Exploring the Relationship Between Program Signaling & Interview Invitations Across Specialties

2024 ERAS® Preliminary Analysis

Data as of 12/29/2023

Association of
American Medical Colleges

Program Signals: Overview

Program Signals

What is a program signal?

- Program signals *offer applicants the opportunity to express interest* in a residency program at the time of application.

- Program signals are *intended to be used by programs as one of many data points* in deciding whom to invite to interview.

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Goals of Signal Approaches

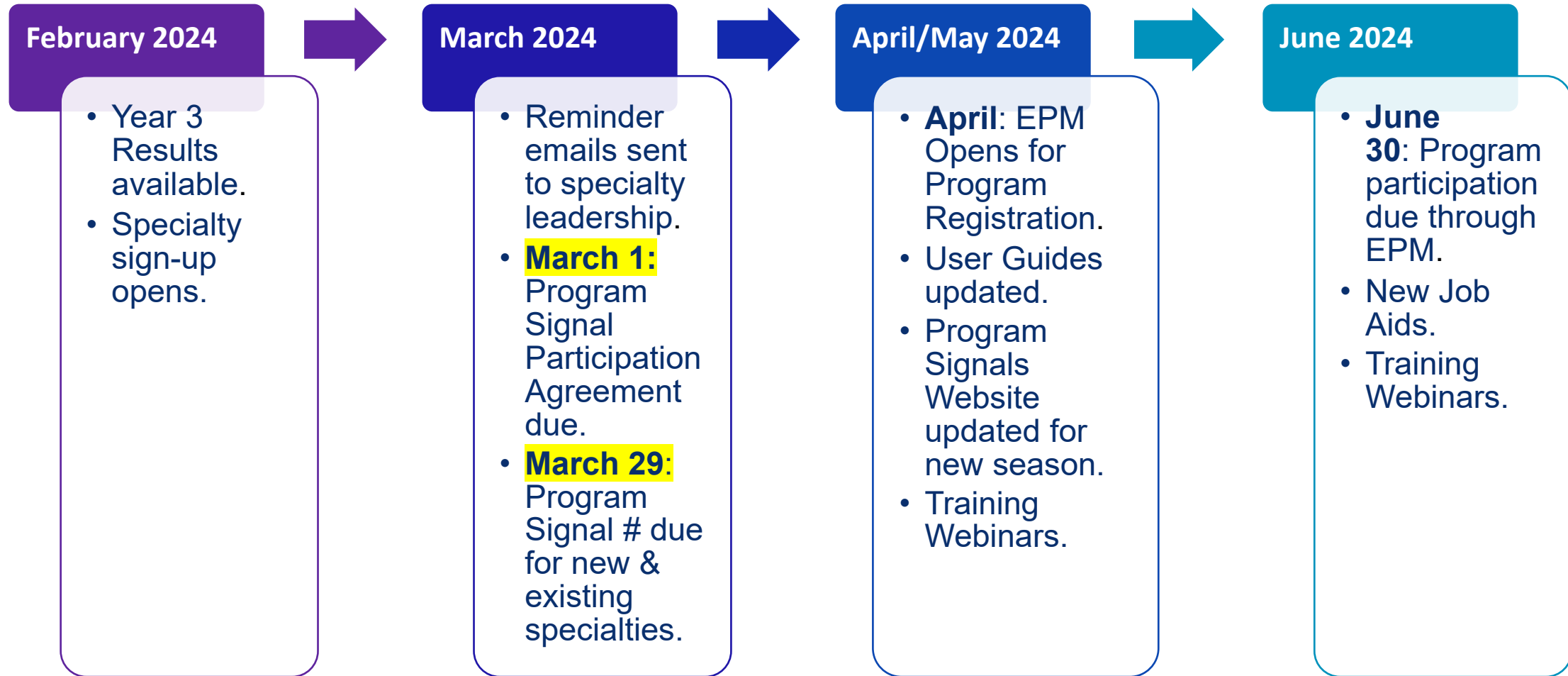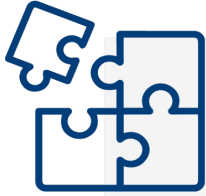|	Small	Large	Two-Tier
Goal	• Top Programs only.	• Distributes signals more evenly.	• Distributes signals more evenly. • Greater flexibility for applicants.
Example(s)	• General Surgery (5). • Internal Medicine (7).	• Orthopedic Surgery (30). • ENT (25).	• OBGYN (3 Gold, 25 Silver). • Dermatology (3 Gold, 25 Silver).

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Pros & Cons of Signal Approaches

	Small	Large	Two-Tier
Pros	• True top programs. • Guards against use of signals as interview invitation criteria.	• Distributes signals more evenly.	• Distributes signals more evenly. • Gold identifies top programs & silver gives flexibility.
Cons	• May be insufficient for accurately representing all applicant preferences. • High concentration in a small # of programs.	• Tempting to use as threshold. • Value of signal may be diluted.	• Tempting to use as threshold. • Explanation more challenging.

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2025 ERAS Program Signaling Timeline

February 2024

- Year 3 Results available.
- Specialty sign-up opens.

March 2024

- Reminder emails sent to specialty leadership.
- **March 1:** Program Signal Participation Agreement due.
- **March 29**: Program Signal # due for new & existing specialties.

April/May 2024

- **April**: EPM Opens for Program Registration.
- User Guides updated.
- Program Signals Website updated for new season.
- Training Webinars.

June 2024

- **June 30**: Program participation due through EPM.
- New Job Aids.
- Training Webinars.

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Consider Key Questions & Review Data

Conceptual

- What are we trying to learn from signals?

- What goals are we trying to accomplish with signals?

- How much risk do we want to ask applicants to bear?

- How much change can our community tolerate?

- How much evidence do we need to support a change?

Data

- Did we accomplish our goals? Were there any unintended consequences?

- How did applicants react to small, 2-tiered, and large number signals?

- Did specialties that used a different approaches accomplish goals that we didn't?

- Did specialties use signals similarly regardless of # of signals?

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Sample of 2024 ERAS Applicants in the Following Specialties:

- Anesthesiology.

- Child Neurology.

- Dermatology.

- Diagnostic Radiology.

- Emergency Medicine.

- Family Medicine.

- General Surgery.

- Internal Medicine.

- Internal Medicine/Psychiatry.

- Interventional Radiology.

- Neurodevelopmental Disabilities*.

- Neurological Surgery.

- Neurology.

- Obstetrics & Gynecology.

- Orthopedic Surgery.

- Otolaryngology.

- Pathology.

- Pediatrics.

- Physical Medicine & Rehabilitation.

- Psychiatry.

- Public Health and General Preventive*.

- Thoracic Surgery.

* Results not included due to sample size.

Analysis

- **Predictors:**
  - Program signal.

- **Outcome:**
  - Scheduled to interview PDWS or Thalamus Interview Scheduler as of December 29, 2023.

- **Analysis:**
  - Results analyzed separately by program.
  - Computed signal to interview conversation rates by program.
  - Summarized the distribution of conversion rates programs using boxplots.

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What information is provided by a boxplot?

Boxplots show the distribution of signal to interview conversion rates for all programs in a specialty.

The colored box shows the signal to interview conversion rates for the bulk of the programs. The bottom of the box is the 25th percentile, the horizontal line is the median or the 50th percentile, and the top of the box is the 75th percentile.

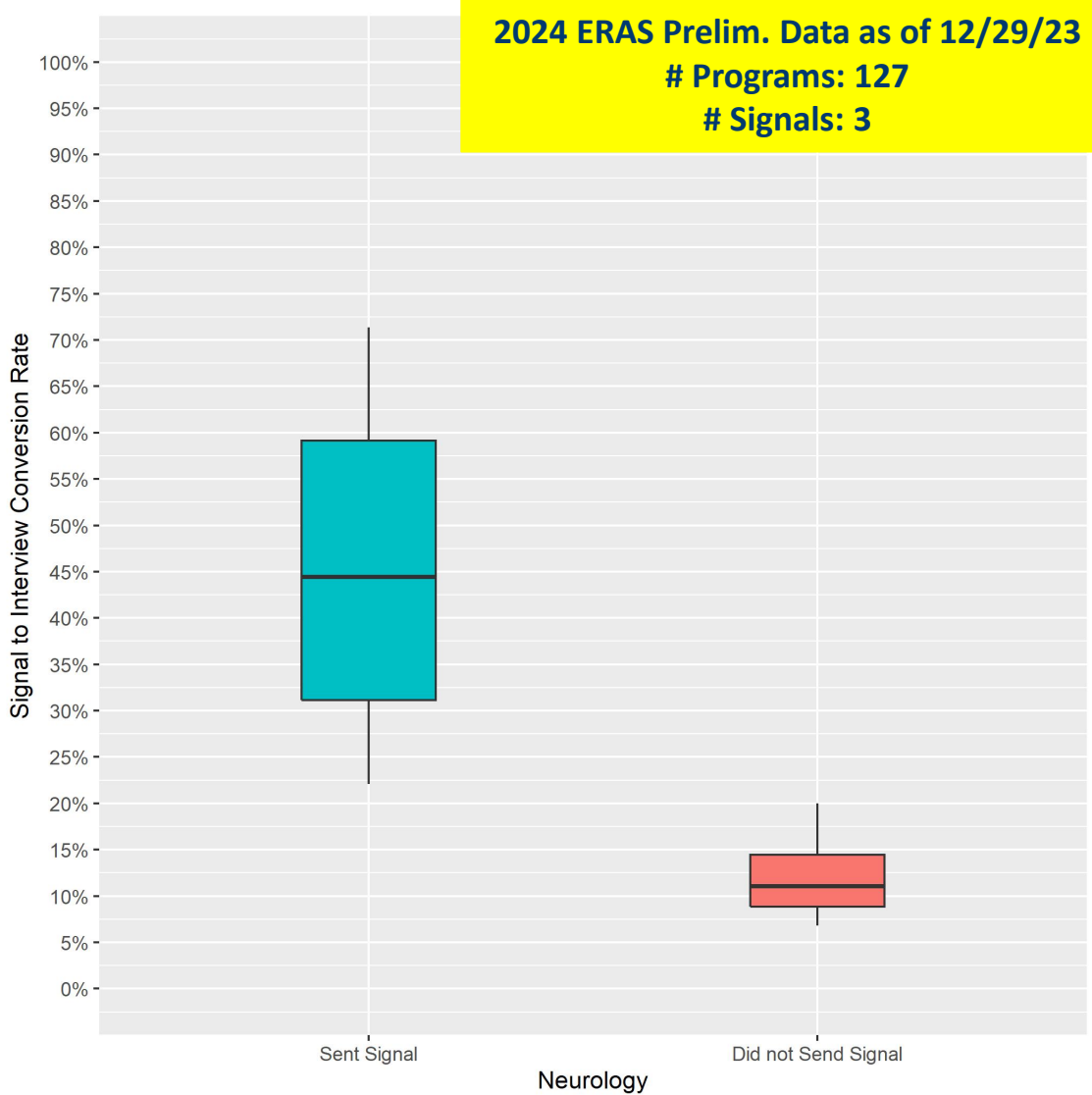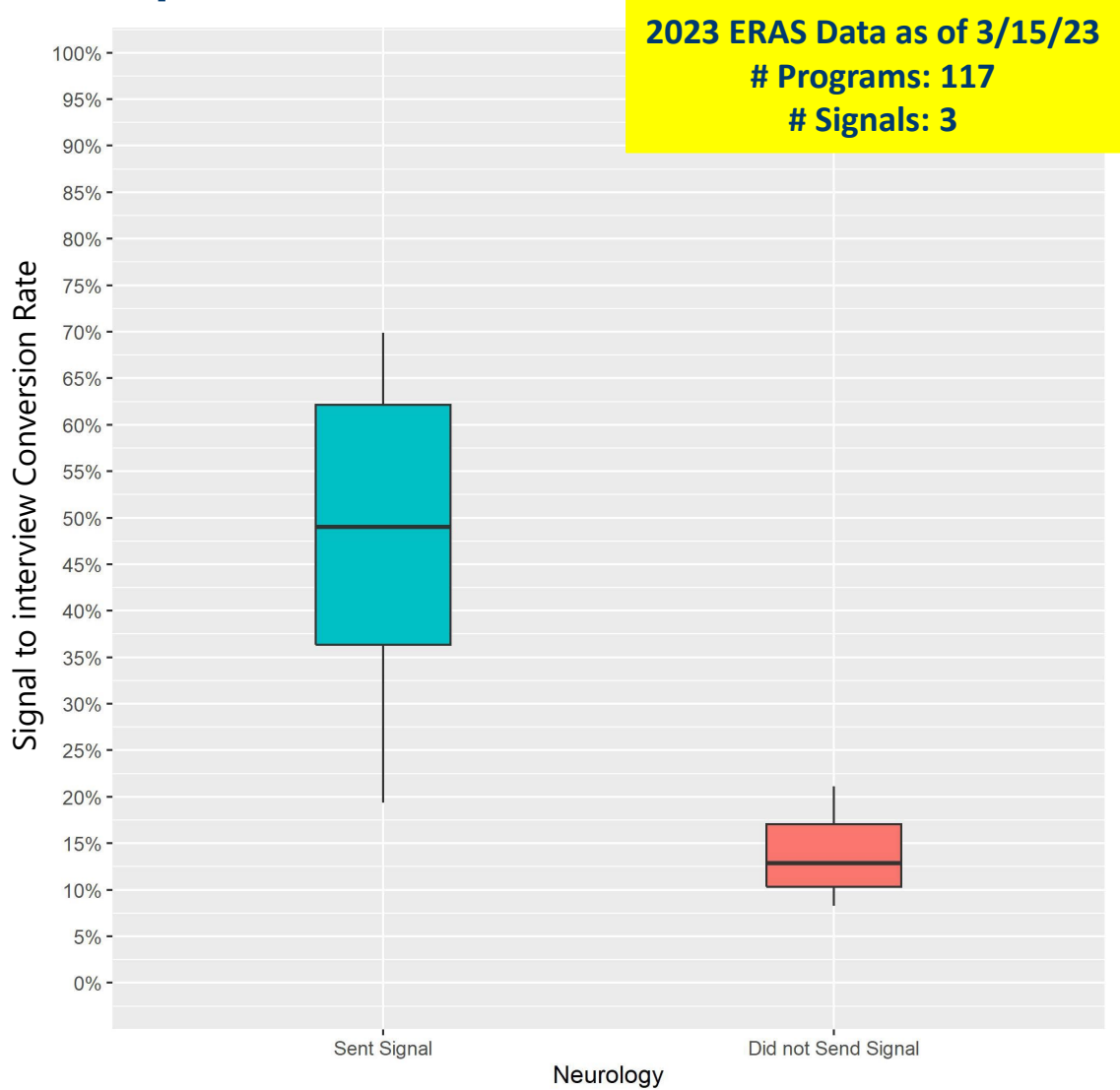The whiskers represent the 10th and 90th percentile of programs' interview invitation rates.
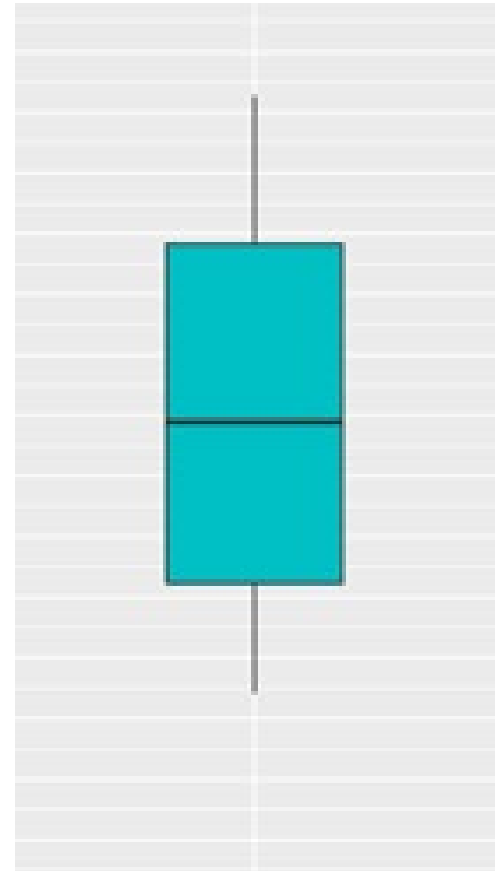
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Adult Neurology: Program Sample & Inclusion Criteria

	N of Programs for Program Signals
Total programs	176
Total programs participating in program signaling	165
Did not meet inclusion rule equal to or larger than 7:1; Did not provide PGY1 info in GME track; Did not provide interview offer data by December 29, 2023	31
N Programs with fewer than 10 Program Signals	7
Total analytic sample	**127**
Total % of programs participating in program signaling	**77%**
Total % of all Adult Neurology programs in 2024 ERAS® cycle	**72%**

Adult Neurology: Interview Rates by Program Signal Status Year Over Year Comparison

2023 ERAS Data as of 3/15/23
Programs: 117
Signals: 3

2024 ERAS Prelim. Data as of 12/29/23
Programs: 127
Signals: 3

Anesthesiology: Program Sample & Inclusion Criteria

	N of Programs for Program Signals
Total programs	166
Total programs participating in program signaling	156
Did not meet inclusion rule equal to or larger than 5:1; Did not provide PGY1 info in GME track; Did not provide interview offer data by December 29, 2023	11
N Programs with fewer than 10 Program Signals	0
Total analytic sample	**145**
Total % of programs participating in program signaling	**93%**
Total % of all Anesthesiology programs in 2024 ERAS cycle	**87%**

