Research Square

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Resident Perceptions of Entrustable Professional Activities and Faculty Engagement

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Abstract

Purpose Surgical educators recognize the importance of consistent faculty feedback, yet variability in learners' perceptions make it difficult to identify targets for intervention. We hypothesize perception of faculty feedback is improved through Entrustable Professional Activities.

Methods In January 2025, trainees completed an optional survey post ABS in-training exam. Trainees reported the percentage of faculty that consistently give feedback. Those who responded at the extremes (0-25% or 76-100%) were grouped and termed as low percentage (LP) and high percentage (HP). Additional items queried include feedback and EPA frequency and characteristics. Overall feedback and EPA satisfaction were reported on 1-10 numeric scales. Demographics included self-reported gender, race, ethnicity, PGY-level, and underrepresented in medicine (URiM) status. Outcomes were compared using bivariate analysis.

Results Of 10,404 examinees, 57% (n=5,963) responded about faculty engagement. Of these, 17% (n=1,008) and 18% (n=1,098) were in respective LP and HP groups. The LP group had more female (62%, n=599) and PGY1-3 trainees (76%, n=761)($p<0.001$, for all), with no differences in race, ethnicity, or URiM status compared to the HP group. Most HP trainees (83%, n=911) received feedback every day or 2-3 days compared to 13% (n=128) of LP trainees ($p<0.001$). Reporting a higher percentage of faculty consistently giving feedback was moderately correlated with increased feedback frequency (rho=0.56) but only weakly correlated with increased self-reported EPA frequency (rho=0.21). HP trainees (54%, n=553) received EPAs at least once a week or more compared to 23% (n=219) of LP trainees ($p<0.001$). Only 11% (n=114) of HP trainees reported not receiving an EPA compared to 29% (n=274) of LP trainees. Most HP trainees (64%, n=660) agreed frequency of EPAs met expectations compared to 9% (n=81) of LP trainees ($p<0.001$). Most HP trainees (62%, n=653) reported >50% of EPAs were accompanied by verbal feedback. Overall feedback and EPA satisfaction were moderately correlated (rho=0.53). Mean feedback satisfaction was significantly higher for HP trainees (8.9 ± 1.1) than LP trainees (4.36 ± 1.9) ($p<0.001$). Similarly, EPA satisfaction was higher for HP than LP trainees (8.24 ± 2.0 vs. 4.07 ± 2.31, $p<0.001$).

Conclusions Trainees who report a high percentage of faculty engaged in feedback report receiving more frequent feedback, including EPAs, and EPAs accompanied by verbal feedback. These data suggest EPAs are an avenue for faculty to improve feedback to trainees.

Introduction

Effective feedback is consistently identified by faculty and residents alike as the cornerstone of surgical skill development and operative autonomy. [1, 2] Despite this shared understanding, faculty and residents are often misaligned in their perceptions of the feedback process in training. Surgeon educators have long worked to optimize feedback while addressing its barriers in a shifting surgical landscape. [3–5] Entrustable Professional Activities (EPAs) have emerged as a promising assessment framework for standardizing competency evaluation and encourage more frequent, focused feedback.

Through EPA microassessment use, faculty can utilize the shared mental model to articulate expectations more clearly and provide more timely performance assessments, which may lead to greater overall satisfaction with feedback.[6–7] The adoption of EPA microassessments on a national scale is still early, and data on residents' perceptions of their use remain limited.

Prior to EPA implementation, a national study investigated general surgery residents' perception of faculty engagement in feedback. The authors suggest one factor in resident satisfaction with feedback may be the perceived percentage of faculty that consistently provide feedback that meet their expectations. [8] EPAs have now launched across all surgical specialties governed by the American Board of Surgery, and the number of faculty providing more frequent, focused feedback has theoretically increased since the prior study. A recent study by Diaconescu et. al posit that EPA use may standardize residents' perceptions of faculty feedback, finding that resident feedback satisfaction increased, even on residents' self-identified 'worst' rotation, when EPA microassessments were consistently provided. [7] Understanding these relationships is essential to identifying additional ways EPAs can enhance the feedback experience in surgical training programs.

