency programs. During a time of uncertainty, clear and consensus-based
270 advising likely made this experience less stressful for students. Most importantly, it reinforces
271 the importance of strong EM advising to students.

272

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Author

Appendix

1. How satisfied are you with the advising communication from your department of EM?

Not at all Satisfied	Slightly Satisfied	Moderately Satisfied	Quite Satisfied	Extremely Satisfied
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2. How satisfied are you with the advising communication from your school of medicine?

Not at all Satisfied	Slightly Satisfied	Moderately Satisfied	Quite Satisfied	Extremely Satisfied
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3. How stressed do you feel about applying in EM this year?

Not at all Stressed	Slightly Stressed	Moderately Stressed	Quite Stressed	Extremely Stressed
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4. How important is it to you to secure an emergency medicine rotation spot at your home institution prior to submitting your residency applications this year?

Not at all Important	Slightly Important	Moderately Important	Quite Important	Extremely Important
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5. Is your school approving you to do away rotations in emergency medicine that could be completed prior to submitting your residency applications this year? (Yes/No)

6. If yes: How confident are you that you will be able to secure an away rotation this year given the COVID-19 pandemic?

Not at all	Slightly Confident	Moderately	Quite Confident	Extremely
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Confident		Confident		Confident
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7. If no: How confident are you that your advisors' plan to support you in your application process will help mitigate the lack of an away rotation given the COVID-19 pandemic?

Not at all Confident	Slightly Confident	Moderately Confident	Quite Confident	Extremely Confident
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8. How clear is the rationale from your department of EM for their policy on away rotations this year?

Not at all Clear	Slightly Clear	Moderately Clear	Quite Clear	Extremely Clear
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9. How much financial stress are you experiencing regarding away rotations this year?

None at all	Slight amount	Moderate amount	Quite a lot	Extreme amount
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10. How confident are you that your home EM rotation will be able to assure you adequate PPE?

Not at all Confident	Slightly Confident	Moderately Confident	Quite Confident	Extremely Confident
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11. How confident are you that any away EM rotation will be able to assure you adequate PPE?

Not at all Confident	Slightly Confident	Moderately Confident	Quite Confident	Extremely Confident
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12. How important do you think it is that programs that offer away rotations prioritize spots for students who attend institutions without an EM residency program?

Not at all Important	Slightly Important	Moderately Important	Quite Important	Extremely Important
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13. How important do you think it is to do an away rotation at an institution you are interested in in order to get an interview at that institution?

Not at all Important	Slightly Important	Moderately Important	Quite Important	Extremely Important
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Table 1: Participant Response Rate by Institution. Michigan = University of Michigan, OHSU = Oregon Health & Sciences University, OSU = Ohio State University, UW = University of Washington.

School	Recruited	Responded	Response Rate (%)
Michigan	28	11	39.3
OHSU	20	14	70
OSU	21	8	38.1
UW	56	33	58.9

Table 2: Descriptive Statistics of Students' Survey Responses (1-5 scale from "Not at all Satisfied" to "Extremely Satisfied").

Survey Item	Mean	Standard Deviation	Nonresponse Bias
How satisfied are you with the advising communication from your department of EM?	4.28	0.75	0.12
How satisfied are you with the advising communication from your school of medicine?	3.52	0.89	0.01
How stressed do you feel about applying in EM this year?	3.49	1.01	0.01
How important is it to you to secure an emergency medicine rotation spot at your home institution prior to submitting your residency applications this year?	4.81	0.68	0.08
How confident are you that your advisors' plan to support you in your application process will help mitigate the lack of	3.68	0.90	0.02

an away rotation given the COVID-19 pandemic?			
How clear is the rationale from your department of EM for their policy on away rotations this year?	4.34	0.90	0.03
How much financial stress are you experiencing regarding away rotations this year?	1.46	0.84	0.06
How confident are you that your home EM rotation will be able to assure you adequate PPE?	3.91	0.83	0.05
How confident are you that any away EM rotation will be able to assure you adequate PPE?	2.82	1.09	0.06
How important do you think it is that programs that offer away rotations prioritize spots for students who attend institutions without an EM residency program?	4.51	0.93	0.02

How important do you think it is to do an away rotation at an institution you are interested in in order to get an interview at that institution?	3.27	1.14	0.05
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Figure 1: Student Responses to the Survey Item, “How satisfied are you with the advising communication from your department of EM?” Extremely Satisfied (31, 46.3%), Quite Satisfied (24, 35.8%), Moderately Satisfied (12, 17.9%), Slightly Satisfied (0, 0.0%), Not at all Satisfied (0, 0.0%).

How satisfied are you with the advising communication from your department of EM?

