

Exploring the impact of the COVID-19 pandemic on medical learners

Start of Block: Country

Q2.1 What **level of learner** are you currently? (select one)

- Medical Student, Pre-Clerkship or Pre-Clinical Years
 - Medical Student, Clerkship or Clinical Years
 - 1st year resident or intern (i.e., PGY1 Resident)
 - 2nd year resident (i.e., PGY2 Resident)
 - 3rd year resident (i.e., PGY3 Resident)
 - 4th year resident (i.e., PGY4 Resident)
 - 5th year resident (i.e., PGY5 Resident)
 - 6th year resident or above (i.e., PGY6 or higher Resident)
 - I prefer to not answer this question
-

Q2.2 In which **country** is your medical school or residency program located? (select one)

▼ Afghanistan ... Zimbabwe

End of Block: Country

Start of Block: Demographic Questions

*Display This Question:
If Q2.2 = Canada*

Q3.1 What **academic institution** are you currently a registered learner at in Canada? (select one)

▼ University of British Columbia (1) ... I prefer to not answer this question (18)

Supplemental File: Survey Questionnaire

34 Q3.2 Which of the following best describes your **gender identity**? (select all that apply)

- 35 I identify as a woman
- 36 I identify as a man
- 37 I identify as non-binary
- 38 I prefer to self-describe: _____
- 39 I prefer to not answer this question



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43 Q3.3 Which of the following condensed categories best describe your **race or how you are racialized**? (select all

44 that apply)

- 45 White/Caucasian
- 46 Black/African American (e.g., African American)
- 47 Hispanic/Latinx (e.g., Latin American, Spanish, Portugese, etc.)
- 48 South Asian (e.g., Indian, Pakistani, Bangladeshi, Sri Lankan, etc.)
- 49 Southeast Asian (e.g., Vietnamese, Cambodian, Laotian, Thai, Filipino, etc.)
- 50 West Asian (e.g., Middle Eastern, etc.)
- 51 East Asian (e.g., Chinese, Japanese, Korean, etc.)
- 52 I prefer to self describe: _____
- 53 I prefer to not answer this question



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56 *Display This Question:*

57 *If Q2.2 = Canada*

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59 Q3.4 Do you consider yourself an Aboriginal or Indigenous person, that is, First Nations, Metis, or Inuit? (select

60 one)

61 ▼ Yes (1) ... I prefer not to answer this question



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64 Q3.5 Do you consider yourself to live with a **physical disability**? (select one)

65 ▼ No (1) ... I prefer not to answer this question



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68 Q3.6 Do you consider yourself to live with a **learning disability**? (select one)

69 ▼ No (1) ... I prefer not to answer this question



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Supplemental File: Survey Questionnaire

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Display This Question:
If Q3.5 = Yes
Or Q3.6 = Yes

Q3.7 Has the response to the COVID-19 pandemic from your medical school or residency program resulted in any concern(s) about how you may be **disadvantaged** at this time as a result of your physical or learning disability? (select one)

▼ Yes (1) ... I prefer not to answer this question

Q3.8 Do you have **children**? (select one)

▼ No (1) ... I prefer not to answer this question

Display This Question:
If Q3.8 = Yes

Q3.9 Do you feel that you have **adequate childcare** during this time? (select one)

▼ Yes, I have adequate childcare at this time... I prefer not to answer this question

Q3.10 Are you currently a **caregiver** to others (e.g., family members)? (select one)

▼ No ... I prefer not to answer this question

Display This Question:
If Q3.10 = Yes

Q3.11 Are you able to continue to **maintain** your caregiver responsibilities at this time? (select one)

▼ Yes ... I prefer not to answer this question

End of Block: Demographic Questions

Supplemental File: Survey Questionnaire

107 **Start of Block: Questions for Medical Clerks**

108 *Display This Question:*

109 *If Q2.1 = Medical Student, Clerkship or Clinical Years*

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111 Q4.1 Did your medical school formally **excuse you from clinical duties** (i.e., clerkship rotations, other clinical
112 rotations or experiences) as a result of the COVID-19 pandemic? (select one)

113 Yes

114 No

115 I prefer not to answer this question

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118 *Display This Question:*

119 *If Q2.1 = Medical Student, Pre-Clerkship or Pre-Clinical Years*

120 *Or Q2.1 = Medical Student, Clerkship or Clinical Years*

121
122 Q4.2 Are you **currently** working clinically? (select one)

123 Yes, I am currently working in my planned clinical rotations as a medical student

124 Yes, I am currently working but in other clinical ways at this time

125 No, I am not currently working clinically at this time

126 No, I am still in pre-clerkship or the pre-clinical stage of my training

127 I prefer not to answer this question

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130 *Display This Question:*

131 *If Q2.1 = Medical Student, Pre-Clerkship or Pre-Clinical Years*

132 *Or Q2.1 = Medical Student, Clerkship or Clinical Years*

133
134 Q4.3 If your medical school has excused you from clinical duties or moved your scheduled curriculum to online
135 learning modalities, did you **leave or depart from your primary residence** (i.e., where you live during the school
136 year) to go to another location during this time? (select all that apply)

137 Yes, I left my primary residence where I live during the school year to go to stay at my parent(s) or family
138 member's house

139 Yes, I left my primary residence where I live during the school year to go to stay at a friend's house

140 Yes, I left my primary residence to go somewhere else during this time (specify)
141 _____

142 No, I have not left the primary residence where I live during the school year

143 I prefer to not answer this question

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146 *Display This Question:*

147 *If Q2.1 = Medical Student, Pre-Clerkship or Pre-Clinical Years*

148 *Or Q2.1 = Medical Student, Clerkship or Clinical Years*

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Supplemental File: Survey Questionnaire