Thus, the aim of this study is to extend the original investigation and assess whether resident perception in percentage of faculty engaging in consistent feedback practices has changed since the integration of EPA microassessments. Further, we aim to characterize specific feedback practices that positively impact resident satisfaction to provide tangible targets for faculty to employ.

Methods

In January 2025, all trainees participating in the American Board of Surgery (ABS) in-training exam were invited to complete an anonymous, 23-item survey. The survey administered was approved by the ABS research committee. It was published with validity evidence in Emergency Medicine and adapted for use in general surgery in 2023. [8] Additional survey items were added in 2025 regarding perception of EPA use in training. All examinees were eligible to participate, and participation was voluntary and confidential. Survey data were collected and deidentified by the ABS, with the dataset including both survey and program level data. The Institutional Review Board at the University of Alabama at Birmingham determined this project exempt from review (IRB-300010897)

Examinees were prompted to select the percentage of faculty who consistently met feedback expectations from categories representing quartiles (0–25%, 26–50%, 51–75%, 76–100%), and examinees who did not answer this item were excluded from the analysis. Descriptive statistics were used to identify examinees who reported the extremes (0–25% or 76–100%) to form our comparison groups termed the low percentage (LP) and high percentage (HP) groups, respectively. These groups' responses were then analyzed across additional survey items including: feedback frequency, EPA frequency, EPA expectations, percentage of EPAs accompanied with verbal feedback, overall satisfaction with feedback, and overall satisfaction with EPAs. Frequency of both feedback and EPA microassessments were reported in categories ('Every Day', 'Every 2–3 days', 'Once per week', 'Once per

rotation', 'I have not received') while EPA expectations were rated on a 1–5 Likert scale (1. Strongly disagree, 2: Disagree, 3. Neutral, 4. Agree, 5. Strongly Agree). Percentage of EPAs accompanied by verbal feedback were reported in quartiles, and overall satisfaction with both feedback and EPAs were reported on a 1–10 numeric scale, with 10 being the highest level of satisfaction.

Demographic variables including gender, race /ethnicity, clinical year of training, residency program setting, and program region were also collected. Historically underrepresented in medicine (URiM) identities including: Indigenous Population, Black or African American, Multi-Racial, and Other were grouped, and those indicating "Prefer Not to Say" were excluded from demographic analysis. Hispanic / Latinx ethnicity was analyzed as a separate variable from racial identity to include Multi-Racial examinees. Postgraduate levels 1–3 and 4–5 were grouped and analyzed as Junior and Senior residents, respectively.

Data were analyzed using STATA (version 19.0. StataCorp, College Station, TX, USA). A p-value < 0.05 was considered statistically significant. Differences in descriptive statistics were compared for significance using Pearson's Chi-squared tests, and Spearman correlations.

Results

A total of 10,404 examinees received the survey, with a mean response rate of 53% across survey items of interest. The faculty percentage prompt was completed by 57.3% (n = 5963) of examinees. Most examinees (n = 2,100) reported 51–75% of faculty consistently provide feedback that meet their expectations, however nearly half (46%, n = 2755) indicated 50% or fewer of their program faculty provide consistent feedback. The high percentage (HP) and low percentage (LP) comparator groups were nearly equal in size with 17% (n = 1,008) in the LP group and 18% (n = 1,098) in the HP group.

Resident demographics are detailed in Table 1. The LP group was enriched with examinees who were Female (62.3%, n = 599) and Junior trainees (75.5%, n = 761)($p < 0.01$, for all). Most examinees in both HP and LP groups were from the Northeast region and University programs, yet a significantly higher proportion were in the LP group for both Northeast (HP: 27.9% vs LP: 36.9%) and University programs (HP: 37.5% vs LP: 50.1%)($p < 0.01$, for all). No statistically significant differences in race, ethnicity, and URiM status were observed between groups.