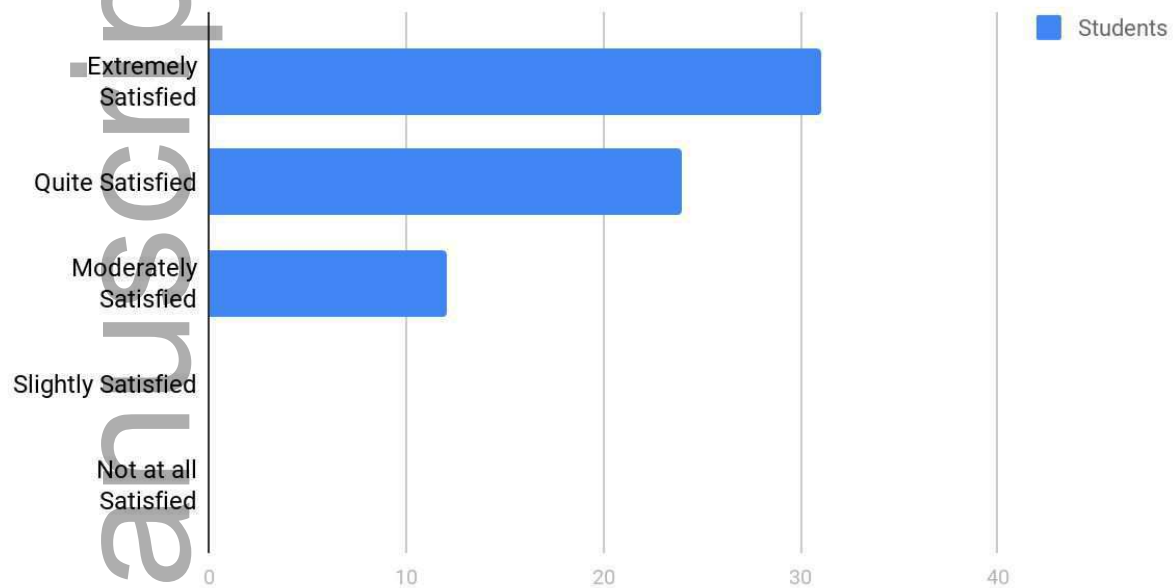


Figure 2: Student Responses to the Survey Item, “How satisfied are you with the advising communication from your school of medicine? Extremely Satisfied (7, 10.4%), Quite Satisfied (31, 46.3%), Moderately Satisfied (20, 29.9%), Slightly Satisfied (8, 11.9%), Not at all Satisfied (1, 1.5%)

How satisfied are you with the advising communication from your school of medicine?

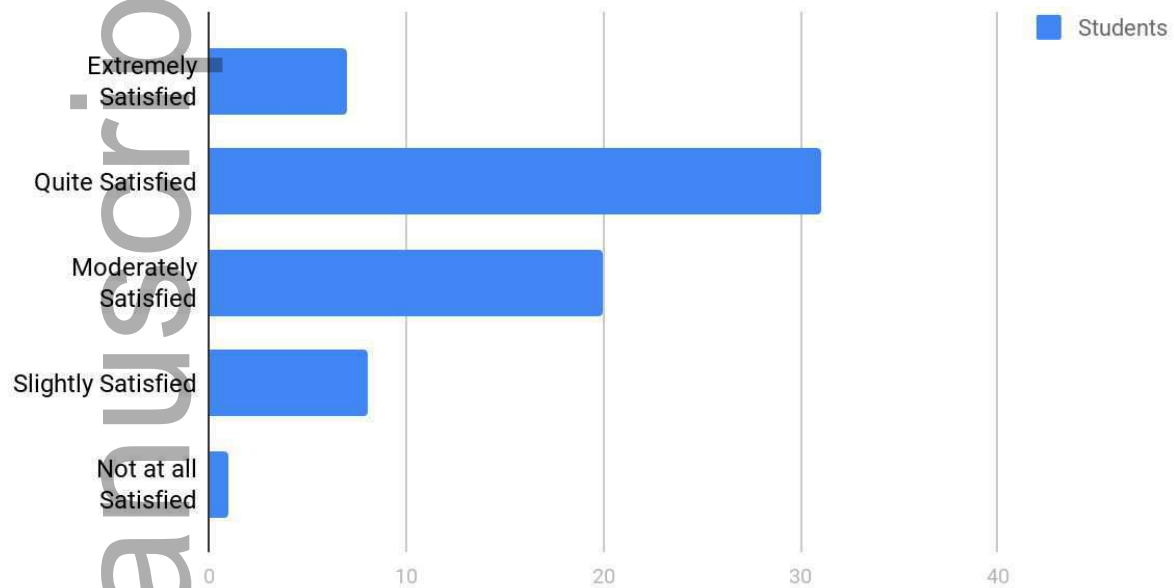


Figure 3: Student Responses to the Survey Item, “How confident are you that your home EM rotation will be able to assure you adequate PPE?” Extremely Confident (14, 20.9%), Quite Confident (38, 56.7%), Moderately Confident (11, 16.4%), Slightly Confident (3, 4.5%), Not at all Confident (1, 1.5%)

How confident are you that your home EM rotation will be able to assure you adequate PPE?

