Interventional Pain Medicine 3 (2024) 100392

Contents lists available at ScienceDirect

Interventional Pain Medicine

journal homepage: www.journals.elsevier.com/interventional-pain-medicine

Physician turnover rates and job stability in interventional spine and pain practices: Results of an IPSIS survey study

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ARTICLE INFO

Keywords:
Physician turnover
Compensation
Job stability
Salary

ABSTRACT

Background: Physician turnover and job instability have profound implications for healthcare systems, private facilities, and patient outcomes. High physician turnover disrupts continuity of care, impedes establishment of patient-physician relationships, and may compromise overall healthcare quality.
Objective: This survey study explores the rate of job turnover in the field of Interventional Spine and Pain Medicine, based on a 2022 survey of physicians of the International Pain and Spine Intervention Society.
Methods: A standardized, anonymous survey was distributed by email via Research Electronic Data Capture (REDCap) software to physician members of the International Pain and Spine Interventional Society (IPSIS).
Results: Our survey results indicate that interventional spine/pain physicians with initially lower starting salaries were more likely to leave their first job. We also found that those currently in a productivity-based compensation models were more likely to have left their first job.
Conclusions: Of the interventional pain and spine physicians who had been in practice for at least three years, over 65% reported leaving their initial job after training.

1. Introduction

Physician turnover has significant impacts on healthcare systems, hospitals, and patients. High turnover rates impose significant financial burdens on healthcare organizations, as recruitment, onboarding, and training can be costly. Although physician turnover may offer an opportunity for embracing new ideas and skillsets, the balance between these positive factors with costs and training burden is unknown. Possible negative outcomes related to physician turnover include financial burden to healthcare organizations and facilities, patient safety, and quality of service aspects of medicine [1–3]. Physicians leaving practices or healthcare systems may be due to a multitude of reasons, including personal factors, work location, practice characteristics, disagreements with administration, compensation, benefits, lack of opportunity for leadership or research, strained relationships amongst staff, colleagues and/or patients, retirement, and others [4–7]. A 2012 study from Jackson & Coker, a US healthcare recruiting firm, reports that over half of physicians leave their first job within five years, and the majority of those only worked at their first job for one to two years, and those who stayed fewer than five years were more likely to indicate location as the reason for leaving [8]. The primary objectives of this study were to evaluate job stability for interventional spine/pain physicians and identify factors that predict whether a physician will leave their initial job. To the authors' knowledge, this is the first study that examines rates and predictive factors of job stability for interventional spine and pain physicians.

2. Methods

A standardized, anonymous survey was distributed via Research Electronic Data Capture (REDCap) software to North American and US Affiliate physician members of the International Pain and Spine Interventional Society (IPSIS), representing specialists within Anesthesiology, Physical Medicine and Rehabilitation (PM&R), Radiology,

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https://doi.org/10.1016/j.inpm.2024.100392
Received 11 December 2023; Received in revised form 6 February 2024; Accepted 7 February 2024
Available online 2 March 2024

Neurology, Neurosurgery, and Orthopaedic Surgery by e-mail during August to December 2022. In total, 2316 members opened the survey email and 108 surveys were completed (4.7%). The primary outcome variable was job stability (i.e., how long a physician stayed in their first job). Data were analyzed using descriptive statistics, as well as logistic regression (LR) models with the calculations of an odds ratio (OR) and its 95% confidence interval (CI). The survey questions are outlined in Fig. 1. Descriptive statistics (frequencies and percentages) were calculated for variables related to clinical practice, compensation, and demographics of physicians, as well as job stability (outcome variable). In order to identify predictors for job stability, logistic regression (LR) models were used to fit the data.

Initial salaries were also corrected for inflation, based on the number of years the respondent was in practice. As this survey design only asked about ranges of initial starting salary in $50,000 increments and time in practice in ranges of years, true and actual inflationary value was not able to be calculated. To adjust for inflation, the average range for both starting salary and years in practice were used, then an estimated present value was calculated using Consumer Price Index data and an inflation calculator from the United States Bureau of Labor Statistics [9]. If the new adjusted average starting salary at estimated present value increased into a higher initial starting salary range, this data point was then re-classified into the new salary group. For example, for those in practice for 6–10 years, we used an average inflation rate of 23% (2014–2022). Those who reported an initial starting salary of $200 k-$250 k, average $225 k, were re-classified into the $250 k-300 k ($280 k inflation adjusted). Those in practice for 6–10 years who reported 300 k-350 k, average $325 k, were adjusted to $401 k, and thus reclassified into the $400 k-$450 k group. This was calculated for every salary range and every time frame to determine inflation-adjusted starting salary rates.