Reporting a higher percentage of faculty consistently giving feedback was moderately correlated with increased feedback frequency perception ($\rho = 0.56$) but only weakly correlated with increased self-reported EPA frequency ($\rho = 0.21$). Figures 1 and 2 detail the distribution of feedback and EPA frequency amongst HP and LP examinees. Most HP trainees (83%, n = 911) perceive feedback frequency as every day or every 2–3 days compared to 13% of LP examinees ($p < 0.01$), however, only 29% of HP trainees (n = 298) report the same frequency for EPA microassessments. Only 5% of LP examinees report receiving an EPA every day or every 2–3 days ($p < 0.01$). Most HP (31.1%) and LP (38.6%) examinees report receiving an EPA once per rotation. Importantly, almost triple the amount of LP examinees (29%, n = 274) report not receiving an EPA compared to the amount of HP examinees (11%, n = 114), $p < 0.01$.

HP and LP examinees also reported significant differences in EPA frequency expectations. Most HP trainees (64%, n = 660) agreed EPA frequency meets their expectations for feedback. By contrast, only 9% (n = 81) of LP examinees agreed ($p < 0.01$), while nearly half (46%, n = 399) disagreed. Percent of EPAs accompanied with verbal feedback also differed between HP and LP examinees. Most HP examinees (62.1%, n = 653) reported greater than 50% of EPAs were accompanied by verbal feedback compared to only 8.4% (n = 78) of LP examinees ($p < 0.01$). Notably, over half of LP examinees (52.4%, n = 489) reported less than 25% of EPA microassessments are accompanied by verbal feedback.

Overall feedback and EPA satisfaction were moderately correlated ($\rho = 0.52$). Mean feedback satisfaction was significantly higher for HP trainees (8.9 ± 1.1) than LP trainees (4.36 ± 1.9)($p < 0.001$). Similarly, EPA satisfaction was higher for HP than LP trainees (8.24 ± 2.0 vs. 4.07 ± 2.31, $p < 0.001$).

Regression models were constructed to control for random program effects. Significant differences remained between LP and HP examinees' perceptions including perception of feedback and EPA frequency, EPA expectations, the percentage of EPAs accompanied by verbal feedback, and satisfaction with both feedback and EPAs. LP trainees were less likely to report high feedback frequency (OR: 0.03, CI: 0.02–0.04, $p < 0.001$) or EPA frequency (OR: 0.25, CI: 0.21–0.29, $p < 0.001$). LP trainees were also significantly less likely to agree that EPA frequency met their expectations for feedback (OR: 0.02, CI: 0.01–0.02, $p < 0.001$). Further, LP examinees were significantly less likely to report a high percentages of EPAs that were accompanied by verbal feedback (OR: 0.04, CI: 0.03–0.06, $p < 0.001$). Lastly, LP examinees were strongly associated with lower satisfaction with feedback (OR: 0.00, CI: 0.03–0.06, $p < 0.001$), and lower satisfaction with EPAs (OR: 0.04, CI: 0.03–0.05, $p < 0.001$).

Discussion

Feedback is fundamental to trainees' increasing entrustment with surgical practice by experts in the field. This cross-sectional study investigated feedback from the perspective of trainees, comparing findings to an initial study from 2023. Interestingly, a similar proportion of trainees reported 50% or less of faculty are perceived to provide consistent feedback that meet residents' expectations in 2025 (n = 46%, n = 2755) as did in 2023 (47%). [8] One explanation for this constancy is that surgeon educators who provided effective, consistent feedback prior to EPA microassessment implementation are simply continuing to do so with access to a new feedback modality, and provision of a tool alone is not sufficient to change faculty behavior related to feedback consistency. Other possible explanations include that trainees view EPAs more as evaluation than a tool for formative feedback or that administration of the survey occurred too early in the intervention cycle to see meaningful shifts on the impact of EPAs on perception of feedback in training. Yet, we believe these data serve as an important baseline for future assessment of feedback perceptions in training

