Clinical Updates for Nurse Practitioners and Physician Assistants: 2017

Making a Difference in ADHD: Screening and Treating for Primary Care

Final Outcomes Report for Shire Grant: USA 16346

May 1, 2018

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Curriculum Overview

- Accredited Live Regional Symposia, Launch Date: September 16, 2017 through December 7, 2017
  - The live symposia was held in 10 cities with simulcast in 3 cities.
  - Role play exercise – during each program, each participant had an opportunity to practice taking, and administering, the Adult ADHD Self Report Scale (ASRS-v1.1), followed by a discussion of the experience.
- Non-Accredited “Clinical Highlights” - The program content was reinforced to participants with a document containing key teaching points from the program and is distributed 1 week after each meeting.
- Enduring Symposium Monograph, Launch Date: January 5, 2018 End Date: January 4, 2019
  - http://naceonline.com/CME-Courses/course_info.php?course_id=938

Quantitative Impact Summary

Participants

1,756
Total Learners

1061
Learners participated in Live Meetings

695
Learners participated in The Simulcasts

Pre to Post Test Results By Learning Objective

- **51.65% Improvement**: Recognize the pervasive nature of ADHD symptoms throughout the day.
- **67.51% Improvement**: Describe the physical and psychologic morbidity and mortality associated with ADHD
- **11.94% Improvement**: Use adult ADHD assessment and treatment tools to measure residual symptoms and optimize outcomes
- **60.72% Improvement**: Implement pharmacologic treatment to optimize symptom control throughout the day

Impact

- **After 4 weeks, the most consistently reported change in practice behavior was the recognition of the need to include ADHD in the differential diagnosis when evaluating adults and to utilize ADHD rating scales**.

Future Education should focus on identified persistent learning gaps:

- **Impact of untreated ADHD.**
- **Duration of effect of stimulants in adults with ADHD.**
- **Prescribing stimulants after diagnosing patients with ADHD**

Making a Difference in ADHD: Screening and Treating for Primary Care

This curriculum consisted of 10 live meetings and 3 simulcast events focused on patients with ADHD within the primary care setting.

Learning outcomes were measured using matched Pre-Test and Post-Test scores for four learning domains (Knowledge, Competence, Confidence, and practice strategy) and across all of the curriculum's Learning Objectives.

Outcomes Metric	Definition	Application
Percentage change	This is how the score changes resulting from the education are measured. The change is analyzed as a relative percentage differences by taking into account the magnitude of the Pre-Test average.	Differences between Pre-Test, Post-Test, and PCA score averages
P value (p)	This is the measure of the statistical significance of a difference in scores. It is calculated using dependent or independent samples t-tests to assess the difference between scores, taking into account sample size and score dispersion. Differences are considered significant for when $p \leq .05$.	Significance of differences between Pre-Test, Post-Test, and PCA scores and among cohorts; significance of drivers in predictive modeling
Effect size (d)	This is a measure of the strength/magnitude of the change in scores (irrespective of sample size). It is calculated using Cohen's d formula, with the most common ranges of d from 0-1: d < .2 is a small effect, d=.2-.8 is a medium effect, and d > .8 is a large effect.	Differences between Pre-Test, Post-Test, and PCA score averages
Power	This is the probability (from 0 to 1) that the "null hypothesis" (no change) will be appropriately rejected. It is the probability of detecting a difference (not seeing a false negative) when there is an effect that is dependent on the significance (p), effect size (d), and sample size (N).	Differences between Pre-Test, Post-Test, and PCA score averages
Percentage non-overlap	This is the percentage of data points at the end of an intervention that surpass the highest scores prior to the intervention. In this report, it will reflect the percentage of learners at Post-Test who exceed the highest Pre-Test scores.	Differences between Pre-Test, Post-Test, and PCA score averages

Participation

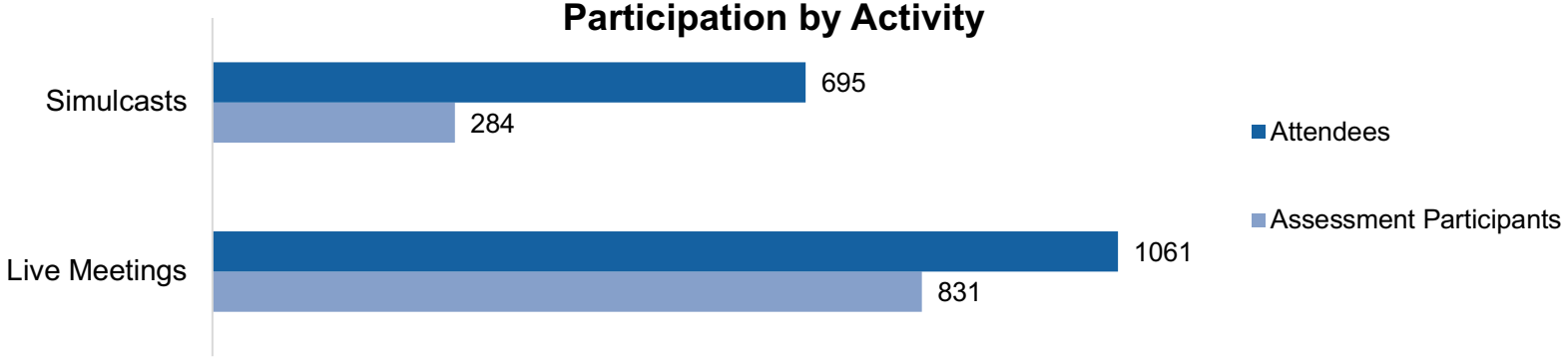
2017 Meeting/Simulcast Location (Date)	Attendees	Assessment Participants
Orlando Live Meeting (09/16/17)	148	118
Cincinnati Live Meeting (09/23/17)	56	51
Seattle Live Meeting (10/07/17)	74	55
Philadelphia Live Meeting (10/14/17)	57	45
Philadelphia Simulcast (10/14/17)	209	77
Dallas Live Meeting (10/21/17)	202	185
Miami Live Meeting (10/28/17)	131	101
Charlotte Live Meeting (11/04/17)	107	56
Phoenix Live Meeting (11/11/17)	123	97
Phoenix Simulcast (11/11/17)	259	122
White Plains Live Meeting (11/18/17)	90	67
White Plains Simulcast (11/18/17)	227	85
Costa Mesa Live Meeting (12/02/17)	73	56
	1,756	**1,115**