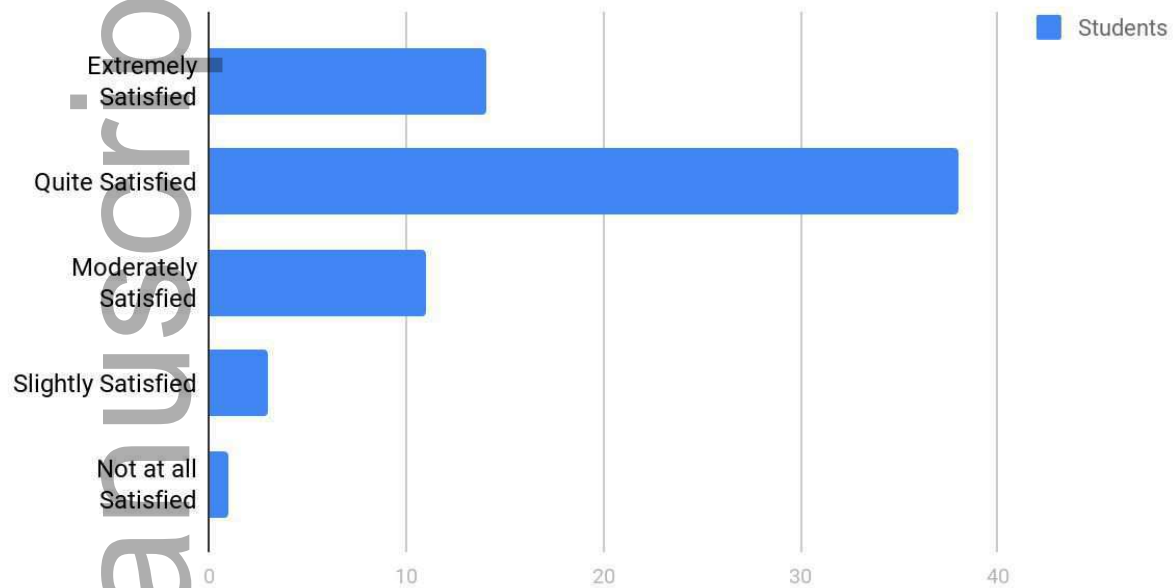
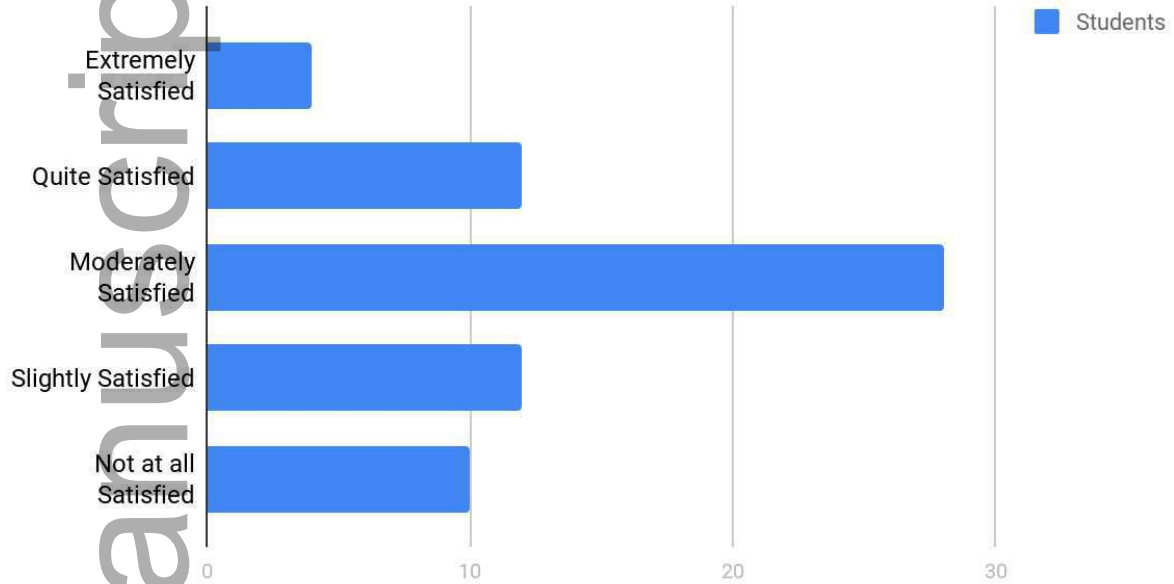


Figure 4: Student Responses to the Survey Item, “How confident are you that any away EM rotation will be able to assure you adequate PPE?” Extremely Confident (4, 6.1%), Quite Confident (12, 18.2%), Moderately Confident (28, 42.4%), Slightly Confident (12, 18.2%), Not at all Confident (10, 15.2%)

How confident are you that any away EM rotation will be able to assure you adequate PPE?



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Extremely Satisfied	31
Quite Satisfied	24
Moderately Satisfied	12
Slightly Satisfied	0
Not At All Satisfied	0

Extremely Satisfied	7
Quite Satisfied	31
Moderately Satisfied	20
Slightly Satisfied	8
Not At All Satisfied	1

Extremely Confident	14
Quite Confident	38
Moderately Confident	11
Slightly Confident	3
Not At All Confident	1

Extremely Confident	4
Quite Confident	12
Moderately Confident	28
Slightly Confident	12
Not At All Confident	10

