

O'Connor AB, Catalanotti JS, Desai SV, et al. Internal medicine residency program director support and burnout during the COVID-19 pandemic: results of a national survey. *J Grad Med Educ.* 2022;14(2):218-223. DOI:<http://dx.doi.org/10.4300/JGME-D-21-00804.1>

## 2020 APDIM Annual Fall Survey of Residency Program Directors: Informed Consent Page and COVID-19 Thematic Question Sections

### Q1 APDIM Annual Survey of Internal Medicine Residency Program Directors Fall 2020

Q2 For over 15 years, the APDIM Survey and Scholarship Committee has collected representative data on graduate medical education (GME) in internal medicine (IM). APDIM Surveys provide residency program directors (PDs) with 1. critical trend data for planning and negotiation and 2. a voice to regulatory bodies such as the Accreditation Council for Graduate Medical Education (ACGME). This 2020 survey will identify immediate effects of the SARS-CoV-2 (COVID-19) pandemic on issues essential to GME training. Analyses of APDIM Survey data are presented at academic medicine professional conferences, through virtual forums, as scholarly works, and at *IM.org*. **Immediately after submitting your responses, you will receive them by email.**

This study (#20-AAIM-113) is exempt by Pearl IRB (U.S. DHHS OHRP #IRB00007772) under FDA 21 CFR 56.104 and 45CFR46.104(b). You are invited to participate as a residency PD whose program was ACGME-accredited prior to the start of the **previous** Academic Year (July 1, 2019) and holds APDIM membership as of today.

**Participation is voluntary;** refusal to participate will not affect your or your program's APDIM membership. The survey software will alert you if you leave questions empty but you may skip any that you cannot or do not wish to answer.

**Your data will remain confidential.** No results containing identifiers of you or your program will be published in scholarly works or summary results files. Before survey section authors access the survey dataset, all personal and program identifiers will be removed by Alliance for Academic Internal Medicine (AAIM) Surveys staff, who hold valid human subjects research protections certificates and manage data collection.

**If you encounter technical problems or no longer are the director of your institution's IM residency program,** please contact AAIM Surveys staff at [surveys@im.org](mailto:surveys@im.org) or **703-341-4540**. Questions about survey content may be directed to the APDIM Survey Committee Chair via [surveys@im.org](mailto:surveys@im.org) as well. If you feel that your rights as a participant have not been upheld, please contact Pearl IRB at [info@pearlirb.com](mailto:info@pearlirb.com) or 317-602-5917.

Please expect to allocate about **10 minutes to Section I** and **25 minutes to the remaining sections (possibly less time, depending on your responses)**. **If necessary, you may exit and return later without losing your data.** Please use the unique survey link in your email invitation; you will be returned to where you left off. **DO NOT USE** your browser's "**Back**" or "**Forward**" buttons to navigate the survey. **Instead, you must use the survey "<BACK**" and "**NEXT>**" buttons at the bottom of each page.

#### \*\*\*\*\*ESSENTIAL FOR SURVEY NAVIGATION\*\*\*\*\*

1. This survey is compatible with most tablet devices but if you encounter technical problems please check that your device's operating system is updated. **Smartphone use is discouraged** due to programming that might cause unexpected errors or navigation problems. Your data will be collected using Secure Socket Layer encryption.

2. **Timeframe:** Unless otherwise specified, this survey applies to the most recently completed academic year (AY). Consider anybody enrolled or participating in your residency training program on **December 31, 2019** as part of that AY.

3. **Cohort:** Questions apply to IM residents in a three-year IM training program. Unless otherwise specified, **DO NOT INCLUDE DATA FOR THE FOLLOWING:** 1. trainees enrolled in a transitional year program or preliminary program; 2. subspecialty fellows or trainees from programs not included in your ACGME program number.

4. Ready access to your program characteristics will help with completing Section I. **YOUR PROGRAM COORDINATOR(S) / ASSOCIATE PROGRAM DIRECTOR(S) MAY COMPLETE ALL OR PART OF SECTION I.** Share your unique survey URL with **caution** and please **check the information** entered by others before

O'Connor AB, Catalanotti JS, Desai SV, et al. Internal medicine residency program director support and burnout during the COVID-19 pandemic: results of a national survey. *J Grad Med Educ.* 2022;14(2):218-223. DOI:<http://dx.doi.org/10.4300/JGME-D-21-00804.1>

submitting your responses.

5. **Further technical assistance and support FAQs** about navigating this survey are available [here](#) (a separate browser tab/window will open).