Attendee: Registrants
Assessment Participants: Answered at least one question

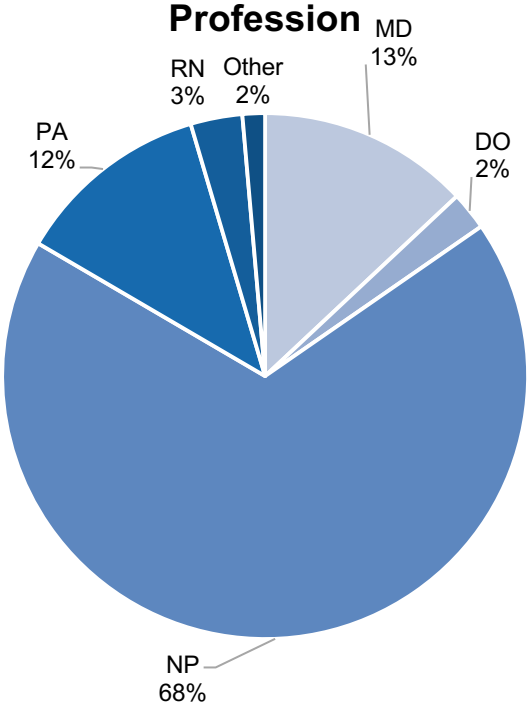
Population Summary

Participation Overview
Attendees: 1,756 Assessment Participants: 1,115

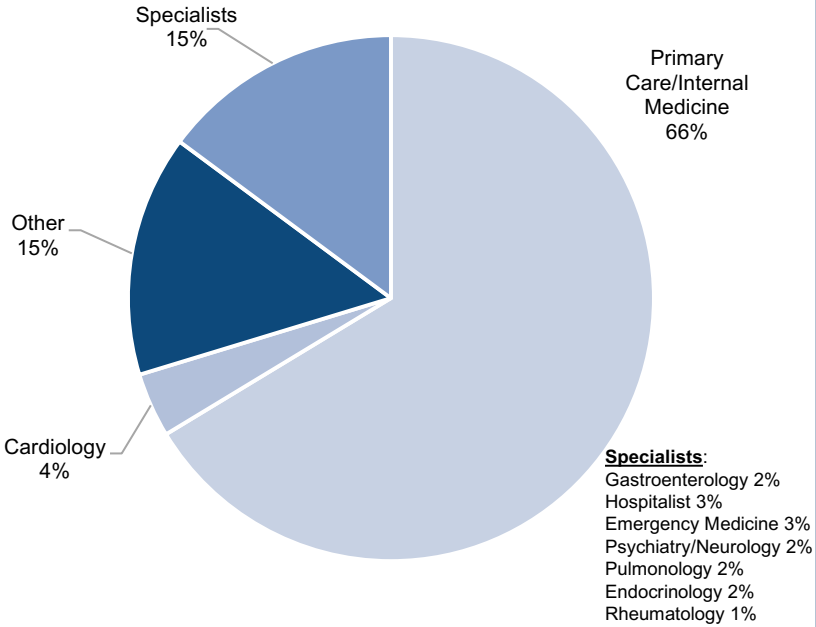
Participation by Activity



Profession



Specialty



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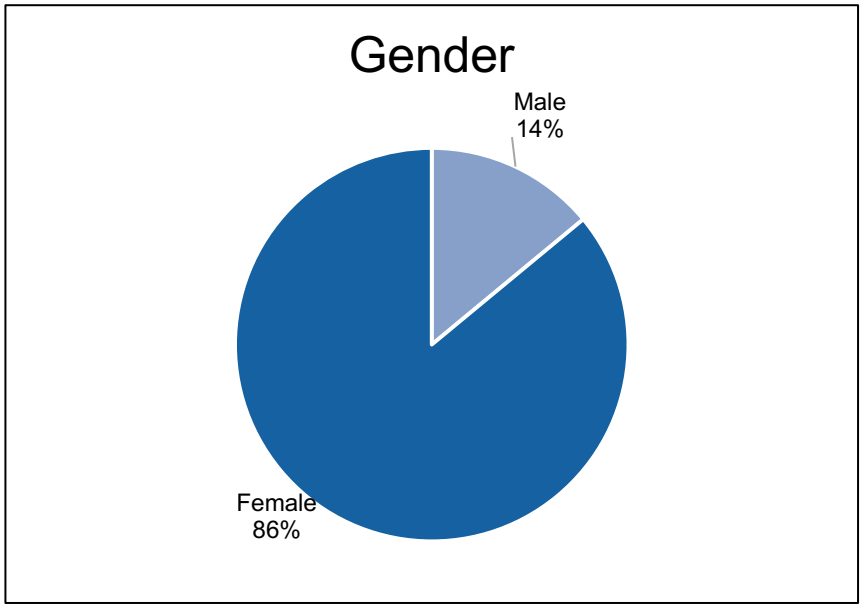
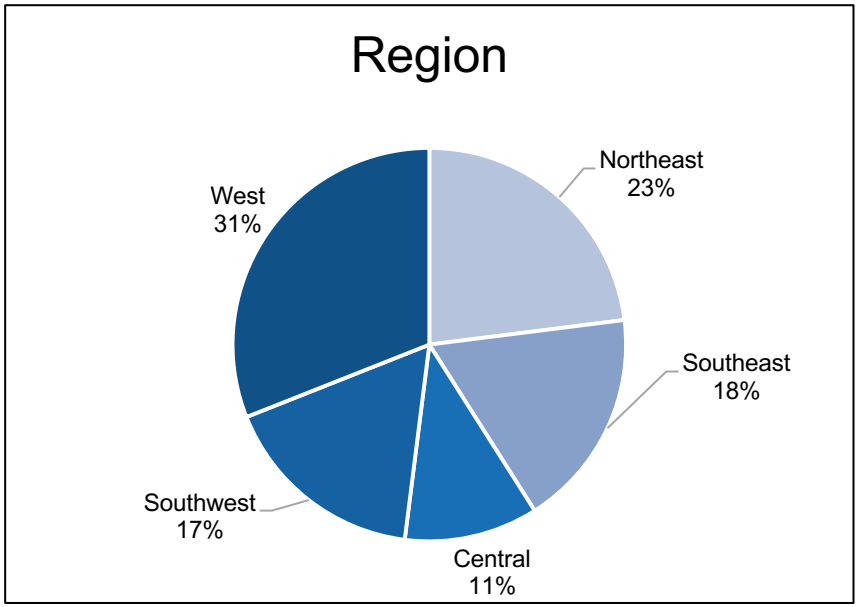
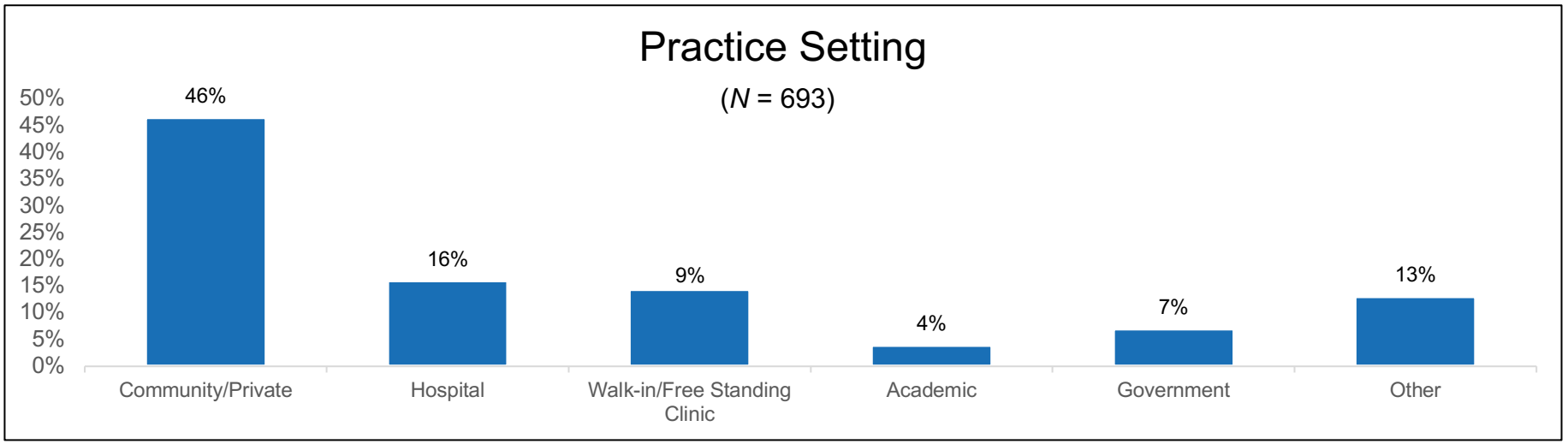
Learner Demographics







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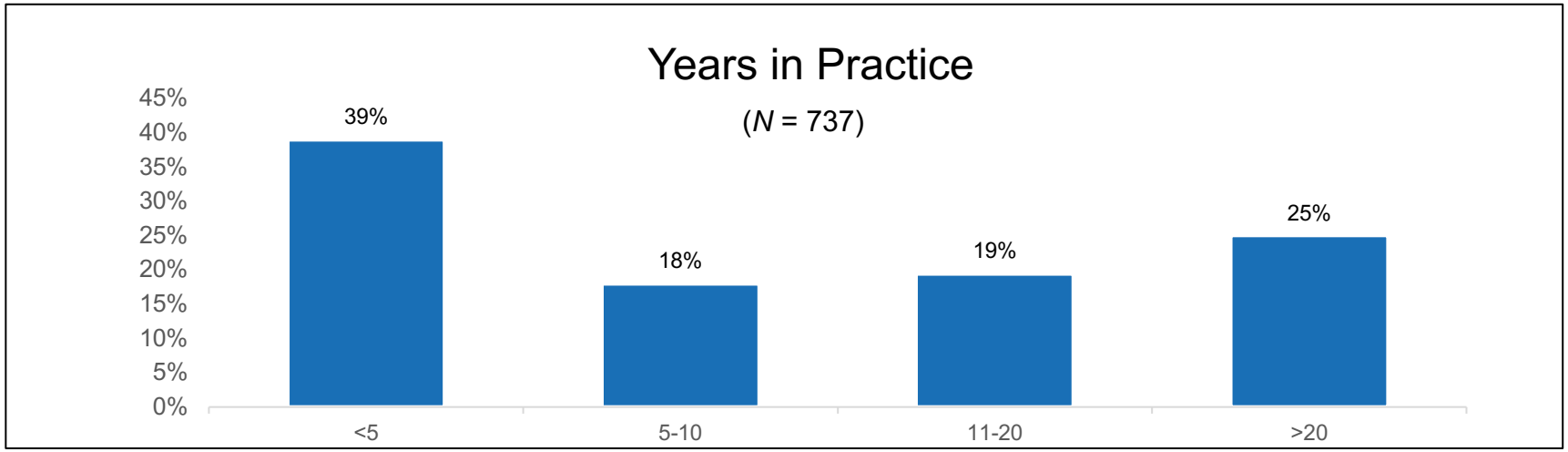
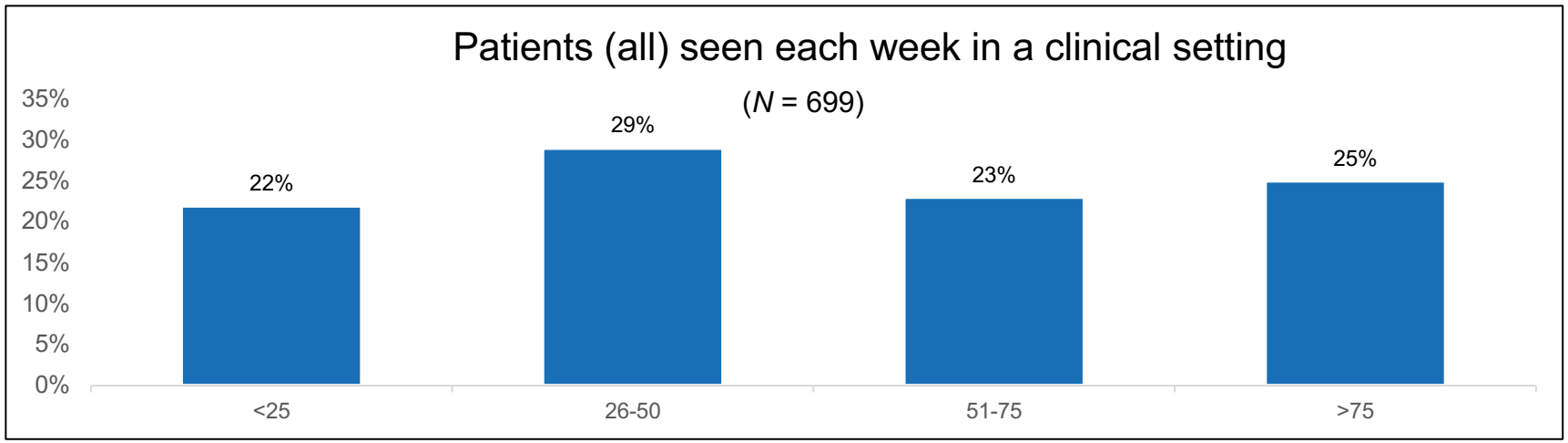
Learner Demographics