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Anesthesiology: Interview Rates by Program Signal Status Year Over Year Comparison
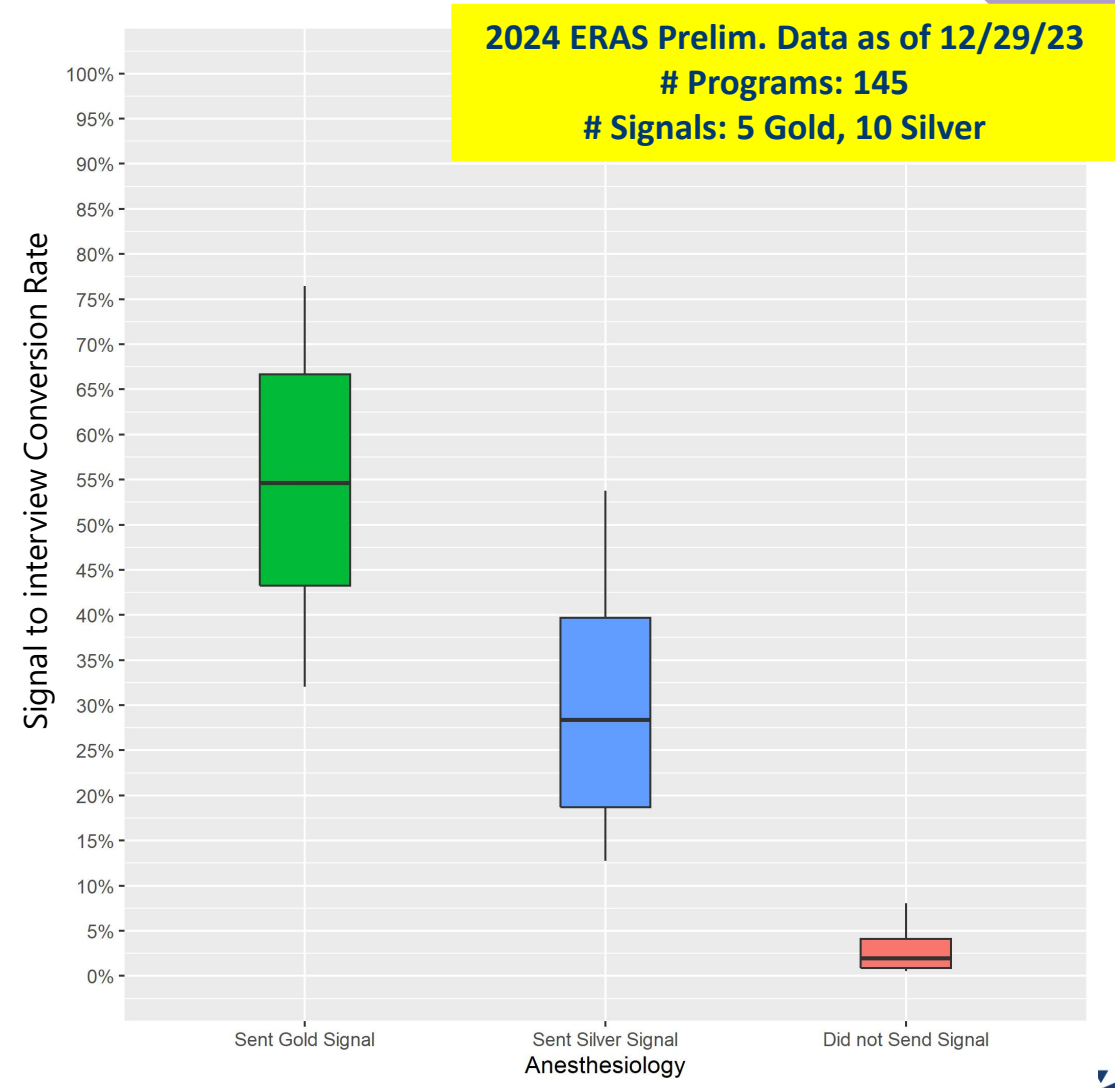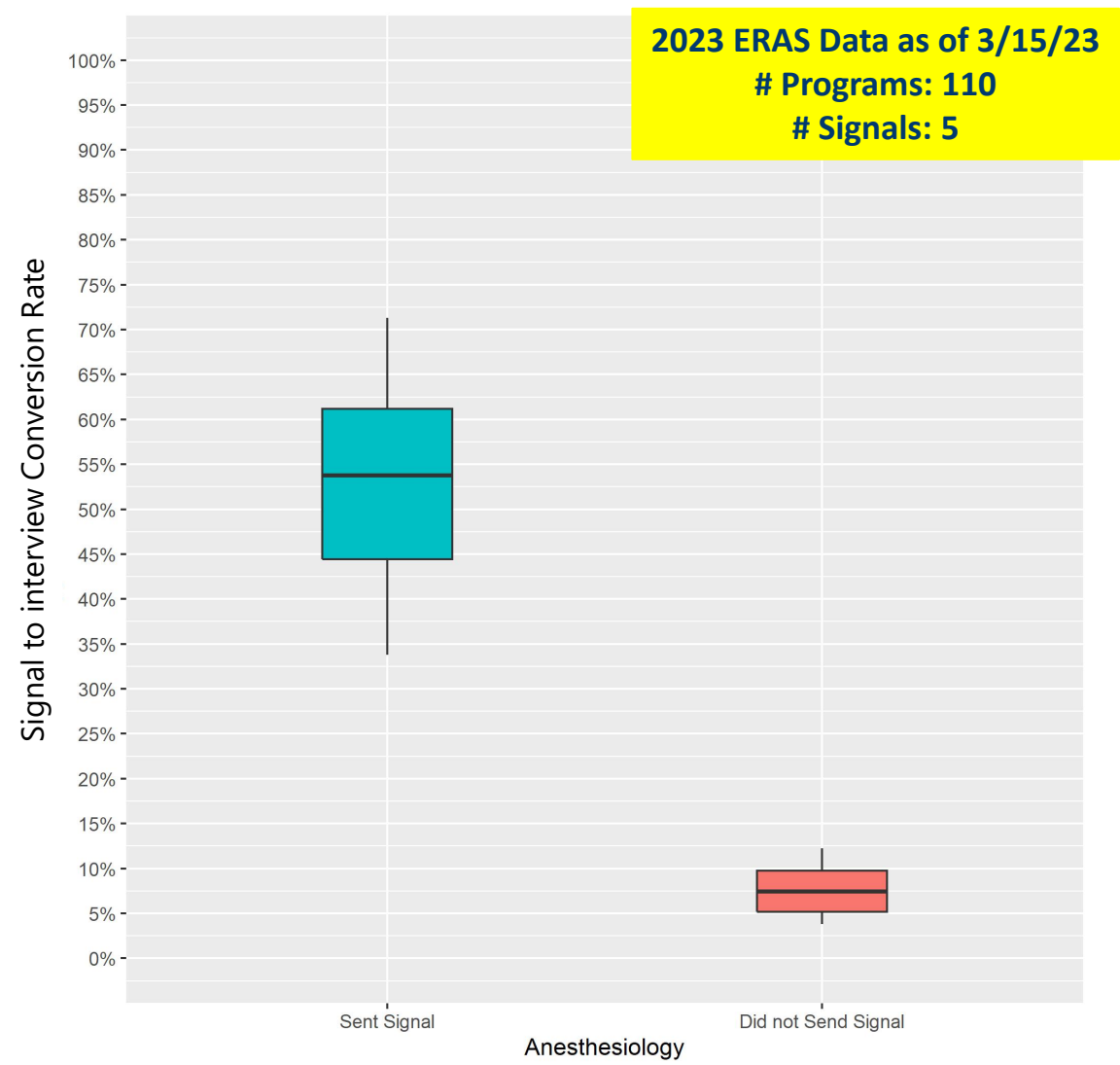
2023 ERAS Data as of 3/15/23
Programs: 110
Signals: 5

2024 ERAS Prelim. Data as of 12/29/23
Programs: 145
Signals: 5 Gold, 10 Silver

Child Neurology: Program Sample & Inclusion Criteria

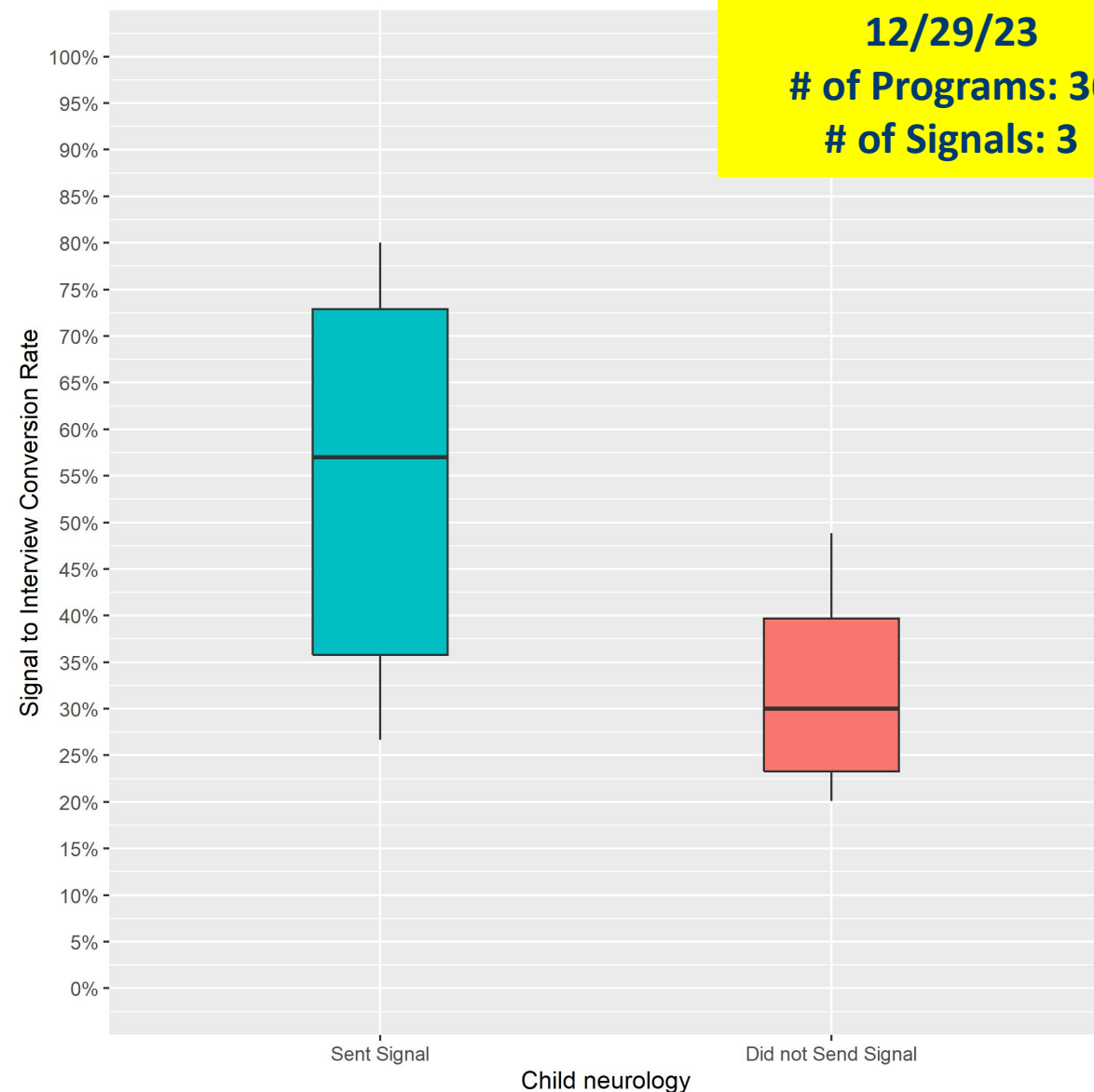|	N of Programs for Program Signals
Total programs	77
Total programs participating in program signaling	74
Did not meet inclusion rule equal to or larger than 7:1; Did not provide PGY1 info in GME track; Did not provide interview offer data by December 29, 2023	13
N Programs with fewer than 10 Program Signals	25
Total analytic sample	**36**
Total % of programs participating in program signaling	**49%**
Total % of all Child Neurology programs in 2024 ERAS cycle	**47%**

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Child Neurology: Interview Rates by Program Signal Status

Applicants who sent a signal:

- Median of interview offers: 57%.
- 10th percentile: 27%.
- 90th percentile: 80%.

Applicants who did not send a signal:

- Median of interview offers: 30%.
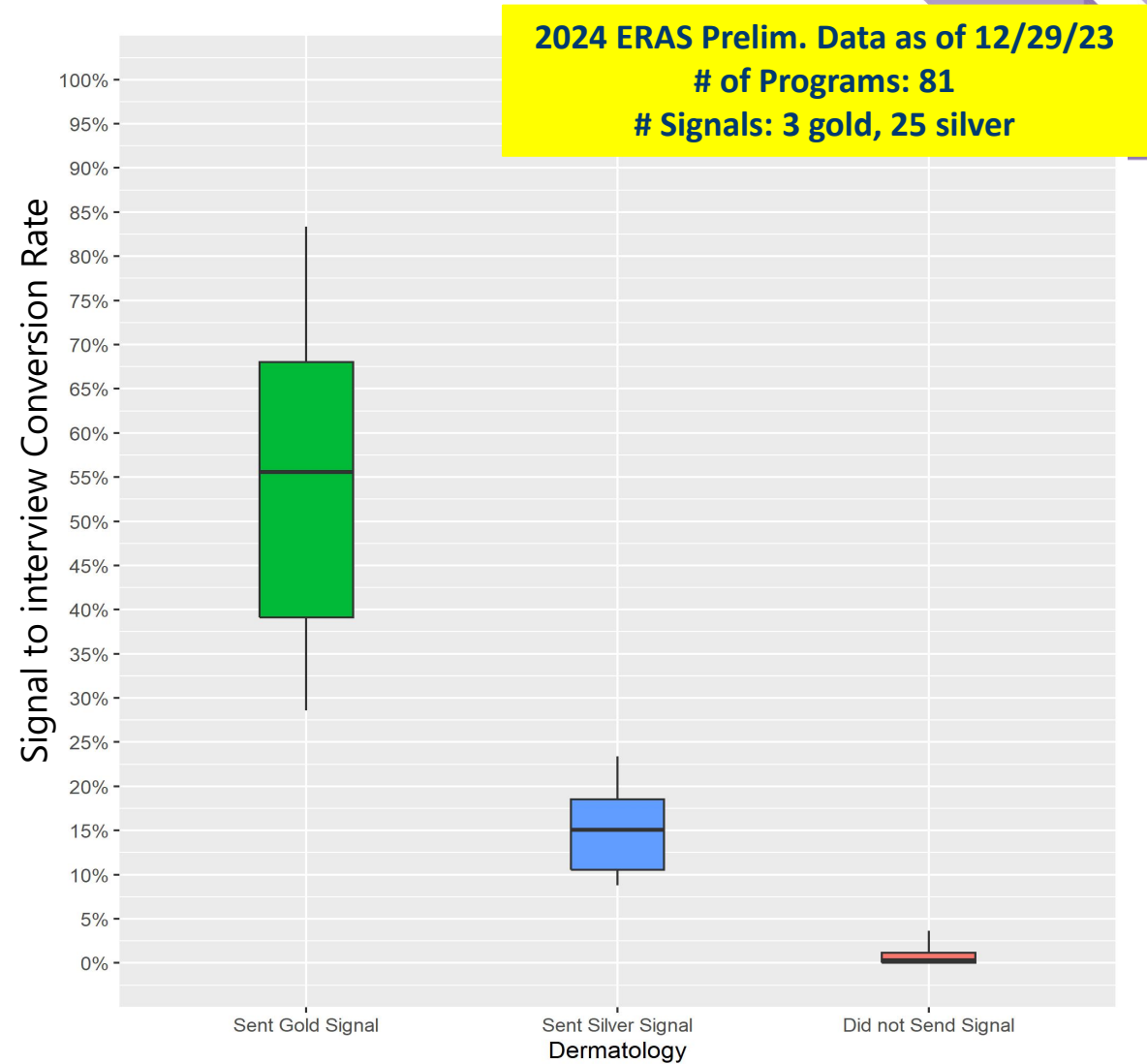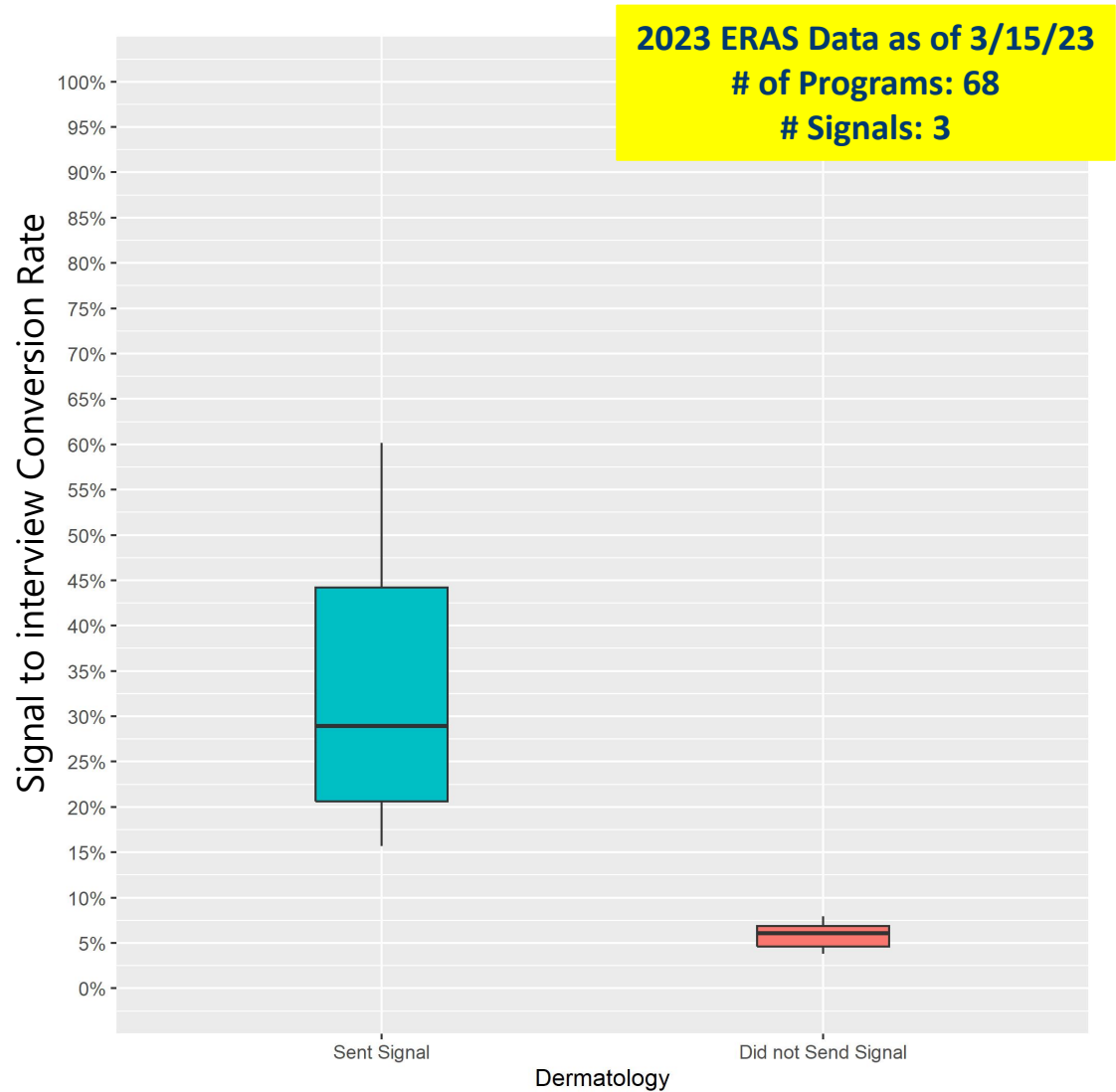- 10th percentile: 20%.
- 90th percentile: 49%.