First, a simple LR model (i.e., one predictor model) was run on each of the potential predictors, as variable selection process. Any variable with $p < 0.200$ was identified and entered in the final multiple LR models. In the final LR models, an odds ratio (OR) and its 95% confidence interval (CI) were computed for each coefficient. Further,

1)	What is your primary specialty?	◯ Anesthesia ◯ PM&R ◯ Neurology ◯ Other
2)	Did you complete a fellowship?	◯ Yes ◯ No
3)	Was your fellowship ACGME accredited?	◯ yes ◯ no ◯ did not complete fellowship
4)	Was your fellowship a NASS ISMM accredited fellowship?	◯ yes ◯ no ◯ did not complete fellowship
5)	Do you work full or part time?	◯ full time ◯ part time
6)	How long have you been in practice?	◯ 0-2 years ◯ 3-5 years ◯ 6-10 years ◯ 11-20 years ◯ >20 years
7)	How long have you been in your CURRENT job?	◯ 0-2 years ◯ 3-5 years ◯ 6-10 years ◯ 11-20 years ◯ >20 years
8)	Are you still working in the same practice/institution that you began your career post-fellowship?	◯ Yes ◯ No
9)	If no, how long did you stay in your first job post-training?	◯ 0-2 years ◯ 3-5 years ◯ 6-10 years ◯ 11-20 years ◯ >20 years ◯ still in same practice
10)	If no, how many other jobs/positions (at a different institution) have you had prior to your current role?	◯ 1-2 ◯ 3-4 ◯ >5 ◯ still in same practice

Fig. 1. Survey questions.

11)	If you have had other jobs prior to your current role, what was the MAIN reason for changing (please choose all that apply)?	○ "fit" ○ geography ○ family ○ compensation ○ switched type of practice (academic to private practice) ○ other
12)	How would you define your practice?	○ private practice with 3 or fewer providers ○ private practice with >3 providers ○ large health system/institution employee (e.g. Kaiser) ○ academic institution ○ government ○ other
13)	What was the starting salary of your FIRST job out of training?	○ < $100,000 ○ $100,000-$150,000 ○ $150,000-$200,000 ○ $200,000-$250,000 ○ $250,000-$300,000 ○ $300,000-$350,000 ○ $350,000-$400,000 ○ $400,000-$450,000 ○ $450,000-$500,000 ○ >$500,000
14)	What is your current yearly compensation (including bonuses)?	○ < $250,000 ○ $250,000-$300,000 ○ $300,000-$350,000 ○ $350,000-$400,000 ○ $400,000-$450,000 ○ $450,000-$500,000 ○ $500,000-$550,000 ○ $550,000-$600,000 ○ $600,000-$650,000 ○ $650,00-$700,000 ○ $>700,000
15)	What is your compensation model?	○ Salary ○ Salary with bonus ○ Productivity - Collections based ○ Productivity - RVU based
16)	Do you have another source of income besides your primary practice? (please choose all that apply)	☐ none ☐ surgical center partnership/ownership ☐ medical legal consulting ☐ industry consulting/speaking ☐ moonlighting ☐ other
17)	Do you feel like you are appropriately compensated?	○ Yes ○ No
18)	Are you aware of what your partners/peers are compensated?	○ Yes ○ No
19)	Based on your education, training, and experience, do you feel that your compensation is above, at, or below the median salary for your peer group?	○ Above ○ At ○ Below

Fig. 1. (*continued*).

predicted probabilities of the outcome variable based on a select covariate was calculated to aid in interpretations. All the analyses were conducted using Stata/MP 18.0 (StataCorp LLC, College Station, TX), with an α level of 0.05 for statistical significance.