***Thank you in advance for helping to strengthen the profession of IM residency training.***

Q3 **By clicking below, you acknowledge that your participation is voluntary.**

- Click "PROCEED" (below) to begin*

Display This Question:

If Q3 != 1

Q4 **Do you acknowledge that your participation is voluntary?**

- Yes (BEGIN the survey)**
- No (you will EXIT the survey and not be able to return)**

Skip To: End of Survey If Q4 = 2

O'Connor AB, Catalanotti JS, Desai SV, et al. Internal medicine residency program director support and burnout during the COVID-19 pandemic: results of a national survey. *J Grad Med Educ.* 2022;14(2):218-223. DOI:http://dx.doi.org/10.4300/JGME-D-21-00804.1

**Q28 SECTION II. COVID Demographics and Finance**

*Unless otherwise specified, please answer for the time period of March 1, 2020 to the date in which this survey launched (August 18).*

**Q29 For what period of time was your hospital maximally stressed as a result of COVID-19? We realize that you might not know the exact dates but include the weeks when your census was the highest.**

Select the month and day

	Month	Day
<b>BEGINNING DATE</b>	▼ March (1 ... August)	▼ 1 (1 ... 31 (31))

**Q30 Select the month and day**

	Month	Day
<b>END DATE</b>	▼ March (1 ... August)	▼ 1 (1 ... 31 (31))

**Q31 Definition of Diagnosis of COVID-19**

*We realize that there are many presentations of COVID-19 and that testing was not always available nor was 100 percent accurate. For the following questions, please consider a COVID-19 diagnosis as anyone with any of the following:*

1. A positive test
2. Symptoms consistent with COVID-19 regardless of test results
3. Symptoms consistent with COVID-19 and no testing

**Q32 If you do not know the totals for the question below or do not wish to answer it, click here to bypass it.**

Do not know / Not sure or Do not wish to respond

Display This Question:  
If Q32 != 1

O'Connor AB, Catalanotti JS, Desai SV, et al. Internal medicine residency program director support and burnout during the COVID-19 pandemic: results of a national survey. *J Grad Med Educ.* 2022;14(2):218-223. DOI:http://dx.doi.org/10.4300/JGME-D-21-00804.1

**Q33 From March 1, 2020 to August 18, 2020 (launch of this survey), how many residents in your program...**

	<i>Provide your best estimates; whole numbers only</i>
Were diagnosed with COVID-19 (based on definition above)?	
Were hospitalized with COVID-19 (based on definition above)?	
Died from COVID-19?	

**Q34 Were you diagnosed with COVID-19 based on the definition above?**

- No
- Yes
- Unsure
- Do not wish to respond

*Display This Question:*  
*If Q34 = 2*

**Q35 Were you hospitalized due to COVID-19?**

- No
- Yes
- Do not wish to respond

**Q36 How many beds does your main training hospital have? Please answer with respect to one hospital as your main training hospital. Whole numbers only. \_\_\_\_**

**Q37 Between March 1, 2020 and August 18 (launch of this survey), what was the highest number on a single day of floor (non-ICU) patients in your main training hospital with COVID-19?**

- Whole numbers only: \_\_\_\_
- Do not know / Unsure

**Q38 Between March 1, 2020 and August 18 (launch of this survey) what was the highest number on a single day of ICU patients in your main training hospital with COVID-19?**

- Whole numbers only: \_\_\_\_
- Do not know / Unsure

**Q39 At any time between March 1, 2020 and August 18 (launch of this survey), was there a plan to care for all COVID-19 patients without using trainees?**

- No
- Yes
- Do not know / Unsure

*Display This Question:*  
*If Q39 = 2*

O'Connor AB, Catalanotti JS, Desai SV, et al. Internal medicine residency program director support and burnout during the COVID-19 pandemic: results of a national survey. *J Grad Med Educ.* 2022;14(2):218-223. DOI:<http://dx.doi.org/10.4300/JGME-D-21-00804.1>

**Q40 Why was there a plan to care for all COVID-19 patients without using trainees? Check all that apply.**

- To protect trainees
- To preserve personal protective equipment
- Other (please explain): \_\_\_\_

**Q41 During the time period between March 1, 2020 and August 18 (launch of this survey), were residents assigned to care for known COVID-19 patients...**

	No	Yes	Do not know / Unsure
In the ICUs?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
On the general medical wards?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In the ambulatory settings?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Q42 What percentage of your residents was involved in caring for COVID-19 patients?**

- Whole numbers only (1 to 100): \_\_\_\_
- None: we did not have any COVID-19 patients
- None: residents were not eligible to care for COVID-19 patients

**Q43 Did you revise your residents' clinical rotation schedule because of the COVID-19 pandemic?**

- No
- Yes
- Do not know / Unsure
- Other (please explain): \_\_\_\_

**Q44 Were any accommodations made in your residents' schedules due to the following (i.e., so they would not have to care for COVID-19 patients)? If you do not have an item for "other," check "Not Applicable."**