Results among participating residents demonstrated no statistically significant differences in race, ethnicity, or URiM status between groups, despite showing differences in the 2023 cohort.[8] It is notable that the 2025 LP group included a high proportion of female trainees (62.3%) and junior trainees (75.5%)

compared to male (37.1%) or senior (24.5%) trainees. This finding was also seen in the 2023 cohort. [8] The greater representation of junior trainees may reflect differences in clinical experience and level of autonomy early in training, which may limit opportunities for direct faculty interaction and structured feedback. The increased proportion of female trainees in the LP group may reflect differences in feedback dynamics rather than intrinsic performance. Prior literature suggests that female trainees may receive feedback that differs in specificity, actionability, and opportunities for autonomy compared to their male counterparts.[9–13] These findings are consistent with prior observations and suggest that both trainee level and gender may be associated with differences in perceived faculty engagement in feedback. In a single-institution sample, EPAs have demonstrated preliminary efficacy to limit gender-based bias and is an interesting area for further study. [14]

Higher perceived faculty engagement was associated with more frequent feedback and higher feedback satisfaction which was also found in 2023 (Fig. 3). Consistent feedback has been shown to improve trainee satisfaction and positively influence development, and these results suggest more faculty engaged in effective feedback practices have similar effects.[7, 15–16] EPA utilization was less frequent than general feedback frequency and showed a weaker association with faculty engagement, with most trainees across both groups indicating that EPAs occurred only once per rotation. These findings suggest that while frequent, informal feedback may be relatively common in environments with higher perceived faculty engagement, EPAs remain underutilized as a structured assessment tool.

Verbal feedback is widely recognized as a highly valuable component of surgical training, with nearly all residents identifying it as one of the most useful methods for assessing performance. [17–19] The percent of EPA microassessments integrated with verbal feedback was also associated with higher perceived faculty engagement with most HP trainees reporting EPAs were accompanied by verbal discussion, while fewer than one-quarter of LP trainees indicated the same. These findings suggest an opportunity to better integrate EPAs with meaningful verbal feedback, strengthening their combined impact on trainee development.

Overall, mean feedback satisfaction and EPA satisfaction were moderately correlated, with both measures significantly higher among HP trainees compared to LP trainees. The significant difference between HP and LP trainees in EPA satisfaction suggest that EPAs may play an important role in shaping the trainee experience, particularly as they often provide more individualized and specific narrative feedback. [20] As EPA implementation continues to expand across training programs, improvements in both feedback quality and overall trainee satisfaction may be expected. [7]

After controlling for program-level effects, the differences in LP and HP trainees' results remained measurably different across all areas of inquiry. This suggests that these observed differences are not the result of discrepancies between programs but reflect meaningful differences in the level of trainee perception and experience. LP trainees were significantly less likely to report frequent feedback or EPA use and far more likely to feel that EPA frequency did not meet their expectations, highlighting a gap between what trainees need and what they are receiving. Importantly, LP trainees were less likely to

report that EPAs were accompanied by verbal feedback, suggesting that even when EPAs are used, they may lack the context and discussion necessary to be educationally impactful. This aligns with their significantly lower satisfaction with both feedback and EPAs overall in the LP group. While EPAs represent a promising framework, these findings suggest an opportunity to better integrate structured assessments with meaningful verbal feedback, creating a more cohesive and effective approach to trainee development.[20]

This study has distinct limitations. As with any survey, responses are subject to recall bias, extreme bias, or neutral bias. This was mitigated by using a previously published survey with evidence for validity in Emergency Medicine and General Surgery. [21, 8] Further, the survey was co-administered which may have contributed to attrition and varying level of response rates per questions. Even with this limitation, response rates were greater than 50% per question from a national sample of general surgery residents which provides sufficient data to glean meaningful conclusions. An important limitation of this study is the inability to correlate perception of feedback and EPA microassessments with objective measures, however value exists in understanding individuals' experiences especially in tailoring educational interventions. [22] Lastly, we analyzed the extremes of the data which can challenge statistical models, yet the conclusions drawn are consistent with prior literature surrounding feedback in surgical training. Despite these considerations, this study highlights the valuable perspective of residents' feedback experience, including their perception of EPA microassessments in training.