3. Results

A total of 108 surveys were returned and analyzed in this study. Variables related to clinical practice, compensation, and demographics of the survey respondents are summarized in Table 1. The majority of respondents were PM&R physicians (72.2%; $n = 78$) and had completed

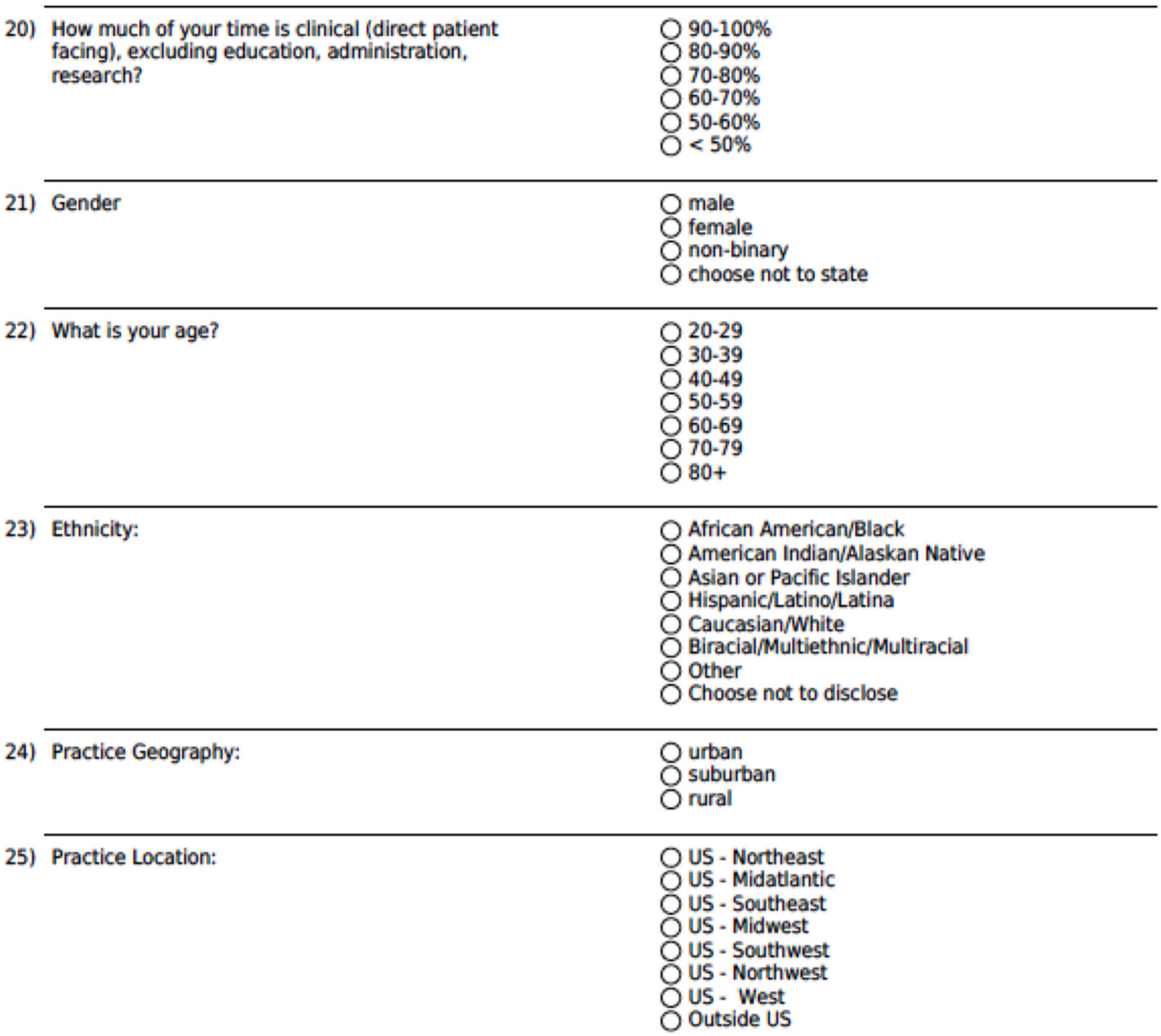

Fig. 1. (*continued*).

fellowship training (85.2%; $n = 92$). Slightly over half of the survey respondents (51.9%; $n = 56$) reported working in a private practice at the time of the survey, followed by those at an academic institution (25.0%; $n = 27$). The distribution of physicians' age was fairly even across the categories. However, sex consisted primarily of males, 78.7% ($n = 85$).