	No	Yes	Not Applicable
Pregnancy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Immunocompromised state	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Young children at home	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Elderly parents in household	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Personal preference (did not want to care for COVID-19 patients)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (please explain):	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Q45 Did your institution restrict the following for residents?**

	No	Yes	Do not know / Unsure
Professional travel	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Personal travel	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Q46 Due to the pandemic...**

	No	Yes	Do not know / Unsure
Have there been cuts to your residency program's budget for the 2020-2021 Academic Year?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Do you anticipate there will be cuts to your residency program's budget for the 2021-2022 Academic Year?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Display This Question:

If Q46 = 1 [ 2 ]

Or Q46 = 8 [ 2 ]

**Q47 What will you do, or have you done, to reduce residency program spending? Check all that apply.**

- Reduce the number of program administrators
- Reduce salary for program administrator(s)
- Reduce salary support to APDs
- Reduce the number of APDS
- Reduce salary support to core faculty
- Decrease spending on wellness programs (including social events and food) for residents
- Decrease spending on diversity and inclusion initiatives
- Decrease spending on educational perks for residents (e.g., book allowance, board exam, board study supplies)
- Reduce support for residents to attend conferences outside your institution or away rotations
- Decrease or defer capital spending for devices (e.g. ultrasound machines, simulation models)
- Decrease the number of PGY1s you will match for the next year (2021-2022)
- Decrease spending for recruitment
- Do not know / Unsure

**Q48 Was your PD income (e.g., salary, institution's contribution to your retirement) reduced for the 2020-2021 academic year due to the COVID-19 pandemic?**

- No
- Yes
- Unsure or Do not wish to answer

Display This Question:

If Q48 = 2

**Q49 How was your PD income reduced?**

- My salary was reduced: **By what percent was it reduced? Whole number: 1 to 100:** \_\_\_\_
- My institution's contribution to my retirement was reduced: **By what percent was it reduced? Whole number: 1 to 100:** \_\_\_\_
- Other (please explain): \_\_\_\_
- Do not know / Unsure

**Q50 Due to the COVID-19 pandemic, did your institution provide or plan to provide additional pay or "hazard pay" to your residents?**

- No
- Yes
- Do not know / Unsure

**Q51 Do you believe that residents should receive "hazard pay?"**

- No (please elaborate): \_\_\_\_
- Yes (please elaborate): \_\_\_\_
- Unsure

**Q52 You have completed Section III!**

O'Connor AB, Catalanotti JS, Desai SV, et al. Internal medicine residency program director support and burnout during the COVID-19 pandemic: results of a national survey. *J Grad Med Educ.* 2022;14(2):218-223. DOI:<http://dx.doi.org/10.4300/JGME-D-21-00804.1>

**Q53 SECTION III. Resident Mental Health / Engagement**

**Q54 What about your residents' response to the pandemic were you...**

**Q55 Most proud of? \_\_\_\_**

**Q56 Least satisfied with? \_\_\_\_**

**Q57 Note: The following two questions pertain to observed behaviors.**

**Q58 During the pandemic, which of the following resident behaviors did you observe more frequently compared to the pre-COVID-19 period? Check all that apply.**

- Volunteering to provide more support for their own colleagues within the program
- Volunteering to provide support to other residency programs or hospitals
- Providing additional support to non-physician team members
- Volunteering to provide outside service such as in homeless shelters
- Giving up or delaying vacation time
- Requesting difficult assignment
- Expressing pride in their role as residents (e.g., speaking highly about each other to bolster morale)
- Using social media or email to bolster morale
- None of the above
- Do not know / Unsure

**Q59 During the pandemic, which of the following resident behaviors did you observe more frequently compared to the pre-COVID-19 period? Check all that apply.**

- Tardiness
- Failure to provide support for colleagues
- Failure to provide support for non-physician team members
- Excused absences
- Unexcused absences
- Inappropriate email or social medical use
- Failure to respond (e.g., to pagers, direct phone calls, e-mails)
- Refusal to provide face-to-face care to patients
- Demand for hazard pay or extra compensation
- Speaking poorly about colleagues
- Spreading inaccurate information about program policies or procedures
- Spreading inaccurate information about COVID-19
- None of the above
- Do not know / Unsure



O'Connor AB, Catalanotti JS, Desai SV, et al. Internal medicine residency program director support and burnout during the COVID-19 pandemic: results of a national survey. *J Grad Med Educ.* 2022;14(2):218-223. DOI:<http://dx.doi.org/10.4300/JGME-D-21-00804.1>