Patient reach = 36,715 per week

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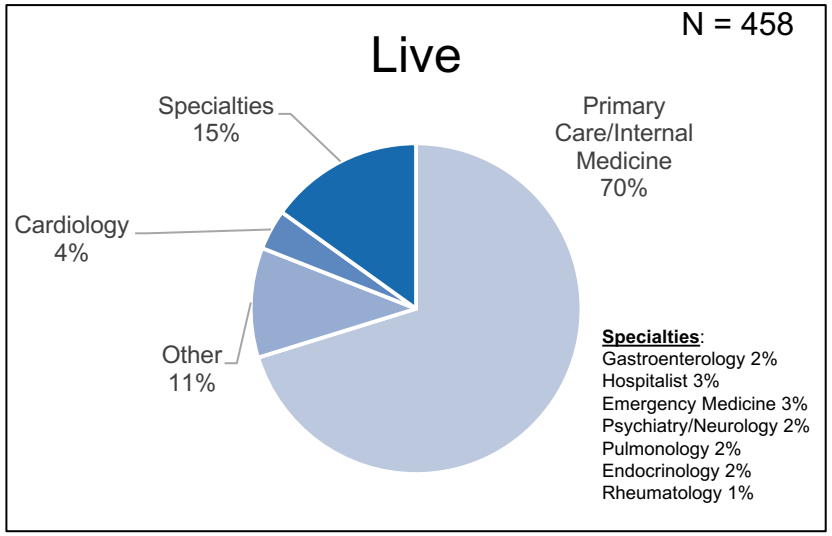
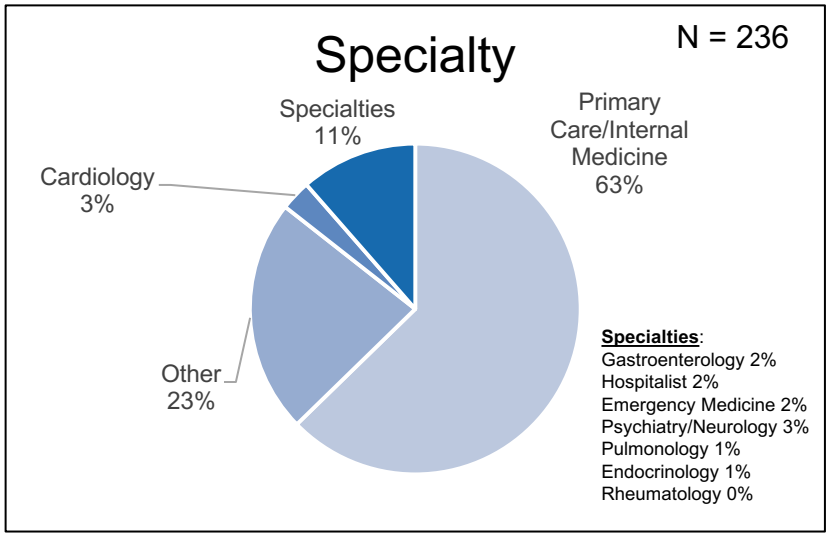
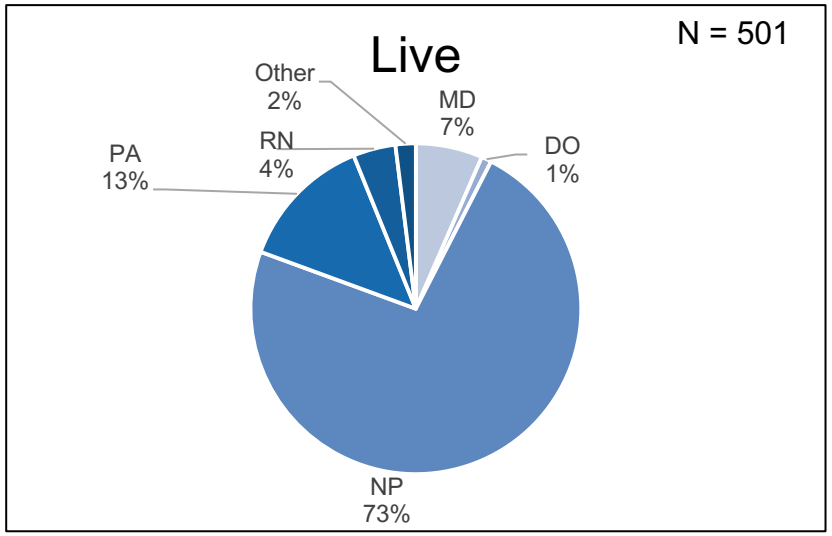
Live vs. Simulcast Demographics

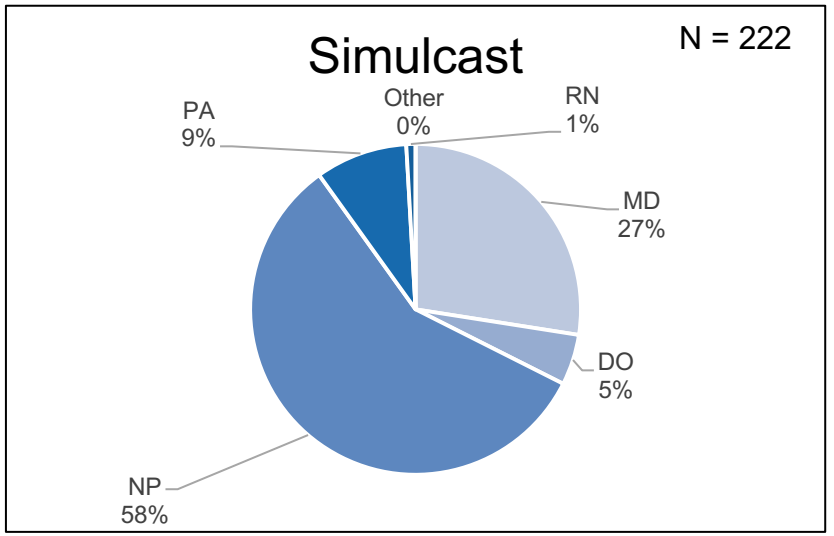
Specialty





Profession





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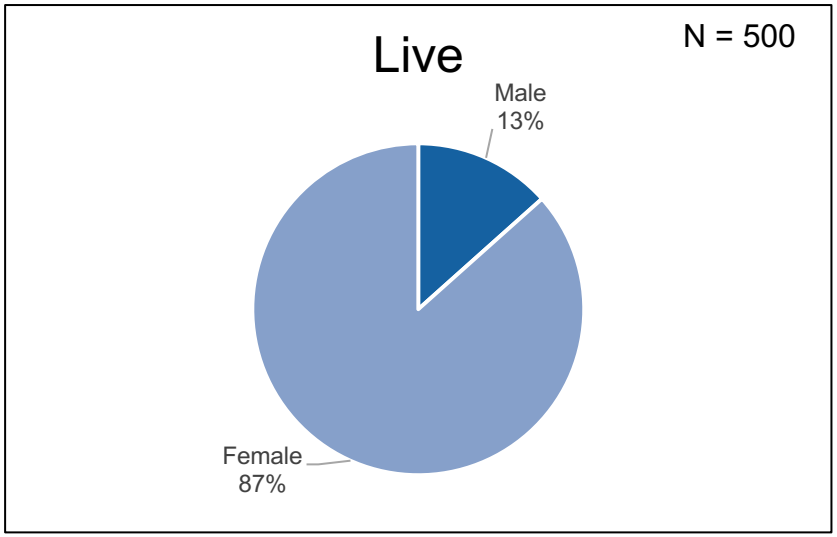
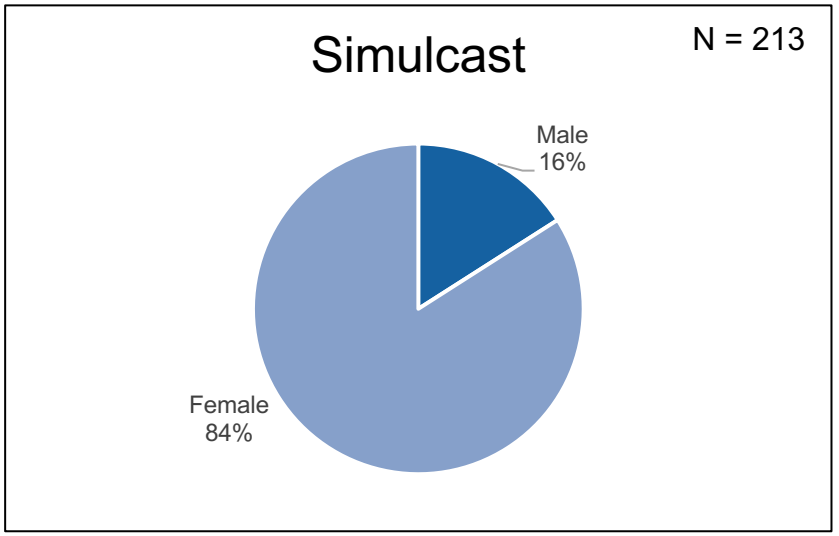
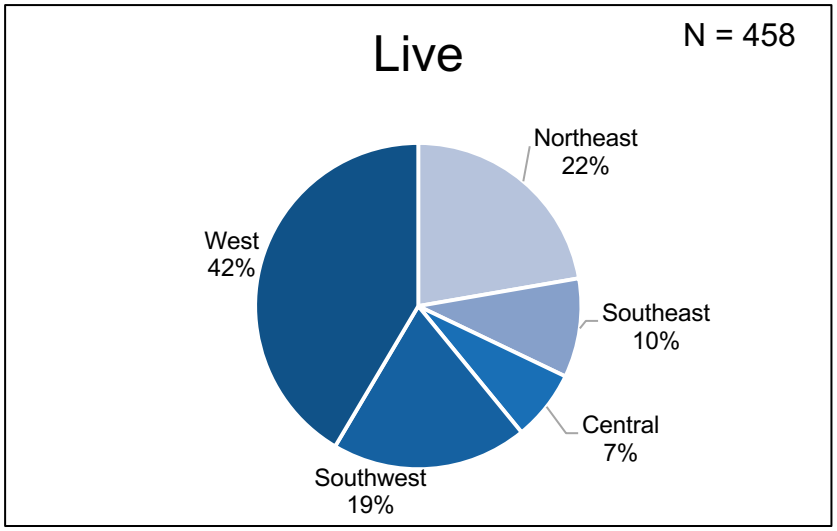
Live vs. Simulcast Demographics