Fig. 2 shows job stability among the survey respondents. More than half of the respondents (57.4%; $n = 62$) reported that they had left their first job after training, while 41.7% ($n = 45$) had remained in their first job. Of those who left their first job, 38.7% ($n = 24$) left their first job within 2 years, and an additional 38.7% ($n = 24$) left their first job between 3 and 5 years. Given that some respondents were recent graduates, analysis was performed again after excluding 15 physicians who had been in practice for 0–2 years. Of the respondents in practice for 3 years or more ($n = 93$), 66.7% ($n = 62$) were no longer at their first job, and for those in practice for 6 years or more ($n = 76$), 72.4% ($n = 55$) were no longer at their original practice. The main reason stated for leaving a practice or position was "fit" (17.6%; $n = 19$), followed by geography and family (15.8%; $n = 17$), and switching types of practice (i.e., from academic to private practice or vice-versa; 7.4%; $n = 8$).

A series of logistical regression (LR) models on job stability revealed several potential predictors (i.e., $p < 0.200$) for each of the two outcome variables (Table 2). Model 1 evaluated the outcome variable of leaving one's first job at some point (vs. never leaving one's first job), and Model 2 evaluated the outcome variable of leaving one's first job in 0–2 years (vs. others). Then, additional LR models were built after entering the predictors chosen in the variable selection process above (Table 3). Model 1 showed that, after adjusting for experience of fellowship, duration of time in practice, age, and first job salary, the current compensation models of "salary with bonus" and "collections based" were significantly associated with over five times (OR = 5.44; 95% CI = 1.13, 26.25; $p = 0.035$) and 10 times (OR = 10.48; 95% CI = 1.91, 57.66; $p = 0.007$) higher odds of leaving one's first job at some point compared with never leaving one's first job. Predicted probabilities of leaving one's first job at some point for physicians working in "salary with bonus" and "collections based" models were 58.6% (95% CI = 45.7, 71.4) and 68.8% (95% CI = 55.3, 82.2), respectively, compared with 30.9% (95% CI = 11.1, 50.7) for those currently in a salary-only based model. Lastly, lower starting physician compensation was significantly associated with poor of job stability ($p = 0.018$). This was seen both using reported values as well as inflation-corrected values. Each additional $50,000 increment of a first job salary was associated with 32% lower odds of leaving one's first job (OR = 0.68; 95% CI = 0.49, 0.94). According to the predicted probabilities, each additional $50,000 increment of a first job salary was associated with about a 6% (95% CI = 1.4, 10.4) lower probability of leaving one's first job (Fig. 3). Meanwhile, none of the variables examined were significantly associated with leaving one's first job within 0–2 years (Model 2; $p > 0.05$ for all

Table 1
Variables related to clinical practice, compensation, and demographics of survey respondents ($N = 108$).