Conclusion

In conclusion, surgical trainees who perceive a high percentage of faculty engaged in consistent feedback practices report more frequent feedback, including the perception of more frequent EPA microassessments and microassessments accompanied by verbal feedback. Nearly half of surgical trainees continue to perceive that 50% or less of faculty provide consistent feedback, and these data suggest EPA microassessments are an avenue for faculty to improve feedback to trainees.

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Table

Table 1
Examinee Demographics

Characteristics	All Examinees n(%)	HP n(%)	LP n(%)	p-value
Gender/Gender Identity				< 0.01
Male	3842 (47.7%)	634 (59.3%)	357 (37.1%)	
Female	4167 (51.7%)	429 (40.1%)	599 (62.3%)	
Transgender/Nonbinary	51 (0.6%)	6 (0.6%)	6 (0.6%)	
Race				0.25
White	4181 (40.2%)	599 (54.6%)	475 (47.1%)	
Asian	1408 (13.5%)	146 (13.3%)	162 (16.1%)	
Black or African American	430 (4.1%)	55 (5.0%)	54 (5.4%)	
Middle Eastern or North African	363 (3.5%)	34 (3.0%)	43 (4.3%)	
Hispanic or Latinx	540 (5.2%)	74 (6.7%)	78 (7.7%)	
Indigenous Population	24 (0.23%)	7 (0.6%)	1 (0.1%)	
Multi-Racial	2845 (27.3%)	102 (9.3%)	101 (10.1%)	
‘Prefer Not to Say’ or Other	613 (5.9%)	77 (7.0%)	90 (8.9%)	
Ethnicity				0.29
Non-Hispanic or Latinx	9,537 (92%)	975 (89.0%)	880 (87.3%)	
Hispanic or Latinx	867 (8.3%)	123 (11.2%)	128 (12.7%)	
URiM				0.16
Non-URiM	6,184 (85.3%)	813 (84.5%)	704 (82.1%)	
URiM	1,068 (14.7%)	149 (15.5%)	154 (18.0%)	
PGY level (Self-Reported)				0.01
1	2152 (25%)	220 (20.1%)	287 (28.5%)	
2	1722 (20%)	191 (17.4%)	219 (21.8%)	
3	1562 (18%)	191 (17.4%)	192 (19.1%)	
4	1425 (17%)	237 (21.6%)	142 (14.1%)	
5	1116 (13%)	211 (19.2%)	103 (10.2%)	
Research/Professional development	568 (6.6%)	47 (4.3%)	63 (6.3%)	
PGY status (ABS Provided)				0.01

Characteristics	All Examinees n(%)	HP n(%)	LP n(%)	p-value
Senior (4–5)	3,104 (29.8%)	450 (41.0%)	247 (24.5%)	
Junior (1–3)	7,300 (70.2%)	648 (59.0%)	761 (75.5%)	
Residency setting				0.01
University	2586 (45%)	392 (37.5%)	462 (50.1%)	
University-affiliated	1825 (32%)	355 (33.9%)	265 (28.7%)	
Independent	1026 (18%)	237 (22.7%)	156 (16.9%)	
Military	133 (2.3%)	26 (2.5%)	13 (1.4%)	
Community	134 (2.3%)	34 (3.3%)	23 (2.5%)	
Other	20 (0.3%)	2 (0.2%)	4 (0.4%)	
ABS Region				0.01
Northeast	3389 (32.6%)	306 (27.9%)	370 (36.9%)	
Southeast	2137 (20.6%)	250 (22.8%)	163 (16.2%)	
Midwest	2162 (20.8%)	263 (24.0%)	220 (21.9%)	
Southwest	1260 (12.1%)	132 (12.0%)	112 (11.2%)	
West	1434 (13.8%)	147 (13.4%)	139 (13.8%)	