**Q60 What were the *main* concerns that residents expressed to you during the pandemic? Check all that apply.**

- No concerns were expressed
- Contracting COVID
- Bringing COVID home to family
- Childcare
- Family job loss
- Practicing at a level above their PGY year
- Not having a role in COVID care
- Effect on moonlighting
- Effect on salary / benefits
- Inadequate PPE
- Loss of connection with peers due to social distancing
- Being asked to perform extra clinical duties
- Lack of electives
- Excess ICU care
- Effect on fellowships or jobs
- Effect on clinical education
- Effect on ambulatory/clinic time
- Loss of vacations
- Loss of time with family
- Quarantine / isolation
- Other (please explain): \_\_\_\_\_

**Q61 Due to the pandemic, did you move any of your educational conferences to a virtual platform?**

- No
- Yes
- Do not know / Unsure

*Display This Question:*  
*If Q61 = 2*

**Q62 Do you plan to continue virtual conferences for the 2020-2021 Academic Year?**

- No
- Yes
- Don't know / Unsure

**Q63 You have completed Section III!**

**Q64 Section IV. Ambulatory and Inpatient Practice Changes Due to COVID-19**

**TELEMEDICINE**

***Telemedicine is defined as provision of remote clinical services, such as diagnosis and monitoring, via healthcare technology.***

**Q65 If you have not used or are not you using telemedicine for ambulatory continuity clinic visits during either of the periods below, check below to bypass this question.**

- We have not used telemedicine for ambulatory continuity clinics during the periods below

Display This Question:  
If Q65 != 1

**Q66 For ambulatory continuity clinic visits, what percentage of visits were telemedicine (as opposed to in-person visits)?**

	<i>Whole numbers only</i>
<i>Prior to the pandemic</i>	
<i>During period of maximal pandemic intensity</i>	

**Q67 How do you anticipate using telemedicine in residents' clinics for the entire 2020-2021 academic year?**

- All clinic visits will be telemedicine
- No clinic visits will be telemedicine
- Clinic visits will be a blend of in-person and telemedicine

Q65 != 1

- We anticipate returning solely to in-person clinic visits when safe
- Unsure

**Q68 Regarding telemedicine...**

	No	Yes	Unsure
Have clinic preceptors received training in how to supervise via telemedicine?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Are you planning additional faculty development for telemedicine precepting?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Display This Question:  
If Q67 != 2

**Q69 How will telemedicine affect resident ambulatory education with respect to the following?**

	Worsen	No effect	Improve	Do not know / Unsure
Physical exam skills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Access to patients	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Patient-physician relationships	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ability to practice ambulatory medicine after residency	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Q70 Which factors do you believe are important for the continued use of telemedicine in resident clinic experiences? Check all that apply.**

- Physical distancing requirement
- Reimbursement
- Patient ability to participate
- Patient satisfaction
- Patient access to care
- Perceived value
- Clinic closures/reorganization
- Other (please specify): \_\_\_\_\_
- Unsure

**Q71 During the period of maximum stress of the pandemic at your hospital, which of the following changes occurred? Check all that apply.**

- Eliminated 24+4 call
- Had residents perform a higher PGY year job
- Incorporated virtual rounding
- Used ambulatory or elective residents to increase your jeopardy or back-up list
- Had your residents work on teams with residents from other specialties (e.g., anesthesia, surgery)
- Had your residents supervised on team with faculty from other specialties (e.g., anesthesia, surgery)
- Temporarily suspended your clinical competency committee
- Other (please explain): \_\_\_\_\_
- None of the above

**Q72 Are you interviewing candidates virtually for residency recruitment in the 2020-2021 Academic Year?**

- No
- Yes: **all** candidates
- Yes: **some** candidates
- Do not know / Unsure

Display This Question:

If Q72 = 1

Or Q72 = 3

Or Q72 = 4

**Q73 Who(m) are you interviewing in person? Check all that apply.**

- Students from our associated medical school
- Students who live in the area
- Students in neighboring areas
- Students who live geographically close
- Students who are willing to travel
- All of the above
- None of the above
- Do not know / Unsure

**Q74 You have completed Section IV!**

**Q75 Section V. Program Director Experiences and Wellbeing**

**Q76 In what way(s) were you involved in planning the local response to the COVID-19 pandemic with respect to the following? Check all that apply.**

	Not involved	Participant in discussions / stakeholder	Leader of response / decision-maker
Institution / hospital	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Department	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Program	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Medical school	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

O'Connor AB, Catalanotti JS, Desai SV, et al. Internal medicine residency program director support and burnout during the COVID-19 pandemic: results of a national survey. *J Grad Med Educ.* 2022;14(2):218-223. DOI:http://dx.doi.org/10.4300/JGME-D-21-00804.1

**Q77 For this series of questions, please consider the *two weeks of the pandemic that caused maximal stress* for your program.**

