

# Hazard pay for internal medicine resident physicians during the COVID-19 pandemic: A national survey of program directors

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## Abstract

**Background:** Hazard pay for resident physicians has been controversial in the COVID-19 pandemic. Program director (PD) beliefs about hazard pay and the extent of provision to internal medicine (IM) residents are unknown.

**Objective:** To evaluate hazard pay provision to residents early in the COVID-19 pandemic and pandemic and residency program characteristics associated with hazard pay.

**Design, Setting, and Participants:** A nationally representative survey was conducted of 429 US/US territory-based IM PDs from August to December 2020.

**Main Outcome and Measures:** Hazard pay provision and PD beliefs about hazard pay were tested for association with factors related to the pandemic surge and program characteristics.

**Results:** Response rate was 61.5% (264/429); 19.5% of PDs reported hazard pay provision. PD belief about hazard pay was equivocal: 33.2% agreed, 43.1% disagreed, and 23.7% were uncertain. Hazard pay occurred more commonly in the Middle-Atlantic Census Division (including New York City) and with earlier surges and greater resident participation in COVID-19 patient care. Hazard pay occurred more commonly where PDs supported hazard pay (74.5% vs. 22.1%,  $p = .018$ ). Reasons most frequently given in support of hazard pay were essential worker status, equity, and schedule disruption. Those opposed cited professional obligation and equity.

**Conclusion:** Hazard pay for IM residents early in the COVID-19 pandemic was nominal but more commonly associated with heavily impacted institutions. Although PD beliefs were mixed, positive belief was associated with provision. The unique role of residents as both essential workers and trainees might explain our varied results. Further investigation may inform future policy, especially in times of crisis.

## INTRODUCTION

Hazard pay for frontline healthcare workers has been controversial during the COVID-19 pandemic. Traditionally, hazard pay is an additional wage paid for carrying out a work task involving a specific

risk. It assumes both awareness of risk and freedom to decline the dangerous assignment.<sup>1,2</sup> The Occupational Safety and Health Act of 1970 increased mandates for safer working places and reduced the need for hazard pay; in healthcare, these mandates included personal protective equipment (PPE) and systems to manage blood and other

body fluids to reduce exposure to infections.<sup>3</sup> However, the early stages of the COVID-19 pandemic raised new questions about worker safety. The traditional physician call of duty collided with potential risk of exposure to a deadly virus, concerns of inadequate PPE, higher than usual patient volumes, longer work hours and atypical roles. Thus, discussion of hazard pay based on these workplace demands and potential risks emerged ranging from national physician societies to online resident forums.<sup>4,5</sup>

Resident physicians, who play a critical role as “essential frontline workers” in the US hospital system, occupy a unique place among physicians and are a vulnerable workforce. Although residents work alongside staff physicians caring for patients, they are also considered trainees with many requirements and protections focused on optimizing education, enforced both institutionally and nationally.<sup>6</sup> Residents are relatively underpaid for their clinical work given their long work hours and frequent shifts. Unlike other healthcare workers they depend on their employer for future licensure to practice, and leaving their job has higher consequences. During the pandemic, resident trainees were often considered more as “essential workers” than “protected learners” and were asked to take on additional shifts in unfamiliar practice settings, raising the concern of increased risk.<sup>4</sup> Notably, housestaff in a hospital system with an early surge of COVID-19 patients advocated publicly for hazard pay in acknowledgment of these factors unique to their situation in healthcare.<sup>7</sup>

There are no known data about provision of hazard pay for resident physicians during the COVID-19 pandemic. Presumably, provision of hazard pay to residents would more likely occur in situations of greater risk or more intense demands. Through a nationally representative annual survey of US internal medicine (IM) program directors (PDs), we sought to assess the extent to which hazard pay was provided to IM residents in the early stages of the COVID-19 pandemic, IM PD beliefs about hazard pay, and pandemic and residency program characteristics associated with hazard pay provision.

## METHODS

### Setting and participants

The Association of Program Directors in Internal Medicine (APDIM), a professional association representing IM residency PDs, educators, and administrators, is a founding organization of the Alliance for Academic Internal Medicine (AAIM). APDIM's Survey and Scholarship Committee oversees an annual research survey of IM PDs on a variety of central topics in graduate medical education (GME) as well as thematic sections that vary annually.<sup>8,9</sup> The 2020 survey was disseminated to the PDs of all 429 APDIM member IM program, representing 83% of IM residency programs with Accreditation Council for Graduate Medical Education (ACGME) accreditation prior to July 1, 2019 (at least 1 year prior to the academic year to which the survey applied).