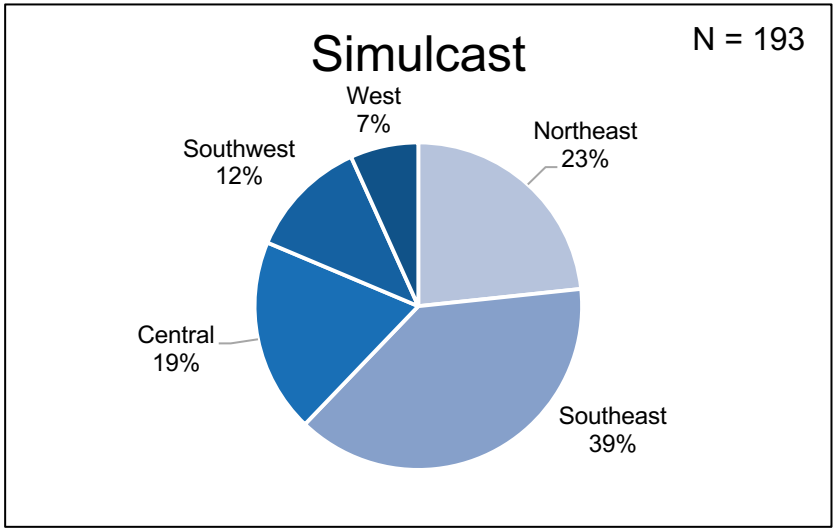
Gender





Region





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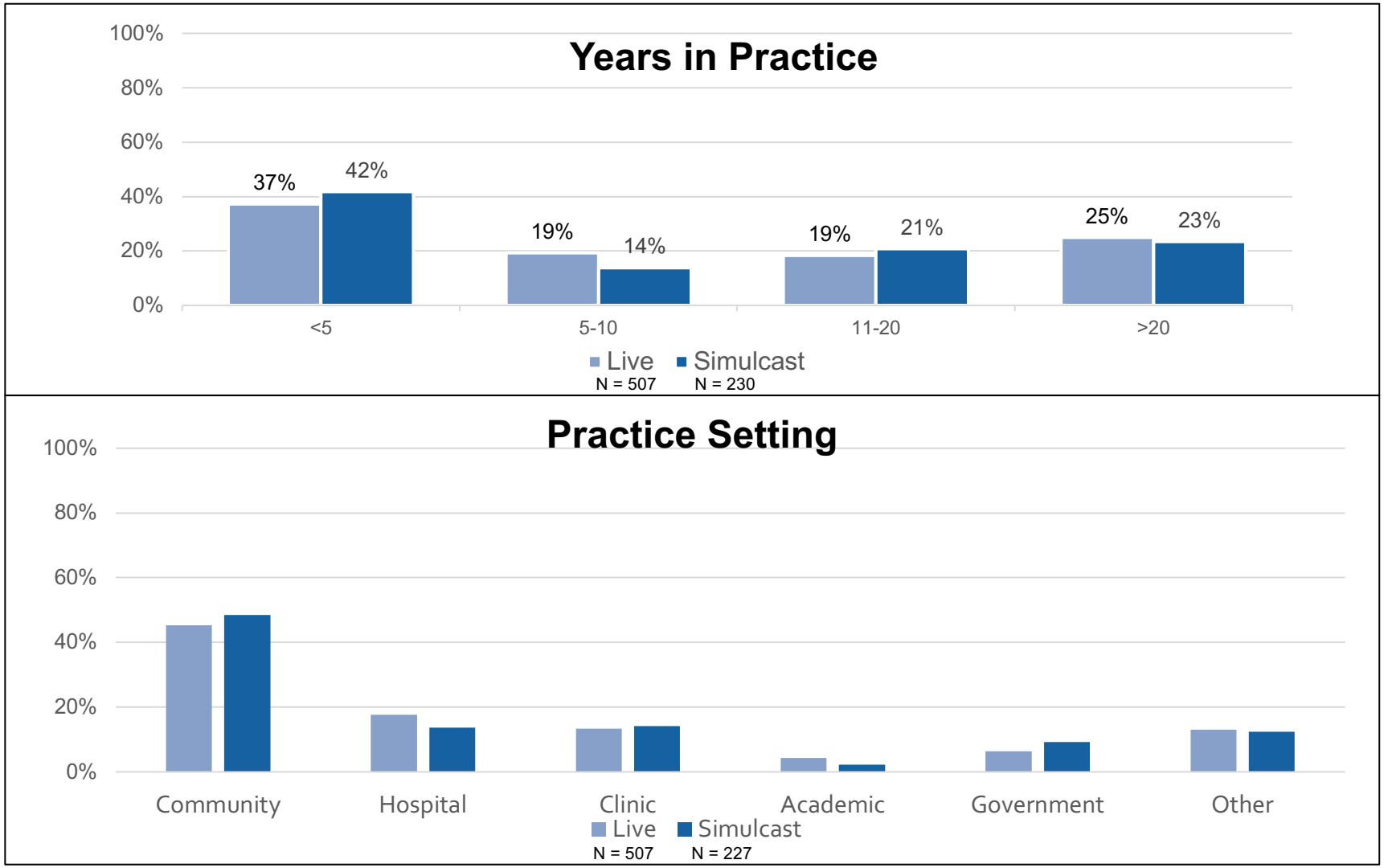
Live vs. Simulcast Demographics



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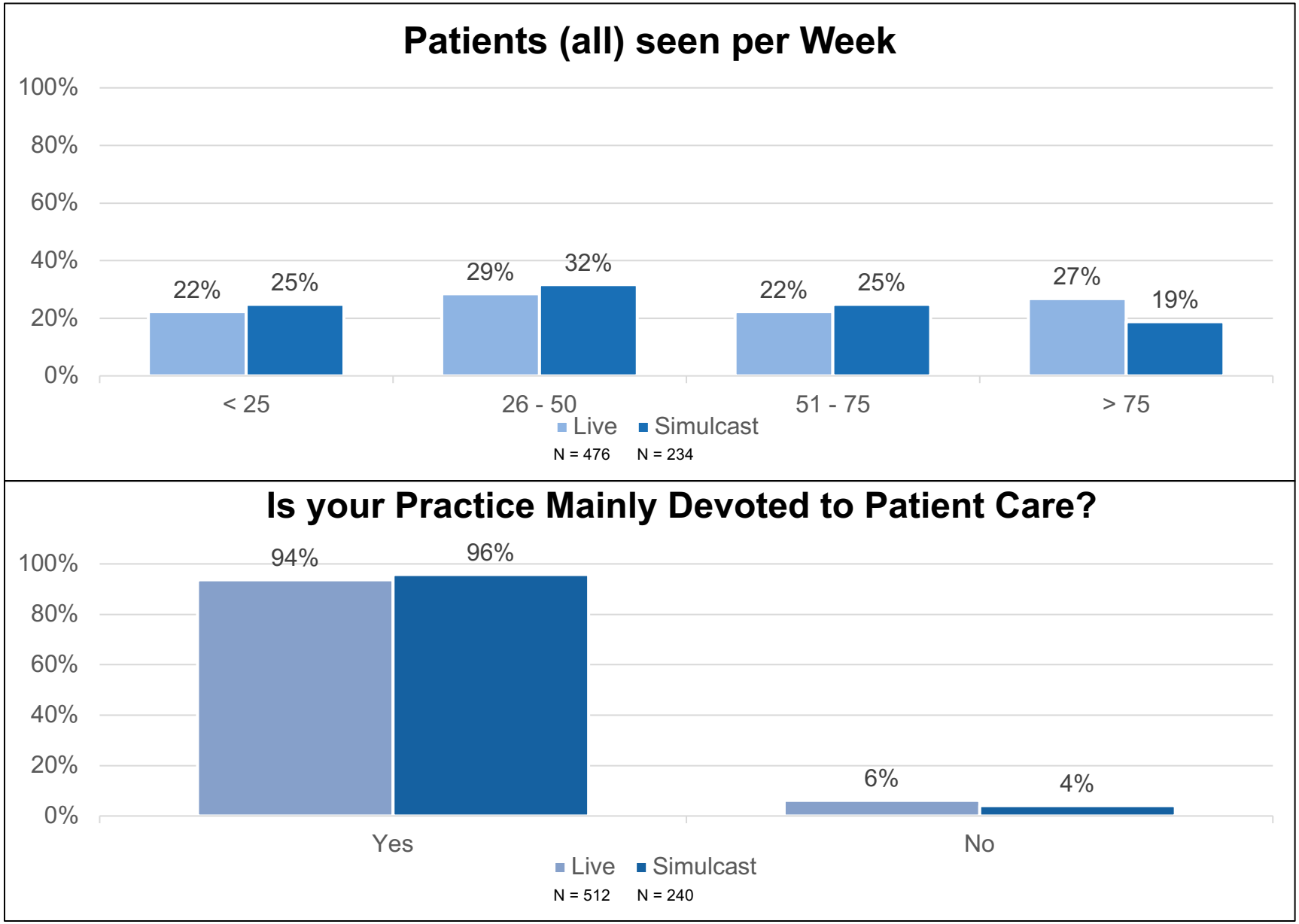
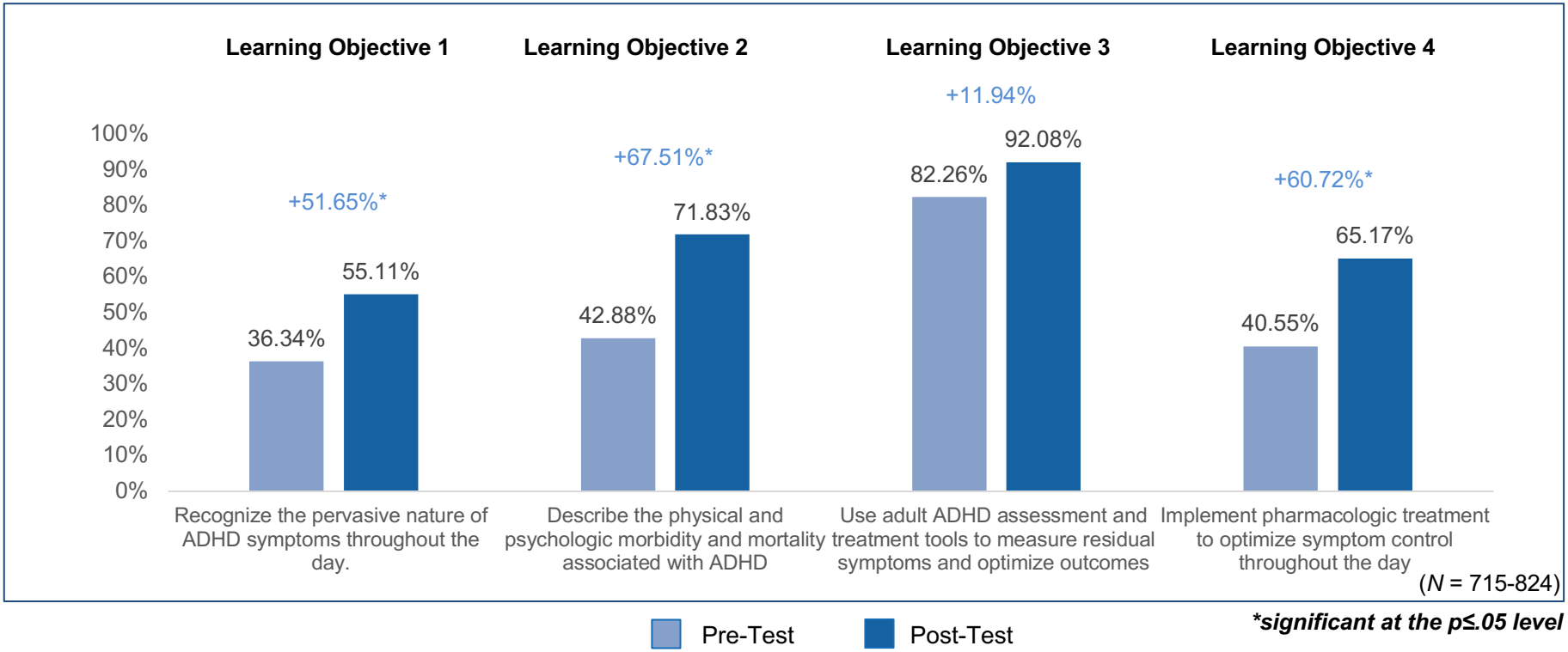
Live vs. Simulcast Demographics



Quantitative Analyses (Learning Objectives)



significant at the p≤.05 level

- Low Pre-Test scores were measured across Learning Objectives 1, 2, and 4. These objectives had substantial significant gains (ranging from 52-68%); however, Post-Test scores remained low.
- Learners achieved the highest Pre-Test (82%) and Post-Test scores (92%) in Learning Objective 3. This objective also showed the least amount of improvement.