Potential predictor variable	Frequency	%
Specialty		
Anesthesia	25	23.2
PM&R	78	72.2
Neurology/other	5	4.6
Fellowship		
Yes	92	85.2
No	16	14.8
How long in practice		
0–2 years	15	13.9
3–5 years	17	15.7
6–10 years	11	10.2
11–20 years	31	28.7
> 20 years	34	31.5
Type of practice		
Private practice	56	51.9
Large health system/institution employee	16	14.8
Academic institution	27	25.0
Government/other	9	8.3
First job salary		
< $100,000	3	2.8
$100,000-$150,000	21	19.4
$150,000-$200,000	26	24.1
$200,000-$250,000	26	24.1
$250,000-$300,000	14	13.0
$300,000-$350,000	9	8.3
$350,000-$400,000	4	3.7
$400,000-$450,000	1	0.9
$450,000-$500,000	0	0.0
> $500,000	3	2.8
No response	*1*	*1.1*
Compensation model		
Salary	17	15.7
Salary with bonus	39	36.1
Productivity - Collections based	40	37.0
Productivity - RVU based	12	11.1
Gender		
Male	85	78.7
Female	22	20.4
Choose not to answer	*1*	*0.9*
Age		
20–39 yr	32	29.6
40–49 yr	35	32.4
50–59 yr	25	23.2
60+ yr	16	14.8
Ethnicity		
Caucasian/White	62	57.4
Asian or Pacific Islander	23	21.3
Other/choose not to disclose	22	20.4
No response	*1*	*0.9*
Geography		
Urban	56	51.9
Suburban	43	39.8
Rural	9	8.3
Location		
Northeast & Mid-Atlantic	21	19.4
Southeast	17	15.7
Midwest	15	13.9
Southwest, Northwest & West	48	44.4
Outside US	6	5.6
No response	*1*	*0.9*
Full-time/part-time		
Full-time	98	90.7
Part-time	10	9.3
Reason for job change		
Fit	19	17.6
Geography & family	17	15.7
Compensation	6	5.6
Switched type of practice (academic to private practice)/ other	17	15.7
No response	*49*	*45.4*

predictors).

4. Discussion

We report findings from the first survey study to specifically assess job stability of interventional spine/pain physicians. Over half of survey respondents (57.4%) left their first job after training. The highest turnover rate occurs within the first five years of practice (44.4%). Among respondents in practice for more than 2 years, over 65% had left their first job after training. Our survey results are similar to survey results from other medical specialties, with over 50% of physicians leaving their first job after residency within 5 years [8]. In our study, of the 22% of respondents who left their jobs within two years, no variables, including specialty, fellowship, type of practice, compensation model, gender, age, ethnicity, geography, location, and first job salary were associated with job instability. This may be due to lower numbers of surveyed individuals who left within two years (and thus a lack of power to detect significant differences), or perhaps a combination of complex decisions associated with starting a first job that were not accounted for within the variables of the survey. After the first two years, respondents who reported currently having a "salary with bonus" or "collections-based" compensation model were more likely to have left their first job compared to those who reported currently having "salary-only" compensation. Additionally, respondents with lower starting salaries had a greater likelihood of leaving their first job, even after correction for inflation.

When queried as to why they left their first job, most respondents indicated that "fit" (17.6%), "geography & family" (15.7%), and "switching type of practice" (15.7%) were the primary reasons for a job change. Interestingly, neither salary nor compensation model were the primary reasons selected for this question. This discrepancy is likely due to the structure of the survey itself. Specifically, questions primarily queried respondent's current situation and did not contrast initial job characteristics compared to current job characteristics. Thus, while we were able to evaluate if people currently in an academic practice were more likely to have left their initial job, we were unable to assess the behavior of those initially in an academic practice. Similarly, we did not have data on the geography of someone's initial job, only on their current geography of current employment. As a result, the model was unable to correlate physicians' self-reported reasons for leaving their first job with the actual characteristics of their first job, outside of considering their initial salary. Taken in context, while initial salary and current compensation models were predictive of one leaving their initial job, it is entirely plausible that the self-reported reasons for leaving such as "fit", "type of practice" and "geography and family" are also a factor to some degree in making a decision to leave a first job.

Physician turnover and job stability have profound implications for healthcare systems, facilities, and patient outcomes. High physician turnover disrupts continuity of care, which in turn can increase spending and compromise overall quality of care. Consequently, communities, particularly those in underserved areas, face limited access to consistent healthcare services, jeopardizing health equity and exacerbating disparities [10]. Physician turnover has direct costs and consequences, including financial effects, impact on patient satisfaction, and indirect effects relating to public relations and impact of other providers [11].

From a financial perspective, the impact on an organization or employer due to physician turnover can be due to recruitment costs, lack of revenue during position vacancy and onboarding, and financial losses in the early stages of establishing a practice while a physician is developing their practice and gaining efficiency [12]. Rapid turnover also leads to significant financial burdens on healthcare organizations, as recruitment, onboarding, and training can be costly. Although estimates vary, the cost of replacing a physician in a practice can be as high as $500,000 [13]. The overall financial burden from physician turnover in the US has been reported as between $979 million and $4.6 billion annually [3,14].