150 Q4.4 How are you **spending your time** at the moment? (select all that apply)

- 151 My learning or training has not been disrupted so I am spending my time as I typically would during the
152 medical school year
- 153 My learning is now online as coordinated by the medical school
- 154 I am engaging in self-directed learning
- 155 I am studying for licensing examinations
- 156 I am working on research or scholarly projects
- 157 I am volunteering
- 158 I am helping with contact tracing
- 159 I am taking this time to relax or rest
- 160 I am taking care of someone who is ill
- 161 I am personally unwell and need to self-isolate
- 162 I am spending this time to take care of my children/family
- 163 I am taking this time to engage in more wellness activities than I usually would
- 164 Other (please describe) _____
- 165 I prefer not to answer this question

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167 *Display This Question:*
168 *If Q4.4 = I am volunteering*
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171 Q4.5 How are you currently **volunteering**? (select all that apply)

- 172 Contact tracing
- 173 Call centres
- 174 Screening centres
- 175 Providing child care to healthcare professionals
- 176 Providing child care to others
- 177 Other (please describe) _____
- 178 I prefer not to answer this question

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Supplemental File: Survey Questionnaire

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*Display This Question:
If Q4.4 = I am volunteering*

Q4.6 How did you **get involved** in the volunteer opportunities you are currently engaged in as a result of, and/or during, the COVID-19 pandemic? Please provide a brief description about how you found out about these opportunities, or how you may have sought them out yourself.

*Display This Question:
If Q2.1 = Medical Student, Pre-Clerkship or Pre-Clinical Years
Or Q2.1 = Medical Student, Clerkship or Clinical Years*

Q4.7 Have you participated in any **online learning** during this time that was coordinated or organized by your medical school for aspects of your core curriculum (e.g., lectures or clerkship teaching sessions on Zoom)? (select one)

- Yes
- No
- I prefer not to answer this question

*Display This Question:
If Q4.7 = Yes*

Q4.8 Do you feel that the quality of your medical education will be **lower as a result of any online learning** your school is coordinating at this time? (select one)

- Yes
- No
- I prefer not to answer this question

*Display This Question:
If Q4.7 = Yes*

Supplemental File: Survey Questionnaire

219 Q4.9 Do you have any challenges **accessing** online learning modalities (e.g., Zoom, online lectures)? (select all that
220 apply)

221 Yes - I have difficulties accessing a computer

222 Yes - I have difficulties accessing the internet

223 Yes - I have difficulties learning from home

224 Yes - I have other difficulties I wish to describe
225

226 No - I do not have any difficulties accessing online learning

227 I prefer not to answer this question
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230 *Display This Question:*

231 *If Q2.1 = Medical Student, Clerkship or Clinical Years*
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Q4.10 How has the COVID-19 pandemic directly impacted your **clinical electives**? (select all that apply)

234 My visiting electives at other institutions have been cancelled or postponed at this time

235 My core electives at my own medical school have been cancelled or postponed at this time

236 My electives have not yet been influenced at this time

237 Not applicable, as all of my clinical electives have already been completed

238 Not applicable, as I am a pre-clerkship or pre-clinical level of learner

239 I prefer not to answer this question
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242 *Display This Question:*

243 *If Q4.10 = My visiting electives at other institutions have been cancelled or postponed at this time*

244 *Or Q4.10 = My core electives at my own medical school have been cancelled or postponed at this time*
245

246 Q4.11 How many **weeks of electives** have been impacted so far? Feel free to provide any additional information
247 below about how these electives have been impacted or any concerns about this area.

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249 _____
250 _____
251 _____
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255 *Display This Question:*

256 *If Q2.1 = Medical Student, Pre-Clerkship or Pre-Clinical Years*

257 *Or Q2.1 = Medical Student, Clerkship or Clinical Years*
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Supplemental File: Survey Questionnaire

259 Q4.12 How has the COVID-19 pandemic influenced your **career decision-making** (e.g., residency interests, career
260 planning)? (select all that apply)

261 It has influenced the residency program or programs I wish to apply to

262 It has increased my interest in Public Health as a specialty

263 It has increased my interest in Infectious Diseases as a specialty

264 It has increased my interest in Family Medicine as a specialty

265 It has increased my interest in other programs (specify)
266 _____

267 It has not influenced my career decision making or interests

268 I prefer not to answer this question
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271 *Display This Question:*

272 *If Q2.1 = Medical Student, Pre-Clerkship or Pre-Clinical Years*

273 *Or Q2.1 = Medical Student, Clerkship or Clinical Years*

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Supplemental File: Survey Questionnaire

275 Q4.13 Please respond to each of the following statements by selecting a response regarding your level of agreement:
 276 (select one response per row)

	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)	Not Applicable (X)
I would have preferred to help out clinically at this time , thereby continuing my clinical rotations	<input type="radio"/>					
I feel under-utilized at this time	<input type="radio"/>					
I would feel comfortable helping out clinically at this time	<input type="radio"/>					
I am concerned about the impact of COVID-19 on my chance to match to residency (<u>select Not Applicable if you have already matched</u>)	<input type="radio"/>					
The COVID-19 pandemic has negatively influenced my well-being	<input type="radio"/>					
I am concerned about the risk of exposure to COVID-19 during rotations	<input type="radio"/>					
I am concerned about the risk of exposure to COVID-19 in the community	<input type="radio"/>					
The response to COVID-19 will have minimal impact on my learning or skill development	<input type="radio"/>					
The response to COVID-19 will have minimal impact on my ability to enter residency with the knowledge and skills to provide safe, high quality care	<input type="radio"/>					
I am satisfied with how my program or institution is communicating information regarding the impact of COVID-19 on us as learners and the next steps for me as a learner (e.g., remainder of my training, career progression, etc.)	<input type="radio"/>					
I am worried about the impact of this disruption on my progression and timeline through medical training, including matching to a residency program, following a defined timeline, completing licensing exams on time, and/or starting a residency program on schedule	<input type="radio"/>					

