



INTRODUCTION

Intraosseous anesthesia delivers local anesthetic directly into cancellous bone, bypassing cortical barriers to provide rapid and effective pulpal anesthesia. It is particularly useful in cases of acute pain, trauma, and failed conventional anesthesia.

Achieving effective anesthesia in pediatric patients remains challenging because of anatomical variation and behavioral factors such as anxiety and limited cooperation.

Intraosseous anesthesia offers several advantages, including rapid onset, predictable anesthesia, reduced soft tissue numbness, and decreased risk of postoperative self-injury. Despite these benefits, intraosseous anesthesia remains underutilized in pediatric dentistry, potentially due to variability in training and clinical exposure.

OBJECTIVE

To evaluate the utilization of intraosseous anesthesia among pediatric dentists, identify barriers to its adoption, and assess the impact of formal training on clinical use.

METHODS

This IRB-exempt cross-sectional study (Protocol #9763) surveyed U.S. pediatric dentists using a web-based questionnaire distributed through the AAPD email list (n = 6,591). Eligible participants included all active AAPD members with registered email addresses.

A 21-question SurveyMonkey instrument assessed demographics, training, intraosseous anesthesia use, clinical preferences, and perceived barriers and advantages. The anonymous voluntary survey required approximately five minutes to complete. An initial invitation email was followed by two reminders at two and four weeks.

Data were analyzed using descriptive statistics to summarize responses. Associations between training, intraosseous anesthesia use, frequency of use, and years since residency were evaluated using chi-square, Wilcoxon rank-sum, and Fisher's exact tests. Multivariable logistic regression was performed to assess predictors of current use, including training, years since residency, and practice setting. Findings reflect self-reported clinician experiences.

RESULTS

Figure 1. No Significant Association Between Training and Intraosseous Anesthesia Use