### Survey development and administration

The APDIM Survey Committee recognized the need to survey IM PDs in four different thematic sections regarding the immediate effects of the COVID-19 pandemic on IM residency training. The initial survey was drafted by a subset of 18 committee members with extensive GME experience. They first reviewed discussions about the pandemic on the APDIM Discussion Forum email list-serve to which over 4000 APDIM individual members contribute questions and ideas. They then included input from the APDIM Council and reviewed ACGME policies related to the pandemic for residency training. The entire committee reviewed and revised the complete survey. The survey instrument was programmed in Qualtrics by AAIM staff and pilot tested by the entire committee as well as six members of AAIM's Research Committee, blinded to the Survey Committee.<sup>10</sup> The full survey instrument consisted of 83 questions with 44 questions assigned to the COVID themes.

The survey launched on August 18, 2020 and closed on December 7, 2020. Five email reminder messages were sent to non-respondents. The email invitation and reminders included opt-out links for individuals who did not wish to participate. Only AAIM Surveys staff had access to the survey platform, contacts, and data set during fielding. The study (#20-AAIM-113) was deemed exempt by Pearl IRB (US DHHS OHRP #IRB00007772) under FDA 21 CFR 56.104 and 45CFR46.104(b)(2).

### Main outcome and measures

The primary outcomes (constructs) in the hazard pay section of the full survey instrument included institutional provision of hazard pay to residents and PD beliefs about resident hazard pay were. PDs who expressed support for or against hazard pay were prompted to provide reasons for their belief, in free-text responses. Additional essential characteristics about the PD and the residency program as well as data about timing and intensity of the clinical surge were collected.

### Data analysis

Data were analyzed (M. K.) in Stata 16.1 SE.<sup>11</sup> Before deidentifying the final responses for analysis, the data set was appended with data from external sources, including the US Census Bureau geographic region.<sup>12</sup> Tests for statistical associations between provision of hazard pay, PD beliefs about hazard pay, and pandemic and program characteristics were conducted for respondents to the hazard pay questions. We used the Adjusted Wald (Pearson)  $\chi^2$  test to test for associations between categorical variables (accounting for characteristics explaining most of the population variance) to minimize Type-I or Type-II errors. Due to unequal variances or large standard deviations, we used the Mann-Whitney-Wilcoxon test

and a nonparametric equality-of-populations rank test (Kruskal-Wallis) or equality-of-medians test to compare means or medians of continuous variables against dichotomous variables. Statistical significance was designated using an  $\alpha$  level of .05; means are reported with standard deviations and medians are reported with interquartile ranges (IQRs).

We performed inductive content analysis of free-text responses enumerating reasons why hazard pay should or should not be paid to residents.<sup>13</sup> Two authors (J. C., K. M.) used open coding and abstraction to create thematic categories based on the free-text responses; categories were created separately by both authors and consensus was reached. These authors then coded each response independently and disagreements in scoring were discussed until consensus was reached. Responses were categorized by as many concepts as they contained or were deemed not codable if they did not describe reasons for or against hazard pay. The two reviewers demonstrated 87% and 93% initial agreement on categories, respectively; discussion achieved 100% consensus.

## RESULTS

The survey response rate was 61.5% (264 of 429 survey-eligible PDs). PD respondents and nonrespondents did not differ based on program characteristics (Table 1). In all, 19.5% (51/262) of PDs reported that their residency program provided or planned to provide hazard pay to IM residents (Table 2). Table 3 shows that programs from the Middle Atlantic Census Division (including New York City) and whose “maximal stress” period began in March were more closely associated with provision of hazard pay. Hazard pay provision was not associated with program type (dichotomized into “university-based” and “all other program types” as previously documented).<sup>8,9</sup>

PDs’ beliefs about hazard pay provision were varied; 33.2% (87/262) believed that residents should receive hazard pay, 43.1% (113/262) believed that they should not, and 23.7% (62/262) were unsure (Table 4). PDs whose institutions provided hazard pay (74.5%, 38/51) more commonly believed that residents should receive hazard pay compared to those whose institutions did not provide it (22.1%, 45/204;  $p = .018$ ). PDs who supported hazard pay represented programs with a higher median percentage of residents involved in COVID-19 care (96 [IQR 25]) compared to those who believed residents should not receive hazard pay (90 [IQR 50];  $p = .008$ ). PD gender, tenure status, subspecialty training, additional administrative roles, and program accreditation status were not statistically associated with their reported beliefs about hazard pay (data not shown).