Learning Objectives (Live vs. Simulcast Audience)

Learning Objective	Live Meeting (*N* = 832)			Simulcast (*N* =284)		
	Pre-Test	Post-Test	% Change	Pre-Test	Post-Test	% Change
Recognize the pervasive nature of ADHD symptoms throughout the day.	48.82%	58.40%	**+19.62%***	36.10%	45.21%	**+25.24%***
Describe the physical and psychologic morbidity and mortality associated with ADHD	49.75%	74.34%	**+49.43%***	40.61%	64.15%	**+57.97%***
Use adult ADHD assessment and treatment tools to measure residual symptoms and optimize outcomes	83.01%	93.13%	**+12.19%**	79.80%	89.04%	**+11.58%**
Implement pharmacologic treatment to optimize symptom control throughout the day	45.10%	67.20%	**+49.00%***	39.22%	59.00%	**+50.43%***

significant at the p≤.05 level

- Live meeting learners achieved higher scores at Pre-Test and Post-Test in all Learning Objectives.
- For both live meeting and simulcast participants, the greatest gains were measured on Learning Objective 2.

Quantitative Analyses (Learning Domains and Item-Level Analysis)

Learner Performance Insights

- Significant and substantial gains were made in all learning domains from Pre-Test to Post-Test, ranging from 20% to 91%.
- Learners achieved high Post-Test averages in Competence questions.
- Learners remained challenged on Knowledge questions, which had an average Post-Test score of 71%.
- Learners significantly and substantially increased their reported Confidence in their ability to screen and treat patients with ADHD, though Confidence ratings remained moderate.

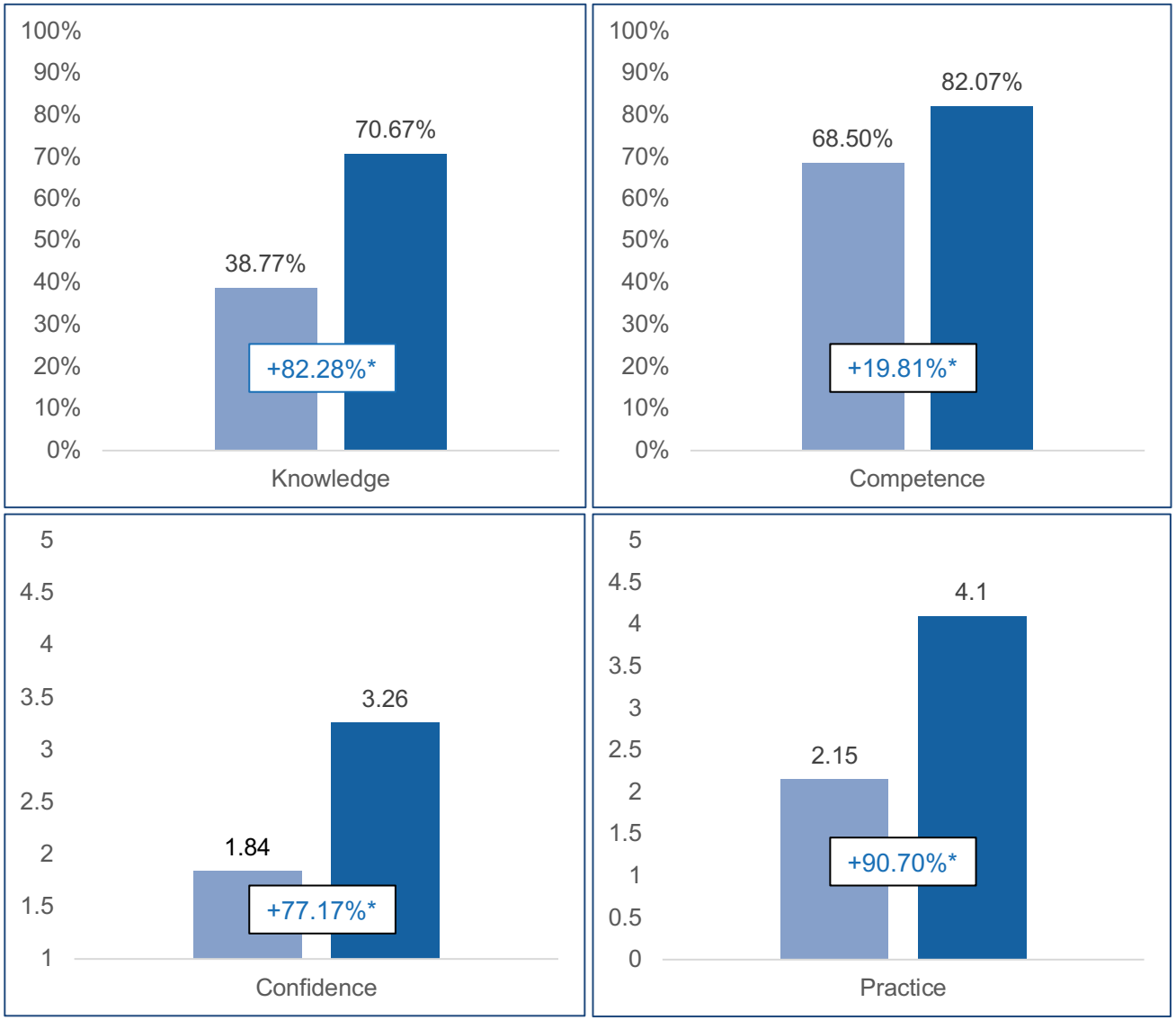
Persistent Gaps to be Addressed in Future CME Activities

An evaluation of learner performance on all curriculum questions revealed three low scoring questions which remained a challenge at Post-Test:

- **Knowledge Question: Proportion of ER visits due to motor vehicle accidents related to consistent use of ADHD medications.**
- **Knowledge Question: Duration of effect of stimulants in adults with ADHD.**
- **Competence Question: Prescribing stimulants after diagnosing patients with ADHD.**

Learning Domains

(*N* = 740-835)



***significant at the p≤.05 level, matched data**

Pre-Test Post-Test

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Curriculum/Activity Intervention Effect

Learning Domain	Effect Size*	% Non-Overlap (PND)
Knowledge	2.323	88.02%
Competence	0.797	46.83%

- The activity had a large impact on learners' Knowledge and Competence, with over 47% of learners at Post-Test exceeding the highest Pre-Test scores.

Effect Size Definition: This is a measure of the strength/magnitude of the change in scores (irrespective of sample size). It is calculated using Cohen's d formula, with the most common ranges of d from 0-1: d < .2 is a small effect, d=.2-.8 is a medium effect, and d > .8 is a large effect.

Learning Domain by Professional Cohort

Learning Domain	Physician Assistant (N=79)				Nurse Practitioner (N=476)			
	N	Pre Test Average Score	Post Test Average Score	% Change	N	Pre Test Average Score	Post Test Average Score	% Change
Knowledge	70	38.36%	76.93%	+100.55%*	380	40.48%	71.17%	+75.82%*
Competence	68	76.53%	71.21%	-6.95%	390	71.17%	85.67%	+20.37%*
Confidence	66	1.82	3.22	+76.92%*	376	1.78	3.22	+80.9%*
Practice	69	2.05	4.04	+97.07%*	380	2.07	4.09	+97.58%*

significant at the p≤.05 level

- Both Physician Assistants and Nurse Practitioners demonstrated statistically significant gains and comparable scores in Knowledge, Confidence, and practice strategy.
- In Competence, NPs demonstrated a lower Pre-Test score than PAs; however, due to their significant 20% gain and the 7% decrease of PAs, NPs' Post-Test score far exceeded that of PAs.

Learning Domains (Live vs. Simulcast Audience)

Learning Domain	Live Meeting (*N* = 832)				Simulcast (*N* = 473)			
	N	Pre Test	Post Test	% Change	N	Pre Test	Post Test	% Change
Knowledge	663	39.54%	73.49%	**+85.86%***	207	36.2%	62.04%	**+71.38***
Competence	665	68.97%	82.27%	**+19.28%***	203	67.00%	81.50%	**+21.64%***
Confidence	561	1.77	3.26	**+84.18%***	214	2.03	3.25	**+60.1%***
Practice	559	2.01	4.19	**+108.46%***	214	2.59	3.83	**+47.88%***

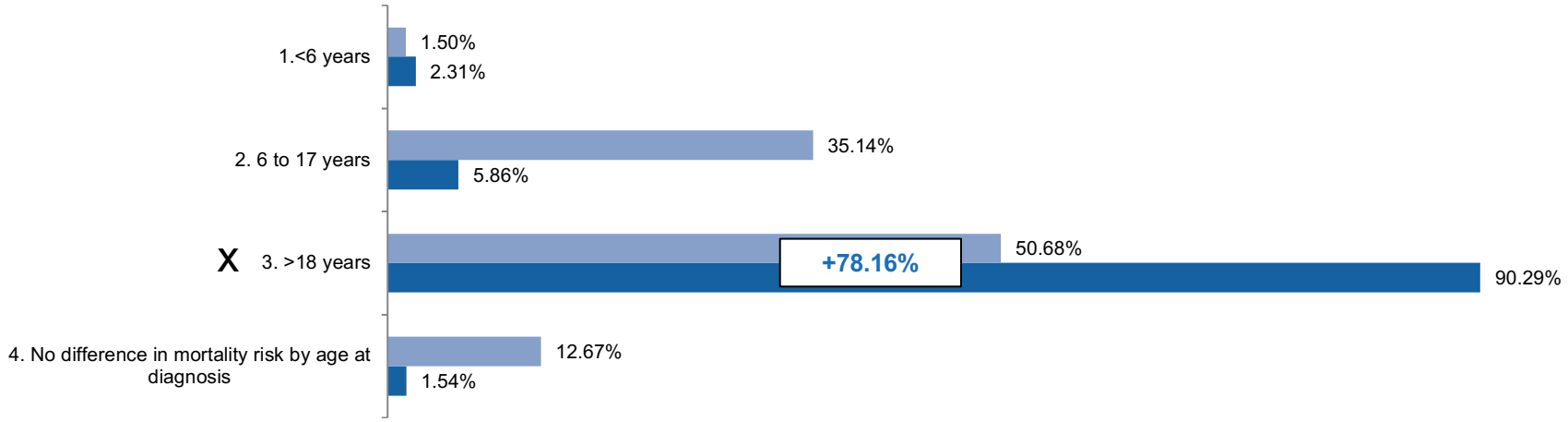
significant at the p≤.05 level

- Both learner groups achieved improvements in all domains from Pre-Test to Post-Test.
- Despite the substantial gains demonstrated in Knowledge, Post-Test scores remained low for both groups. Simulcast participants demonstrated a lower Post-Test Knowledge average compared to live meeting participants.