Dermatology: Program Sample & Inclusion Criteria

	N of Programs for Program Signals
Total programs	138
Total programs participating in program signaling	128
Did not meet inclusion rule equal to or larger than 7:1; Did not provide PGY1 info in GME track; Did not provide interview offer data by December 29, 2023	47
N Programs with fewer than 10 Program Signals	0
Total analytic sample	**81**
Total % of programs participating in program signaling	**63%**
Total % of all Dermatology programs in 2024 ERAS cycle	**59%**

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# Dermatology: Interview Rates by Program Signal Status Year Over Year Comparison

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Diagnostic Radiology: Program Sample & Inclusion Criteria

	N of Programs for Program Signals
Total programs	187
Total programs participating in program signaling	184
Did not meet inclusion rule equal to or larger than 10:1; Did not provide PGY1 info in GME track; Did not provide interview offer data by December 29, 2023	39
N Programs with fewer than 10 Program Signals	0
Total analytic sample	**145**
Total % of programs participating in program signaling	**79%**
Total % of all Diagnostic Radiology programs in 2024 ERAS cycle	**78%**

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Diagnostic Radiology: Interview Rates by Program Signal Status Year Over Year Comparison
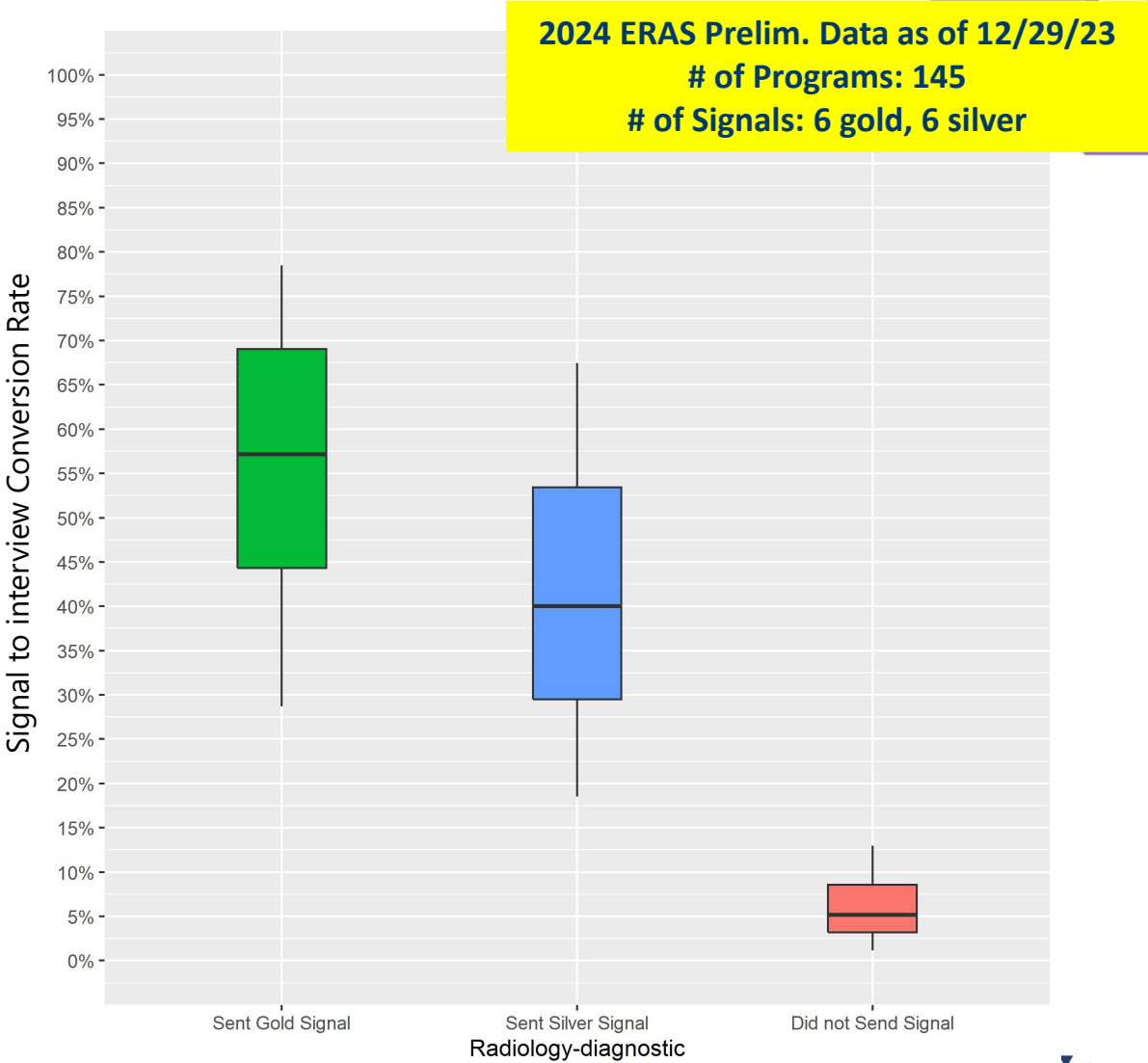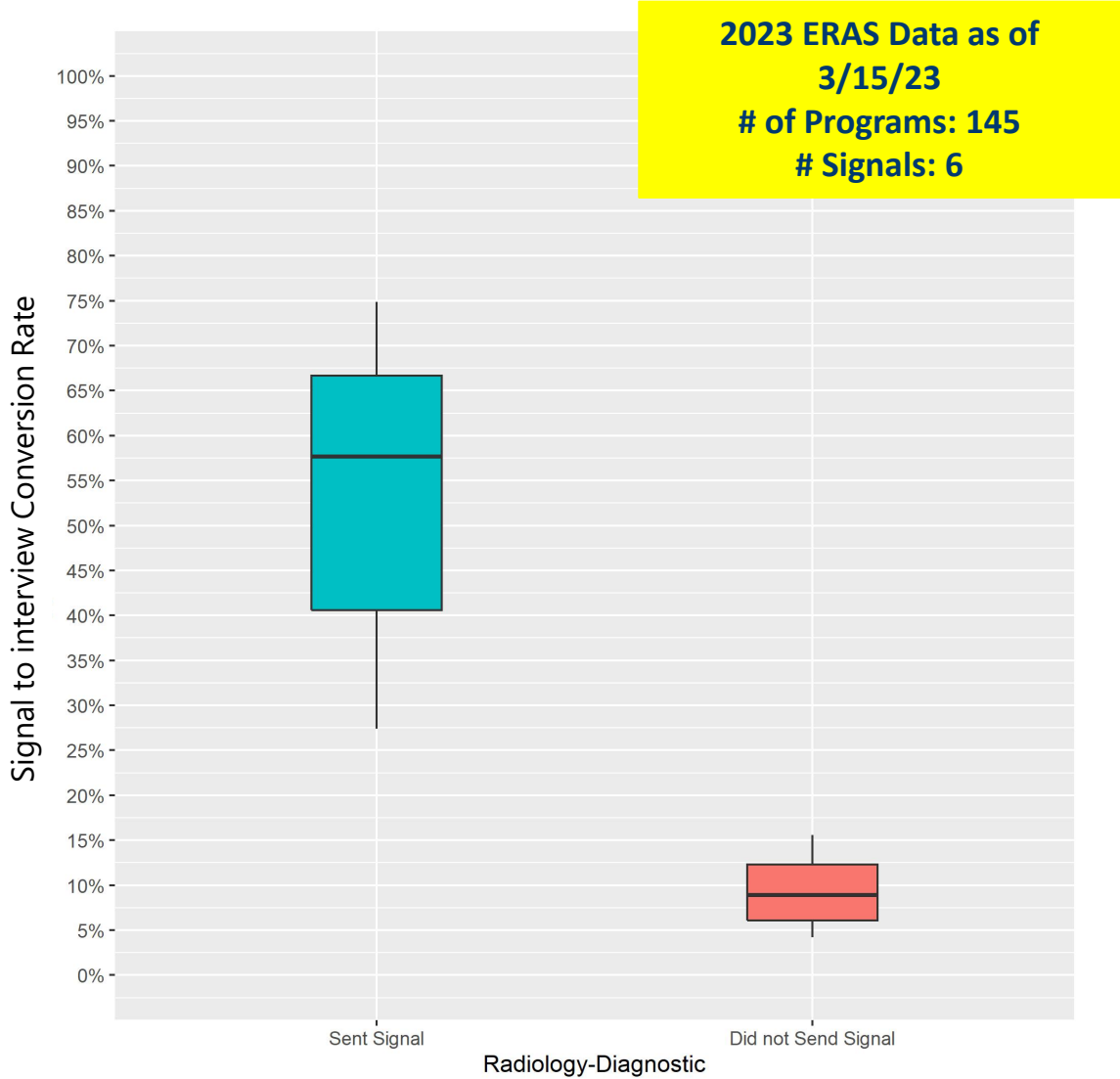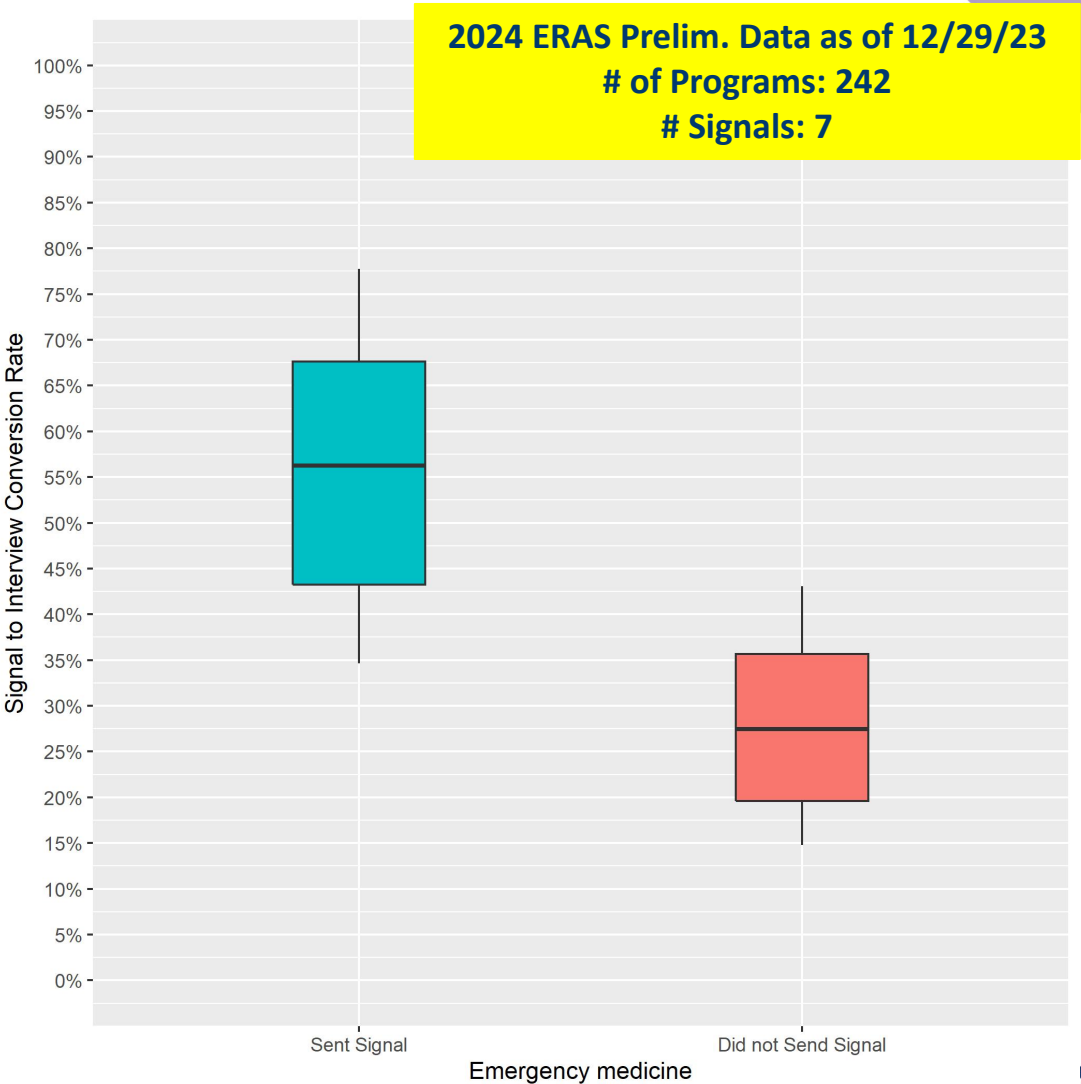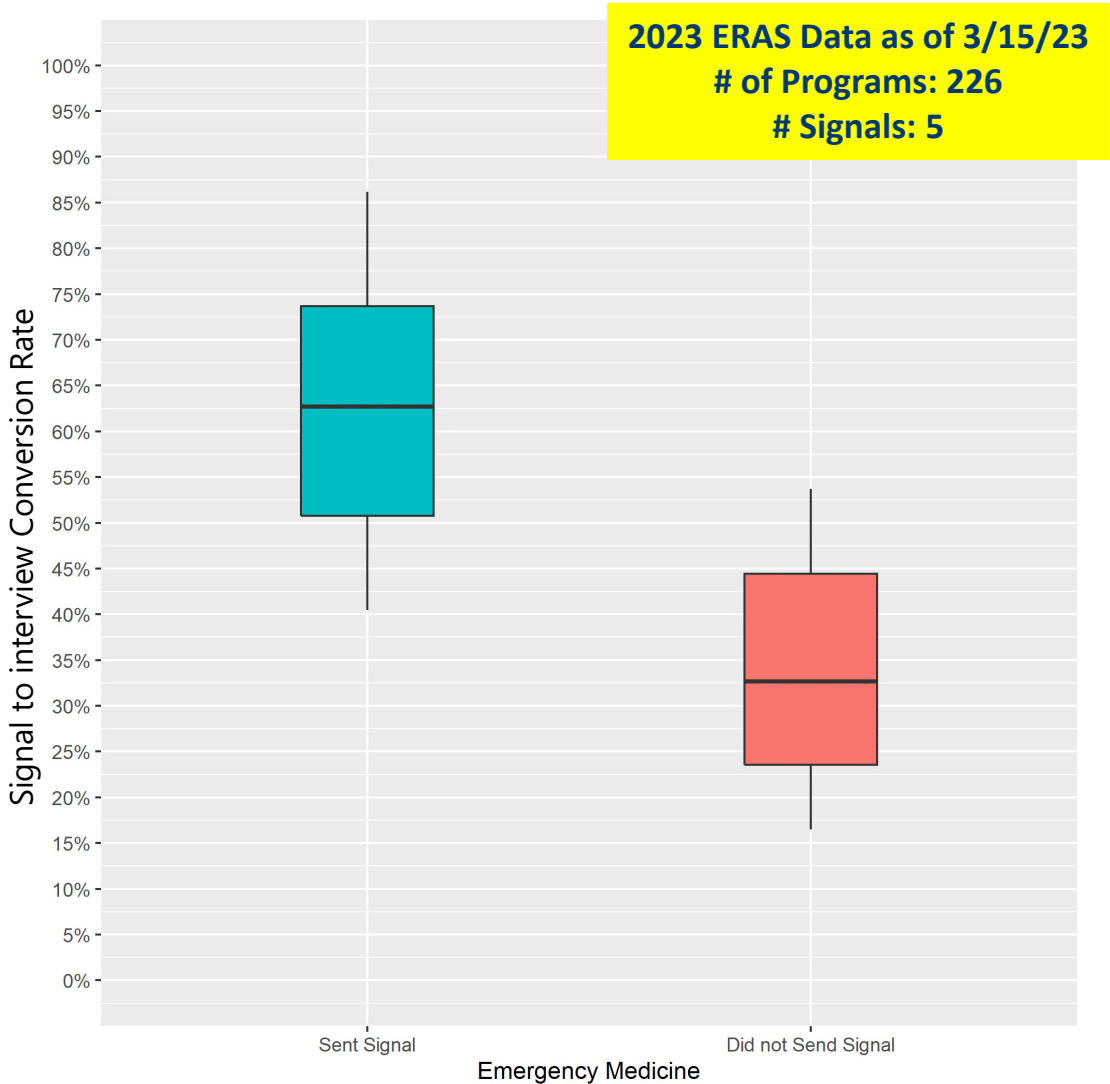
Emergency Medicine: Program Sample & Inclusion Criteria

	N of Programs for Program Signals
Total programs	280
Total programs participating in program signaling	278
Did not meet inclusion rule equal to or larger than 7:1; Did not provide PGY1 info in GME track; Did not provide interview offer data by December 29, 2023	36
N Programs with fewer than 10 Program Signals	0
Total analytic sample	**242**
Total % of programs participating in program signaling	**87%**
Total % of all Emergency Medicine programs in 2024 ERAS cycle	**86%**

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Emergency Medicine: Interview Rates by Program Signal Status Year Over Year Comparison

Family Medicine: Program Sample & Inclusion Criteria

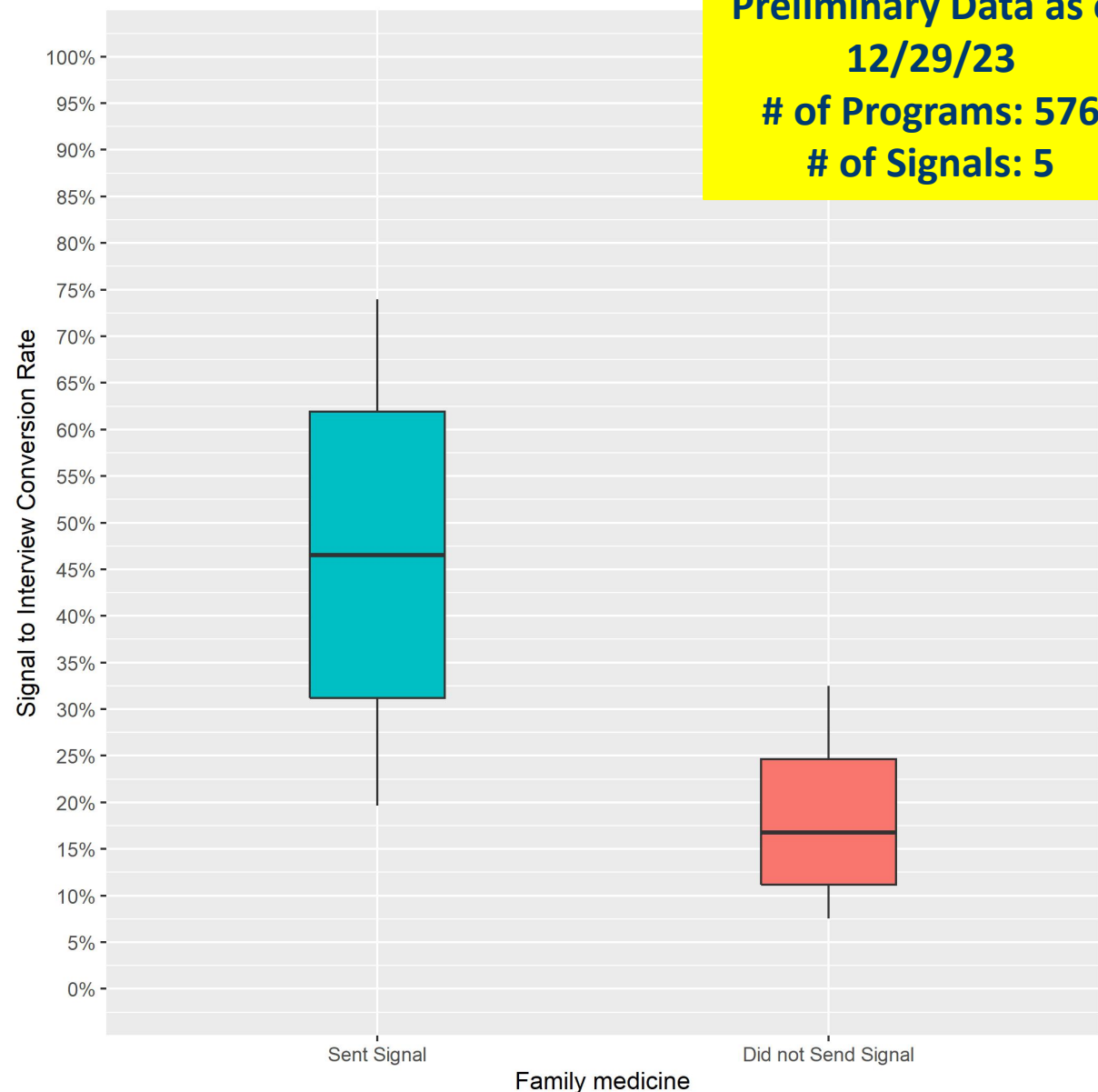|	N of Programs for Program Signals
Total programs	730
Total programs participating in program signaling	666
Did not meet inclusion rule equal to or larger than 7:1; Did not provide PGY1 info in GME track; Did not provide interview offer data by December 29, 2023	78
N Programs with fewer than 10 Program Signals	12
Total analytic sample	**576**
Total % of programs participating in program signaling	**86%**
Total % of all Family Medicine programs in 2024 ERAS cycle	**79%**

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Family Medicine: Interview Rates by Program Signal Status

Applicants who sent a signal:
- Median of interview offers: 47%.
- 10th percentile: 20%.
- 90th percentile: 74%.