Figures

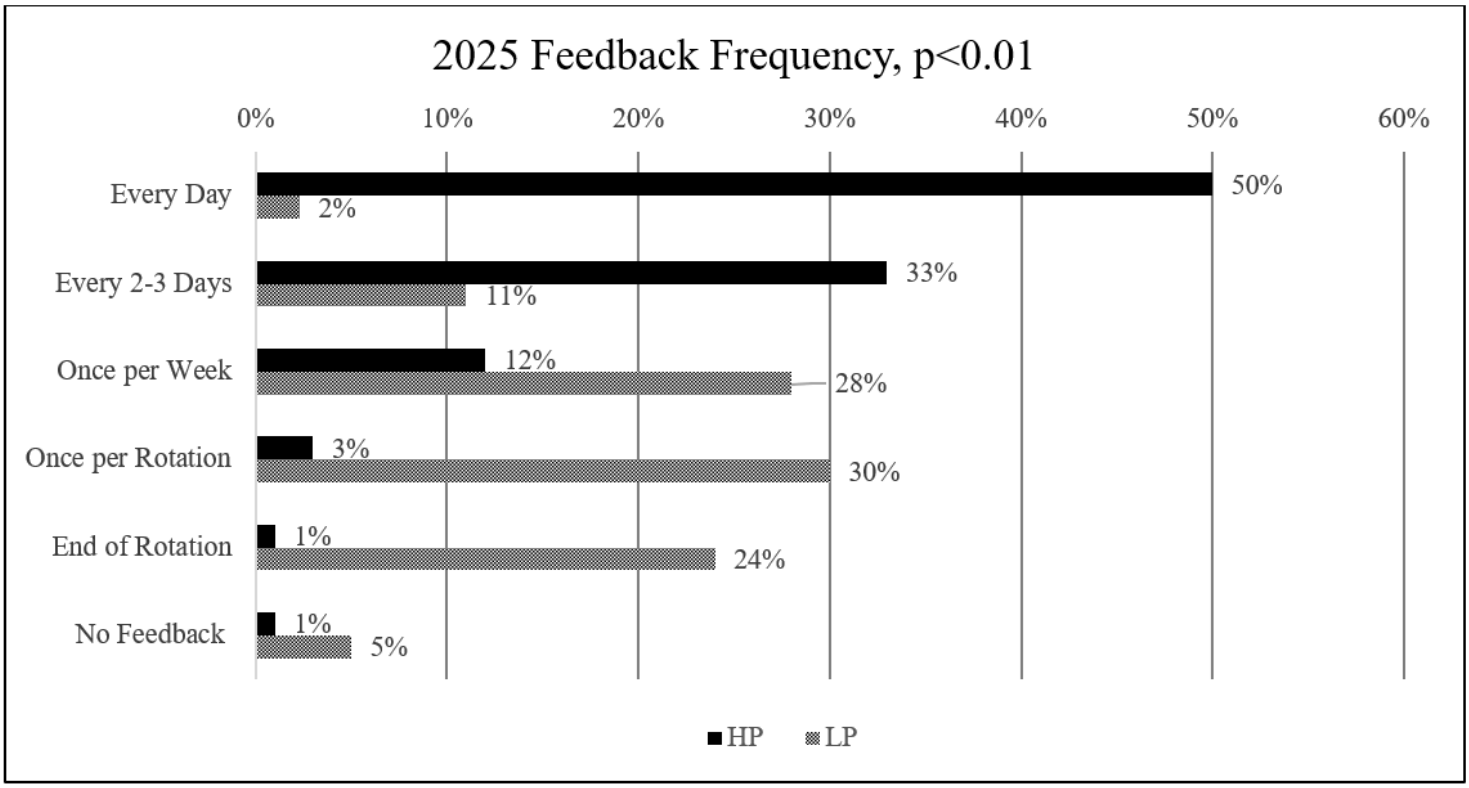


Figure 1

Distribution of HP and LP responses to frequency of feedback.