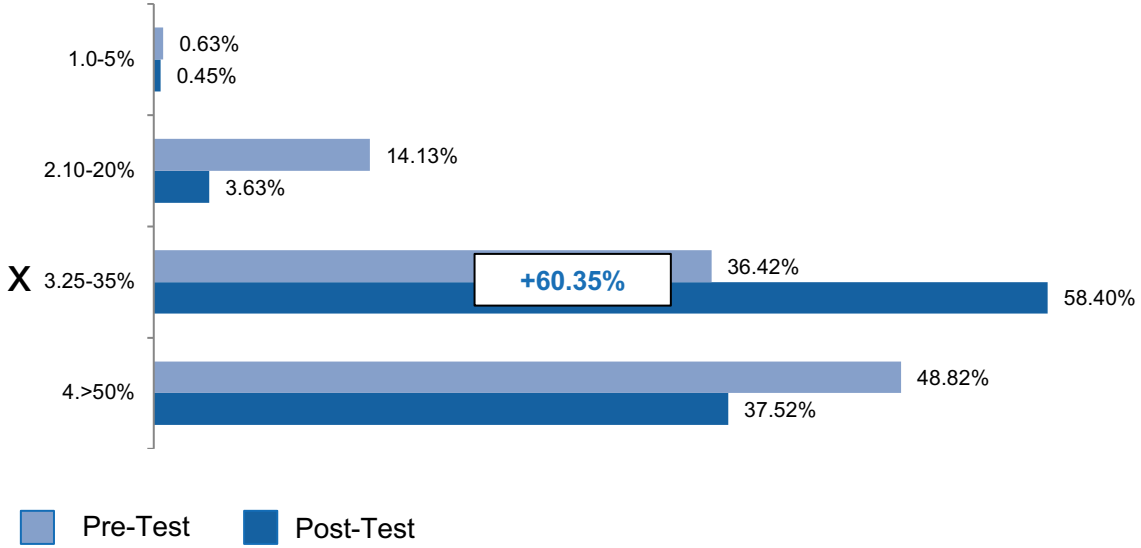
Knowledge Questions

N = (590-663)

Based on registry studies, people diagnosed with ADHD at which of the following ages have the highest risk for death?



Based on a large national cohort study, about what proportion of ER visits due to motor vehicle accidents among adults with ADHD could be prevented with consistent use of ADHD medications?



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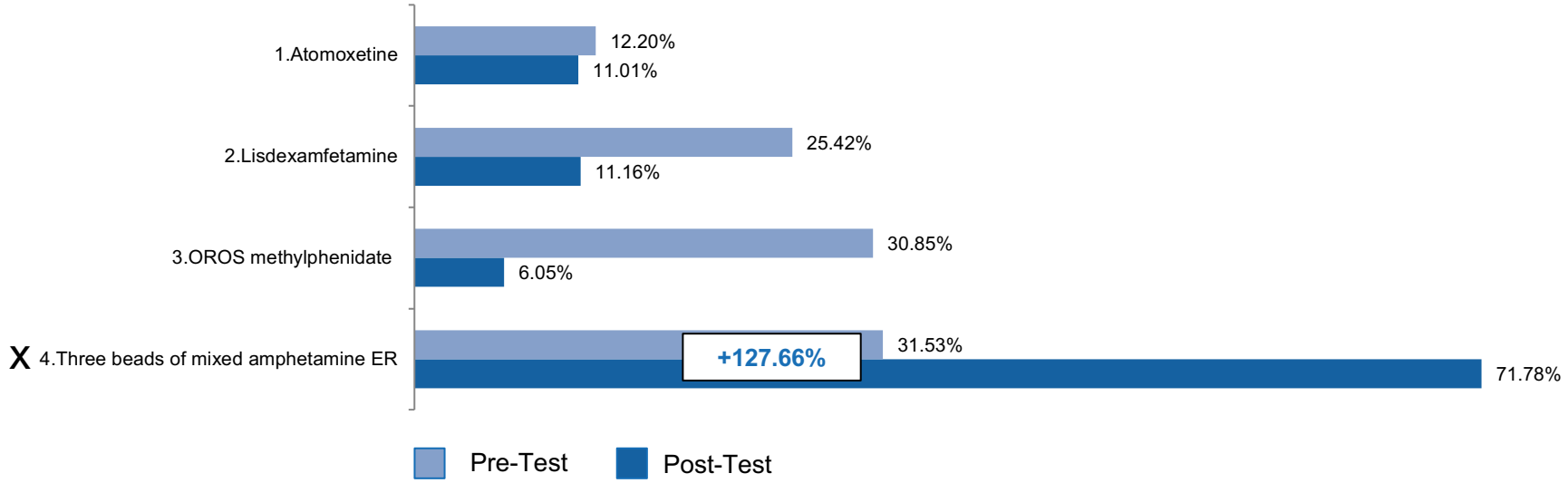
Knowledge Questions

N = (590-663)

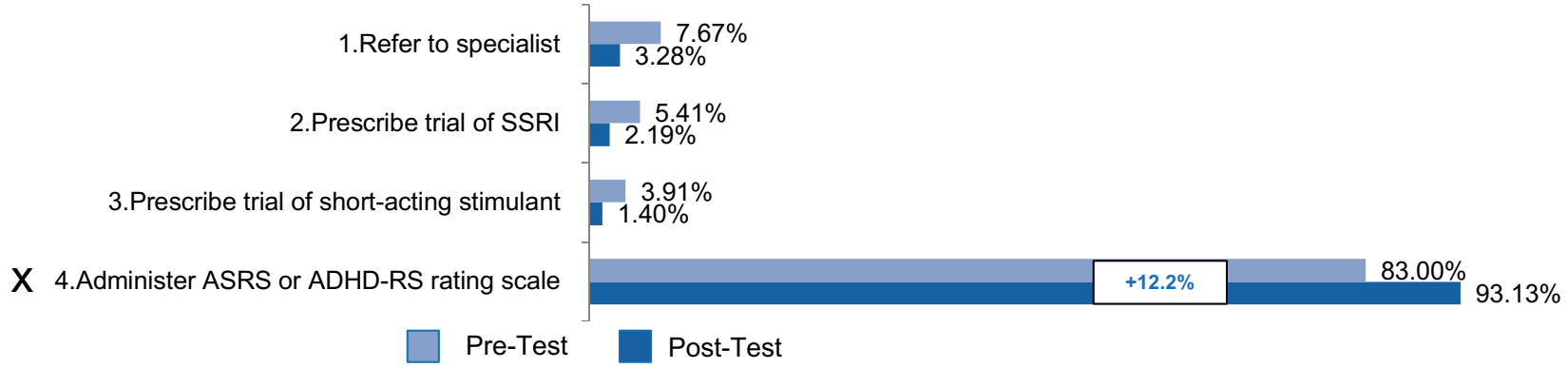
Which of the following agents is a stimulant that is FDA-approved for adults with ADHD and has the longest duration of effect in this category?



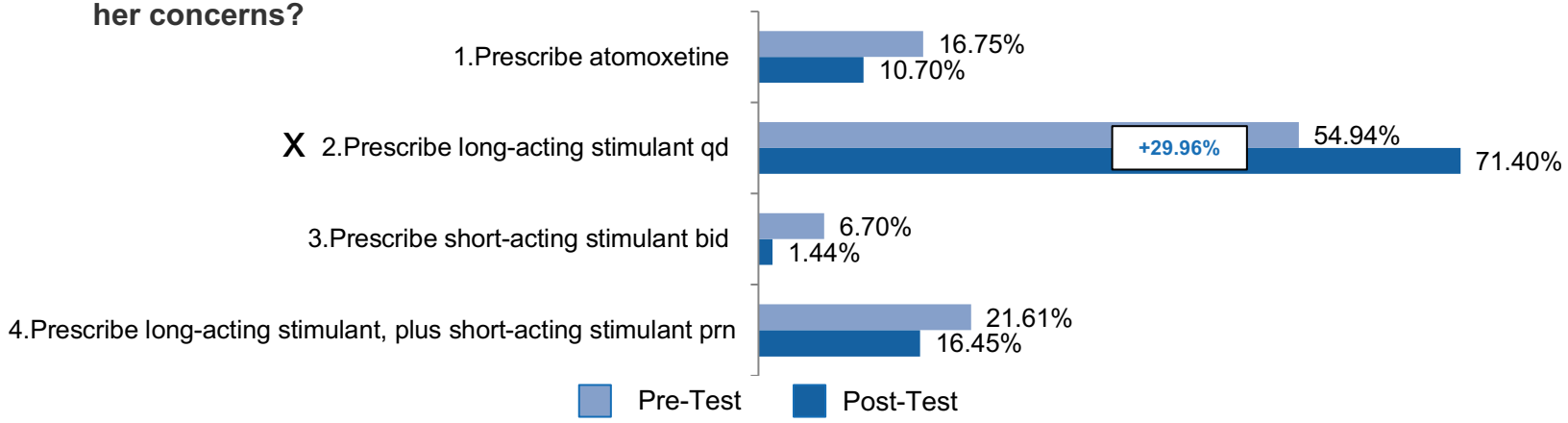
Competence Questions

N = (597-665)

A 41-year-old man presents complaining of feeling stressed and overwhelmed. He is recently divorced and has a 12-year-old son who was diagnosed with ADHD. He has a prior history of major depression, which was treated with an SSRI. He asks if an antidepressant might help him now. Which of the following would be appropriate at this time?