Program budget cuts due to the pandemic were reported less commonly by PDs in programs with provision of hazard pay (32.0% [16/50] vs. 47.9% [91/190];  $p = .042$ ). PD income reduction was also reported less commonly by PDs in programs with provision of hazard pay (14.9% [7/47] vs. 30.3% [59/195];  $p = .034$ ). Among PDs who commented on resident behaviors observed during the pandemic, a higher percentage of PDs whose institutions provided hazard pay observed resident demand for hazard pay compared to those whose

institutions did not provide hazard pay (48.2% [13/27] vs. 28.9% [28/97];  $p = .037$ ). Seventy-five percent (36/48) of PDs whose institutions provided hazard pay observed residents forfeiting or delaying vacation time compared to 58.5% of PDs whose institutions did not provide hazard pay ( $p = .035$ ).

Among 87 PDs who believed that residents should receive hazard pay, 64 provided free-text explanations. The status of residents as essential workers was the most frequently reported reason (39.1% [25/64]). Sample responses in this category noted that residents were “frontline workers,” “had no choice,” and had a “risk to health.” Equity with other frontline personnel who were receiving hazard pay was the second-most frequently reported reason (31.3% [20/64]). Schedule disruption, including extra shifts having to be worked, was the third-most frequently reported reason (26.6% [17/64]). Of 113 PDs who believed residents should not receive hazard pay, 71 provided free-text responses. Among those responses, the most frequently reported reason was “duty,” with PDs stating that caring for COVID-19 patients was consistent with physicians’ “moral duty” or professional “obligation” (63.4% [45/71]). The second-most frequently reported response was PPE—that residents had “adequate protection” and, thus, were not facing sufficient hazard (23.9% [17/71]). Equity with other frontline personnel who were not receiving hazard pay was the third-most frequently reported reason not to issue hazard pay to residents (18.3% [13/71]).

## DISCUSSION

In this nationally-representative survey, we found that 19.5% of IM PDs reported that their institutions provided or planned to provide hazard pay to resident physicians during the early stages of the COVID-19 pandemic. Additionally, although PD belief in the provision of hazard pay was divided, provision of hazard pay to residents was more closely associated with institutions whose PD viewed it favorably. Both institutional provision of hazard pay and PD belief that residents deserve hazard pay were more closely associated with institutions in the Middle Atlantic Census division and with earlier maximal stress period (March 2020) and greater resident involvement in COVID-19 patient care.

The association of hazard pay provision with several factors related to the local intensity of the pandemic suggests that institutions acknowledged the excessive burden borne by residents providing care in these early stages. Locations with an early surge may have had less PPE for providers, higher volume of patients, and the need to redeploy frontline workers to different “surge” jobs, all of which would have increased the hazard risk to trainees without the ability to mitigate these risks.<sup>14,15</sup> The sudden onset of the pandemic also limited the time available to trainees to assess risk or make informed choices. Provision of hazard pay in these circumstances may be considered analogous to the automatic hazard compensation received by individuals in the military, which is not associated with choice and, unlike the traditional definition of hazard pay, cannot be declined.<sup>16,17</sup>

**TABLE 1** Characteristics of responding and nonresponding Internal Medicine Residency Programs, 2020 Survey of US Internal Medicine Residency Program Directors