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 279 **End of Block: Questions for Medical Clerks**
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282 **Start of Block: Questions for Residents**

283 *Display This Question:*

- 284 *If Q2.1 = 1st year resident or intern (i.e., PGY1 Resident)*
285 *Or Q2.1 = 2nd year resident (i.e., PGY2 Resident)*
286 *Or Q2.1 = 3rd year resident (i.e., PGY3 Resident)*
287 *Or Q2.1 = 4th year resident (i.e., PGY4 Resident)*
288 *Or Q2.1 = 5th year resident (i.e., PGY5 Resident)*
289 *Or Q2.1 = 6th year resident or above (i.e., PGY6 or higher Resident)*

290
291 Q5.1 What of the following best describes the **primary setting** for your residency program? (select one)

- 292 Urban (i.e., large city)
- 293 Rural (i.e., outside of a large city or in a remote location)
- 294 Other (please describe) _____
- 295 I prefer not to answer this question

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297 *Display This Question:*

- 298 *If Q2.1 = 1st year resident or intern (i.e., PGY1 Resident)*
299 *Or Q2.1 = 2nd year resident (i.e., PGY2 Resident)*
300 *Or Q2.1 = 3rd year resident (i.e., PGY3 Resident)*
301 *Or Q2.1 = 4th year resident (i.e., PGY4 Resident)*
302 *Or Q2.1 = 5th year resident (i.e., PGY5 Resident)*
303 *Or Q2.1 = 6th year resident or above (i.e., PGY6 or higher Resident)*

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306 Q5.2 Which of the following category best describes your **residency program**? (select one)

- 307 Family Medicine
- 308 Public Health
- 309 Emergency Medicine
- 310 Internal Medicine (core training)
- 311 Pediatrics (core training)
- 312 Medical Subspecialty Training (fellowship training)
- 313 Surgery
- 314 Obstetrics and Gynecology
- 315 Anesthesiology
- 316 Psychiatry
- 317 Other: _____
- 318 I prefer not to answer this question

Supplemental File: Survey Questionnaire

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Display This Question:
If Q2.1 = 1st year resident or intern (i.e., PGY1 Resident)
Or Q2.1 = 2nd year resident (i.e., PGY2 Resident)
Or Q2.1 = 3rd year resident (i.e., PGY3 Resident)
Or Q2.1 = 4th year resident (i.e., PGY4 Resident)
Or Q2.1 = 5th year resident (i.e., PGY5 Resident)
Or Q2.1 = 6th year resident or above (i.e., PGY6 or higher Resident)

Q5.3 Are you **working more than usual** during the COVID-19 pandemic? (select one)

- Yes, I am working more than usual
- No, I am working the same amount as usual
- No, I am working less than usual
- I prefer not to answer this question

Display This Question:
If Q5.2 = Family Medicine
Or Q5.2 = Psychiatry

Q5.4 You selected that your residency program is either in Family Medicine or Psychiatry. Do you think residents in these programs could potentially be utilized at this time to provide **peer-to-peer mental health support and/or counseling** to other residents or healthcare professionals at this time over videoconferencing modalities? (select all that apply)

- Yes, I think we could be useful to provide mental health supports at this time to any and all other residents at this time
- Yes, I think we could be useful to provide mental health supports at this time to residents who are working at the front lines of care, or who may be additionally stressed or burnt out as a result of the pandemic
- Yes, I think we could be useful to provide mental health supports at this time to other healthcare professionals (e.g., nursing) at this time
- No, I do not think we could be useful at this time in providing mental health supports to other residents

Display This Question:
If Q2.1 = 1st year resident or intern (i.e., PGY1 Resident)
Or Q2.1 = 2nd year resident (i.e., PGY2 Resident)
Or Q2.1 = 3rd year resident (i.e., PGY3 Resident)
Or Q2.1 = 4th year resident (i.e., PGY4 Resident)
Or Q2.1 = 5th year resident (i.e., PGY5 Resident)
Or Q2.1 = 6th year resident or above (i.e., PGY6 or higher Resident)

Supplemental File: Survey Questionnaire

361 Q5.5 Please respond to each of the following statements by selecting a response regarding your level of agreement:
 362 (select one response per row)

	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
My learning has been negatively impacted by the COVID-19 virus	<input type="radio"/>				
My career/training timeline has been negatively impacted by the COVID-19 virus	<input type="radio"/>				
I possess adequate knowledge of the COVID-19 virus to provide safe care in clinical environments	<input type="radio"/>				
As a resident, I am being adequately utilized during this time to provide patient care	<input type="radio"/>				
As a resident, I am being over-utilized at this time in providing patient care	<input type="radio"/>				
I feel comfortable providing patient care at this time	<input type="radio"/>				
As a resident, I could be better utilized in other ways at this time	<input type="radio"/>				
I feel prepared to use personal protective equipment (PPE) adequately and safely	<input type="radio"/>				
I feel prepared to be utilized on other clinical services or areas (i.e., on services that are not my specialty)	<input type="radio"/>				
I am worried about working in the hospital or the clinic at the moment	<input type="radio"/>				
The COVID-19 pandemic has negatively influenced my well-being	<input type="radio"/>				
I am satisfied with how my program or institution is communicating information regarding the impact of COVID-19 on us as learners and the next steps	<input type="radio"/>				

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Display This Question:
 If Q2.1 = 1st year resident or intern (i.e., PGY1 Resident)
 Or Q2.1 = 2nd year resident (i.e., PGY2 Resident)
 Or Q2.1 = 3rd year resident (i.e., PGY3 Resident)
 Or Q2.1 = 4th year resident (i.e., PGY4 Resident)
 Or Q2.1 = 5th year resident (i.e., PGY5 Resident)
 Or Q2.1 = 6th year resident or above (i.e., PGY6 or higher Resident)

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Q5.6 How could you, as a resident, potentially be **better utilized** at this time?