**Q78 During your period of *maximal stress*, how supported did you feel by the following in managing your program's response?**

	Not at all supported	Somewhat supported	Highly supported	Do not know / Unsure
Hospital leadership	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
GME leadership	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Departmental leadership	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Residency leadership (APDs, chief residents, program administrators)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Residents	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Local community	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Colleagues in other cities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Q79 What new mechanism(s) did you use to maintain connectivity within the program during the pandemic? *Check all that apply.***

- No new mechanism(s)
- COVID-specific informational calls / meetings
- Video (e.g., Zoom, WebEx) educational conferences (not COVID related)
- Synchronous (but not video) educational conferences (e.g., morning report)
- Social calls/meetings (e.g., Zoom happy hours)
- Newsletters/emails (e.g., end-of-day email)
- Individual check-ins
- Other (please specify): \_\_\_\_\_

O'Connor AB, Catalanotti JS, Desai SV, et al. Internal medicine residency program director support and burnout during the COVID-19 pandemic: results of a national survey. *J Grad Med Educ.* 2022;14(2):218-223. DOI:http://dx.doi.org/10.4300/JGME-D-21-00804.1

Q80 MBI - Human Services Survey - MBI-HSS: Copyright ©1981 Christina Maslach & Susan E. Jackson. All rights reserved in all media. Published by Mind Garden, Inc., [www.mindgarden.com](http://www.mindgarden.com).

**Please answer this question without any special consideration of timeframes.**

**How often do you feel...**

	Never	A few times a year or less	Once a month	A few times a month	Once a week	A few times a week	Every day
burned out from work?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
you've become more callous toward people since you took this job?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Q81 Have you considered resigning as program director during the following periods?**

	No	Yes	Not sure / Cannot answer (e.g., in position for less than one year)
between mid-August 2019 and March 1, 2020?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
from March 2, 2020 through the present?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*Display This Question:  
If Q81 [ 2 ] (Count) >= 1*

**Q82 How likely are you to resign in the next 12 months?**

- Very unlikely
- Somewhat unlikely
- Neutral
- Somewhat likely
- Very likely

**Q83 What was the most difficult aspect of the pandemic for you as a program director? \_\_\_\_**

**Q84 What was the most positive aspect of the pandemic for you as a program director? \_\_\_\_**

**Q85 What did you learn about your own leadership ability during the pandemic? \_\_\_\_**

**Q86 Please consider sharing a story from the pandemic (optional): \_\_\_\_**

**Q87 You have completed Section V!**

**END OF SURVEY INSTRUMENT**

O'Connor AB, Catalanotti JS, Desai SV, et al. Internal medicine residency program director support and burnout during the COVID-19 pandemic: results of a national survey. *J Grad Med Educ.* 2022;14(2):218-223. DOI:<http://dx.doi.org/10.4300/JGME-D-21-00804.1>

## **Appendix A: 2020 APDIM Annual Fall Survey of Internal Medicine Residency Program Directors Fielding History and Summary Methods**

### **METHODS**

#### **Study Setting and Participants**

The Association of Program Directors in Internal Medicine (APDIM) is a founding organization of the Alliance for Academic Internal Medicine (AAIM), a professional association that represents over 10,000 internal medicine (IM) educators and administrators. For over 15 years, the APDIM Survey and Scholarship Committee has overseen the development of an annual research survey of IM residency program directors (PDs) to collect essential trend data and to study issues central to graduate medical education (GME) training. In addition to a standardized question section about residency program characteristics that generally remains static, the survey includes a limited number of thematic sections that vary annually. The Survey Committee determined, however, that the SARS-CoV-2 (COVID-19) pandemic necessitated a 2020 Annual Survey to study immediate effects of the pandemic on IM residency training. A separate section on Point of Care Ultrasound (POCUS) Training in Residency (originally intended as an off-cycle early 2020 thematic APDIM Survey) also was included in the survey and is described broadly in this methods section.

The survey was disseminated to PDs from all 429 APDIM member residency programs that were of “initial” or “continued” accreditation status (with or without a warning) by the Accreditation Council for Graduate Medical Education (ACGME) prior to July 1, 2019 (i.e., at least one year prior to the academic year to which the survey applied). At the time of the study, APDIM member programs represented 83% of ACGME-accredited residency programs prior to that date.

O'Connor AB, Catalanotti JS, Desai SV, et al. Internal medicine residency program director support and burnout during the COVID-19 pandemic: results of a national survey. *J Grad Med Educ.* 2022;14(2):218-223. DOI:<http://dx.doi.org/10.4300/JGME-D-21-00804.1>

The study criteria are intended to exclude the most recently accredited programs due to their relative newness in training residents, which if included likely would result in incomplete data, data that are not representative of the larger body of training programs, or greater survey non-response. Further, essential characteristics about those programs (see “Statistical Analysis” below) typically are not publicly available until at least one academic year has passed relative to the survey year in question.