	Respondents (n = 264) No. (column %)	Nonrespondents (n = 165) No. (column %)	Total (n = 429) No. (column %)	p-Value <sup>a</sup>
<b>Program type (AMA-FREIDA)</b>				
University-based	100 (37.9)	36 (21.8)	136 (31.7)	.082
Community-based	46 (17.4)	35 (21.2)	81 (18.9)	.484
Community-based, university-affiliated	115 (43.6)	91 (55.2)	206 (48.0)	.135
Military-based	3 (1.1)	3 (1.8)	6 (1.4)	.441
<b>Census Region (US Census Bureau)<sup>b</sup></b>				
Northeast	84 (31.8)	47 (28.8)	131 (30.7)	.616
Midwest	56 (21.2)	41 (25.2)	97 (22.7)	.466
West	35 (13.3)	32 (19.6)	67 (15.7)	.214
South	89 (33.8)	43 (26.4)	132 (30.9)	.435
VA affiliation: Yes (ACGME)	97 (36.7)	54 (32.7)	151 (35.2)	.496
<b>Accreditation status (ACGME)</b>				
Continued or continued with warning	247 (93.6)	157 (95.2)	404 (94.2)	.582
Initial or initial with warning	17 (6.4)	8 (4.9)	25 (5.8)	
	<b>Mean (SD)</b>	<b>Mean (SD)</b>	<b>Mean (SD)</b>	<b>p-Value<sup>c</sup></b>
Program size: No. ACGME approved positions (median) <sup>a</sup>	54 (42.7)	48 (37.5)	52 (40.9)	.249
ABIM pass rate 2017–2019 (%); n = 234, n = 146, n = 380	92.3 (6.6)	89.8 (10.0)	91.3 (8.2)	.571
Program director tenure as of 2020 (years; ACGME)	5.6 (5.6)	6.3 (6.3)	5.9 (5.9)	.717
Program accreditation year (ACGME)	1976 (23.9)	1978 (24.8)	1977 (24.3)	.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)	.524

Note: 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  $R^2 = 0.57$ ; log pseudolikelihood = -265.4; robust standard errors.

Abbreviations: ABIM, American Board of Internal Medicine; ACGME, Accreditation Council for Graduate Medical Education; AMA-FREIDA, American Medical Association Residency and Fellowship Database; SD, standard deviation; USMLE, United States Medical Licensing Examination; VA, Veterans Affairs.

<sup>a</sup>Bivariate test of association (Adjusted Wald [Pearson]  $\chi^2$  with one degree of freedom) used for categorical variables.

<sup>b</sup>Excludes programs from two US territories, due to small cell sizes/data confidentiality.

<sup>c</sup>Mann-Whitney-Wilcoxon test.

<sup>d</sup>Equality-of-medians test (continuity corrected Pearson  $\chi^2$ ).

Advocacy for hazard pay provision from PDs, given the institutional alignment between PD belief and hazard pay provision noted above, may have played a significant role in the recognition of risk and/or burden placed on IM residents. Self-advocacy by residents may also have contributed to hazard pay provision, given the close association between PDs observing this behavior and institutions providing hazard pay.<sup>7</sup> We also noted that hazard pay was more closely associated with programs whose PDs less frequently report budget or salary reductions, suggesting a more favorable financial

situation at these institutions and, thus, less resistance to the provision of hazard pay. Alternatively, an overarching institutional climate that was already favorably disposed to hazard pay for its healthcare workers may have contributed to PDs' support for hazard pay for residents.

Our findings highlight the tension inherent in the role of a resident physician in the COVID-19 pandemic as both essential care provider and trainee. As skilled and versatile frontline physicians in the hospital, residents have been essential to US hospitals' ability to manage

**TABLE 2** Institutional provision of or plan to provide hazard pay for IM residents, compared to program director belief about hazard pay

	Institution did not provide hazard pay (n = 204) No. (%)	Institution provided hazard pay (n = 51) No. (%)	Total (n = 255) No. (%) <sup>a</sup>	p-Value <sup>b</sup>
Program director belief				
Residents should receive hazard pay	45 (22.1)	38 (74.5)	83 (32.6)	.018
Should not receive hazard pay	102 (50.0)	9 (17.7)	111 (43.5)	.038
Unsure	57 (27.9)	4 (7.8)	61 (23.9)	.035

Abbreviation: IM, internal medicine.

<sup>a</sup>Due to item nonresponse and/or exclusion of equivocal responses such as “do not know” or “unsure,” denominator sums to 255. Of 264 survey respondents, six reported “unsure” to the question of whether hazard pay was provided for residents and were excluded from further analysis; two additional respondents did not answer that question; one respondent who answered the question about institutional hazard pay provision did not answer the question regarding belief about hazard pay provision.

<sup>b</sup>Adjusted Wald (Pearson)  $\chi^2$  (one degree of freedom).

admissions surges during the pandemic. However, unlike other front-line essential healthcare personnel, resident physicians have less choice to leave one health system employer if they perceive excessive risk or burden in their job. This is due to the nature of their contracts and dependence on their training program to certify eventual licensure and future practice. The traditional type of hazard pay implies an element of free choice, which is less clear for residents.<sup>3</sup> The military hazard pay given in crisis settings may be a better analogy.