Applicants who did not send a signal:
- Median of interview offers: 17%.
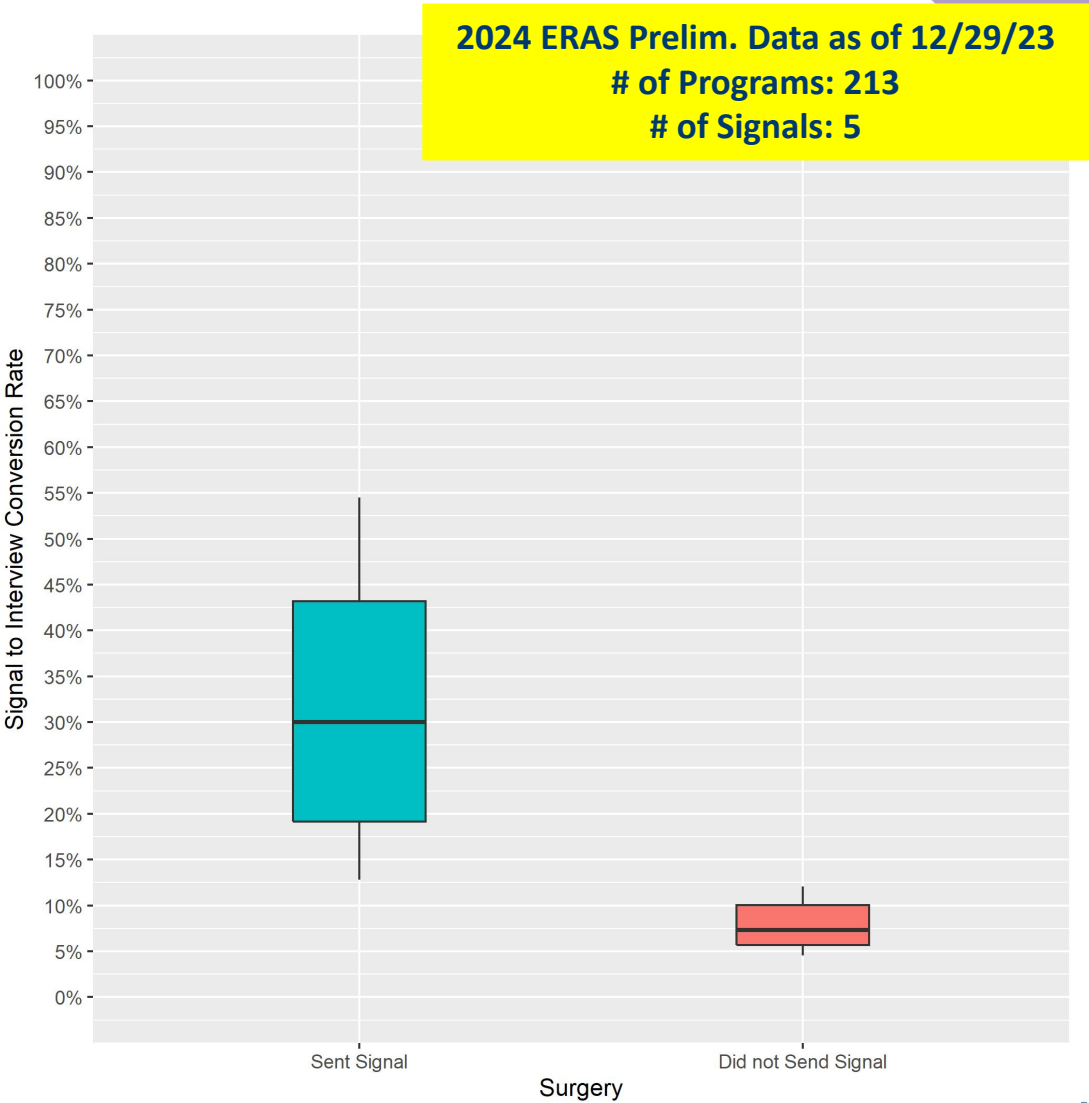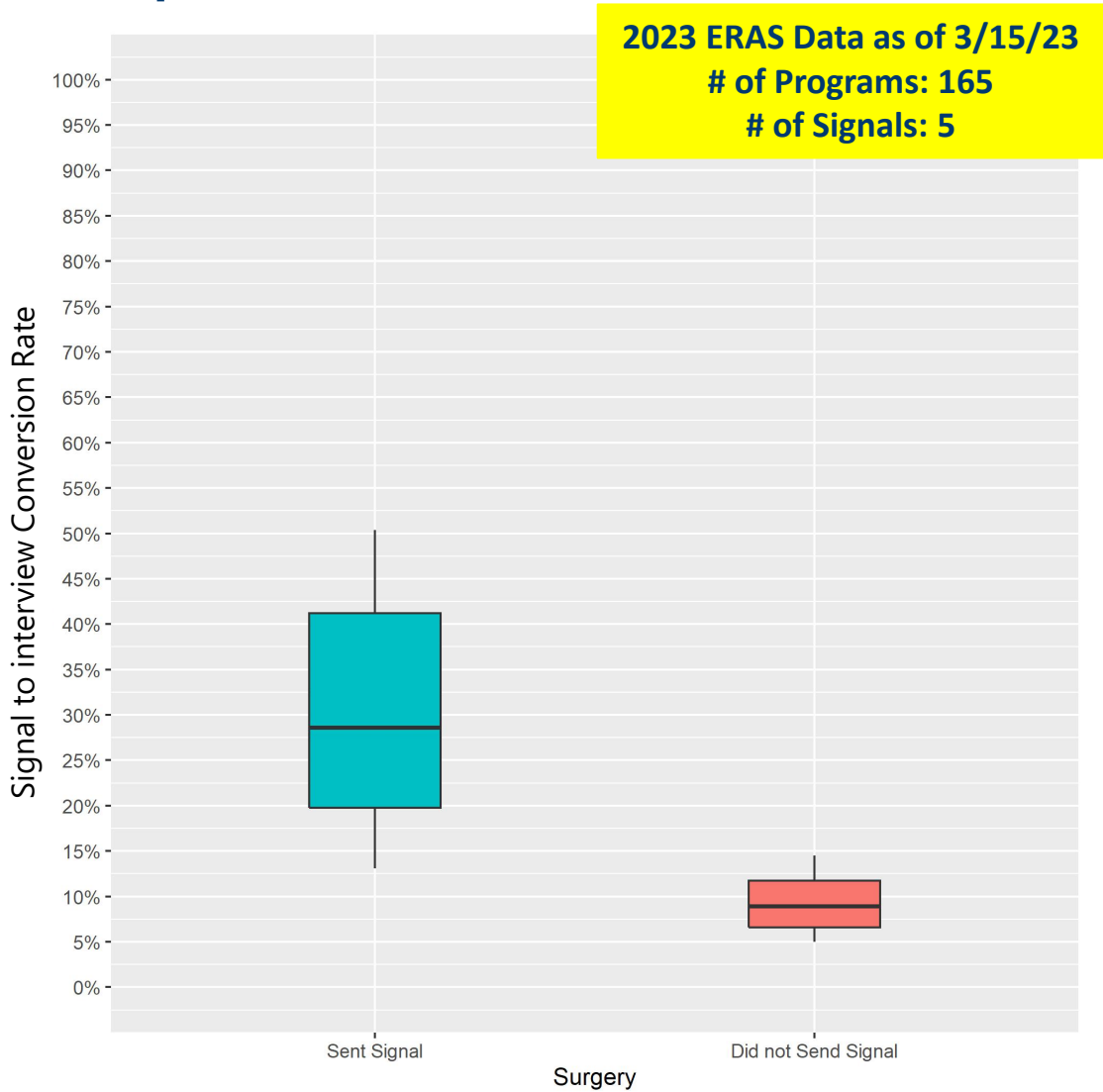- 10th percentile: 8%.
- 90th percentile: 32%.

General Surgery: Program Sample & Inclusion Criteria

	N of Programs for Program Signals
Total programs	344
Total programs participating in program signaling	308
Did not meet inclusion rule equal to or larger than 8:1; Did not provide PGY1 info in GME track; Did not provide interview offer data by December 29, 2023	94
N Programs with fewer than 10 Program Signals	1
Total analytic sample	**213**
Total % of programs participating in program signaling	**69%**
Total % of all General Surgery programs in 2024 ERAS cycle	**62%**

# General Surgery: Interview Rates by Program Signal Status Year Over Year Comparison

2023 ERAS Data as of 3/15/23
# of Programs: 165
# of Signals: 5

2024 ERAS Prelim. Data as of 12/29/23
# of Programs: 213
# of Signals: 5

Internal Medicine: Program Sample & Inclusion Criteria

	N of Programs for Program Signals
Total programs	626
Total programs participating in program signaling	567
Did not meet inclusion rule between 5:1; Did not provide PGY1 info in GME track; Did not provide interview offer data by December 29, 2023	66
N Programs with fewer than 10 Program Signals	1
Total analytic sample	**500**
Total % of programs participating in program signaling	**88%**
Total % of all Internal Medicine programs in 2024 ERAS cycle	**80%**

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Internal Medicine: Interview Rates by Program Signal Status Year Over Year Comparison
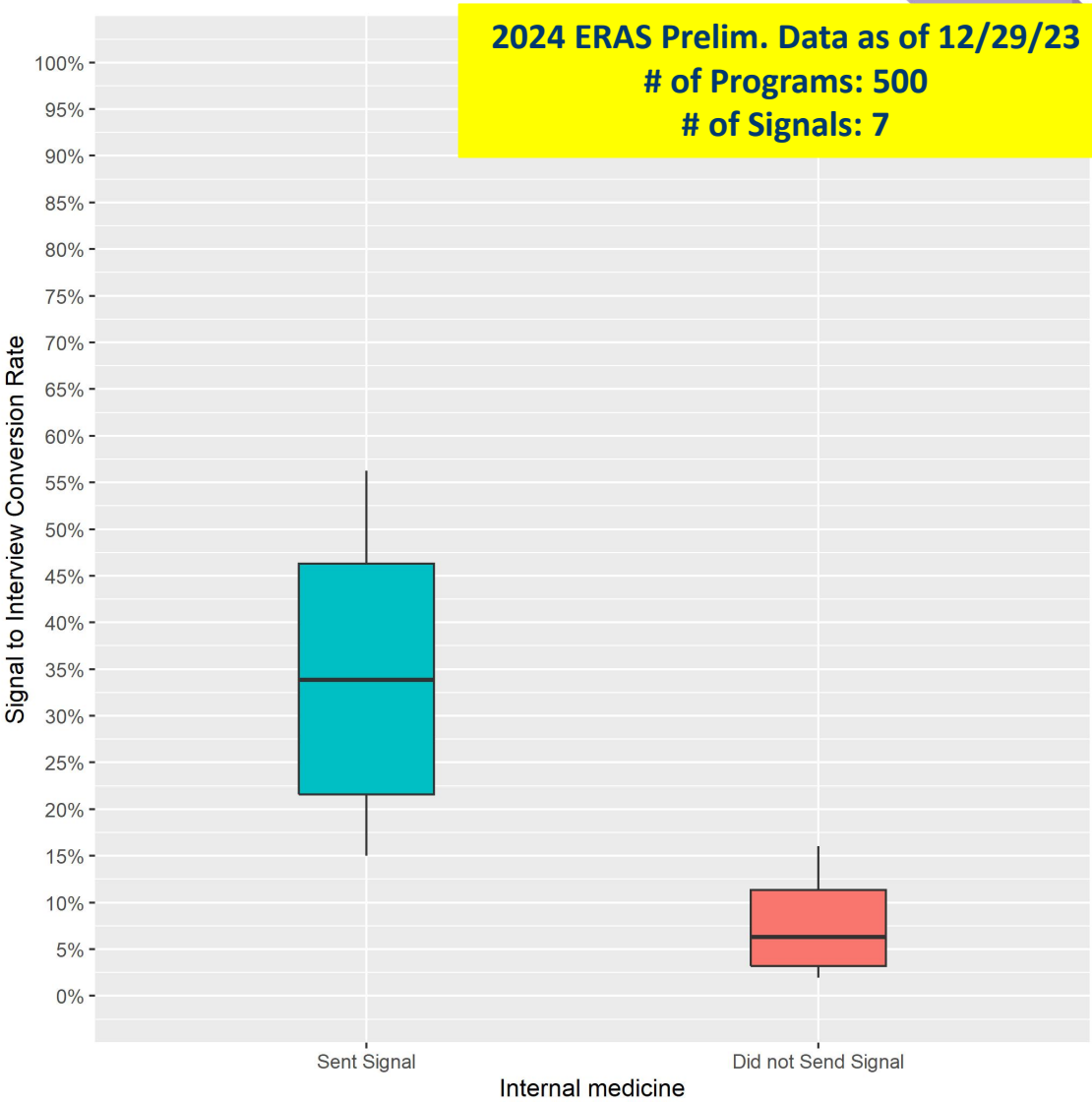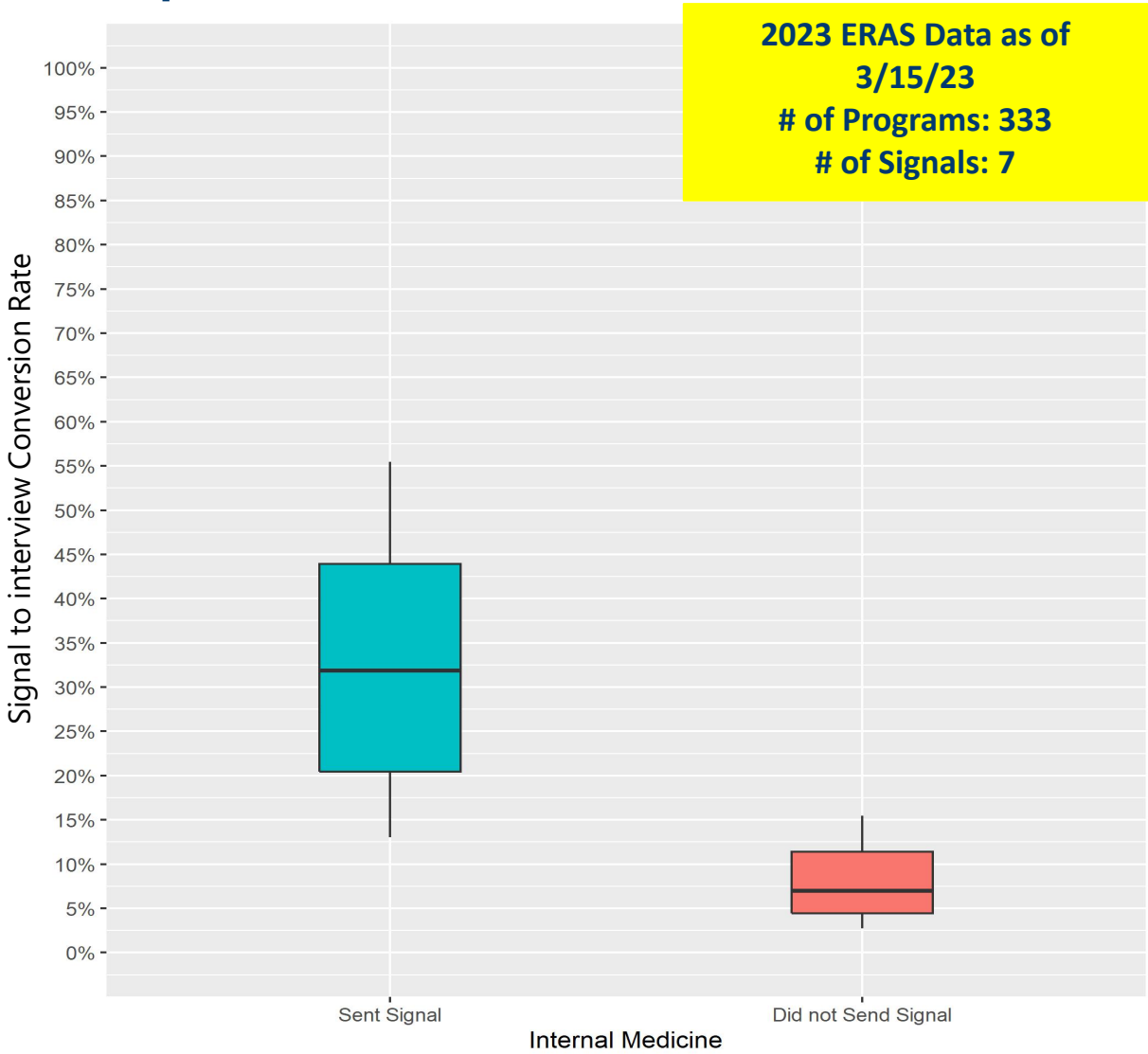
Internal Medicine/Psychology: Program Sample & Inclusion Criteria