### **Survey Instrument**

In late March 2020, the 18-member APDIM Survey Committee (which consists of physician-faculty members with extensive experience as residency program or associate program directors and other GME leadership roles) voted unanimously to conduct a 2020 Annual Survey primarily focused on immediate effects of the COVID-19 pandemic on internal medicine GME training. The committee also voted to include a survey section on POCUS training in residency. The POCUS survey section originally was intended as a short thematic 2020 “Spring Survey” of PDs (for March deployment) but was transposed to the 2020 Annual Survey to avoid response burden associated with deploying a survey at the onset of the pandemic. The elected APDIM Governing Council approved this plan in March.

In April 2020, the Survey Committee curated the COVID-19 thematic content by reviewing open discussions about effects of the pandemic via the APDIM Member Discussion Forum, an AAIM email list-serv to which over 4,000 APDIM physician medical educators contribute questions and ideas about pressing issues that affect IM GME training. The committee also solicited input from the APDIM Council and reviewed ACGME’s policies and provisions for residency program training in response to the



O'Connor AB, Catalanotti JS, Desai SV, et al. Internal medicine residency program director support and burnout during the COVID-19 pandemic: results of a national survey. *J Grad Med Educ.* 2022;14(2):218-223. DOI:<http://dx.doi.org/10.4300/JGME-D-21-00804.1>

pandemic.<sup>1</sup> Survey committee section development lead authors and co-contributors were appointed based on relevant experience.

The COVID-themed sections included the following: 1. COVID Demographics and Finance; 2. Resident Mental Health / Engagement; 3. Ambulatory and Inpatient Practice Changes Due to COVID-19; and 4. Program Director Experiences and Wellbeing. The section on POCUS training was developed by a small group of APDIM members with subject matter expertise in POCUS and submitted in August 2019 to the Survey Committee for consideration as an off-cycle APDIM Survey. The committee blind-reviewed the section proposal in October 2019, scored it on merit, and approved it for dissemination as an early-2020 “Spring Survey.” However, the onset of the pandemic resulted in the committee’s decision to cancel the POCUS survey and transfer it to the 2020 Annual Survey.

The program characteristics section, COVID-themed sections, and POCUS section consisted of 16, 44, and 23 questions (some with subparts), respectively, and included conditional (skip and display) logic. Question types included multiple-choice select-one or select-all-that-apply; five- or three-point Likert scale; rank-choice; numeric entry; write-in responses for questions with an option for “other;” and open-ended essay questions. The survey landing page served as the study’s informed consent page.

Question writing, committee pretesting of the complete instrument, and question revisions occurred from mid-April through late June 2020, during which time the two project personnel (AAIM Surveys staff) programmed the instrument in the Qualtrics Surveys platform.<sup>2</sup> From late June through mid-July, the survey was pilot-tested for content validity by the Survey Committee and by six members of AAIM’s Research Committee (consisting of experts in GME, blinded to the Survey Committee), and final

O'Connor AB, Catalanotti JS, Desai SV, et al. Internal medicine residency program director support and burnout during the COVID-19 pandemic: results of a national survey. *J Grad Med Educ.* 2022;14(2):218-223. DOI:<http://dx.doi.org/10.4300/JGME-D-21-00804.1>

revisions were made to the instrument. The study (#20-AAIM-113) was deemed exempt by Pearl IRB (U.S. DHHS OHRP #IRB00007772) under FDA 21 CFR 56.104 and 45CFR46.104(b)(2).

The survey launched on August 18, included five email reminder messages to nonrespondents, and closed on December 7, 2020. The email invitation and email reminders included opt-out links for individuals who did not wish to participate in the survey. Only AAIM Surveys staff had access to the survey platform and dataset/contacts during fielding.

### **Statistical Analysis**

Data analysis was conducted in *Stata 16.1 SE*<sup>3</sup> by AAIM Surveys staff. Before de-identifying the final responses for analysis, the study dataset was appended with data from external sources including U.S. Census Bureau geographic region.<sup>4</sup> Residency program characteristics such as number of approved positions were obtained from the ACGME *Accreditation Database System (Public)* online.<sup>5</sup> Program type and other program characteristics were obtained through a data license provided by the American Medical Association based on contents of its *Fellowship and Residency Electronic Interactive Database Access System Online*.<sup>6</sup> American Board of Internal Medicine (ABIM) rolling three-year residency pass rates were provided as a courtesy to AAIM by ABIM.<sup>7</sup>