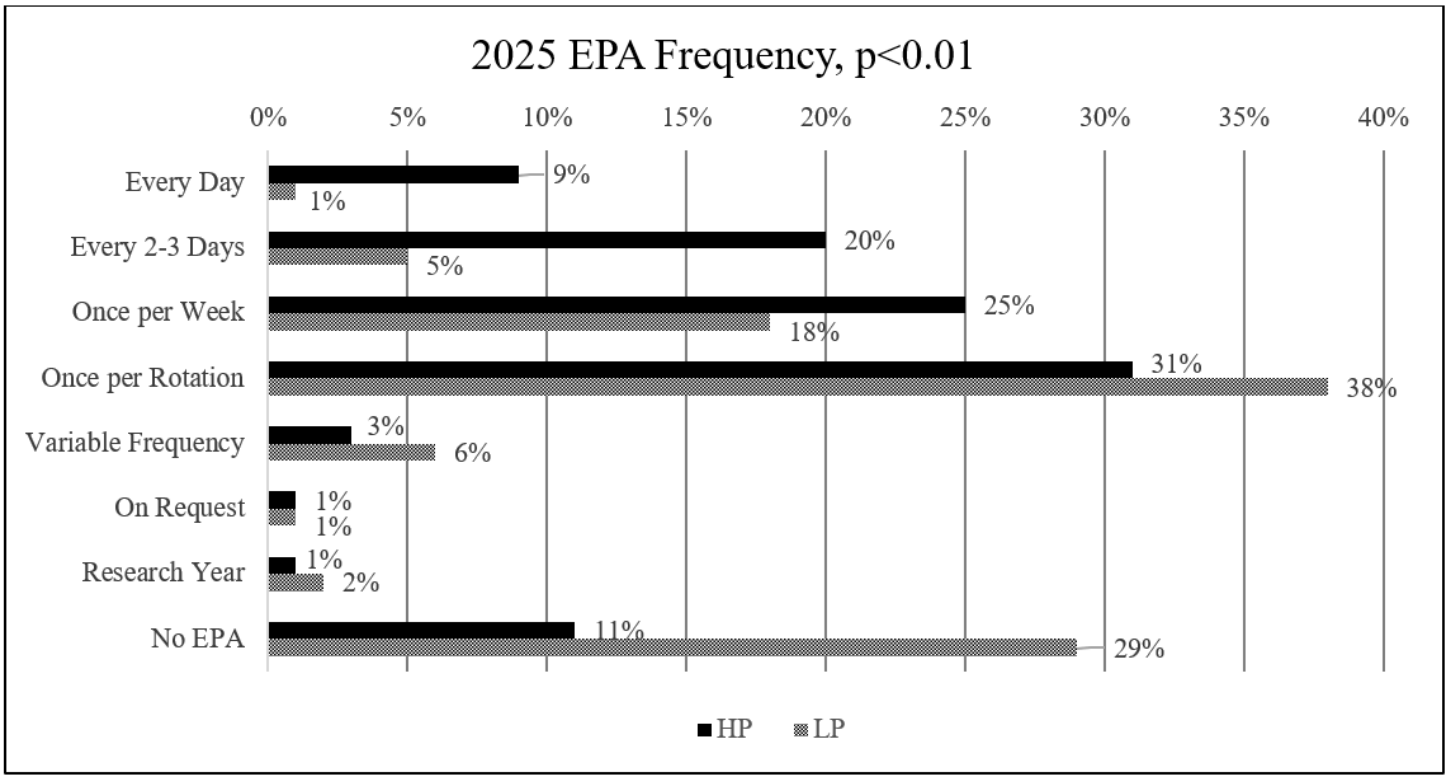


Figure 2

Distribution of HP and LP responses to frequency of EPA microassessments.