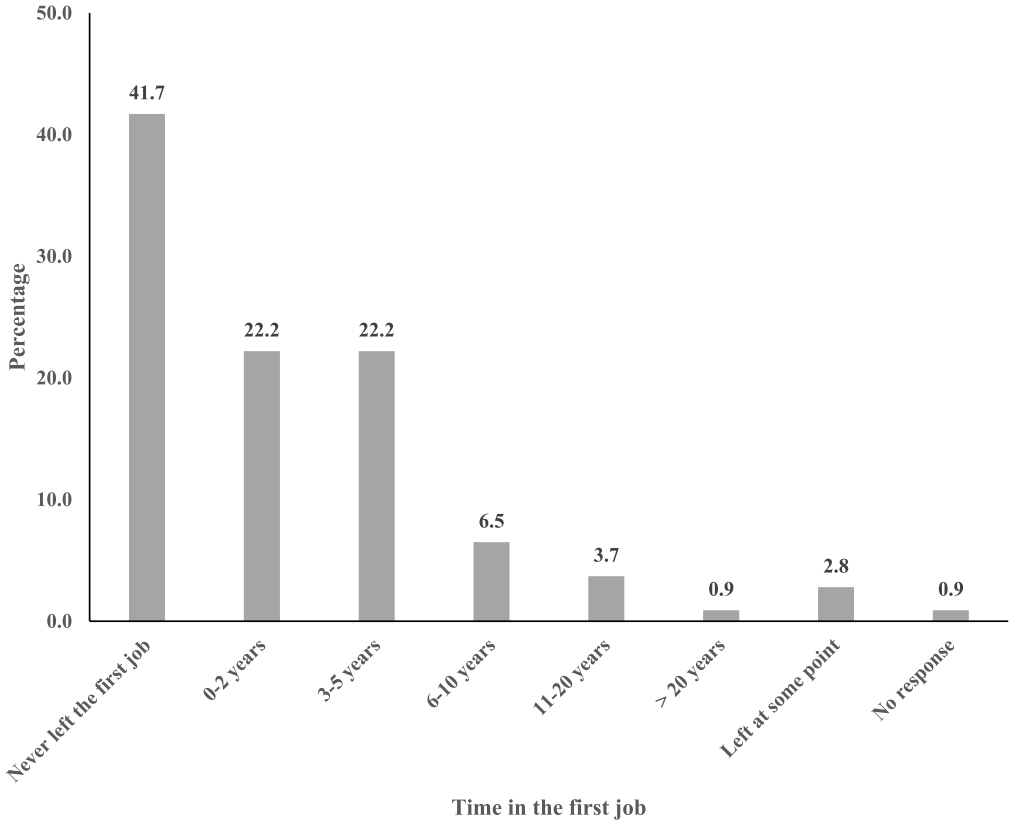

Fig. 2. Job stability among interventional pain and spine physicians.

Table 2
Variable selection for logistic regression models predicting job instability among physicians.

Model	Potential predictor	R^2	p
Model 1[a]	Specialty	0.013	0.395
	Fellowship	0.083	**< 0.001**
	How long in practice	0.187	**< 0.001**
	Type of practice	0.025	0.297
	Compensation model	0.065	**0.024**
	Gender	0.011	0.200
	Age	0.122	**< 0.001**
	Ethnicity	0.005	0.684
	Geography	0.005	0.705
	Location	0.025	0.466
	Full-time/part-time	0.005	0.409
	First job salary[c]	0.018	**0.112**
	Current compensation	0.007	0.325
Model 2[b]	Specialty	0.024	**0.101**
	Fellowship	0.020	**0.136**
	How long in practice	0.028	0.205
	Type of practice	0.016	0.620
	Compensation model	0.022	0.471
	Gender	0.000	0.896
	Age	0.047	**0.145**
	Ethnicity	0.067	**0.023**
	Geography	0.012	0.498
	Location	0.008	0.834
	Full-time/part-time	0.015	**0.188**
	First job salary[c]	0.004	0.487
	Current compensation	0.008	0.344

Note: **Bold**: $p < 0.200$.
[a] Outcome variable: leaving first job at some point (vs. never left the first job).
[b] Outcome variable: leaving first job in 0–2 years (vs. others).
[c] Inflation-corrected values.