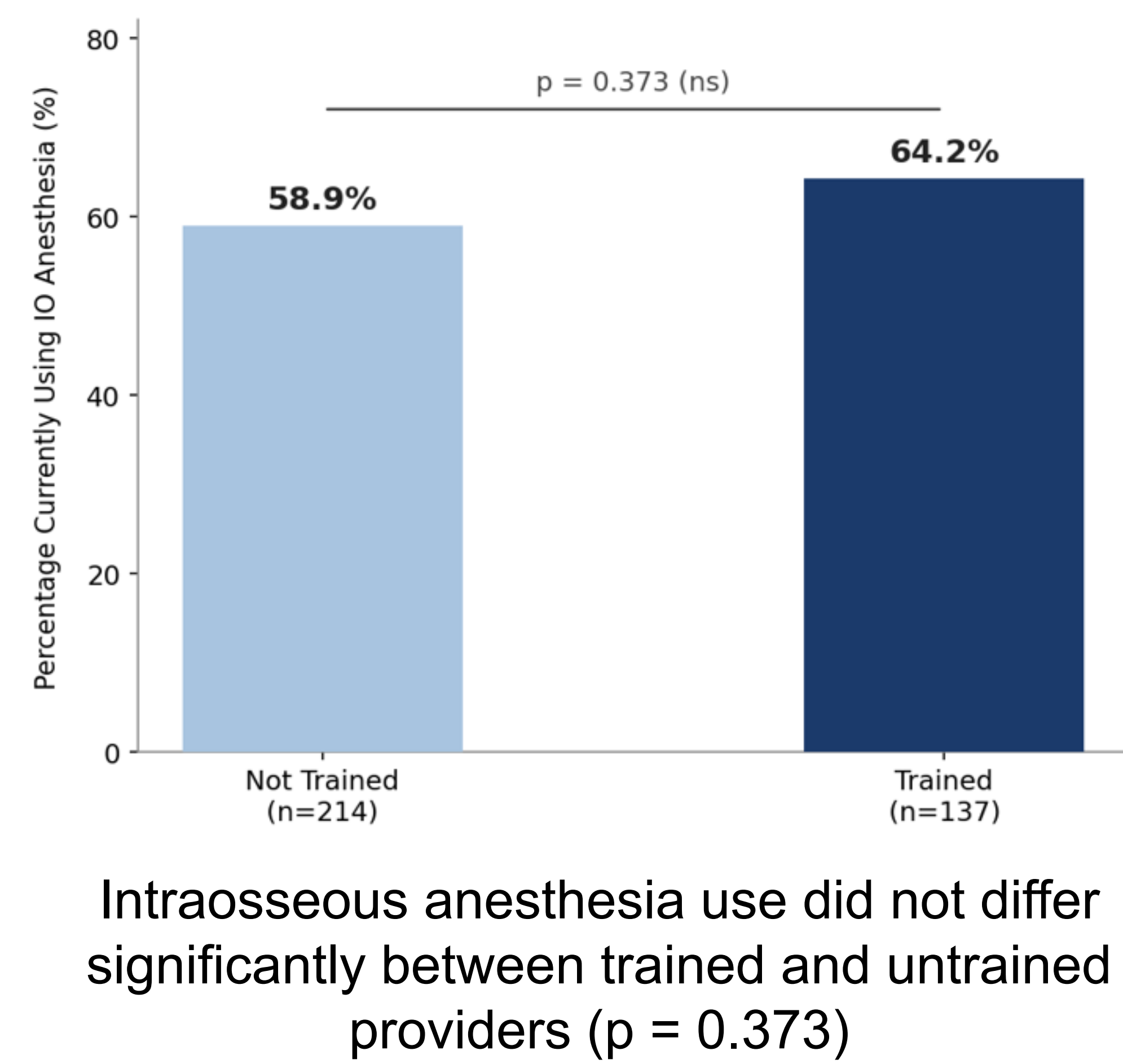


Figure 2. Recent Graduates More Likely to Use Intraosseous