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End of Block: Questions for Residents

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Supplemental File: Survey Questionnaire

382 **Start of Block: Common Questions**

383 Q6.1 Please select the response that best reflects how you feel at this time **regarding the response of organizations**
 384 to the COVID-19 pandemic (select one response per row)

	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
I am satisfied with how the local/municipal government (i.e., the city where I live) has responded to the COVID-19 pandemic	<input type="radio"/>				
I am satisfied with how the provincial government (i.e., the province, state, or region where I live) has responded to the COVID-19 pandemic	<input type="radio"/>				
I am satisfied with how the federal government (i.e., country where I live) has responded to the COVID-19 pandemic	<input type="radio"/>				
I am satisfied with how the professional organizations my clinical specialty is affiliated with have responded to the COVID-19 pandemic	<input type="radio"/>				
I am satisfied with how the professional organizations for medical learners have responded to the COVID-19 pandemic (e.g., resident unions or medical student organizations).	<input type="radio"/>				

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 388 **End of Block:**

390 **Start of Block: Impact of COVID-19 on Wellness for Learners**

391 Q7.1 The following questions are from a short-form version of the **State/Trait Anxiety Inventory for Adults**
 392 (Tluczek, 2009). Please select the response that best reflects how you feel at this time for each row.

	Not at all (1)	Somewhat (2)	Moderately (3)	Very much (4)
I am comfortable	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am anguished	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel at ease	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel nervous	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel concerned	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Right now I feel good	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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Supplemental File: Survey Questionnaire

398 Q7.2 The COVID-19 pandemic has **negatively influenced** the following aspects of my **well-being**: (select one per
399 row)

	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
Physical wellness (e.g., physical activity, nutrition, your own disease management)	<input type="radio"/>				
Mental wellness (e.g., mood, anxiety, stress management, emotional well-being)	<input type="radio"/>				
Social wellness (e.g., sense of inclusion, equity)	<input type="radio"/>				
Intellectual wellness (e.g., ability to learn or fulfill educational goals)	<input type="radio"/>				
Occupational wellness (e.g., safety in learning and working environments)	<input type="radio"/>				

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Display This Question:
 If Q3.3 = South Asian (e.g., Indian, Pakistani, Bangladeshi, Sri Lankan, etc.)
 Or Q3.3 = Southeast Asian (e.g., Vietnamese, Cambodian, Laotian, Thai, Filipino, etc.)
 Or Q3.3 = West Asian (e.g., Middle Eastern, etc.)
 Or Q3.3 = East Asian (e.g., Chinese, Japanese, Korean, etc.)

409 Q7.3 At the beginning of this survey, you indicated that you are racialized as Asian. Have you noticed or
410 experienced an **increase in racist comments or behaviors** towards you or other Asian individuals in the clinical
411 setting since the emergence of COVID-19? (select one)

- 412 Yes
- 413 No
- 414 I prefer not to answer this question

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Supplemental File: Survey Questionnaire

418 Q7.4 Which of the following are **concerns or stressors** for you at this time? (select all that apply)

- 419 My personal health and well-being
- 420 The health and well-being of my family members
- 421 The health and well-being of the public
- 422 My personal financial situation
- 423 The financial situation of others
- 424 The impact of this pandemic on my learning
- 425 Other (specify) _____
- 426 I prefer not to answer this question

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430 Q7.5 Would you consider yourself **more anxious during this time** than you typically are during the medical school

431 or residency year? (select one)

- 432 Yes
- 433 No
- 434 I prefer not to answer this question

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438 Q7.6 Are you practicing **social or physical distancing** (e.g., staying home as much as possible to minimize the

439 spread of COVID-19) at this time? (select one)

- 440 Almost always
- 441 As much as I can
- 442 Not at all
- 443 I prefer not to answer this question

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447 Q7.7 Have you had to be in **quarantine or self-isolation** due to testing positive for COVID-19, potential exposure

448 to COVID-19, or having symptoms associated with COVID-19 at this time? (select one)

- 449 Yes
- 450 No
- 451 I prefer not to answer this question

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Q7.8 Are you being asked by family and friends to **provide medical expertise or information** regarding the COVID-19 pandemic? (select all that apply)

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Yes - Family Members

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Yes - Friends

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Yes - Others

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No

461

I prefer not to answer this question

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Q7.9 Are you using **social media** to communicate information to others about the COVID-19 pandemic? (select all that apply)

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Yes - Twitter

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Yes - Instagram

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Yes - Facebook

470

Yes - Other _____

471

No

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I prefer not to answer this question

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End of Block: Impact of COVID-19 on Wellness for Learners

Supplemental File: Survey Questionnaire

477 **Start of Block: Open Ended Questions and Feedback**

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479 Q8.1 What could medical schools or residency programs do in the future **to better inform you**, as learners, about
480 the impact of similar events on your training?

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489 Q8.2 How can medical schools or residency programs **improve your educational experience** during this time or
490 any similar temporary disruptions to your training?

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499 Q8.3 Which strategies or innovations is your program or school using at the moment that could be beneficial for
500 others to consider implementing? (e.g., setting up Zoom meetings for residents to check in with program directors,
501 involving medical students in online screening or volunteer opportunities, etc.)

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510 Q8.4 Please provide any additional thoughts, comments, or feedback during this time.