Summary statistics included the reporting of frequencies and percentages for categorical variables and measures of central tendency (e.g., mean, median, standard deviation, interquartile range) for continuous variables. To assess the statistical representativeness of the survey responses, variables (from the third-party data sources described above) that explained the most survey population variance were identified through a probit regression model with respondent status (yes/no) as the dependent variable and residency

O'Connor AB, Catalanotti JS, Desai SV, et al. Internal medicine residency program director support and burnout during the COVID-19 pandemic: results of a national survey. *J Grad Med Educ.* 2022;14(2):218-223. DOI:<http://dx.doi.org/10.4300/JGME-D-21-00804.1>

program ACGME accreditation status as the offset variable (pseudo  $R^2=0.57$ ; log pseudolikelihood = -265.4). Those variables (and other essential characteristics) for respondents/their programs were compared to the survey-eligible population (see Appendix Table). Statistical significance was designated with an alpha level set to  $p \leq 0.05$ .

With respect to statistical representativeness of the results, we tested for goodness-of-fit or associations between categorical variables using the Adjusted Wald (Pearson) Chi-Square test of association (with one degree of freedom), to account for characteristics that explained most of the population variance and likelihood of responding to the survey. Due to unequal variances or high variability (large standard deviations), we used the nonparametric Mann–Whitney–Wilcoxon test to compare the means of continuous variables against dichotomous variables, and a nonparametric equality-of-medians test (continuity corrected Pearson Chi-Square, reported with interquartile range [IQR]) when standard deviations were too large to allow for reliable comparisons of means.

In addition to the general methods described above, data analyses for the COVID-19 thematic sections included the reporting of Sidak-adjusted p-values for comparisons of dichotomous variables to multiple-choice select-all-that-apply questions, to minimize Type-I or Type-II errors. Comparisons based on residency program type were dichotomized into “university-based” and “all other program types” (community-based, community-based, university-affiliated, military-based), given the distinctiveness of university-based programs as directly affiliated with an accredited U.S./U.S. territory-based medical school. Interquartile range (Mann-Whitney-Wilcoxon) tests were used to compare continuous variables against dichotomous variables when outliers for nonparametric data were anticipated. A nonparametric equality-of-populations rank test (Kruskal-Wallis) was used to compare nonparametric continuous

O'Connor AB, Catalanotti JS, Desai SV, et al. Internal medicine residency program director support and burnout during the COVID-19 pandemic: results of a national survey. *J Grad Med Educ.* 2022;14(2):218-223. DOI:<http://dx.doi.org/10.4300/JGME-D-21-00804.1>

variables against dichotomous variables when comparison group sizes were unusually small or unequal. Where applicable, the reporting of percentages for single constructs measured by multiple items (i.e., multiple-choice, select-all-that-apply questions) included a notation for Cronbach's alpha ( $\alpha$ ) with average interitem correlation.

Unless intended as a specific construct for measurement, equivocal responses such as "do not know," "unsure," or "not applicable" were excluded from the reporting of results but the number of respondents who reported such items were noted in data tables for their corresponding manuscripts. Due to survey conditional logic or item non-response, denominators reported in those studies will not necessarily sum to the total number of survey respondents.

## RESULTS

The overall survey response rate was 61.5% (264 of 429 survey-eligible PDs). The response rate for the section "Ambulatory and Inpatient Practice Changes" was 60.8% (261/429); response rates for "Program Director Experiences and Wellbeing" and "Point of Care Ultrasound (POCUS) Training in Residency" were 60.6% (260/429). There was no statistical association between respondents and nonrespondents based on essential characteristics that defined the complete survey population (Appendix Table). Although there was slight over-representation of university-based programs (37.9% among respondents; 31.7% for the population), that difference was not statistically significant ( $p=0.082$ ). The median number of ACGME approved resident positions (for the 2019-2020 Academic Year) for responding programs was 54 (SD: 42.7) compared to 52 (SD: 40.9) for the population ( $p=0.249$ ).

O'Connor AB, Catalanotti JS, Desai SV, et al. Internal medicine residency program director support and burnout during the COVID-19 pandemic: results of a national survey. *J Grad Med Educ.* 2022;14(2):218-223. DOI:<http://dx.doi.org/10.4300/JGME-D-21-00804.1>