Anesthesia

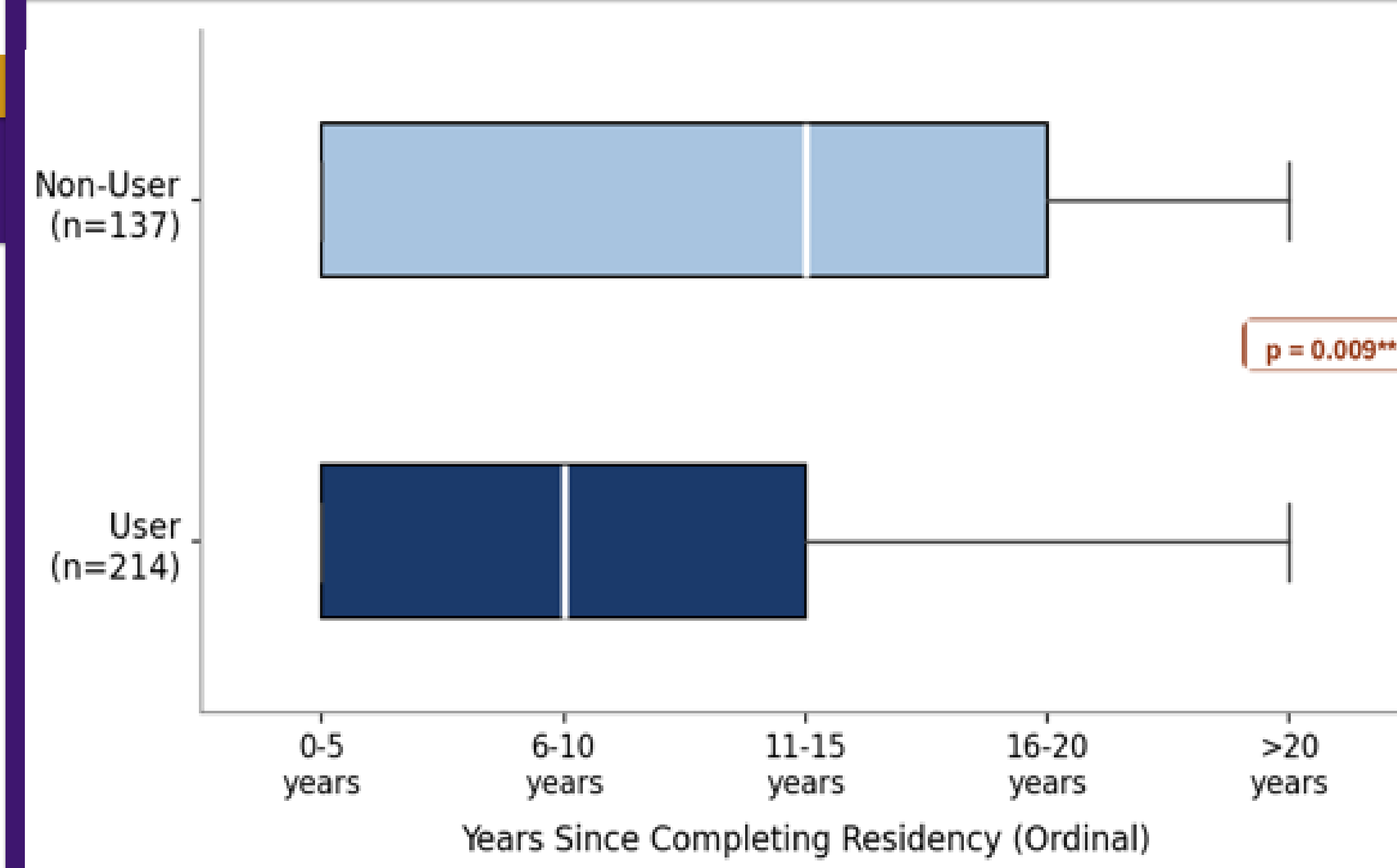
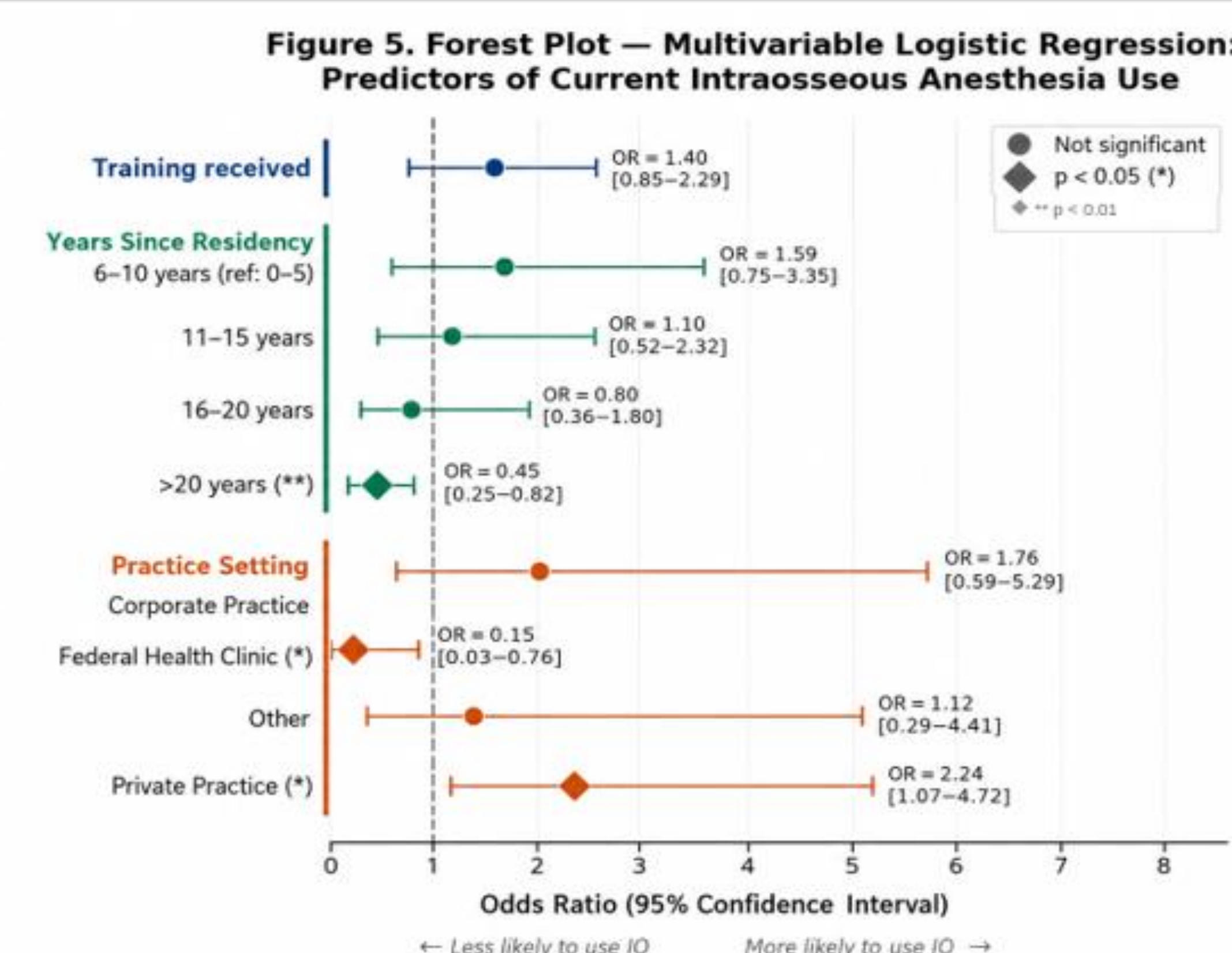