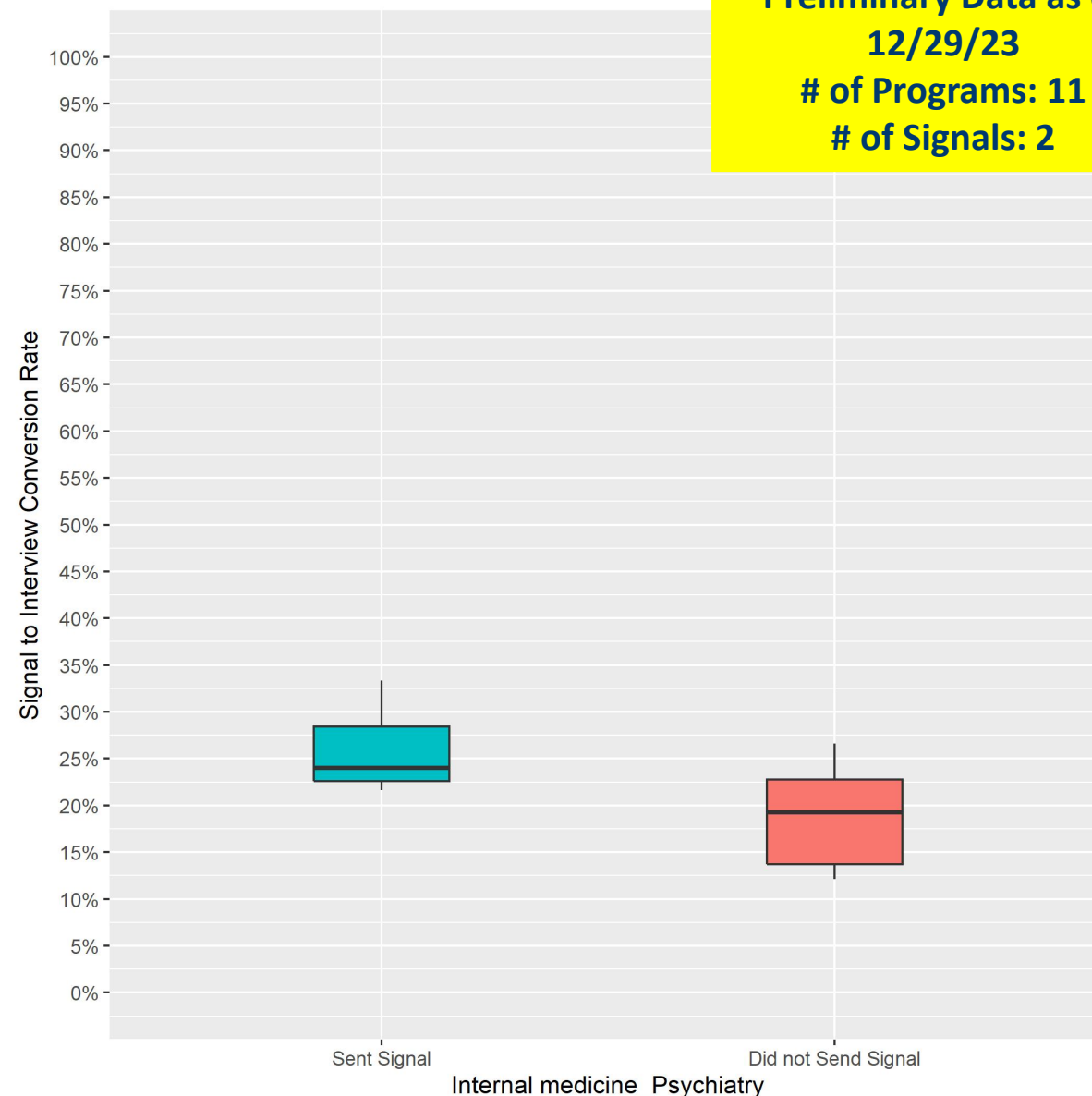|	N of Programs for Program Signals
Total programs	13
Total programs participating in program signaling	13
Did not meet inclusion rule equal to or larger than 7:1; Did not provide PGY1 info in GME track; Did not provide interview offer data by December 29, 2023	1
N Programs with fewer than 10 Program Signals	1
Total analytic sample	**11**
Total % of programs participating in program signaling	**85%**
Total % of all Internal Medicine/Psychology programs in 2024 ERAS cycle	**85%**

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Internal Medicine/Psychology: Interview Rates by Program Signal Status

Applicants who sent a signal:
- Median of interview offers: 24%.
- 10th percentile: 22%.
- 90th percentile: 33%.

Applicants who did not send a signal:
- Median of interview offers: 19%.
- 10th percentile: 12%.
- 90th percentile: 27%.

Interventional Radiology: Program Sample & Inclusion Criteria

	N of Programs for Program Signals
Total programs	96
Total programs participating in program signaling	92
Did not meet inclusion rule between 10:1 and 40:1; Did not provide interview offer data by December 29, 2023	38*
N Programs with fewer than 10 Program Signals	2
Total analytic sample	**52***
Total % of programs participating in program signaling	**57%**
Total % of all Interventional Radiology programs in 2024 ERAS cycle	**54%**

*One program was included in this analysis that did not provide GME track information.

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Interventional Radiology: Interview Rates by Program Signal Status
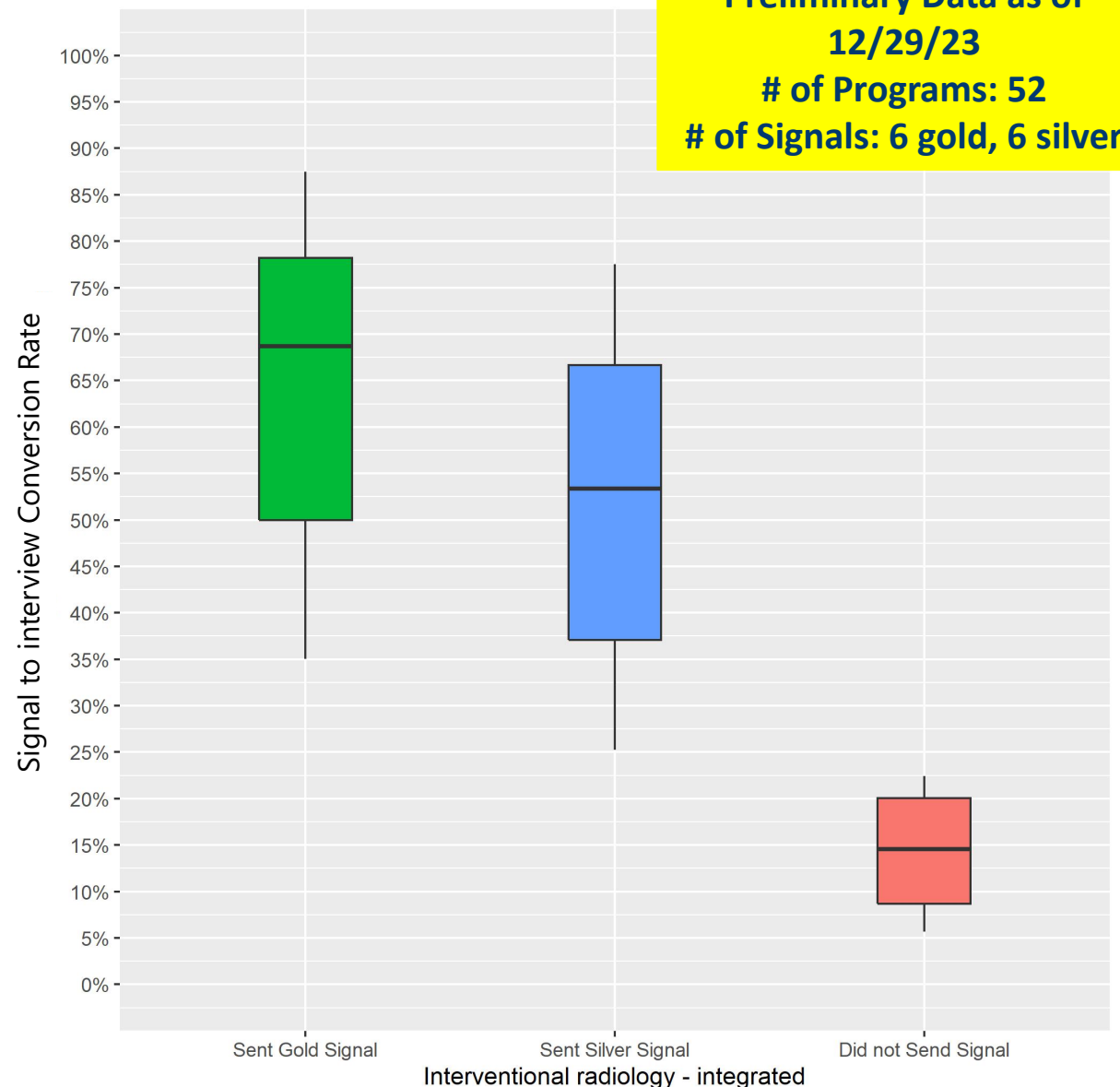
Applicants who sent a GOLD signal:
- Median of interview offers: 69%.
- 10th percentile: 35%.
- 90th percentile: 88%.

Applicants who sent a SILVER signal:
- Median of interview offers: 53%.
- 10th percentile: 25%.
- 90th percentile: 78%.

Applicants who did not send a signal:
- Median of interview offers: 15%.
- 10th percentile: 6%.
- 90th percentile: 22%.

# Neurological Surgery: Program Sample & Inclusion Criteria

	N of Programs for Program Signals
Total programs	116
Total programs participating in program signaling	109
Did not meet inclusion rule equal to or larger than 7:1; Did not provide PGY1 info in GME track; Did not provide interview offer data by December 29, 2023	22
N Programs with fewer than 10 Program Signals	0
Total analytic sample	**87**
Total % of programs participating in program signaling	**80%**
Total % of all Neurological Surgery programs in 2024 ERAS cycle	**75%**

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Neurological Surgery: Interview Rates by Program Signal Status Year Over Year Comparison
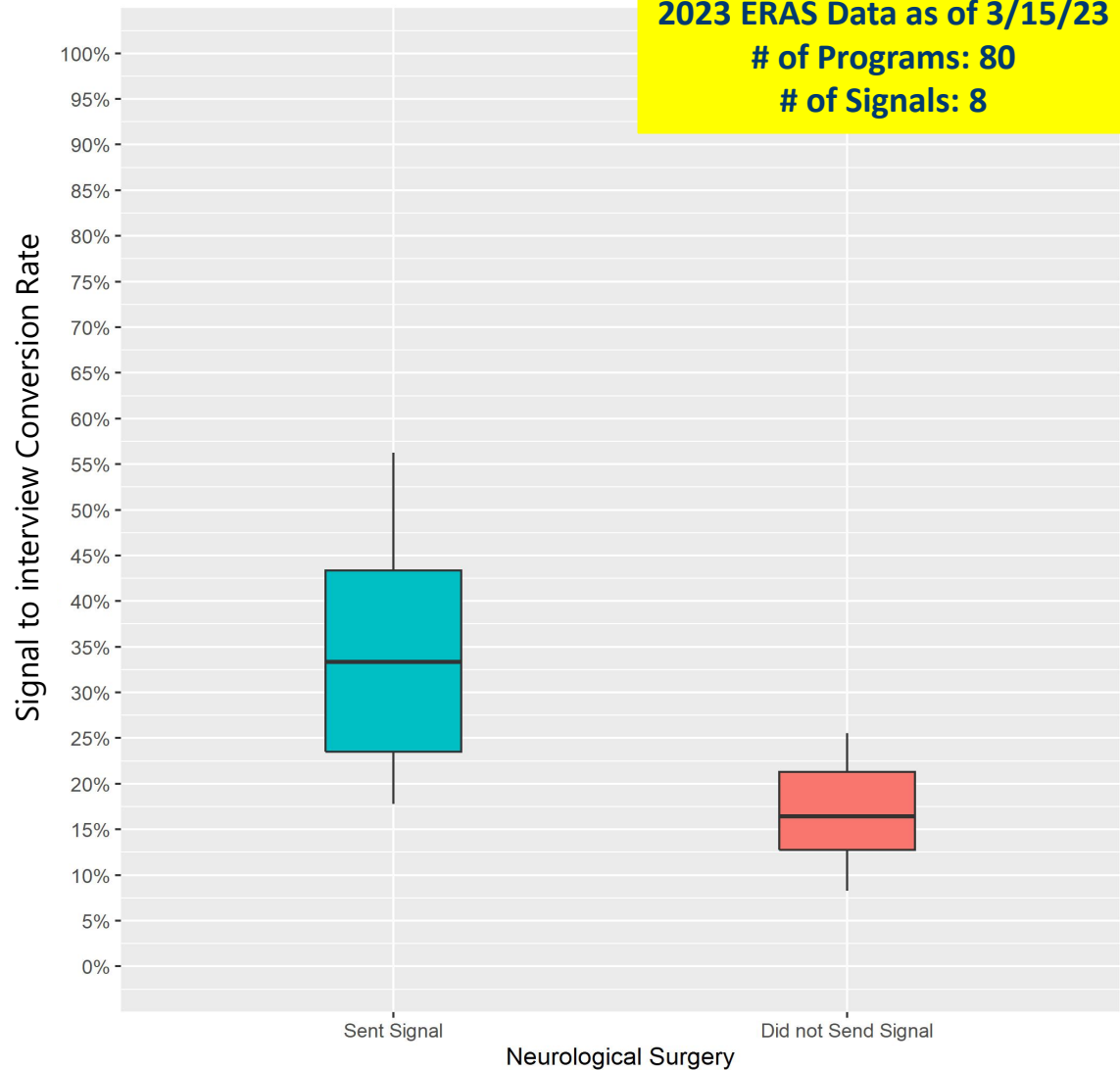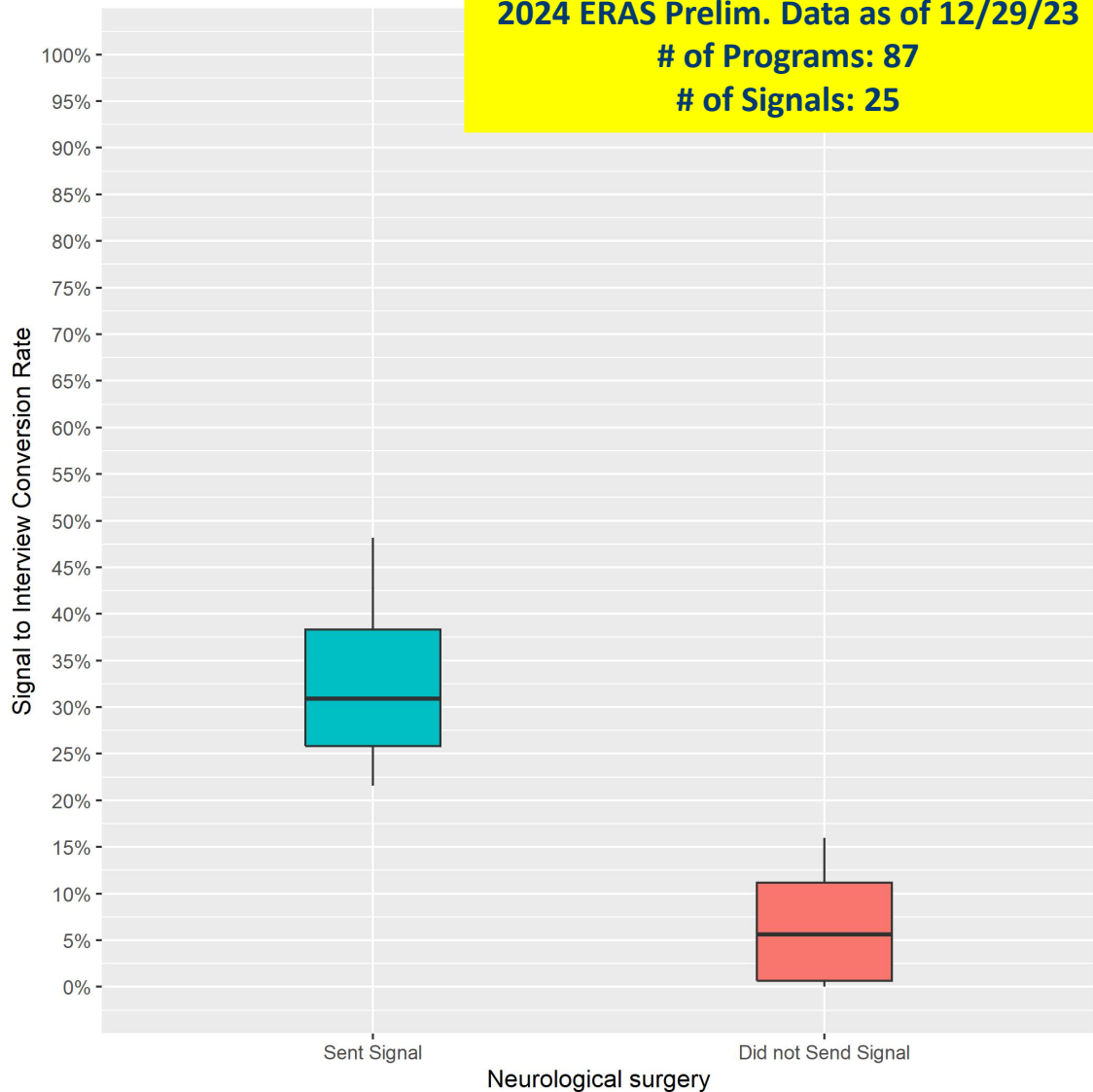
OBGYN: Program Sample & Inclusion Criteria

	N of Programs for Program Signals
Total programs	287
Total programs participating in program signaling	282
Did not meet inclusion rule between 8:1 and 25:1; Did not provide PGY1 info in GME track; Did not provide interview offer data by December 29, 2023	56
N Programs with fewer than 10 Program Signals	0
Total analytic sample	**226**
Total % of programs participating in program signaling	**80%**
Total % of all OBGYN programs in 2024 ERAS cycle	**79%**

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OBGYN: Interview Rates by Program Signal Status Year Over Year Comparison