A 30-year-old woman presents with a chief complaint of restlessness and difficulty concentrating. She says she has often had these problems, but recently started a new job and is worried about being able to focus throughout her long work days. An evidence-based workup, including thorough history and diagnostic tools, supports a diagnosis of ADHD. If you diagnose ADHD, which of the following might be appropriate to address her concerns?



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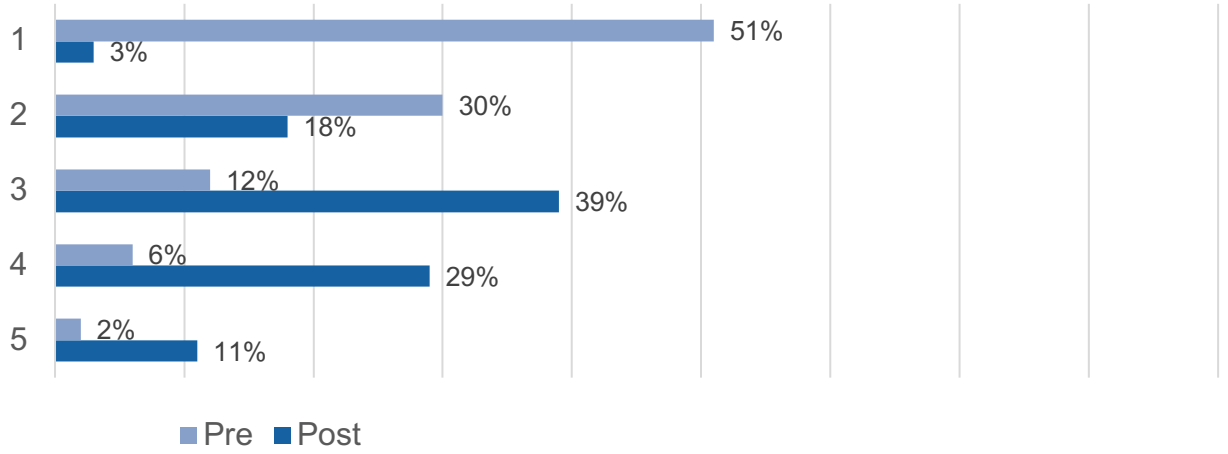
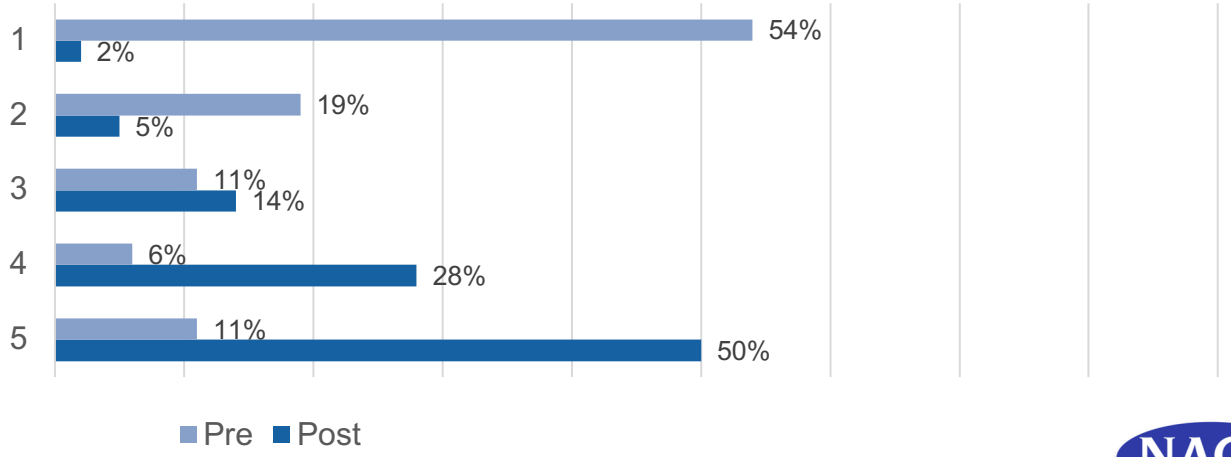
Confidence & Practice Questions

N = (561-632)

Confidence Question:
Please rate your confidence in your ability to select pharmacologic therapy for your adult patients with ADHD:



Practice Question:
How often will you utilize rating scales to screen patients for ADHD prior to making a diagnosis or offering treatment for ADHD?



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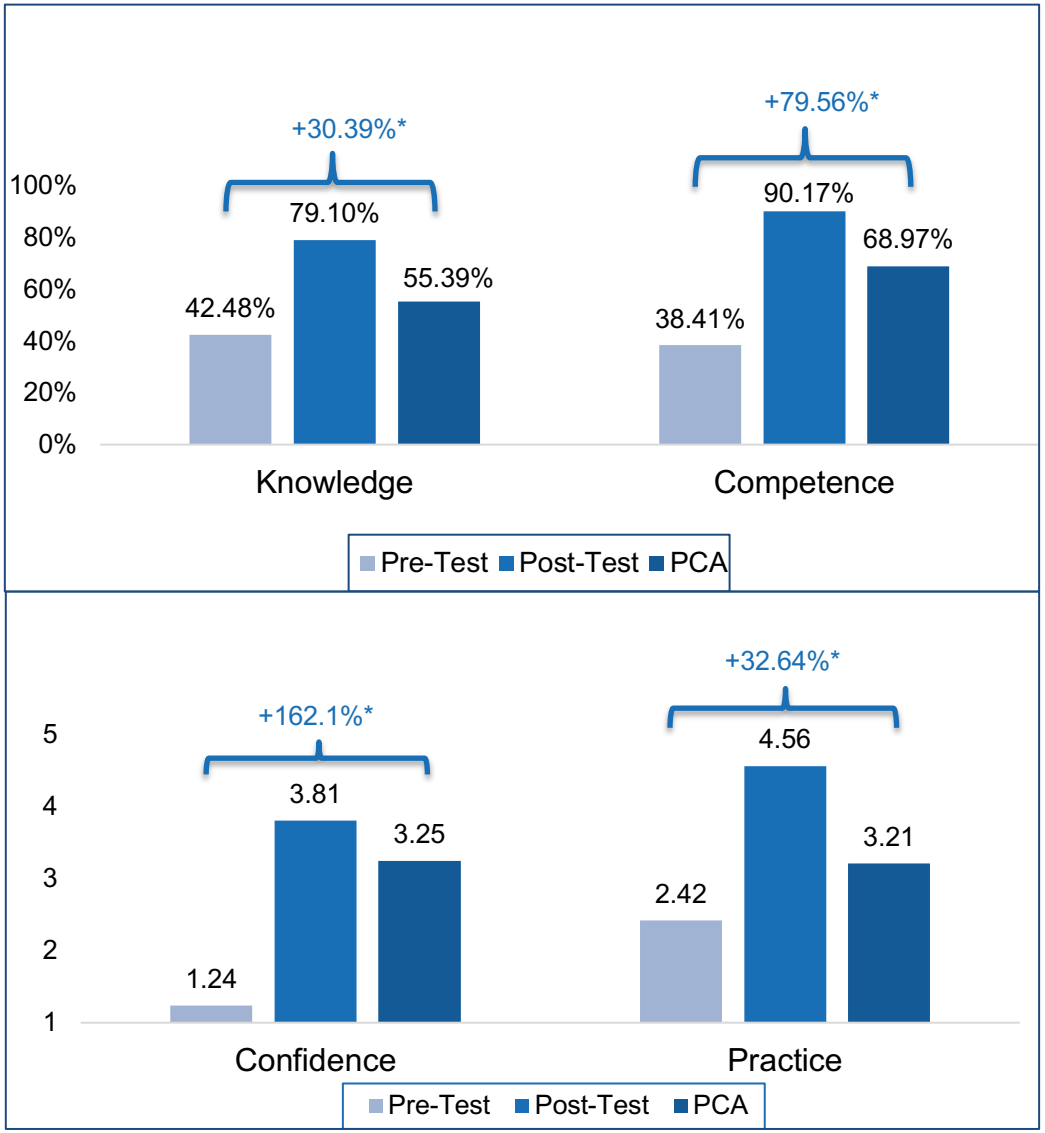
Quantitative Analyses (Retention)



*significant at the p ≤ .05 level

Follow-up assessments (PCA) were sent to participants in the Phoenix and Dallas meetings (N=116). At follow-up:

- Slippage was observed across all domains from Post-Test to PCA.
- Despite that slippage, net gains were measured from Pre-Test to the PCA in all learning domains. Unmatched t-test showed that all of these net gains were significant.

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Identified Learning Gaps:

1. **Proportion of ER visits due to motor vehicle accidents related to ADHD medications.**
2. **Duration of effect of stimulants in adults with ADHD.**
3. **Prescribing stimulants after diagnosing patients with ADHD.**

Knowledge Questions:

Based on a large national cohort study, about what proportion of ER visits due to motor vehicle accidents among adults with ADHD could be prevented with consistent use of ADHD medications? **Results:**

- At Post-Test, 58.40% of learners correctly answered: “25-35%”.
- At Post-Test, 37.52% of learners incorrectly thought “>50%”.

Which of the following agents is a stimulant that is FDA-approved for adults with ADHD and has the longest duration of effect in this category? **Results:**

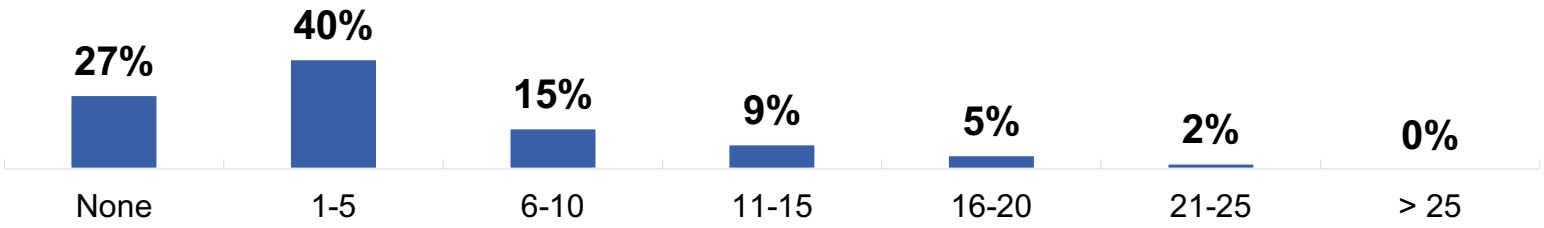
- At Post-Test, 71.78% of learners correctly answered: “Three beads of mixed amphetamine ER”.
- At Post-Test, 11.16% of learners incorrectly thought “Lisdexamfetamine”.