## REFERENCES

1. ACGME Announces Policy to Enforce Compliance with COVID-19 Prevailing Requirements. Accreditation Council for Graduate Medical Education; May 11, 2020. Accessed May 3, 2021. <https://acgme.org/Newsroom/Newsroom-Details/ArticleID/10256/ACGME-Announces-Policy-to-Enforce-Compliance-with-COVID-19-Prevailing-Requirements>.
2. **Qualtrics software, Version XM. Copyright © 2019.**
3. **StataCorp. 2019. Stata Statistical Software: Release 16. College Station, TX: StataCorp LLC.**
4. Census Regions and Divisions of the United States. U.S. Census Bureau. Accessed December 1, 2020. [https://www2.census.gov/geo/pdfs/maps-data/maps/reference/us\\_regdiv.pdf](https://www2.census.gov/geo/pdfs/maps-data/maps/reference/us_regdiv.pdf).
5. Accreditation Database System Online (Public). Accreditation Council for Graduate Medical Education. Accessed June 1, 2020. <https://apps.acgme.org/ads/Public/Programs/Search>.
6. Fellowship and Residency Electronic Interactive Database Access System (FREIDA) Online. American Medical Association. Accessed September 2020. <https://freida.ama-assn.org/search/list?spec=42771>
7. Residency Program Pass Rates [2008-2019]. American Board of Internal Medicine (ABIM). Provided in June 2020 by courtesy from American Board of Internal Medicine. Available online at <https://www.abim.org/Media/lhgmdidp/residency-program-pass-rates.pdf>.

**Appendix Table. Essential Characteristics of Responding and Nonresponding Internal Medicine Residency Programs: 2020 Survey of U.S. Internal Medicine Residency Program Directors**

	<b>Respondents (n=264)</b>	<b>Nonrespondents (n=165)</b>	<b>Total (n=429)</b>	
	<b>No. (Column %)</b>	<b>No. (Column %)</b>	<b>No. (Column %)</b>	<b>P-value*</b>
<b>Program type (AMA-FREIDA)</b>				
<i>University-based</i>	100 (37.9)	36 (21.8)	136 (31.7)	0.082
<i>Community-based</i>	46 (17.4)	35 (21.2)	81 (18.9)	0.484
<i>Community-based, university-affiliated</i>	115 (43.6)	91 (55.2)	206 (48.0)	0.135
<i>Military-based</i>	3 (1.1)	3 (1.8)	6 (1.4)	0.441
<b>Census Region (U.S. Census Bureau)**</b>				
<i>Northeast</i>	84 (31.8)	47 (28.8)	131 (30.7)	0.616
<i>Midwest</i>	56 (21.2)	41 (25.2)	97 (22.7)	0.466
<i>West</i>	35 (13.3)	32 (19.6)	67 (15.7)	0.214
<i>South</i>	89 (33.8)	43 (26.4)	132 (30.9)	0.435
VA affiliation: Yes (ACGME)	97 (36.7)	54 (32.7)	151 (35.2)	0.496
<b>Accreditation status (ACGME)</b>				
<i>Continued or continued with warning</i>	247 (93.6)	157 (95.2)	404 (94.2)	0.582
<i>Initial or initial with warning</i>	17 (6.4)	8 (4.9)	25 (5.8)	
	<b>Mean (SD)</b>	<b>Mean (SD)</b>	<b>Mean (SD)</b>	<b>P-value***</b>
Program size: No. ACGME approved positions (Median) <sup>^</sup>	54 (42.7)	48 (37.5)	52 (40.9)	0.249
ABIM pass rate 2017-2019 (%); n=234, n=146, n=380	92.3 (6.6)	89.8 (10.0)	91.3 (8.2)	0.571
Program director tenure as of 2020 (years; ACGME)	5.6 (5.6)	6.3 (6.3)	5.9 (5.9)	0.717
Program accreditation year (ACGME)	1976.3 (23.9)	1978.4 (24.8)	1977.1 (24.3)	0.482
Average USMLE Step 1 Score (AMA-FREIDA); n=214, n=131, n=345	212.8 (11.0)	213.4 (12.8)	213.0 (11.7)	0.524
<b>Notes</b>				
AMA-FREIDA: American Medical Association Residency and Fellowship Database; ACGME: Accreditation Council for Graduate Medical Education; ABIM: American Board of Internal Medicine; VA: Veterans Affairs; USMLE: United States Medical Licensing Examination; SD: Standard Deviation.				
Variables that explained the most survey population variance and likelihood of responding to the survey: Program type, Census Region, VA affiliation, Accreditation status, Program accreditation year (quintiles), program director tenure; probit regression model (dependent variable: respondent status [yes/no]) with Accreditation status as offset variable: pseudo R <sup>2</sup> =0.57; log pseudolikelihood = -265.4; robust standard errors.				
*Bivariate test of association (Adjusted Wald [Pearson] Chi-Square with one degree of freedom) used for categorical variables.				
**Excludes programs from two U.S. territories, due to small cell sizes/data confidentiality.				
***Mann-Whitney-Wilcoxon test.				
<sup>^</sup> Equality-of-medians test (continuity corrected Pearson Chi-Square).				