2023 ERAS Data as of 3/15/23
# of Programs: 174
# of Signals: 3 gold, 15 silver
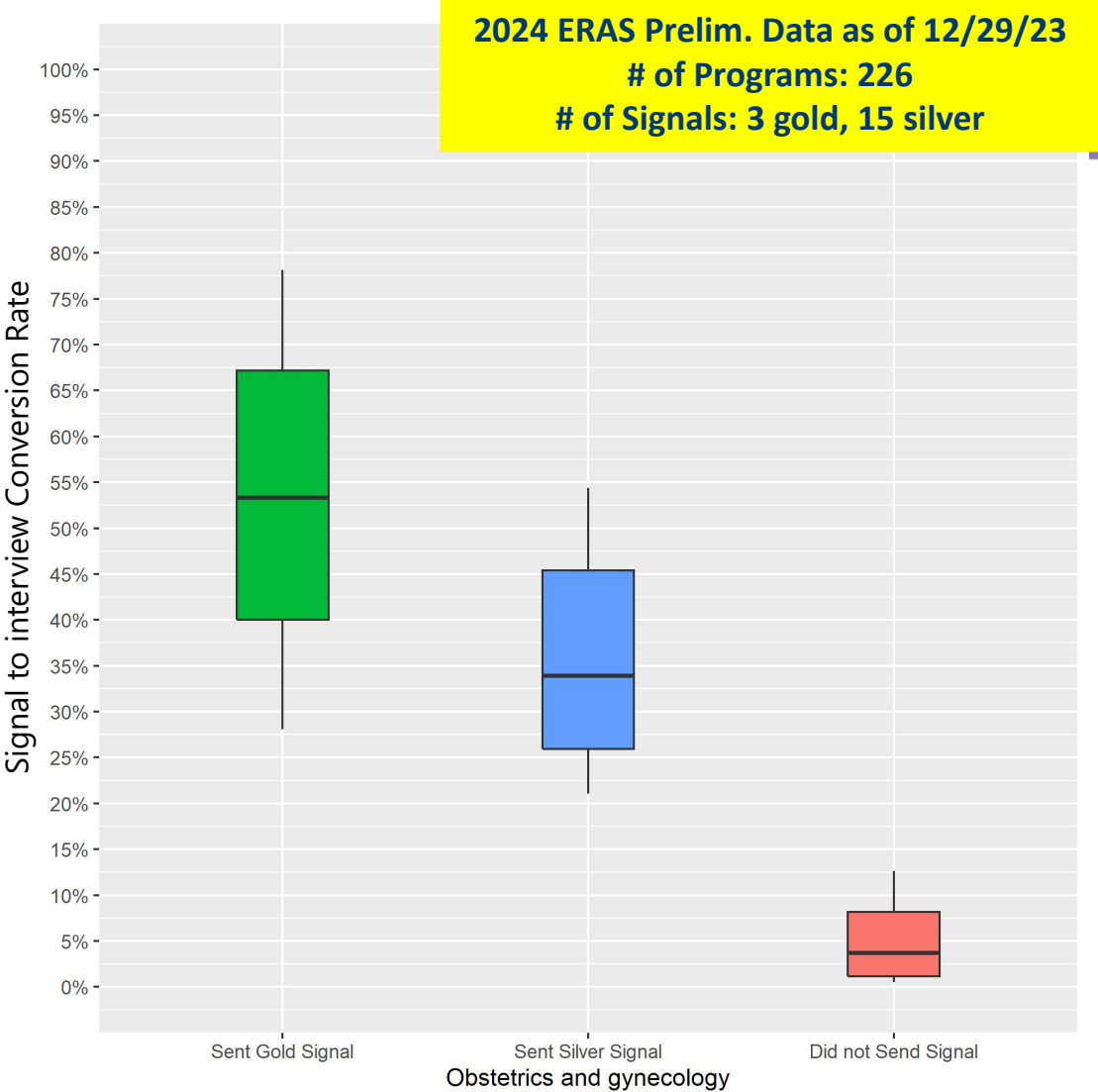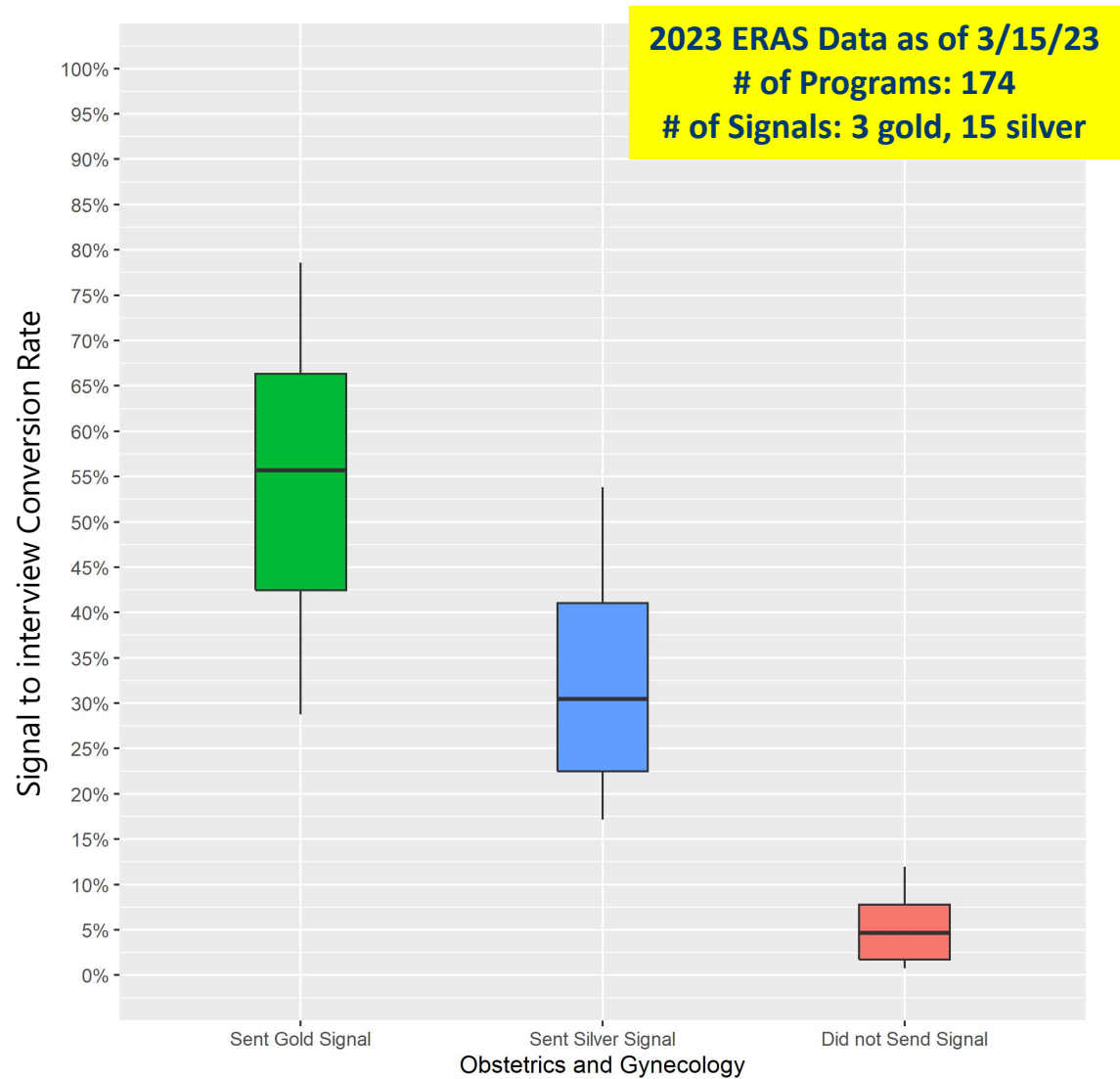
2024 ERAS Prelim. Data as of 12/29/23
# of Programs: 226
# of Signals: 3 gold, 15 silver

Left chart axis: Signal to interview Conversion Rate
X-axis categories: Sent Gold Signal, Sent Silver Signal, Did not Send Signal
X-axis label: Obstetrics and Gynecology

Right chart axis: Signal to interview Conversion Rate
X-axis categories: Sent Gold Signal, Sent Silver Signal, Did not Send Signal
X-axis label: Obstetrics and gynecology

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Orthopedic Surgery: Program Sample & Inclusion Criteria

	N of Programs for Program Signals
Total programs	201
Total programs participating in program signaling	190
Did not meet inclusion rule equal to or larger than 5:1; Did not provide interview offer data by December 29, 2023	57
N Programs with fewer than 10 Program Signals	0
Total analytic sample	**133**
Total % of programs participating in program signaling	**70%**
Total % of all Orthopedic Surgery programs in 2024 ERAS cycle	**66%**

*Five programs were included in this analysis that did not provide GME track information.

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Orthopedic Surgery: Interview Rates by Program Signal Status Year Over Year Comparison

Otolaryngology: Program Sample & Inclusion Criteria

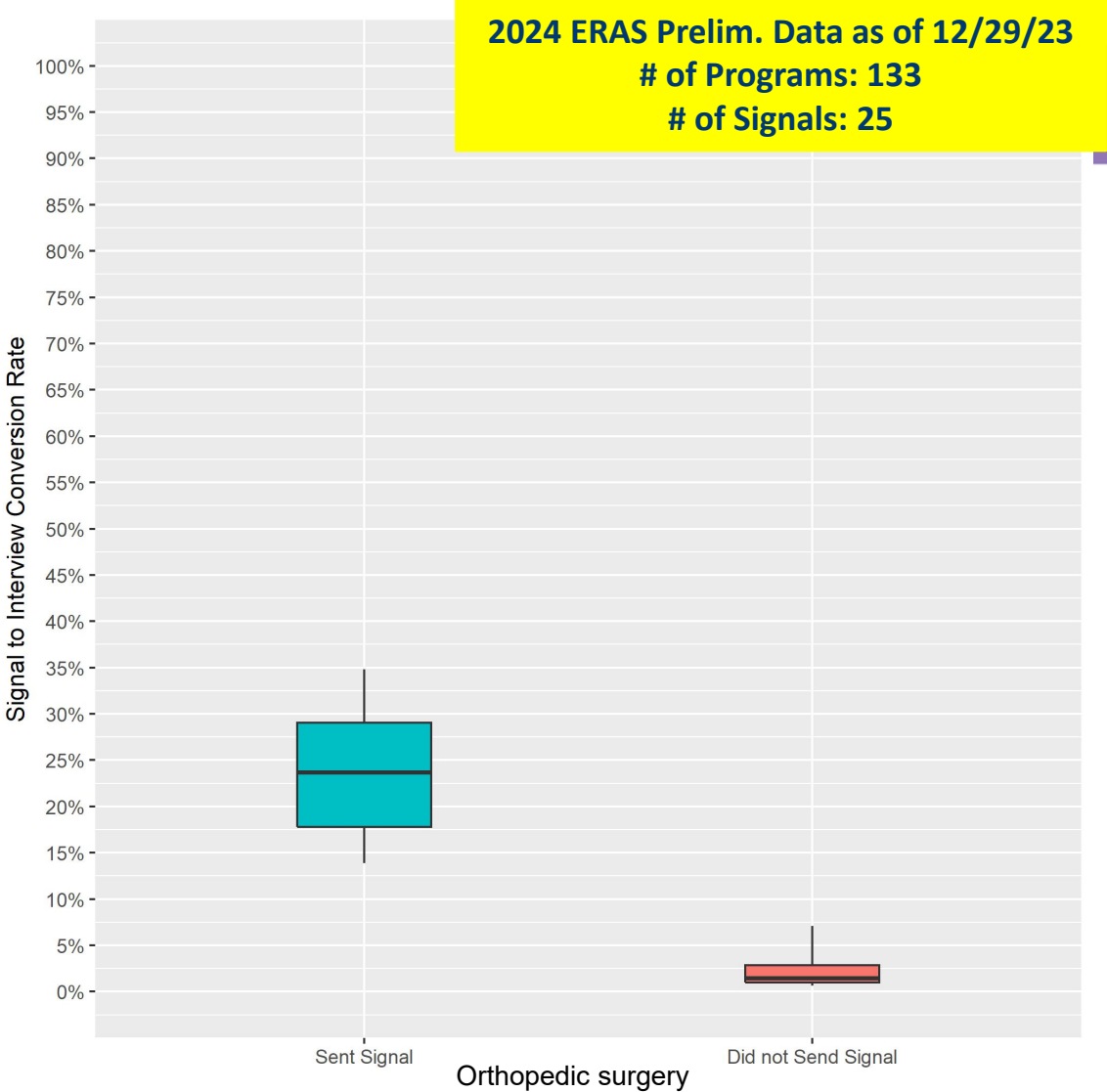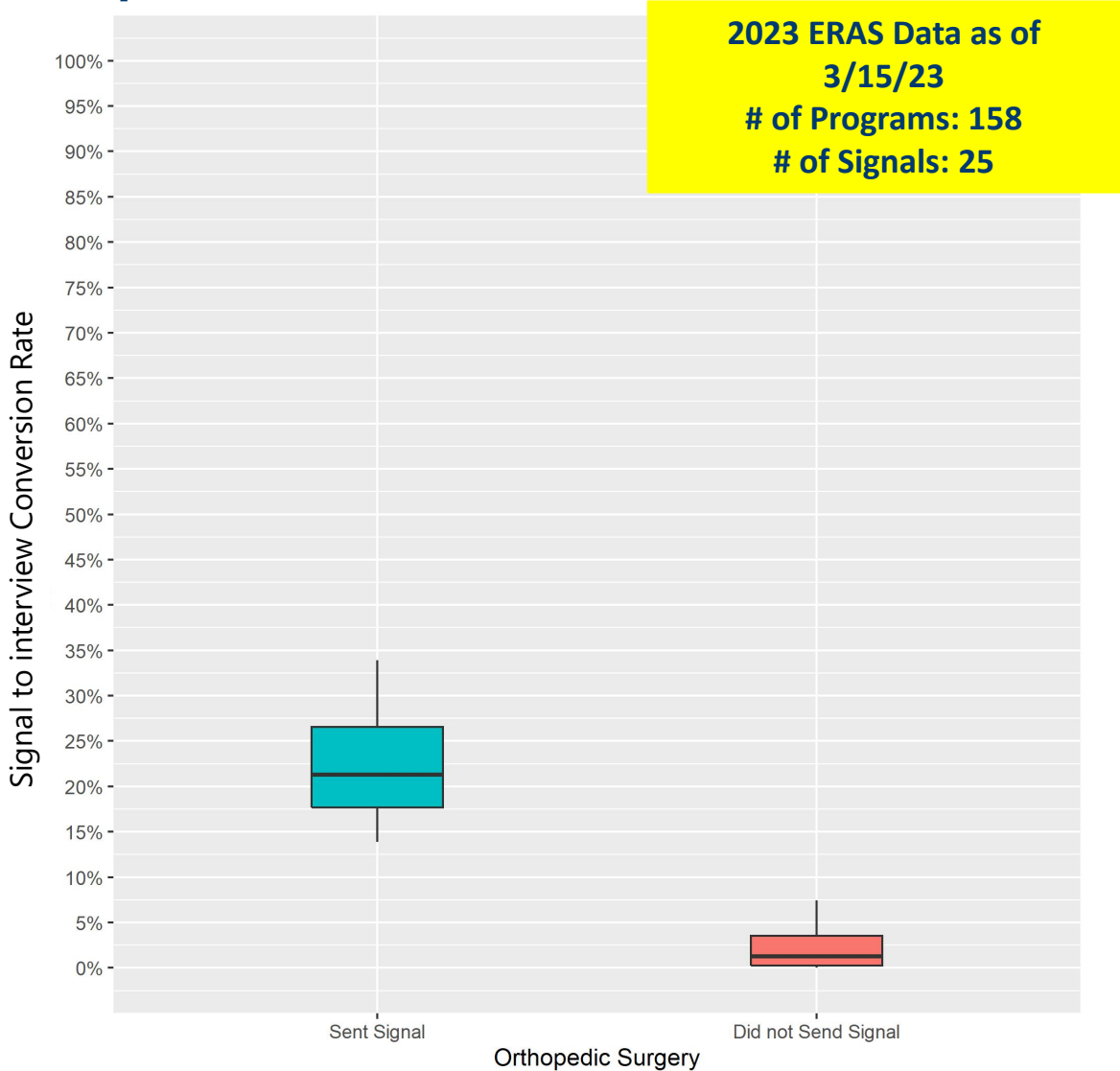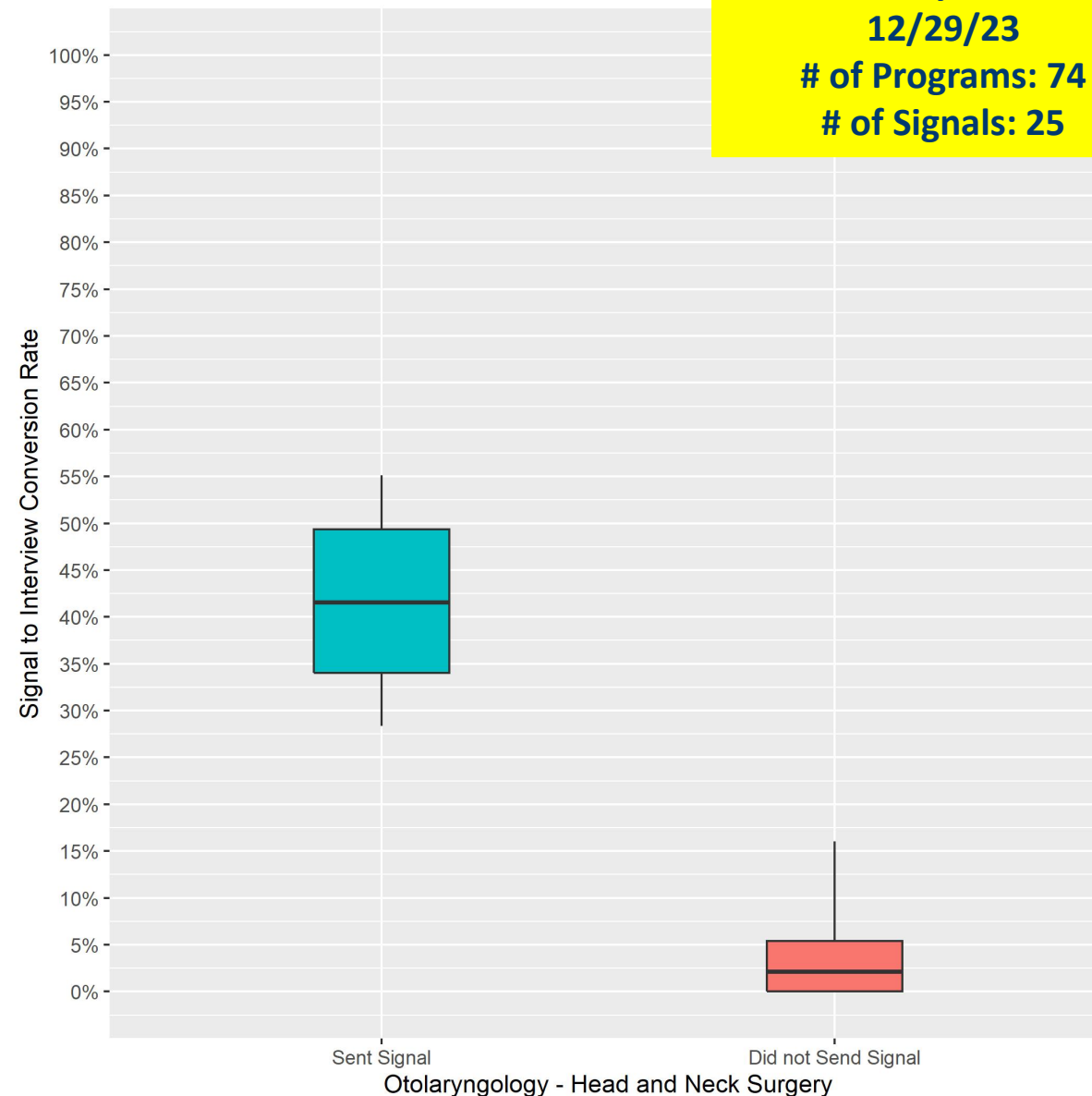|	N of Programs for Program Signals
Total programs	125
Total programs participating in program signaling	123
Did not meet inclusion rule equal to or larger than 7:1; Did not provide PGY1 info in GME track; Did not provide interview offer data by December 29, 2023	49
N Programs with fewer than 10 Program Signals	0
Total analytic sample	**74**
Total % of programs participating in program signaling	**60%**
Total % of all Otolaryngology programs in 2024 ERAS cycle	**59%**

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Otolaryngology: Interview Rates by Program Signal Status

Applicants who sent a signal:
- Median of interview offers: 42%.
- 10th percentile: 28%.
- 90th percentile: 55%.