Competence Question:

A 30-year-old woman presents with a chief complaint of restlessness and difficulty concentrating. She says she has often had these problems, but recently started a new job and is worried about being able to focus throughout her long work days. An evidence-based workup, including thorough history and diagnostic tools, supports a diagnosis of ADHD. If you diagnose ADHD, which of the following might be appropriate to address her concerns? **Results:**

- At Post-Test, 71.40% of learners correctly answered: “Prescribe long-acting stimulant qd”.
- At Post-Test, 16.45% of learners incorrectly thought “Prescribe long-acting stimulant, plus short-acting stimulant prn”.

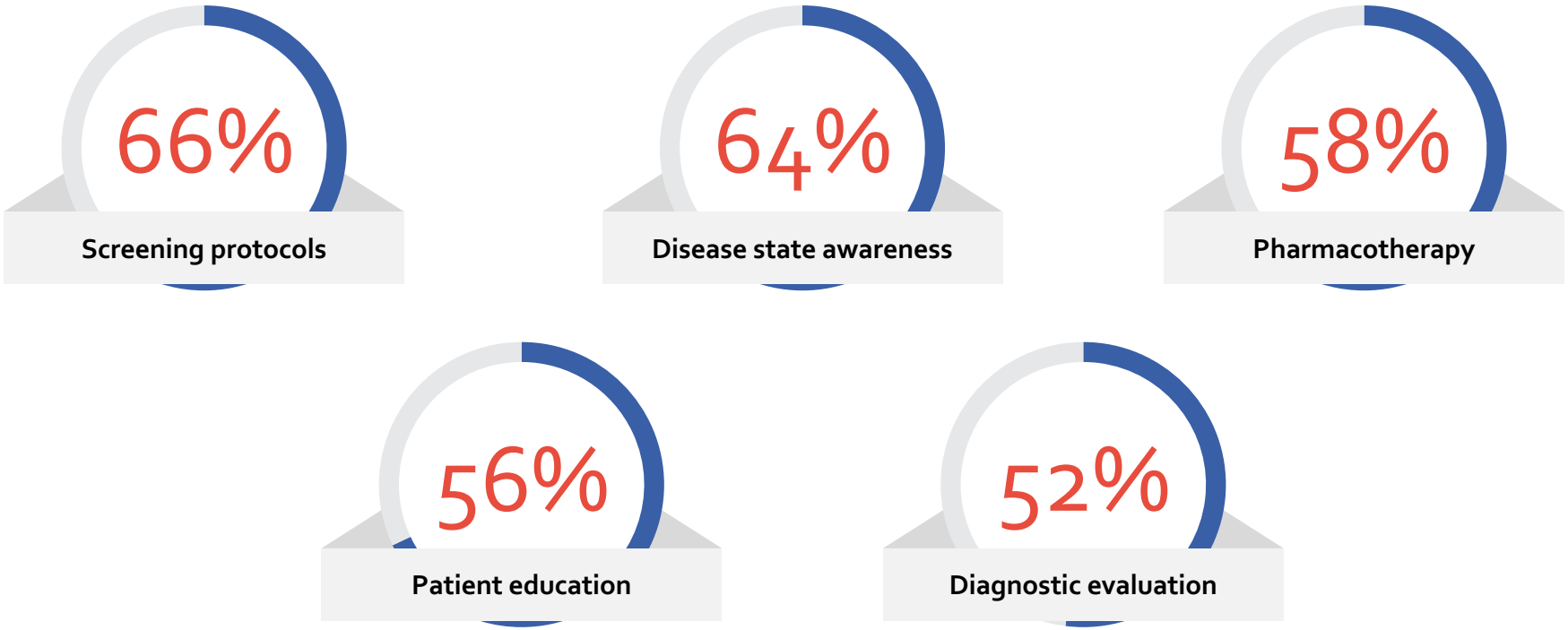
Patients visits with ADHD seen each week in a clinical setting:



Sample Size: N = 1637

Please select the specific areas of skills, or practice behaviors, you have improved regarding the treatment of patients with ADHD since this CME activity. (Select all that apply)

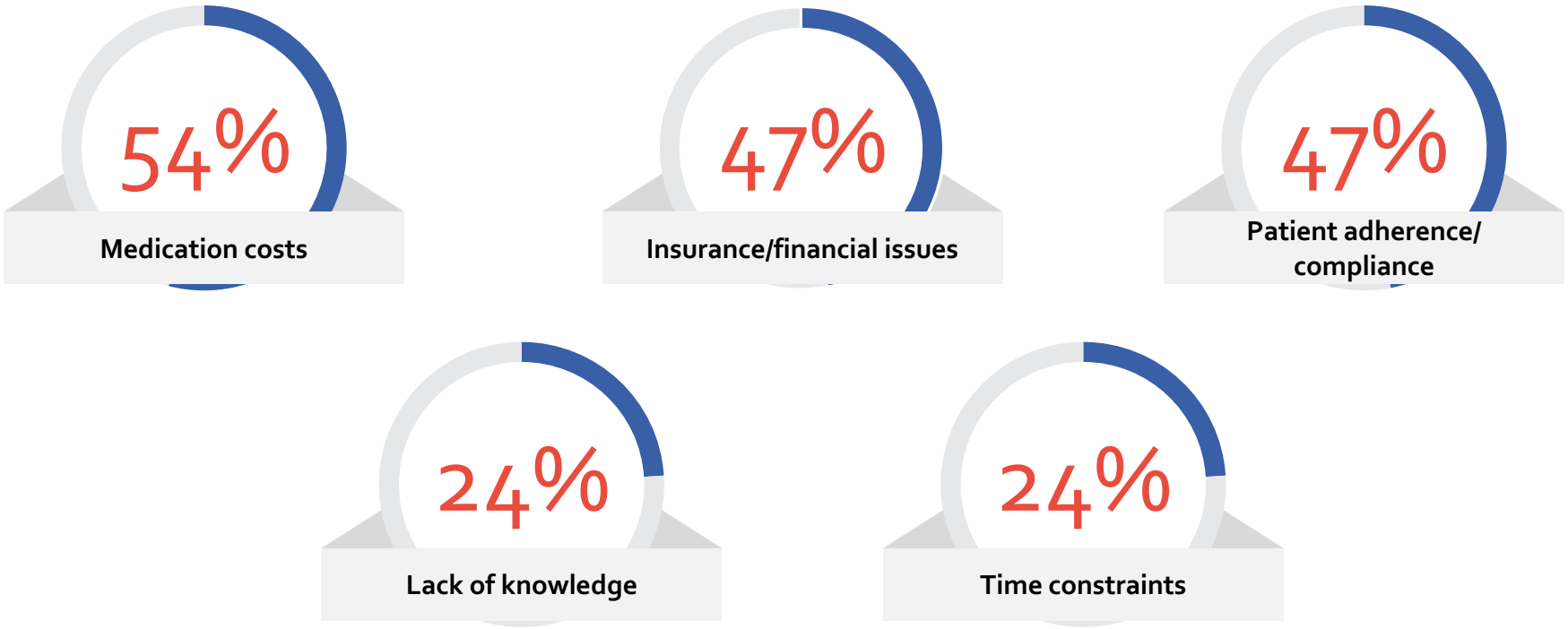
(4-week Post Assessment)



Sample Size: N = 185

What specific barriers have you encountered that may have prevented you from successfully implementing strategies for patients with ADHD since this CME activity? (Select all that apply)

(4-week Post Assessment)



Sample Size: N = 185

New Specific Behaviors Reported at 4 weeks

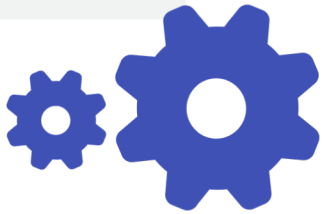
I am able to add ADHD as a differential diagnosis for adults as well, before I thought it only existed in kids as a problem

I am now using the ASRS rating scale

I feel more confidant initiating ADHD discussions with my patients

I recognize that short acting stimulants are not recommended for treating Adults with ADHD

I am more confident prescribing medications for patients with ADHD



Executive Summary: Overall Educational Impact

- This curriculum consisted of 10 live meetings and 3 simulcast events focused on screening and treating patients with ADHD within the primary care setting.
- Improvements ranging from (12-68%) were seen across all Learning Objectives within the curriculum.
    - Despite a substantial 52% improvement, Learning Objective's Post-Test average remained low (55%). The low scoring Knowledge question that addressed the proportion of ER visits due to motor vehicle accidents that are related to ADHD medications was the reason for the low Post-Test score in this Learning Objective.
- Improvements were seen across all learning domains within the curriculum, ranging from (20%-91%).
- There was a strong effect on learners' Knowledge and Competence with 88% and 46% (respectively) of Post-Test learners exceeding the highest Pre-Test scores.

Executive Summary: Overall Educational Impact

- PAs and NPs demonstrated improvement in all learning domains, with the exception of PAs' Competence score. NPs had lower Pre-Test Competence scores compared to PAs; however, due to their greater gain, their Post-Test average exceeded that of PAs.
- Learners in the Live Meeting cohort demonstrated higher Knowledge scores than Simulcast learners. Comparable scores and gains were observed in the other learning domains.
- **After 4 weeks, the most consistently reported change in practice behavior was the recognition of the need to include ADHD in the differential diagnosis when evaluating adults and to utilize ADHD rating scales**.
- The analyses of the Knowledge and Competence domains identified three persistent learning gaps within the primary care setting that future education should continue to focus on:

1. **Proportion of ER visits due to motor vehicle accidents that are related to untreated ADHD**
2. **Duration of effect of stimulants in adults with ADHD**
3. **Prescribing stimulants after diagnosing patients with ADHD**