Although many reasons likely contribute to the decision to leave a practice setting, burnout is receiving increasing attention as a serious problem afflicting physicians. While this survey did not directly address physician burnout, future studies should focus on assessing burnout in interventional pain and spine practices. In a 2022 survey of 13,000 US physicians, 56% of women and 41% of men reported burnout, with the highest incidence in the outpatient setting, the primary setting of many interventional spine/pain practices [16]. Physicians who reported burnout had 168% higher odds (Odds Ratio = 2.68, 95% Cl: 1.34–5.38) of leaving their practice within 2 years, and the two-year economic cost of replacing physicians at a single academic institution was estimated to be between $15,544,000 and $55,506,000 [15]. In addition, numerous metrics including patient satisfaction scores have added to physician burden. Specifically, based on a prior multi-institutional IPSIS survey, patient satisfaction scores are associated with decreased job satisfaction and increased burnout [16].

This study has several limitations. First, as a survey study, this was not a comprehensive reflection of all practices around the country. These results may not represent all interventional pain and spine practices, as only members of International Pain and Spine Society received the survey. A worst-case scenario analysis reveals a response rate of 4.7%; this was calculated by dividing the total number of respondents by anyone who "clicked" on the email. Notably, this is a highly conservative calculation, as many email recipients may have clicked on the email without reading it or having a valid opportunity to following the link to the survey. Regardless, even this response rate using a worst-case scenarios analysis is within the range of previously published survey results specific to interventional pain and spine providers, which range 2.1%–10% when surveying members of IPSIS, American Society of Pain and Neuroscience (ASPN), and America Society of Regional Anesthesia and Pain Medicine (ASRA) [17–20]. In 2020, a survey study evaluating cardiac implantable devices for radiofrequency ablation was sent to

Table 3
Final logistic regression models predicting job instability among physicians.

Model	Predictor	OR	95% CI	*p*
Model 1[a]	Fellowship (vs. no)			
	Yes	0.09	0.01, 0.96	**0.046**
	How long in practice (vs. 0–5 years)			
	6–20 years	6.97	1.63, 29.86	**0.009**
	>20 years	2.24	0.14, 35.73	0.569
	Compensation model (vs. salary)			
	Salary with bonus	5.32	1.1, 25.71	**0.038**
	Productivity - Collections based	9.80	1.79, 53.52	**0.008**
	Productivity - RVU based	5.13	0.76, 34.65	0.093
	Age (vs. 20–39 yr)			
	40–49 yr	1.16	0.27, 4.91	0.840
	50–59 yr	1.65	0.16, 16.74	0.671
	60+ yr	13.51	0.5, 361.81	0.121
	First job salary	0.74	0.56, 0.99	**0.040**
Model 2[b]	Specialty (vs. Anesthesia)			
	PM&R	0.62	0.18, 2.08	0.438
	Neurology/other	*Empty*[c]		
	Fellowship			
	Yes	0.55	0.14, 2.12	0.382
	Age (vs. 20–39 yr)			
	40–49 yr	1.17	0.29, 4.67	0.829
	50–59 yr	0.96	0.21, 4.44	0.959
	60+ yr	1.70	0.36, 8.10	0.502
	Ethnicity (vs. Caucasian/White)			
	Asian or Pacific Islander	0.15	0.02, 1.30	0.084
	Other/choose not to disclose	0.80	0.24, 2.67	0.723
	Full-time/part-time (vs. full-time)			
	Part-time	1.36	0.31, 6.01	0.685

Note: **Bold**: $p < 0.05$.
OR = odds ratio; CI = confidence interval.
[a] Outcome variable: leaving the first job at some point (vs. never left the first job).
[b] Outcome variable: leaving the first job in 0–2 years (vs. others).
[c] None of Neurology/Other physicians left the first job in 0–2 year.