Applicants who did not send a signal:
- Median of interview offers: 2%.
- 10th percentile: 0%.
- 90th percentile: 16%.

Pathology: Program Sample & Inclusion Criteria

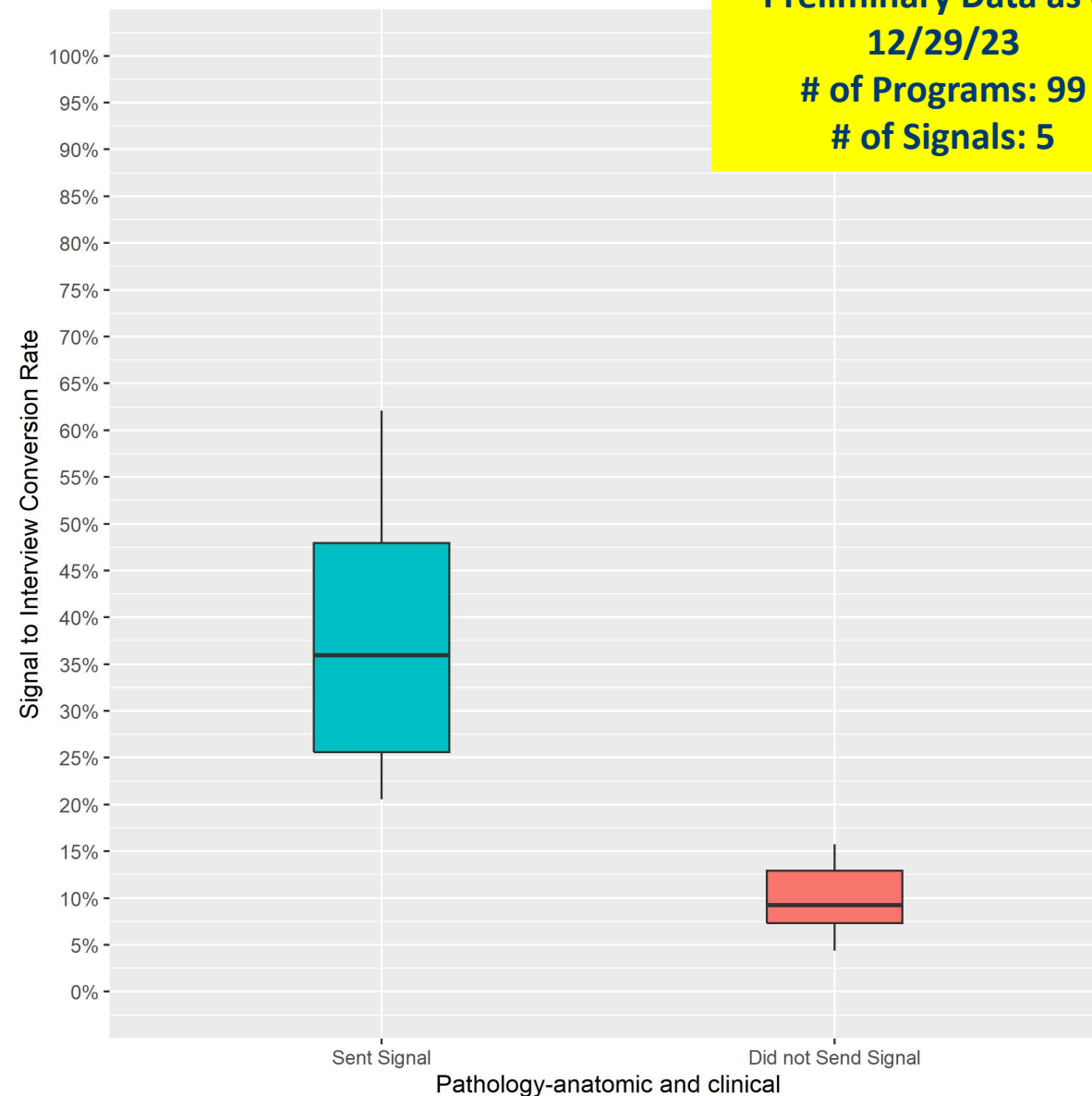|	N of Programs for Program Signals
Total programs	139
Total programs participating in program signaling	129
Did not meet inclusion rule equal to or larger than 7:1; Did not provide PGY1 info in GME track; Did not provide interview offer data by December 29, 2023	29
N Programs with fewer than 10 Program Signals	1
Total analytic sample	**99**
Total % of programs participating in program signaling	**77%**
Total % of all Pathology programs in 2024 ERAS cycle	**71%**

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Pathology: Interview Rates by Program Signal Status

Applicants who sent a signal:
- Median of interview offers: 36%.
- 10th percentile: 21%.
- 90th percentile: 62%.

Applicants who did not send a signal:
- Median of interview offers: 9%.
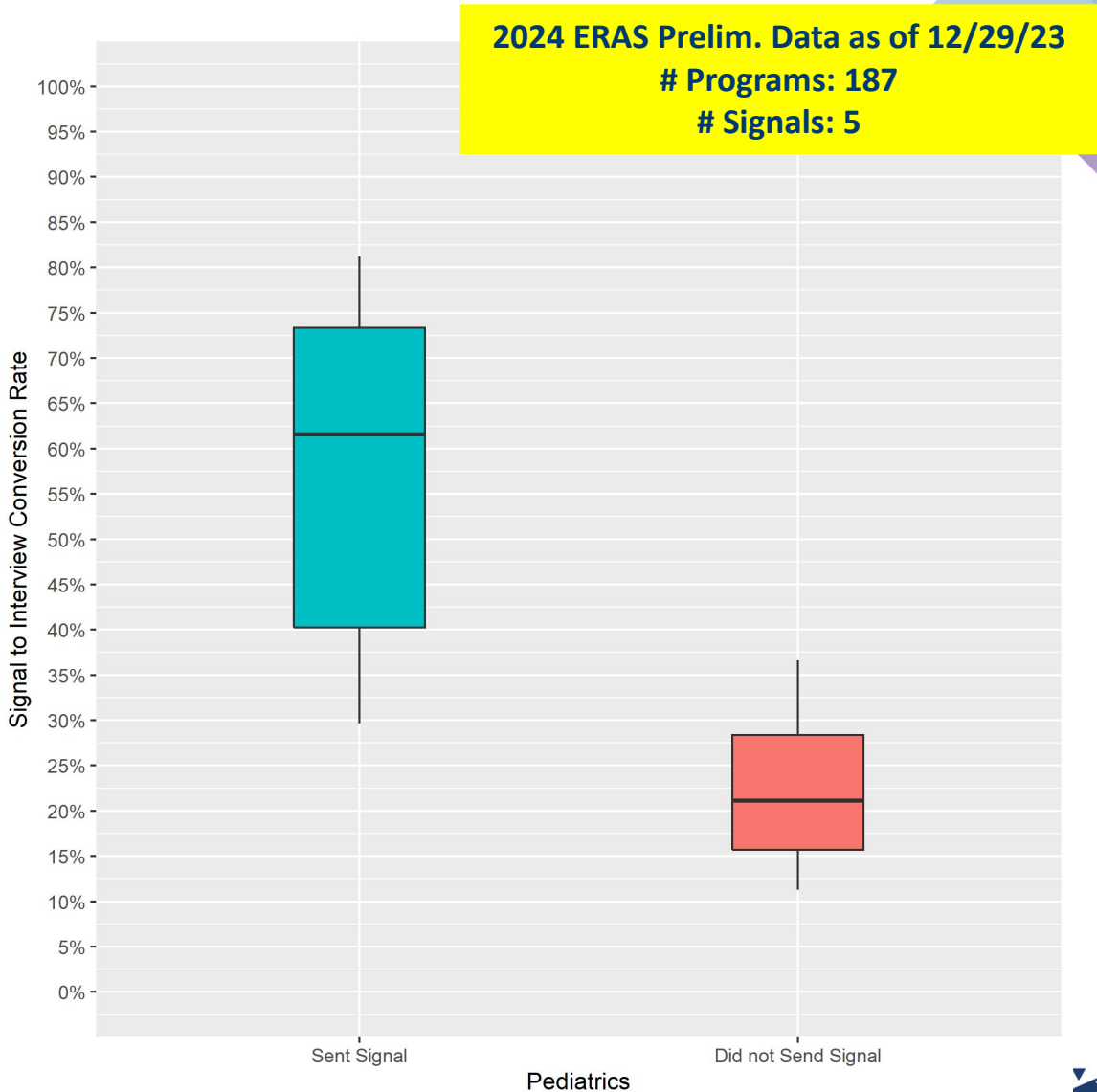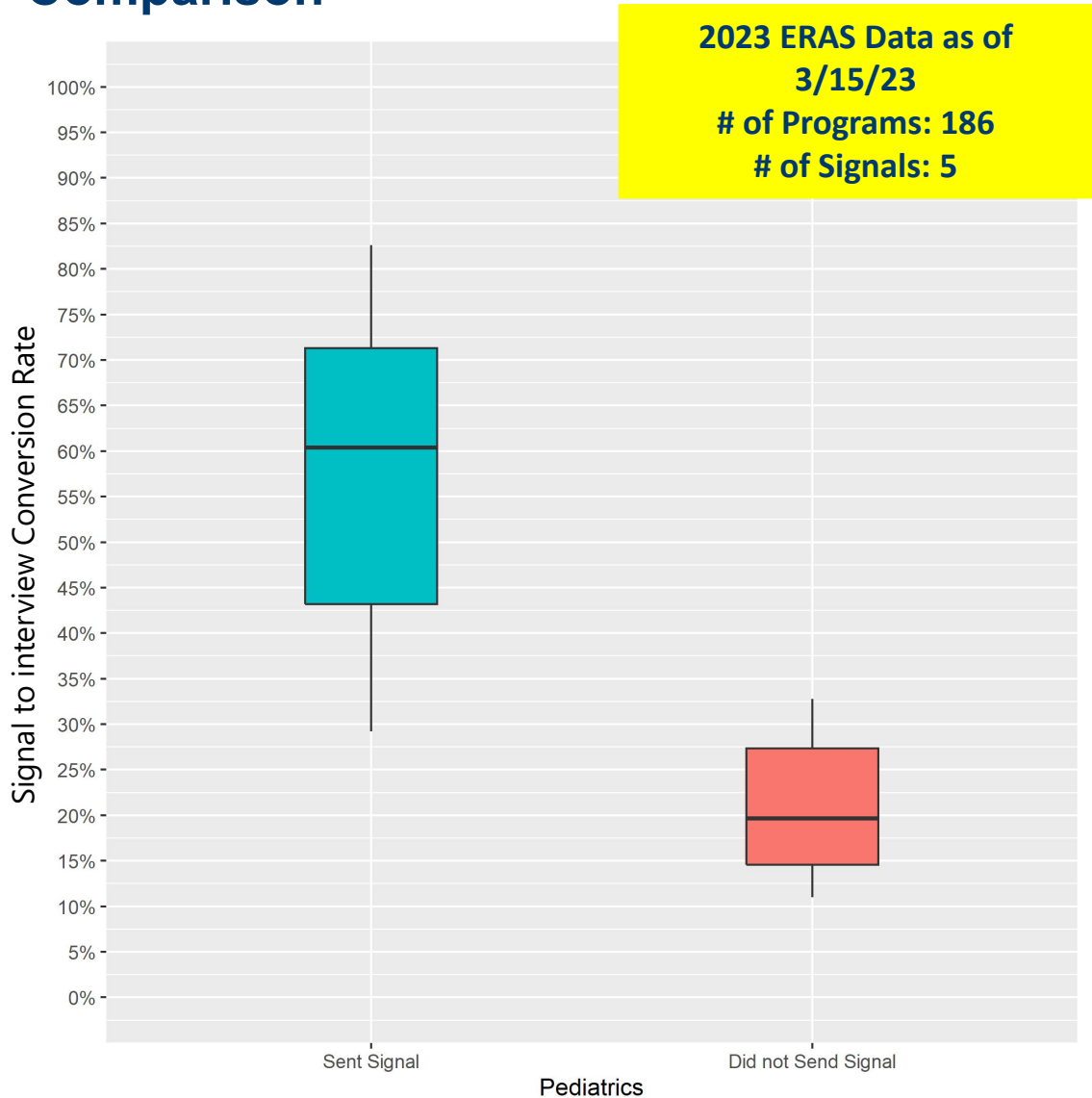- 10th percentile: 4%.
- 90th percentile: 16%.

Pediatrics: Program Sample & Inclusion Criteria

	N of Programs for Program Signals
Total programs	211
Total programs participating in program signaling	205
Did not meet inclusion rule equal to or larger than 7:1; Did not provide PGY1 info in GME track; Did not provide interview offer data by December 29, 2023	18
N Programs with fewer than 10 Program Signals	0
Total analytic sample	**187**
Total % of programs participating in program signaling	**91%**
Total % of all Pediatrics programs in 2024 ERAS cycle	**89%**

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Pediatrics: Interview Rates by Program Signal Status Year Over Year Comparison

2023 ERAS Data as of 3/15/23
# of Programs: 186
# of Signals: 5

2024 ERAS Prelim. Data as of 12/29/23
Programs: 187
Signals: 5

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PM&R: Program Sample & Inclusion Criteria

	N of Programs for Program Signals
Total programs	107
Total programs participating in program signaling	105
Did not meet inclusion rule equal to or larger than 7:1; Did not provide PGY1 info in GME track; Did not provide interview offer data by December 29, 2023	15
N Programs with fewer than 10 Program Signals	2
Total analytic sample	**88**
Total % of programs participating in program signaling	**84%**
Total % of all PM&R programs in 2024 ERAS cycle	**82%**

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PM&R: Interview Rates by Program Signal Status Year Over Year Comparison