Further, residents have educational requirements for their professional development.<sup>6</sup> Working additional, involuntary inpatient shifts in the pandemic, even if safe conditions are maintained, remains an additional burden detracting from residents' time and energy to pursue career development, as well as broad clinical training exposure.<sup>15</sup> Educational offerings were significantly impacted in programs affected by the pandemic.<sup>18,19</sup> Although some ACGME residency training requirements were temporarily suspended at institutions sufficiently impacted by the pandemic through invoking an ACGME Emergency Categorization, such a status did not significantly alleviate the burden on individual residents.<sup>20</sup>

PD beliefs about hazard pay provision demonstrate the tension between resident as essential worker, the moral duty and responsibilities of physicians, and the status of resident as protected learner. PDs opposing hazard pay cited the professional duty of a physician and pointed to the equity of equal treatment with other healthcare workers. However, PDs supporting hazard pay cited residents' lack of choice and disruption to rotation opportunities, highlighting the burden their additional work in the pandemic places beyond the risk of personal illness.

With available PPE and the widespread availability of vaccines, risk exposure has been attenuated for frontline workers in healthcare; additionally, hazard pay has been less commonly mentioned for essential workers as the pandemic progresses.<sup>21</sup> However, the unyielding pressure of ongoing surges of COVID-19 infections continues to demand a sufficient frontline workforce, with a greater impact on residents who have limited choice and the burden of educational and career development needs. The ongoing pandemic is causing psychological distress to residents as frontline healthcare

workers.<sup>22</sup> Moreover, resident physicians were already known before the pandemic to exhibit burnout more frequently than medical students and attendings.<sup>23,24</sup> Considering the unique burden the pandemic continues to place on residents and the precedent in crisis settings involving military personnel, an argument could be made for some ongoing component of hazard pay.

Study limitations include the timeframe to which the constructs in this survey apply given the ongoing nature of the COVID-19 pandemic. Further, the survey instrument did not collect information on adequacy of PPE, which may have factored into the beliefs about risk and burden. Additionally, practices and attitudes about hazard pay may have evolved since the early stages of the pandemic. Self-reported data may have been subject to recall bias (albeit primarily in terms of survey item nonresponse) given the stressful nature of the pandemic. Although the survey response rate was generally representative of the underlying population, PD beliefs about hazard pay may not reflect those of all PDs.

## CONCLUSION

Provision of hazard pay to IM residents in the early stages of the COVID-19 pandemic was nominal but more closely associated with institutions heavily impacted by the pandemic. PD belief about hazard pay was mixed, but those more supportive of hazard pay largely were located at institutions providing hazard pay. Further analysis of how and why hazard pay was provided as well as evolution in PD attitudes through later stages of the pandemic could both inform policy and precedent in future public health crises. Additionally, further studies could provide clarity to the inherent tension that residents experience in their role as both frontline worker and learner.

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**TABLE 3** Characteristics associated with institutional provision of or plans to provide hazard pay for IM residents