members of IPSIS and ASRA, as well as community and academic pain physicians, and had a similar response rate of approximately 4% [21]. Unfortunately, survey response rates in general have been in decline, and physicians have had historically low response rates [22]. There has been no clear way to improve these rates – a 2016 randomized experimental survey to a variety of specialties had a showed that even offering a nonmonetary incentive and sending reminders did not improve survey rates [23]. Additionally, this survey had a high percentage (72.2%) of providers trained in PM&R, and as such these turnover rates may not be generalizable to all specialties. The makeup of IPSIS is approximately 52% PM&R, so the percentage of respondents is higher than the overall makeup of the society. One thought is that because five of six authors are PM&R trained, respondents in the same field may have been more willing to spend time completing the survey after seeing familiar names or specialties. Another limitation to this study was that while we were able to correlate current practice types with job stability, due to both technical and statistical limitations we were not able to evaluate the type of practice that physicians were in when they left. Lastly, it is possible that a single individual could have made multiple submissions from different email addresses. Given that no survey answers were exactly the same, this is unlikely, however this is a limitation of all anonymous medical society membership survey studies.

5. Conclusion

Physician turnover and job instability have far-reaching effects on healthcare organizations, healthcare professionals, and patient care. Of the interventional pain and spine physicians who had been in practice for at least three years, over 65% reported leaving their initial job after training. Given the low overall response rate to our survey (although within the range of response rates seen in previously published studies), our data may not be generalizable to the field as a whole, but are consistent with previously reported physician turnover rates [24]. Our survey results indicate that interventional spine/pain physician with initially lower starting salaries were more likely to leave their first job. We also found that those currently in productivity-based compensation models were more likely to have left their first job.

Declaration of competing interest

Byron Schneider, MD and Zachary L. McCormick, MD serve on the Board of Directors of the Interventional Pain and Spine Intervention

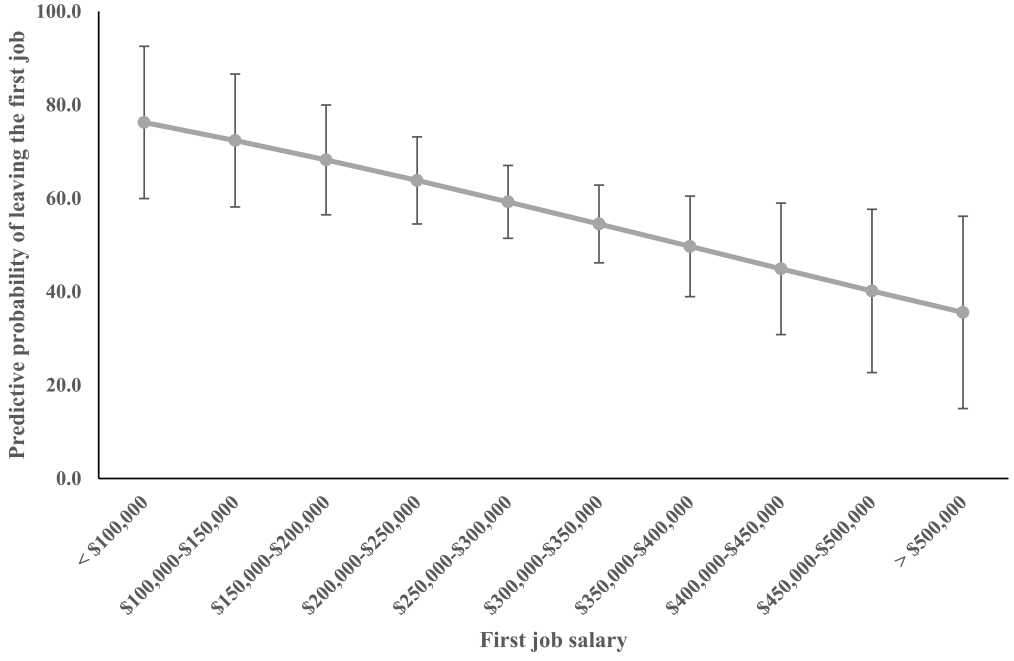

Fig. 3. Predicted probabilities of leaving the first job based on inflation-corrected first job salary.

Society. Allen Chen, MD, MPH is the Vice Chair for Education and a Senior Instructor for the Interventional Pain and Spine Intervention Society. There are no other relevant conflicts of interest to disclose on the part of any of the other authors. There were no sources of support for this study.

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