2023 ERAS Data as of 3/15/23
# of Programs: 83
# of Signals: 4

2024 ERAS Prelim. Data as of 12/29/23
# of Programs: 88
# of Signals: 5
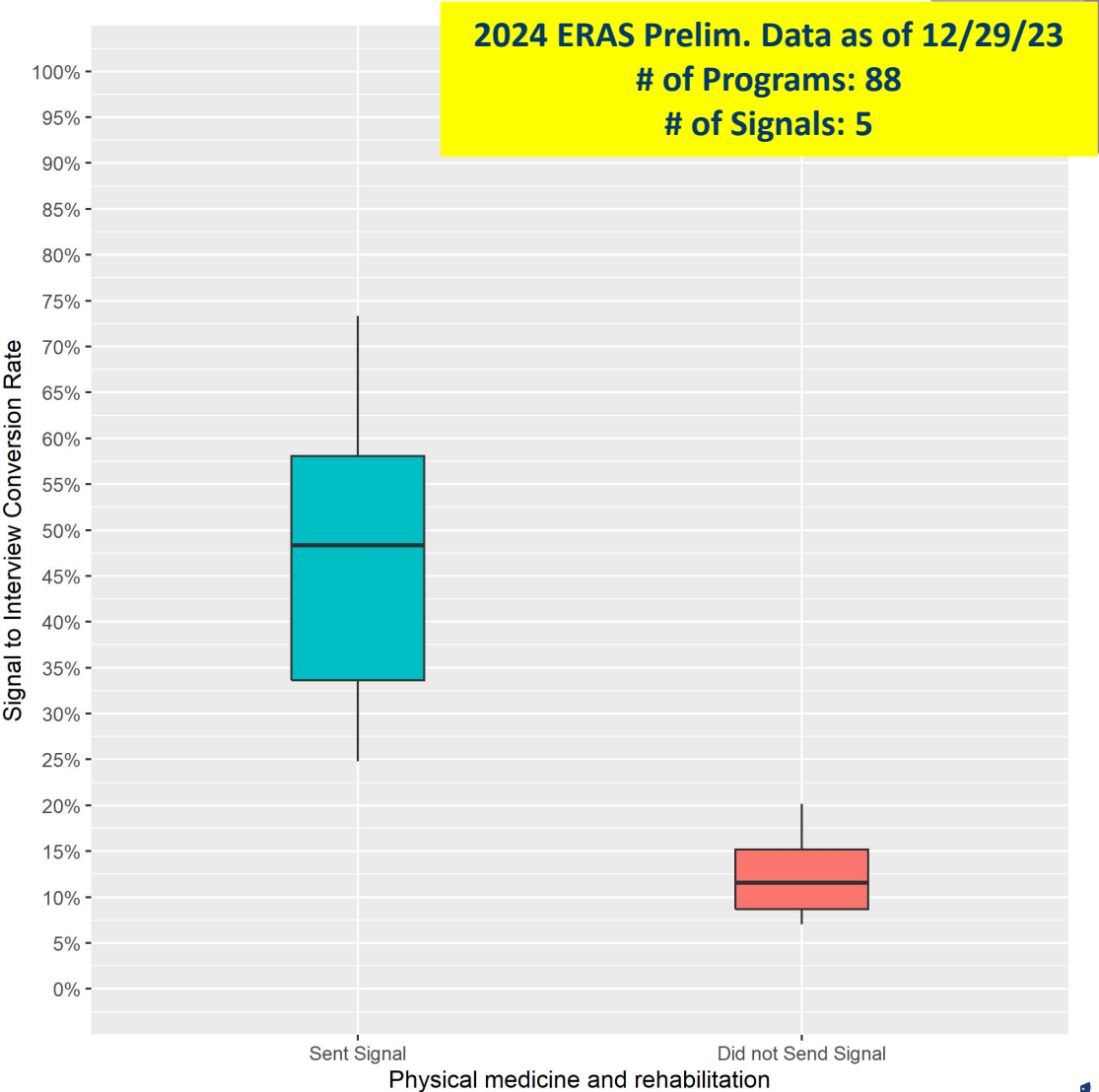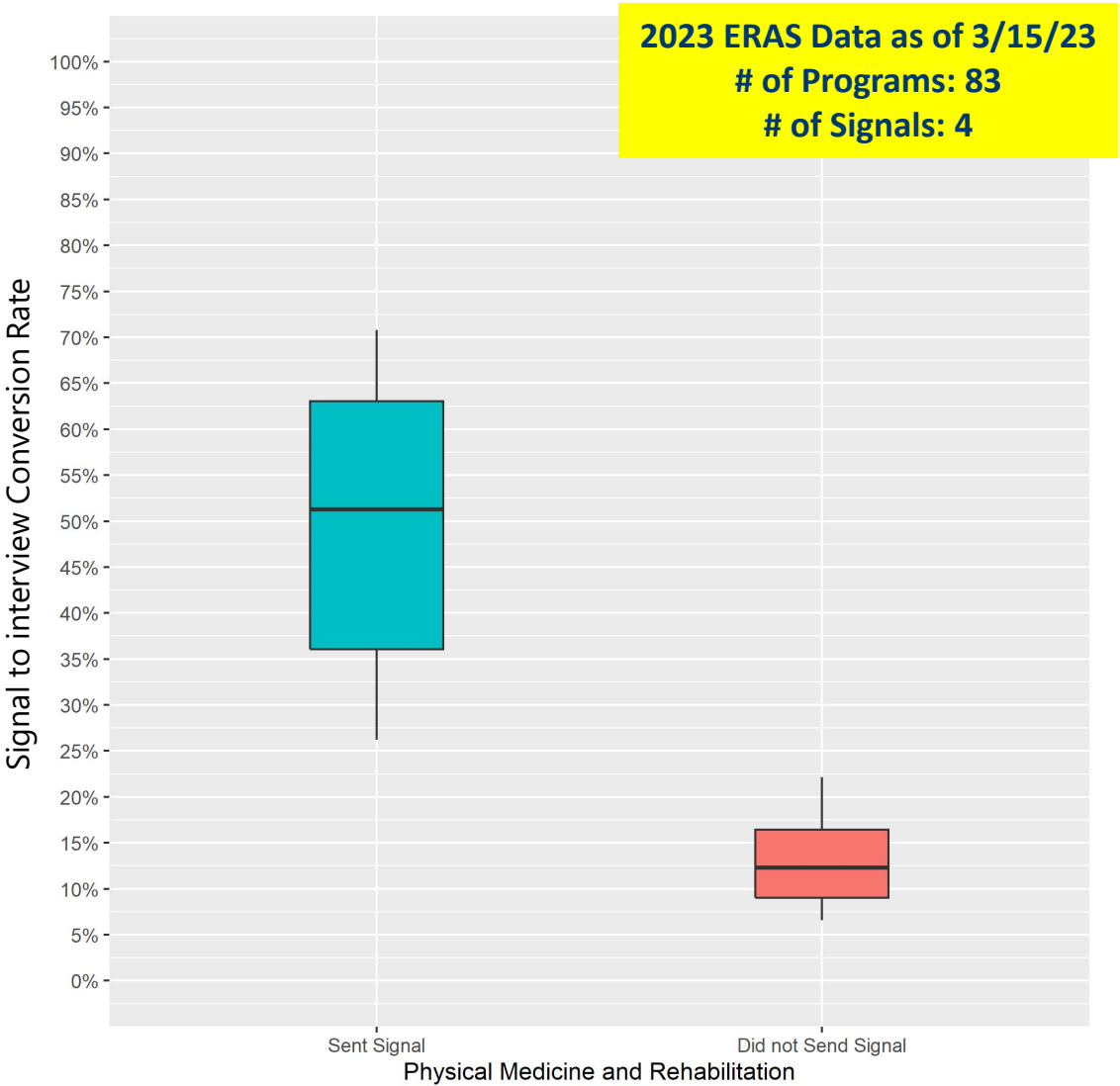
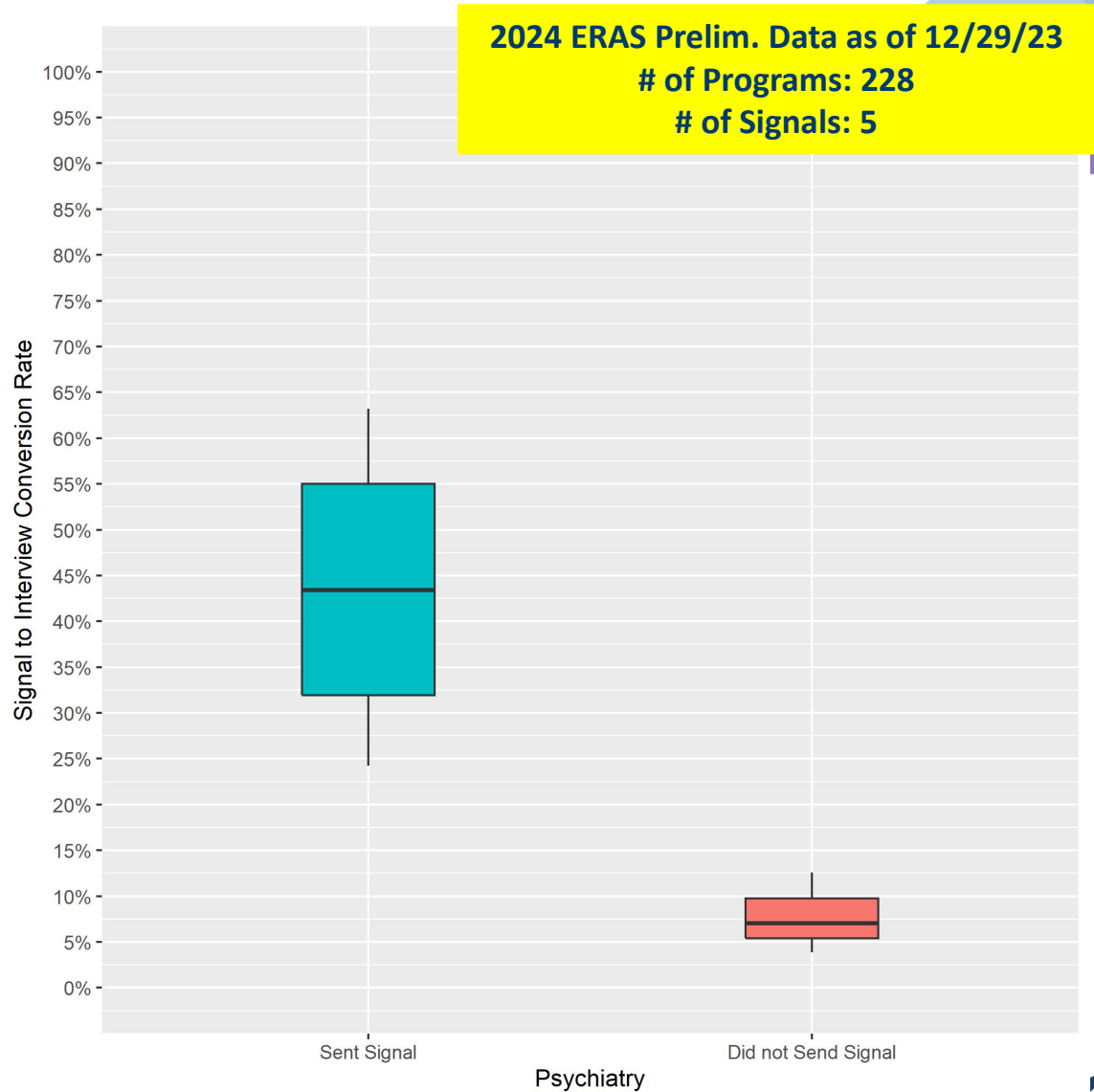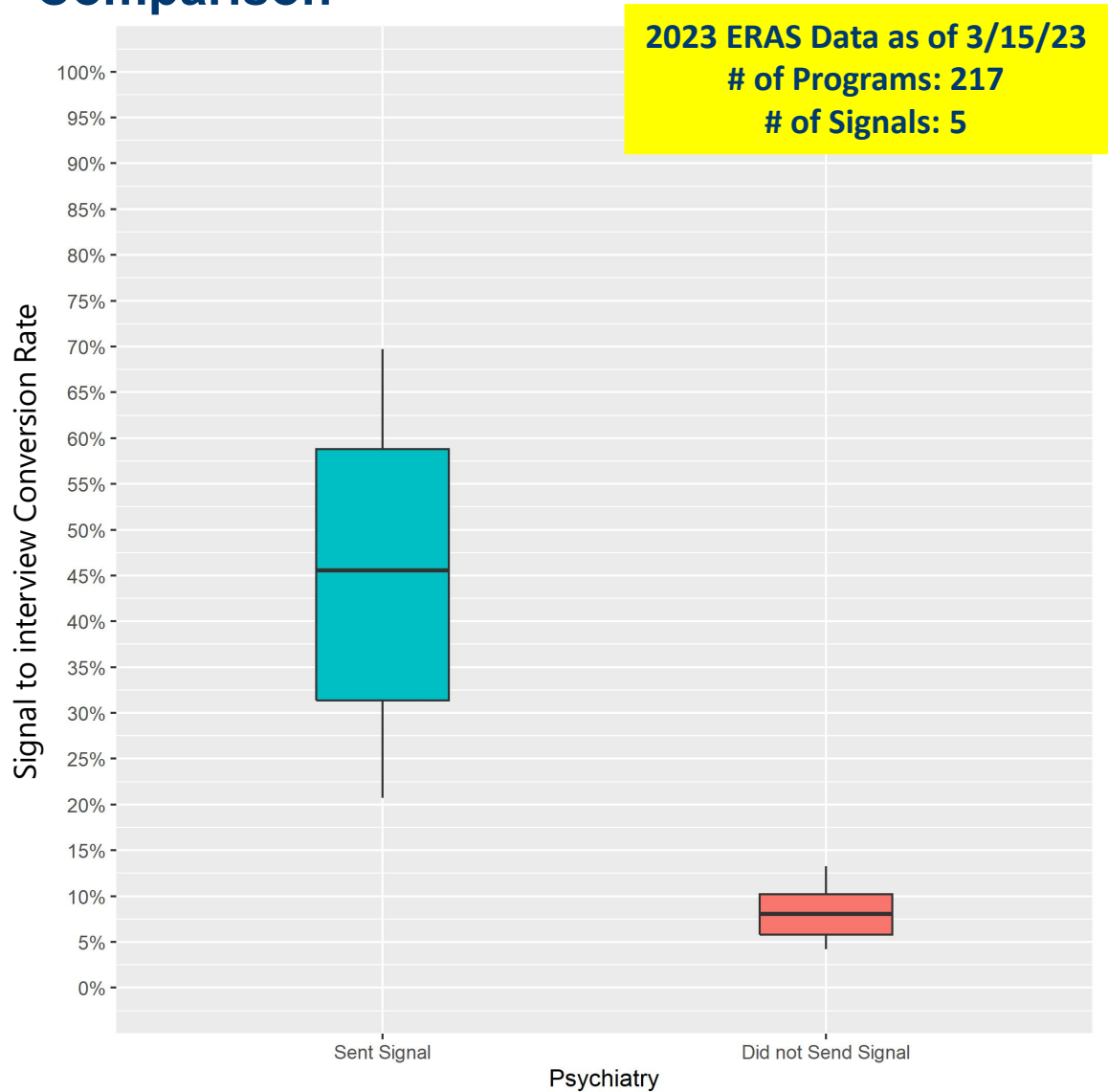# Psychiatry: Program Sample & Inclusion Criteria

	N of Programs for Program Signals
Total programs	304
Total programs participating in program signaling	280
Did not meet inclusion rule equal to or larger than 7:1; Did not provide PGY1 info in GME track; Did not provide interview offer data by December 29, 2023	51
N Programs with fewer than 10 Program Signals	1
Total analytic sample	**228**
Total % of programs participating in program signaling	**81%**
Total % of all Psychiatry programs in 2024 ERAS cycle	**75%**

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Psychiatry: Interview Rates by Program Signal Status Year Over Year Comparison

2023 ERAS Data as of 3/15/23
# of Programs: 217
# of Signals: 5

2024 ERAS Prelim. Data as of 12/29/23
# of Programs: 228
# of Signals: 5

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Thoracic Surgery: Program Sample & Inclusion Criteria

|	N of Programs for Program Signals
Total programs	34
Total programs participating in program signaling	28
Did not meet inclusion rule equal to or larger than 7:1; Did not provide PGY1 info in GME track; Did not provide interview offer data by December 29, 2023	12
N Programs with fewer than 10 Program Signals	3
Total analytic sample	**13**
Total % of programs participating in program signaling	**46%**
Total % of all Thoracic Surgery programs in 2024 ERAS cycle	**38%**

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Thoracic Surgery: Interview Rates by Program Signal Status

Applicants who sent a signal:
- Median of interview offers: 30%.
- 10th percentile: 22%.
- 90th percentile: 41%.

Applicants who did not send a signal:
- Median of interview offers: 20%.
- 10th percentile: 11%.
- 90th percentile: 29%.
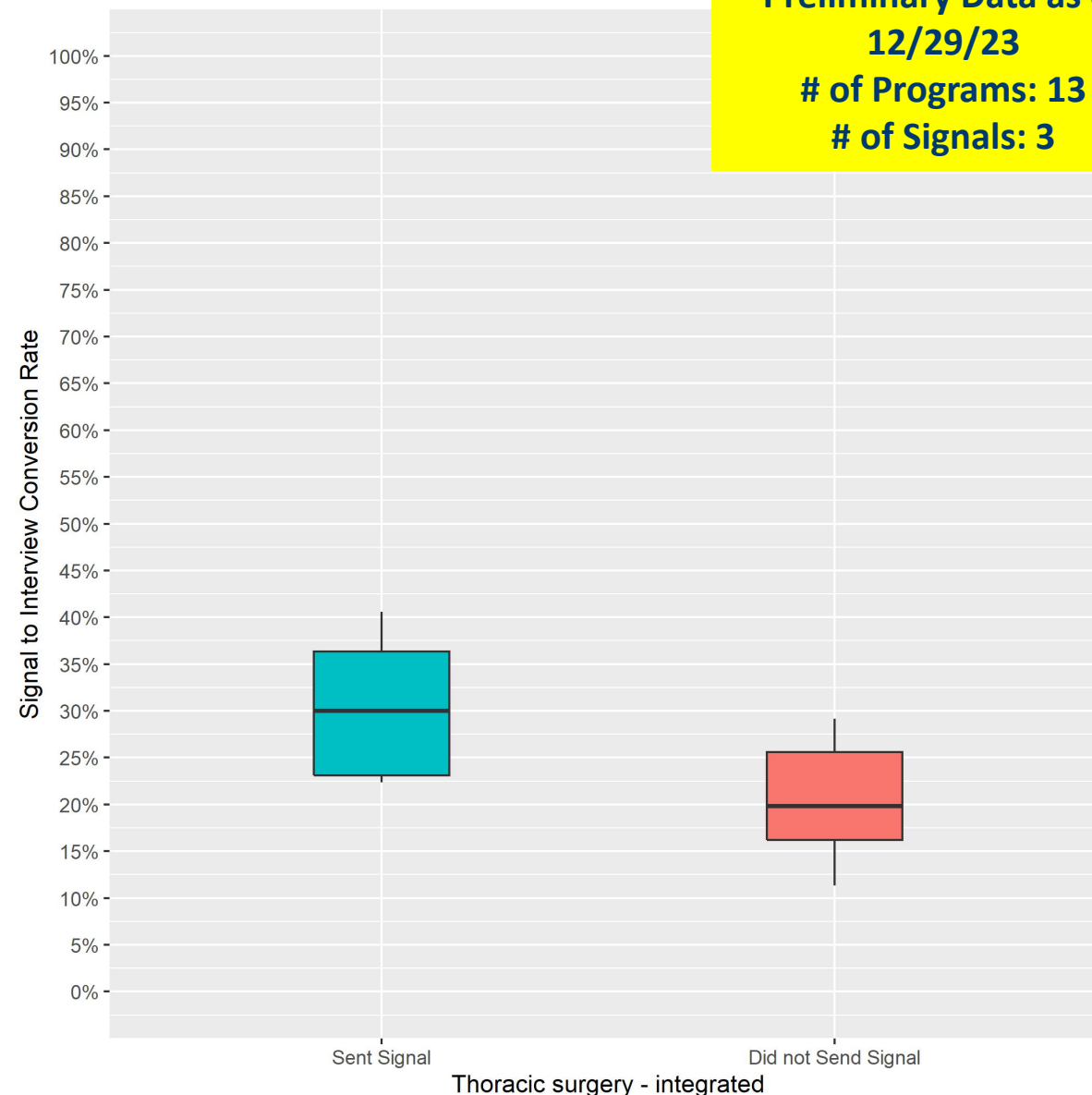
In Conclusion

Small
- Signalers experience higher interview rates.
- Non-signalers still receive interviews but at a lower rate.

Large
- Signalers have substantially higher interview rates.
- Non-signalers, in contrast, see almost no interviews.

Two-Tier
- Gold signals boost interview rates the most, and silver signals follow.
- Non-signalers have close to zero interview rates.

General Trends:
- Sending a program signal enhances applicants' chances of receiving interview invitations across all specialties and signaling approaches.
- Considerable variation in the level of enhancement, so programs may be using or emphasizing signals in varying ways.
- Specialties who changed their approach from small to large or two-tier witnessed a notable decline in interview rates for non-signalers.

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For more information:

- [ERAS Statistics](): This page contains current and historical data related to ERAS applicants and applications. It includes *Preliminary Data*, *Specialty Specific Data*, *Program Signal Data*, and *Cross Specialty Applicant Data*.

- Publications:
  - [*The Relationship Between Program and Applicant Characteristics With Applicant Program Signals in the 2022 Residency Recruitment Cycle: Findings From Three Specialties*]()
  - [*Impact of Preference Signals on Interview Selection Across Multiple Residency Specialties and Programs*]()

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