Figure 5. Practice Setting and Years Since Residency Predict Intraosseous Anesthesia Use



Multivariable regression identified years since residency and practice setting as significant predictors of IA use; training was not significant

Figure 3. Higher Intraosseous Anesthesia Use in Private Practice Settings

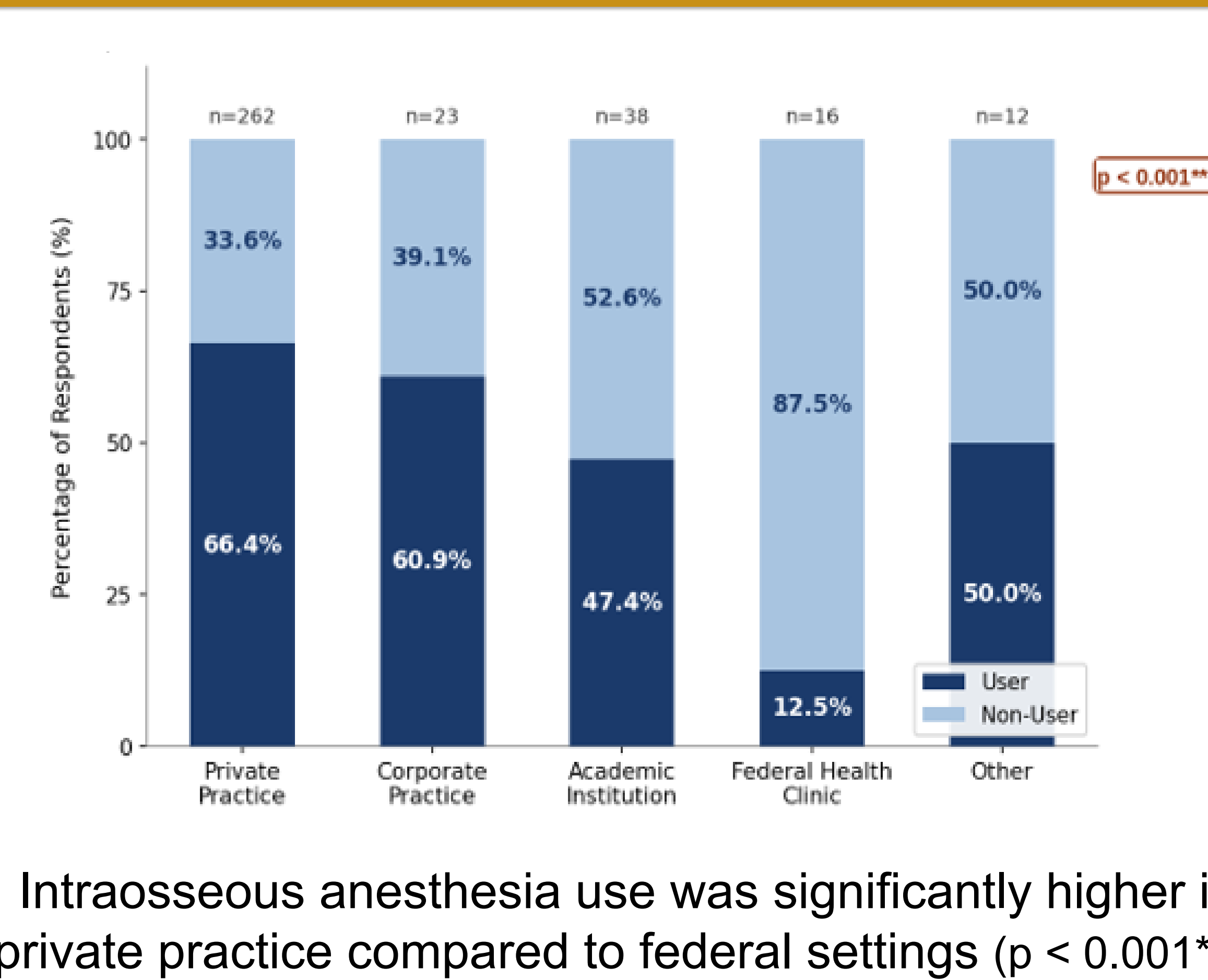
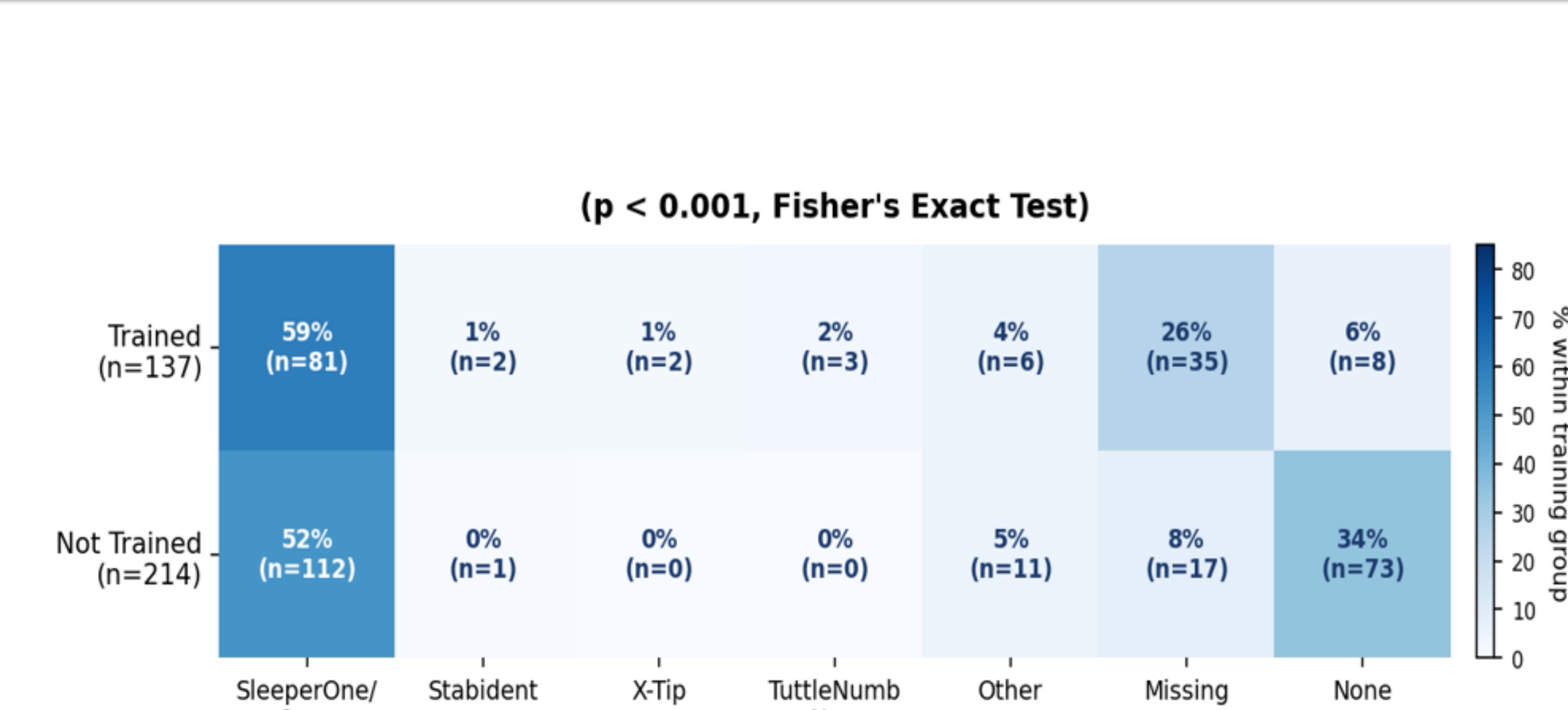


Figure 4. SleeperOne/Soan Predominates; Training Influences System Selection



DISCUSSIONS

Formal residency training was not independently associated with intraosseous anesthesia use, suggesting that factors beyond training alone influence adoption. Overall utilization was relatively high (59.6%), with many clinicians reporting frequent use, indicating that intraosseous anesthesia has become an established technique among adopters.

Recent graduates were more likely to utilize intraosseous anesthesia, supporting that increased curriculum integration over time may drive adoption. In contrast, providers more than 20 years post-residency were less likely to use this technique, likely reflecting established clinical habits.

Practice setting also influenced use, with higher adoption among private practitioners and lower use in federal settings, suggesting the presence of resource and system-level barriers. The SleeperOne/Soan system was the most used device, while training appeared to influence system selection.

Key barriers included limited training, cost, and technical challenges. Expanding hands-on education and improving access to equipment may increase adoption and integration into clinical practice.

CONCLUSIONS

Intraosseous anesthesia is commonly utilized among pediatric dentists, particularly among recent graduates and private practitioners. Although formal training was not independently associated with use, training appeared to influence device selection. Expanding hands-on education and improving access to equipment may support broader clinical integration.

ACKNOWLEDGEMENT

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