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Supplemental File B: Supplemental Analysis

Figure B.1 Comparison of Medical Student Scale Items by Geographic Region

Medical Student Specific Scale

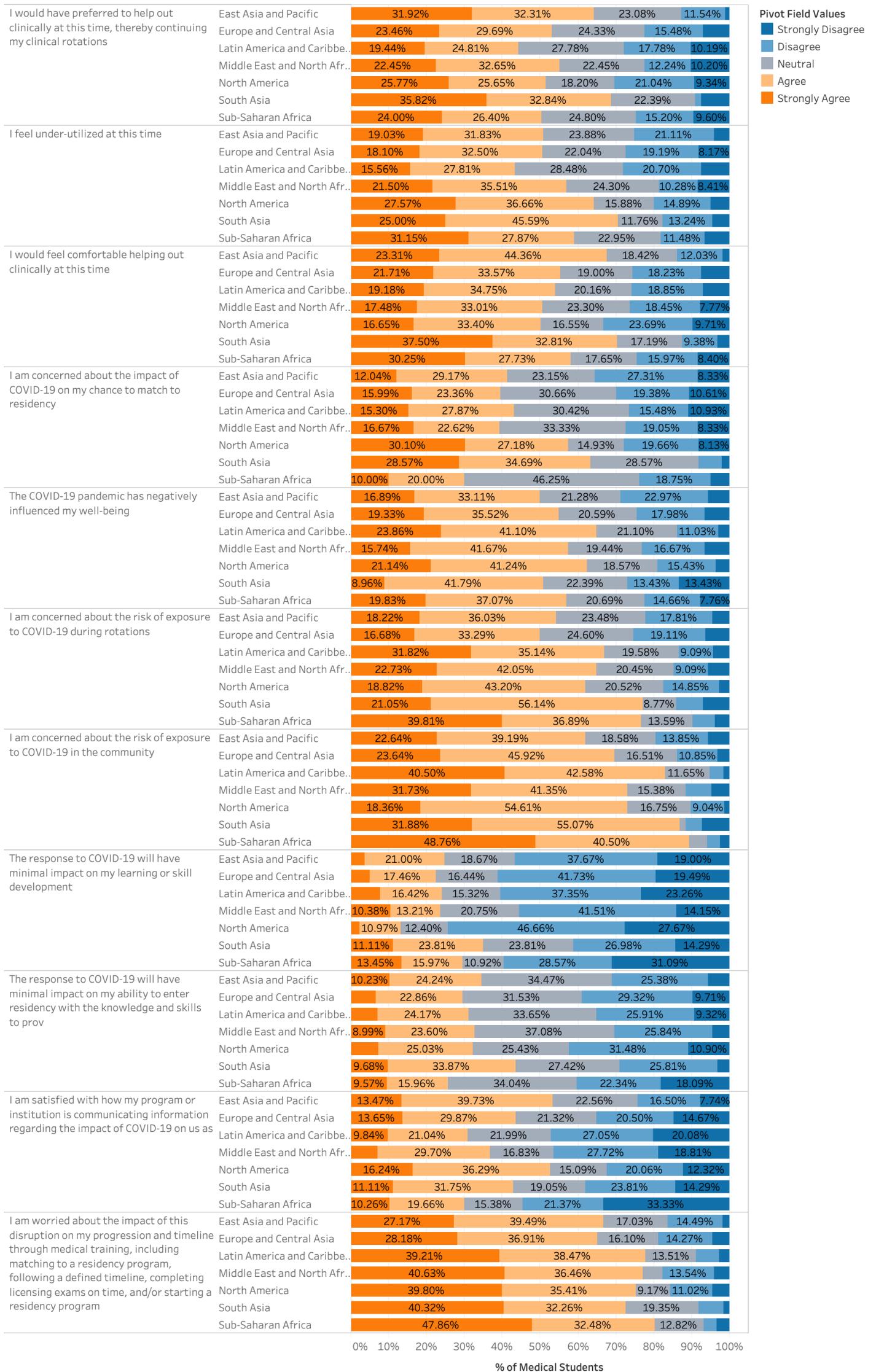
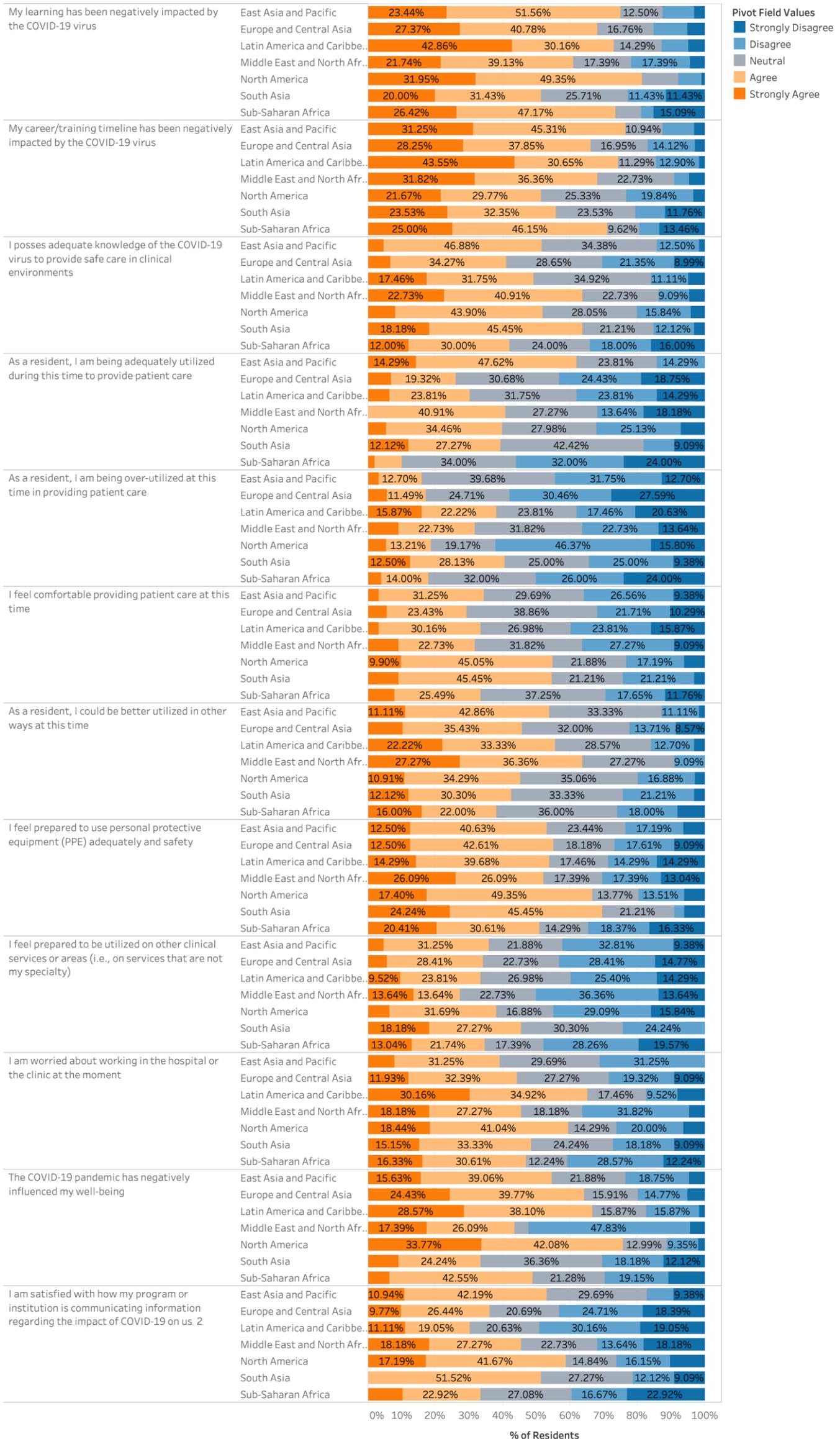