Characteristic	Institution did not provide hazard pay, No. (%)	Institution provided hazard pay, No. (%)	Total, No. (%)	p-Value <sup>a</sup>
Program geography: US Census Division	<i>n</i> = 205	<i>n</i> = 51	<i>n</i> = 256	
East North Central	32 (15.6)	8 (15.7)	40 (15.6)	.989
East South Central	18 (8.8)	0 (–)	18 (7.0)	.031
Middle Atlantic	23 (11.2)	35 (68.6)	58 (22.7)	.015
Mountain	9 (4.4)	0 (–)	9 (3.5)	.077
New England	21 (10.2)	3 (5.9)	24 (9.4)	.380
Pacific	26 (12.7)	0 (–)	26 (10.2)	.028
South Atlantic	47 (22.9)	3 (5.9)	50 (19.5)	.021
West North Central	11 (5.4)	1 (2.0)	12 (4.7)	.203
West South Central	18 (8.8)	1 (2.0)	19 (7.4)	.080
Program type				
University-based program	82 (40.0)	17 (33.3)	99 (38.7)	.079
All other program types <sup>b</sup>	123 (60.0)	34 (66.7)	157 (61.3)	
Beginning of maximal stress period	<i>n</i> = 200	<i>n</i> = 51	<i>n</i> = 251	
March 2020	108 (54.0)	41 (80.4)	149 (59.4)	.012
April 2020	38 (19.0)	7 (13.7)	45 (17.9)	.422
May–August 2020	54 (27.0)	3 (5.9)	57 (22.7)	.015
PD income	<i>n</i> = 195	<i>n</i> = 47	<i>n</i> = 242	
Not reduced	136 (69.7)	40 (85.1)	176 (72.7)	.034
Reduced	59 (30.3)	7 (14.9)	66 (27.3)	
Program budget	<i>n</i> = 190	<i>n</i> = 50	<i>n</i> = 240	
Not cut	99 (52.1)	34 (68.0)	133 (55.4)	.042
Cut	91 (47.9)	16 (32.0)	107 (44.6)	
Resident behaviors observed				
Demanded hazard pay: <i>n</i> = 97, <i>n</i> = 27, <i>n</i> = 124	28 (28.9)	13 (48.2)	41 (33.1)	.037
Giving up or delaying vacation time: <i>n</i> = 195, <i>n</i> = 48, <i>n</i> = 243	114 (58.5)	36 (75.0)	50 (61.7)	.035
Median program accreditation year (ACGME) <sup>c</sup>	1967 (36)	1973 (33)	1968 (34.5)	>.05
Mean and median percentage of residents involved in care of COVID-19 patients <sup>a</sup>	68.8 (33.7), 85 (65)	88.8 (22.8), 100 (7)	73.0 (32.7), 90 (50)	<.001

Note: Due to item nonresponse, survey conditional logic, and/or exclusion of equivocal responses such as “do not know” or “unsure,” denominators will not necessarily sum to the total number of respondents reported for each column. Of 264 survey respondents, six reported “unsure” to the question of whether hazard pay was provided for residents and were excluded from further analysis; two additional respondents did not answer that question.

Census division data obtained through US Census Bureau. Census Regions and Divisions of the United States. 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)

Abbreviation: ACGME, Accreditation Council for Graduate Medical Education.

<sup>a</sup>Adjusted Wald (Pearson)  $\chi^2$  (one degree of freedom).

<sup>b</sup>Includes community-based, community-based, university-affiliated, and military-based programs (source: AMA-FREIDA: American Medical Association Residency and Fellowship Database).

<sup>c</sup>Reports median and interquartile range; nonparametric equality-of-populations rank test (Kruskal–Wallis);  $\chi^2$  (one degree of freedom) for test in means; nonparametric equality-of-medians test for medians; *p* = .531 and *p* = .588, respectively.

<sup>d</sup>Reports mean and standard deviation, followed by median and interquartile range; nonparametric equality-of-populations rank test (Kruskal–Wallis);  $\chi^2$  (one degree of freedom) for test in means; nonparametric equality-of-medians test for medians; *p* < .001 for both tests.