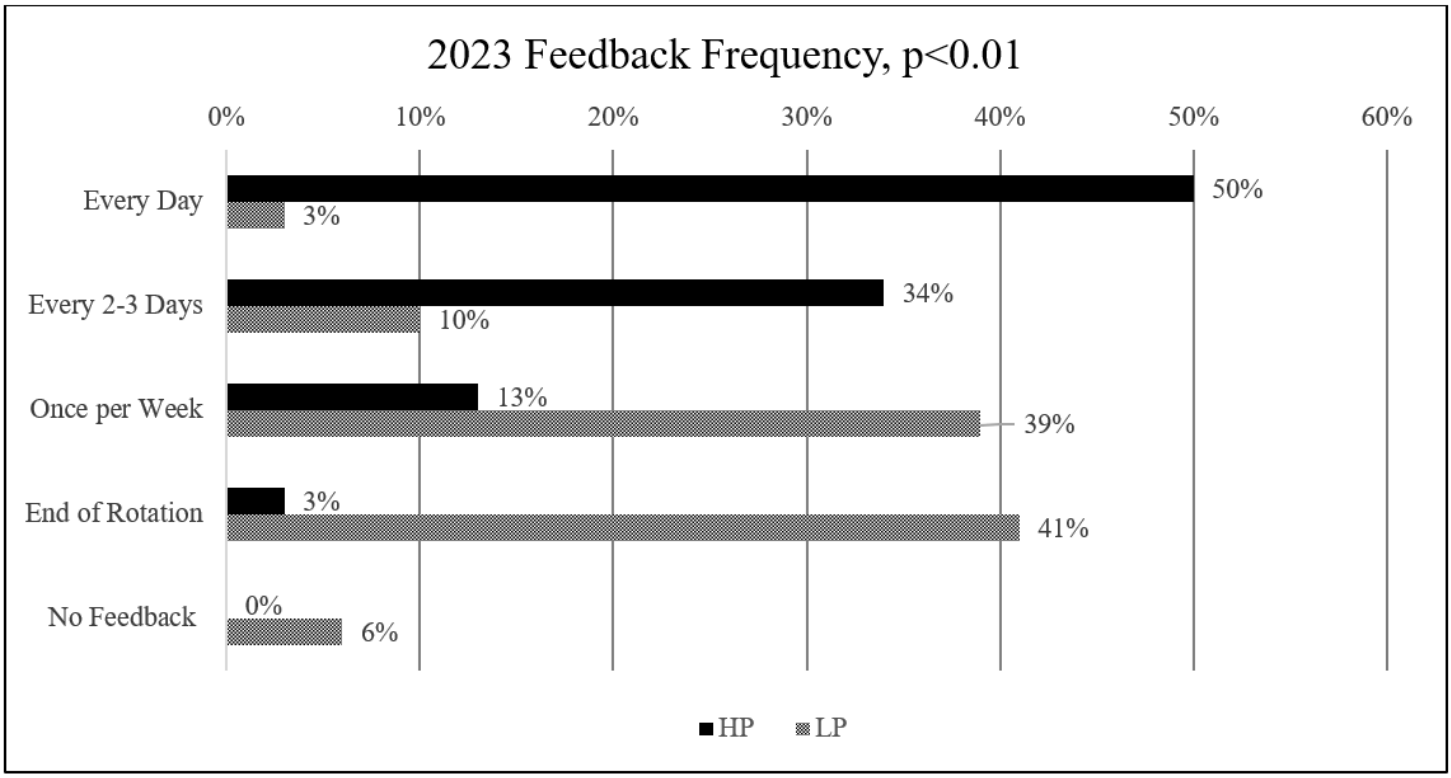


Figure 3

Distribution of HP and LP responses to frequency of feedback in 2023.