Figure B.2 Comparison of Resident Scale Items by Geographic Region

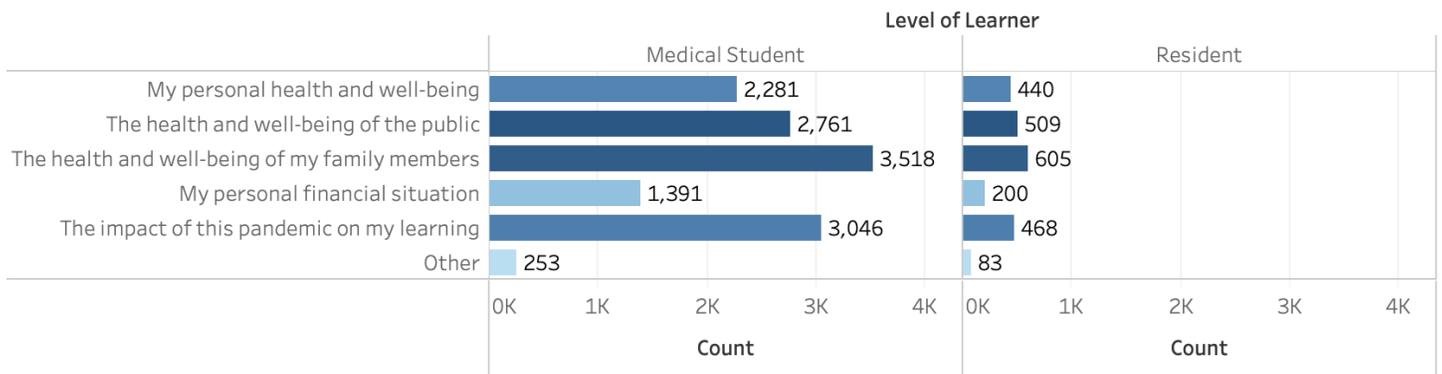
Resident Scale



0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
% of Residents

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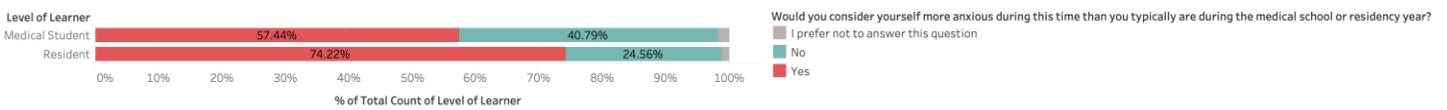
Figure B.3 Frequency of Learner Concerns by Level of Training



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Figure B.4 Comparison of Learner Perceptions of Anxiety by Level of Training

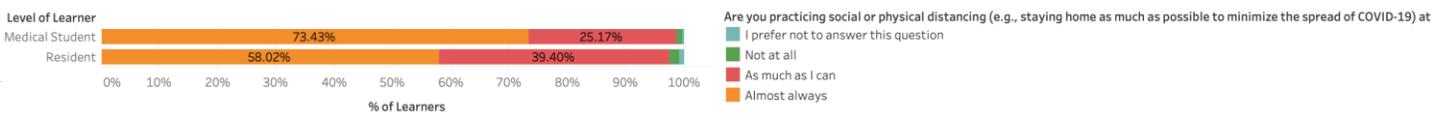
Would you consider yourself more anxious during this time than you typically are during the medical school or residency year?



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Figure B.5 Comparison of Social and Physical Distancing by Level of Training

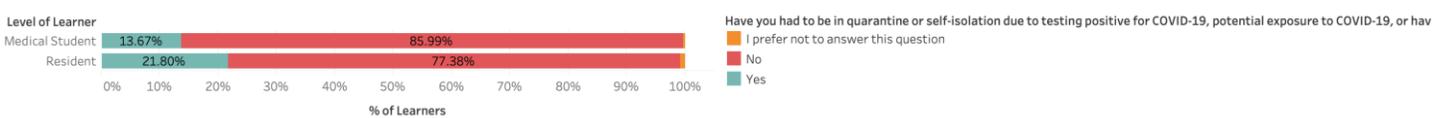
Are you practicing social or physical distancing (e.g., staying home as much as possible to minimize the spread of COVID-19) at this time?