**TABLE 4** Characteristics associated with program director belief about provision of hazard pay to IM residents

Characteristic	Residents should not receive hazard pay, No. (%)	Residents should receive hazard pay, No. (%)	Unsure, No. (%)	Total, No. (%)	p-Value <sup>a</sup>
Program geography: US Census Division	n = 113	n = 87	n = 62	n = 262	
East North Central	17 (15.0)	14 (16.1)	12 (19.4)	43 (16.4)	.668
East South Central	7 (6.2)	2 (2.3)	9 (14.5)	18 (6.9)	.035
Middle Atlantic	24 (21.2)	32 (36.8)	4 (6.5)	60 (22.9)	.020
Mountain	4 (3.5)	4 (4.6)	1 (1.6)	9 (3.4)	.534
New England	14 (12.4)	7 (8.1)	3 (4.8)	24 (9.2)	.452
Pacific	14 (12.4)	2 (2.3)	10 (16.1)	26 (9.9)	.053
South Atlantic	19 (16.8)	17 (19.5)	16 (25.8)	52 (19.9)	.298
West North Central	8 (7.1)	1 (1.2)	3 (4.8)	12 (4.6)	.590
West South Central	6 (5.3)	8 (9.2)	4 (6.5)	18 (6.9)	.272
Program type					
University-based	53 (46.9)	26 (29.9)	20 (32.7)	99 (37.8)	.018
All other program types <sup>b</sup>	60 (53.1)	61 (70.1)	42 (67.7)	163 (69.2)	.007
Beginning of maximal stress period	n = 111	n = 86	n = 60	n = 257	
March 2020	62 (55.9)	60 (69.8)	32 (53.3)	154 (59.9)	.043
April 2020	26 (23.4)	9 (10.5)	10 (16.7)	45 (17.5)	.017
May–August 2020	23 (20.7)	17 (19.8)	18 (30.0)	58 (22.6)	.188
PD income	n = 110	n = 78	n = 59	n = 247	
Not reduced	79 (71.8)	62 (79.5)	40 (67.8)	181 (73.3)	.058
Reduced	31 (28.2)	16 (20.5)	19 (32.2)	66 (26.7)	.371
Program budget	n = 108	n = 81	n = 56	n = 245	
Not cut	63 (58.3)	46 (56.8)	28 (50.0)	137 (55.9)	.485
Cut	45 (41.7)	35 (43.2)	28 (50.0)	108 (44.1)	.644
Resident behaviors observed					
Demanded hazard pay: n = 56, n = 44, n = 28, n = 128	22 (39.3)	15 (34.1)	6 (21.4)	43 (33.6)	.345
Giving up or delaying vacation time: n = 109, n = 84, n = 57, n = 250	71 (65.1)	57 (67.9)	28 (49.1)	156 (62.4)	.055
Median program accreditation year (ACGME) <sup>c</sup>	1962 (21)	1974 (54)	1970 (56)	1969 (39)	<.01
Mean and median percentage of residents in program involved in care of COVID-19 patients <sup>d</sup>	71.4 (32.3), 90 (50)	81.6 (26.5), 96 (25)	58.5 (38.8), 60 (85)	72.2 (33.0), 90 (50)	<.01

Note: Two respondents did not answer the question of whether residents should receive hazard pay (n = 262).

Due to item nonresponse, survey conditional logic, and/or exclusion of equivocal responses such as “do not know” or “unsure,” denominators will not necessarily sum to the total number of respondents reported for each column.

Abbreviations: ACGME, Accreditation Council for Graduate Medical Education; IM, internal medicine.

<sup>a</sup>Adjusted Wald (Pearson)  $\chi^2$  (one degree of freedom).

<sup>b</sup>Includes community-based, community-based, university-affiliated, and military-based programs (source: AMA-FREIDA: American Medical Association Residency and Fellowship Database).

<sup>c</sup>Reports median and interquartile range; nonparametric equality-of-populations rank test (Kruskal–Wallis);  $\chi^2$  (one degree of freedom) for test in means; nonparametric equality-of-medians test for medians; p = .009 and p = .005, respectively.

<sup>d</sup>Reports mean and standard deviation, followed by median and interquartile range; nonparametric equality-of-populations rank test (Kruskal–Wallis);  $\chi^2$  (two degrees of freedom) for test in means; nonparametric equality-of-medians test for medians: p = .006 and p = .008, respectively.

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## CONFLICT OF INTEREST

The authors declare that there are no conflicts of interest.