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Figure B.6 Comparison of Quarantine or Self-Isolation by Level of Training

Have you had to be in quarantine or self-isolation due to testing positive for COVID-19, potential exposure to COVID-19, or having symptoms associated with COVID-19 at this time?



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1 Supplemental File C: Inferential Statistical Analyses

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	Satisfaction with Organizational Responses (/25)			State-Trait Anxiety Inventory (/24)			Impact of COVID-19 on Wellness		
	Mean (SD)	95% CI	p-value	Mean (SD)	95% CI	p-value	Mean (SD)	95% CI	p-value
<i>Level of Training^a</i>									
Medical Student	16.95 (4.32)	16.82-17.08	.000	14.36 (4.12)	14.23-14.48	.000	17.31 (4.07)	17.19-17.43	.000
Resident	15.67 (4.32)	15.36-15.98		15.13 (4.06)	14.83-15.42		18.52 (3.86)	18.24-18.80	
<i>Geographic Regions^b</i>									
East Asia and Pacific	18.46 (4.28)	18.01-18.91	.000	13.33 (3.77)	12.93-13.73	.000	16.77 (4.22)	16.33-17.22	.000
Europe and Central Asia	17.34 (4.25)	17.16-17.52		14.33 (4.18)	14.15-14.51		17.14 (4.09)	16.96-17.31	
Latin American and Caribbean	14.78 (4.19)	14.48-15.07		15.22 (4.12)	14.93-15.51		18.15 (4.10)	17.86-18.44	
Middle East and North Africa	16.04 (5.10)	15.13-16.96		14.36 (3.81)	13.66-15.05		17.14 (3.97)	16.42-17.86	
North America	17.14 (3.78)	16.94-17.34		13.45 (4.01)	14.24-14.66		17.92 (3.78)	17.72-18.11	
South Asia	15.39 (5.19)	14.37-16.41		15.01 (4.51)	14.09-15.93		17.45 (4.62)	16.54-18.37	
Sub-Saharan Africa	12.93 (4.28)	12.20-13.66		15.12 (4.23)	14.44-15.80		16.94 (4.42)	16.24-17.65	

α = Cronbach's alpha (reliability statistic); upon exploratory factor analysis, all items in each scale loaded to one factor, suggesting each scale is unidimensional (construct validity)

^a = Independent samples t-test, equal variances not assumed based on Levene's test for equality of variances; statistical significance if $p < .05$

^b = Analysis of Variance with Bonferroni correction to adjust for post-hoc corrections statistical significance if $p < 0.007$;

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1 Supplemental File D: Summary of Qualitative Themes

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Code	Summary of Qualitative Data
Career Decision Making	Students noted additional increased interests in: EM, critical care, IM, anesthesia, and psychiatry; graduate training in epidemiology and public health. Some noted a decreased interest to pursue a clinical career, and many expressed concerns about the impact of the pandemic on the healthcare system and job prospects in their country, stating they would broaden the countries they apply to for residency. The limited clinical exposure resulting from their removal from the clinical environment limited their opportunities to explore various specialties, decreasing their career interests.
Communication	Communication (Parent Node): Clear and effective communication from institutions was essential for learners. Poor or absent communication left learners uncertain of what was happening, contributing to their stress.
A) Channels or Mode	Effective communication provided clarity and reassurance about the pandemic's impacts and the institutional response.
B) Content	Channels or Mode: Learners preferred an integrated communications strategy which centralized and streamlined delivery to reduce information overload. Email and a regularly updated webpage were the most favoured communications channels. Social media was seen as a useful supplement in some cases, but not as a replacement for established channels.
C) Frequency	Content: Learners wished to be informed about impacts on their programs, details of the pandemic response, their role (including how to help), and resources they could access. Effective communications about these topics were clear, specific, decisive, and reassuring.
D) Learner Input	Frequency: Learners preferred regular communication from their institutions, which kept them up to date and provided a social tether to their school community. Irregular (sporadic) communication created an information vacuum that was filled by speculation, rumours, and misinformation. Overly frequent communication created information overload and led some to ignore institutional communications.
E) Transparency	Learner Input: Learners desired to have input into their institutions' pandemic response. This helped ensure their circumstances were accurately understood and enabled them to raise concerns overlooked by decision makers. Input mechanisms included surveys, virtual town hall meetings, and learner representation on decision making bodies. Transparency: Learners expressed a strong desire for transparency. They wished to have information shared with them about what their institution was doing, and thinking of doing, in response to the pandemic. These included things such as policies under consideration, details of the decision-making process, and contingency plans.
Education and Training	Education and Training (Parent Node): Normal education and training processes were severely disrupted by the pandemic. Learners identified a need for institutions to adapt and innovate in order to mitigate these impacts and continue education.
A) Clinical Learning or Activities	Clinical Learning or Activities: Institutions struggled to mitigate the substantial loss of clinical learning opportunities. All learners emphasized that practical, hands-on learning cannot be substituted. They worried about long term impacts on their clinical proficiency and competence.
B) Educational Content	Educational Content: Learners suggested their education shift focus to topics of immediate practical relevance: public health, critical care, infectious disease, and management of covid-19. They felt these adjustments to be prudent should they be called upon to support the pandemic response.
C) Electives	Electives: Most learners lost multiple months of electives, and often core rotations as well. While they recognized the practical need for these cancellations, they were concerned their professional competence and confidence would suffer if lost electives could not be made up in the future.
D) Exams and Assessment	Exams and Assessment: Institutions attempted to cope with the impact on exams and assessments in various ways (e.g., cancellation, postponement, alteration). How these responses were executed was essential to whether learners were helped or hindered by them. Institutions were judged to have done well when they acted decisively, communicated clearly, consulted learners, and tested tools such as online exams before implementing them.
E) International Learners	International Learners: The situations of international learners presented a number of significant vulnerabilities unique to their group. These learners and their circumstances were frequently overlooked or deliberately ignored by decision makers. Institutions must plan for crises in advance and seek learner input to prevent international learners from continuing to fall through the cracks of pandemic responses.
F) Online Learning	Online Learning: Learners requested the use of online platforms to maintain some continuity of education and training. Online learning differs in fundamental ways from in-person learning, with unique social and technological barriers; successful adoption resulted from careful planning and consideration of content, format, and delivery. When done well, online learning maintained educational momentum and provided learners with motivation, a routine, and sense of purpose.
G) Self-Directed Learning	Self-Directed Learning: Self-directed learning was frequently used to accompany or substitute for an online learning curriculum. When they included appropriate support and guidance, self-directed learning programs furthered education and provided learners with motivation, accountability, and a sense of progress. Programs with too little guidance left learners aimless, and those with too much content overwhelmed them.
Future Concerns or Long-Term Implications	Worries about completing next steps in their training or career trajectory (i.e., locum, certifying exams, electives, residency matching, job availability, getting paid, graduation, completing appropriate activities to bolster residency applications, cancellation of hands-on teaching sessions).
Patient Care	Learners were concerned about lack of PPE and potentially putting patients at risk. Concerns were also articulated about how no matter the response from their program/school, the disruptions to their training would negatively impact patient care.
Responses to the Pandemic	Responses to the Pandemic: Programs/schools applauded for doing the best they could in these circumstances, but a clear theme was the need for proactive planning for the future. Medical schools responded to the pandemic in various ways but it appeared that a lot of the responses to the pandemic, and the subsequent impact on learners, was influenced by how the country was responding (or not responding) to the pandemic.
A) Strategies or Innovations	Strategies/Innovations: Numerous strategies and innovations were described in response to the pandemic, such as: virtual teaching strategies (via Zoom, Microsoft Teams, Google Hangouts, WebEx), virtual sessions between learners and the program via virtual office hours, check ins, and town halls; clinical strategies (e.g., patient handover via teleconference, alternating call schedules to minimize exposure). However, a substantial number of learners commented that their program or school had done nothing in response to the pandemic – it was business as usual or they were being told to just stay at home and figure out their own learning.
Silver Linings	Many trainees find that there are silver linings that have been uncovered by the pandemic, such as: opportunities to be involved in new clinical spaces (i.e., volunteering with health link/contact tracing/testing centres, redeployment, telemedicine), opportunities for innovation in scheduling (i.e., studying, clinical rotations, free time, research), opportunities for supporting others non-clinically (i.e., mental health support for co-residents, daily calls to COVID positive patients, creating medical education modules), opportunities to train for the pandemic rapidly and support heavier hit rotations (i.e., Medical and critical care units), opportunities to contribute directly to creating diagnostic tests and vaccines for COVID-19.
Spending or Utilizing Time	Since being quarantined, medical learners are spending their time: working, volunteering, engaging in academic activities, relaxing, catching up on personal responsibilities, or struggling financially and/or mentally.

<p>A) Feeling under-utilized</p> <p>B) Opportunity – offered to them</p> <p>C) Opportunity – personal</p> <p>D) Personal activities</p> <p>E) Volunteering – Medical</p> <p>F) Volunteering – Non-medical</p>	<p>Feeling under-utilized: learners expressing their desire to be useful clinically or through public health efforts. Many find being sidelined an affront to their training thus far, others feel they are missing valuable learning experience, and some just want to improve the wellbeing of the public. Controversy over whether learner education or public health should be prioritized by their university.</p> <p>Opportunity – offered to them: Most medical students had opportunities offered to them by their medical student associations, schools, hospitals, or through personal and professional connections. This information was often relayed through social media or email.</p> <p>Opportunity – personal: A few volunteers either searched/ asked for opportunities or created their own</p> <p>Personal activities: The pandemic has offered medical students and residents a surplus of free time. Some have used this time to engage in self-care, self-betterment, and helping family. Others have found this challenging as they are struggling with either financial or mental health troubles.</p> <p>Volunteering – Medical: A minority of those volunteering in the medical field are providing hands-on patient care, the rest are helping with: PPE drives, working in public health, providing care via telehealth, hospital/ clinical assistants, helping with research, education (public and other HCW).</p> <p>Volunteering – Non-medical: Most of the non-medical volunteering still strives to help with consequences of the pandemic: running errands and making food for essential workers and those that need help, coordinating volunteers for various services, helping community organizations, visiting elderly/ getting them in touch with family, working with medical student organizations/ support groups, tutoring, IT services, fundraising, and providing public education.</p>
<p>Utilizing Residents</p>	<p>Residents regularly felt they were under-utilized. If placed in a clinical context outside of their field, many saw it as a conflict with their educational goals, with little yield for patient care. Residents stated a preference for supporting their departments over redeployment. The pandemic has exacerbated tensions in the residents dual role; as a learner and as an employee of the health system. This is evidenced in statements around studying, compensation and learning.</p>
<p>Wellness</p>	<p>Mental Health: Learners reported poor mental health because of the stressors brought about by COVID-19 in their own lives such as their learning and working conditions but were also distressed by the impact COVID-19 has had on others including their family members, friends, colleagues, patients, the broader community, their country’s political climate and economy.</p> <p>Physical wellness: They reported that proper access to personal and protective equipment was most important to protect themselves, each other and the broader community.</p> <p>Social wellness: Learners also understood the importance of self-isolation but recognized the impact this had on their wellness and learning.</p> <p>Spiritual: COVID-19 also allowed a time for reflection and spirituality to signify what really matters to learners and the broader community in which they belonged.</p> <p>Strategies: The need for support and advocacy for their own and each other’s wellness. Access to counselling, peer support systems and while practicing self-compassion as well as having compassion for others was emphasized.</p>