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## REFERENCES

- Robinson JC. Hazard pay in unsafe jobs: theory, evidence, and policy implications. *Milbank Q*. 1986;64:650-677. doi:10.2307/3349929
- Ruhnke G. Physician supply during the coronavirus disease 2019 (COVID-10) crisis: the role of hazard pay. *J Gen Intern Med*. 2020; 35(8):2433-2434. doi:10.1007/s11606-020-05931-x
- Hecker S. Hazard pay for COVID-19? Yes, but it's not a substitute for a living wage and enforceable worker protections. *New Solut*. 2020;30(2):95-101. doi:10.1177/1048291120933814
- AMA. Guiding principles to protect resident and fellow physicians responding to COVID-19. 2020. Accessed December 19, 2021. <https://www.ama-assn.org/delivering-care/public-health/guiding-principles-protect-resident-fellow-physicians-responding>
- Student Doctor Network online forum. Resident hazard pay? 2020. Accessed December 21, 2021. <https://forums.studentdoctor.net/threads/resident-hazard-pay.1407251/>
- Accreditation Council for Graduate Medical Education Common Program Requirements (Residency). 2020. Accessed December 19, 2021. <https://www.acgme.org/globalassets/PFAssets/ProgramRequirements/CPRResidency2021.pdf>
- Gross D. What happened when medical residents asked for hazard pay. *The New Yorker*. Accessed December 19, 2021. [https://www.newyorker.com/science/medical-dispatch/what-happened-when-medical-residents-asked-for-hazard-pay?source=search\\_google\\_dsa\\_paid&gclid=CjwKCAjw1uiEBhBzEiwAO9B\\_Hbe5T\\_tmX3uV4ajvFfLJ-Yp72U6J\\_jEbXfKmd0ufybLSjUbmHkRkxCOeUQAvD\\_BwE](https://www.newyorker.com/science/medical-dispatch/what-happened-when-medical-residents-asked-for-hazard-pay?source=search_google_dsa_paid&gclid=CjwKCAjw1uiEBhBzEiwAO9B_Hbe5T_tmX3uV4ajvFfLJ-Yp72U6J_jEbXfKmd0ufybLSjUbmHkRkxCOeUQAvD_BwE)
- Fletcher KE, O'Connor AB, Kisielewski M, Willett LL. Why do residency program directors consider resigning? A mixed-methods analysis of a National Program Director Survey. *Am J Med*. 2020; 133(2):761-767. doi:10.1016/j.amjmed.2020.02.016
- Marshall AL, Halvorsen AH, Kearns L, Reich LM, West CP, Oxentenko AS. Disparities in salary and work-life integration in internal medicine program directors are associated with gender and partner employment status. *Am J Med*. 2021;134(2):285-291.e1. doi:10.1016/j.amjmed.2020.10.004
- Qualtrics Software. Version XM. 2020.
- Stata Statistical Software. Version Release 16. StataCorp LLC; 2019.
- Census Regions and Divisions of the United States. U.S. Census Bureau. 2013. 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)
- Elo S, Kyngäs H. The qualitative content analysis process. *J Adv Nurs*. 2008;62(1):107-115. doi:10.1111/j.1365-2648.2007.04569.x
- Elo S, Kyngäs H. American frontline healthcare personnel's access to and use of personal protective equipment early in the COVID-19 pandemic. *J Occup Environ Med*. 2021;63(11):913-920. doi:10.1097/JOM.0000000000002308
- Rhee D, Pendse J, Chan H, Stern D, Sartori D. Mapping the clinical experience of a New York City residency program during the COVID-19 pandemic. *J Hosp Med*. 2021;16(6):353-356. doi:10.12788/jhm.3623
- McConnell D, Wilkinson D. Compensation and hazard pay for key workers during an epidemic: an argument from analogy. *J Med Ethics*. 2021;47:784-787. doi:10.1136/medethics-2020-106389
- US Department of Defense. Hazardous duty incentive pay. Accessed December 20, 2021. <https://militarypay.defense.gov/Pay/Special-and-Incentive-Pays/HDIP/>
- Redinger JW, Cornia PB, Albert TJ. Teaching during a pandemic. *J Grad Med Educ*. 2020;12(4):403-405. doi:10.4300/JGME-D-20-00241.1
- Tisdale R, Filsoof AR, Singhal S. Novel graduate medical education in the era of a novel virus. *J Grad Med Educ*. 2020;12(4):409-411. doi:10.4300/JGME-D-20-00225.1
- Accreditation Council for Graduate Medical Education. Sponsoring Institution Emergency Categorization. Accessed December 20, 2021. <https://www.acgme.org/covid-19/sponsoring-institution-emergency-categorization/>
- Kinder M, Stateler L, Du J. *The COVID-19 Hazard Continues, but the Hazard Pay Does Not: Why America's Essential Workers Need a Raise*. The Brookings Institute. 2020. Accessed November 29, 2021. <https://www.brookings.edu/research/the-covid-19-hazard-continues-but-the-hazard-pay-does-not-why-americas-frontline-workers-need-a-raise>
- Shechter A. Psychological distress, coping behaviors, and preferences for support among New York healthcare workers during the COVID-19 pandemic. *Gen Hosp Psychiatry*. 2020;66:1-8. doi:10.1016/j.genhosppsych.2020.06.007
- Shanafelt TD, Boone S, Tan L, et al. Burnout and satisfaction with work-life balance among US physicians relative to the general US population. *Arch Intern Med*. 2012;172(18):1377-1385. doi:10.1001/archinternmed.2012.3199
- Prentice S, Dorstyn D, Benson J, Elliott T. Burnout levels and patterns in postgraduate medical trainees: a systematic review and meta-analysis. *Acad Med*. 2020;95(9):1444-1454. doi:10.1097/ACM.0000000000003379

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