

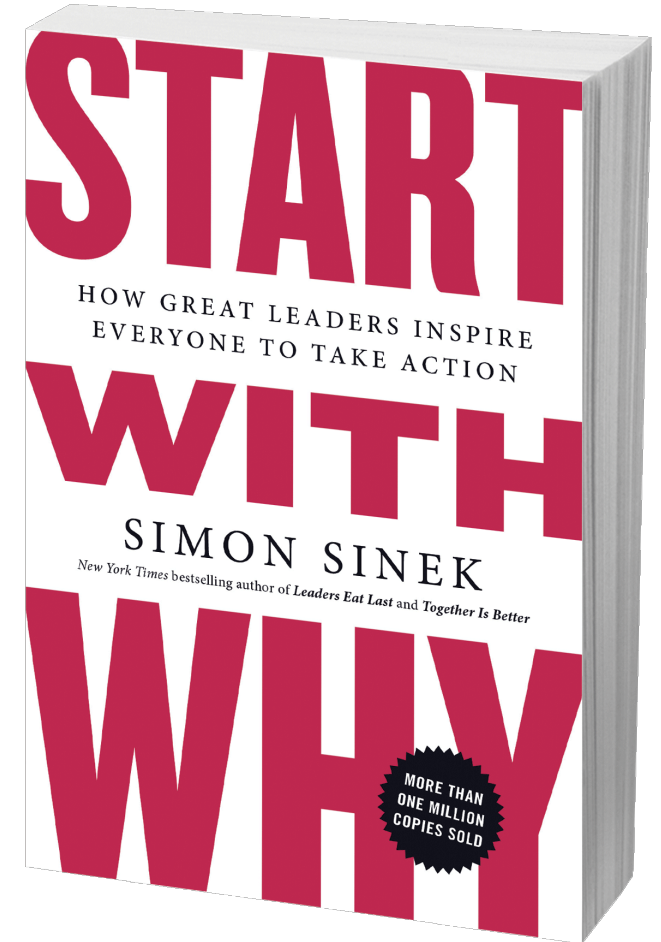
# Recruiting Updates in Orthopaedic Surgery

S. Trent Guthrie, MD, FAOA, FAAOS

# Preference Signaling

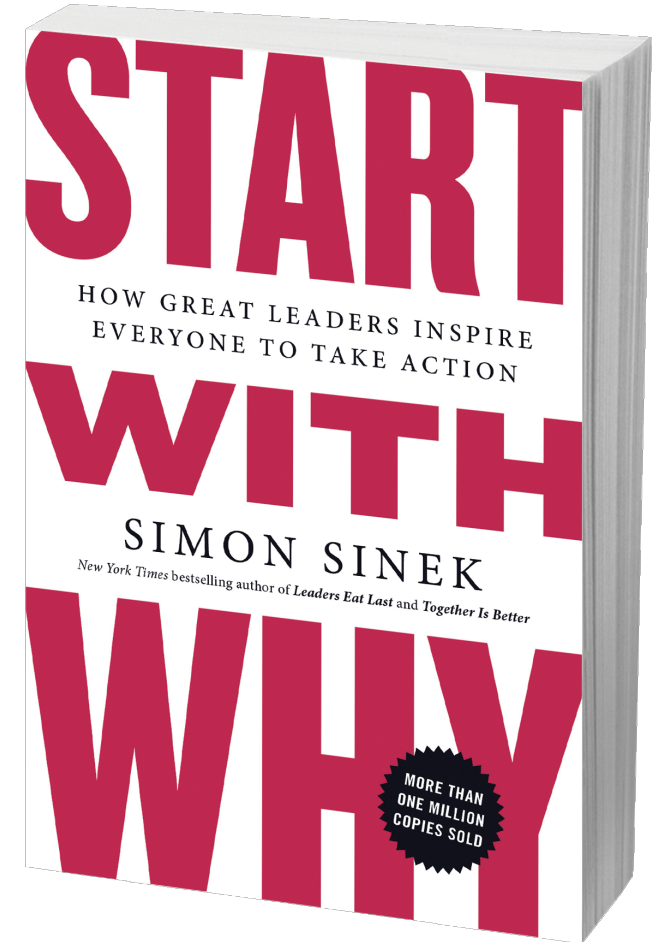
# Why Preference Signaling?

- To add VALUE to both programs and applicants



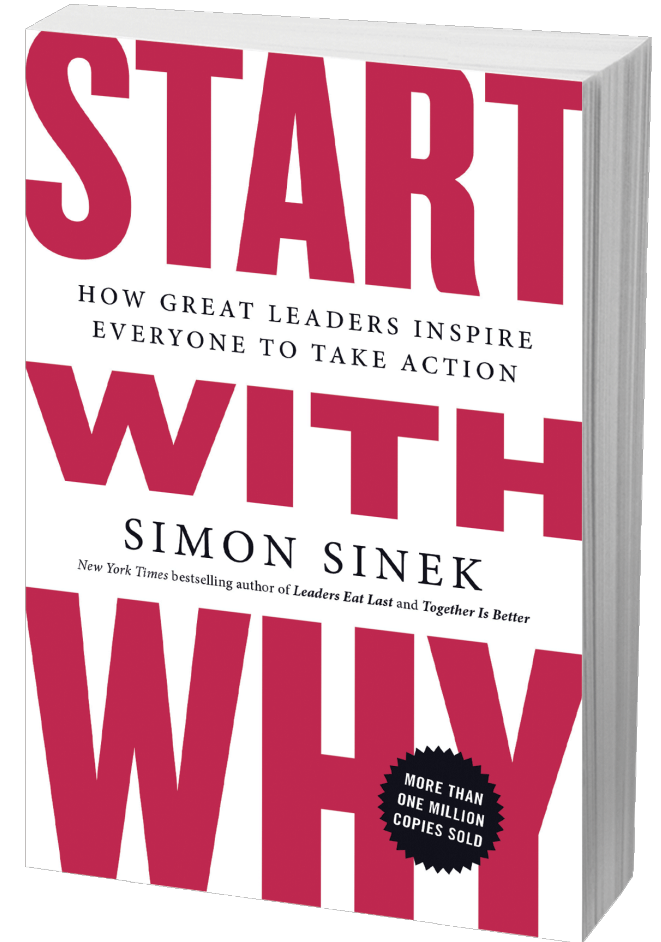
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  - When APPLICANTS overapply and apply to most programs, the value of the application is lost
    - High cost in application fees
    - Not able to indicate most preferred programs
    - Equity issues



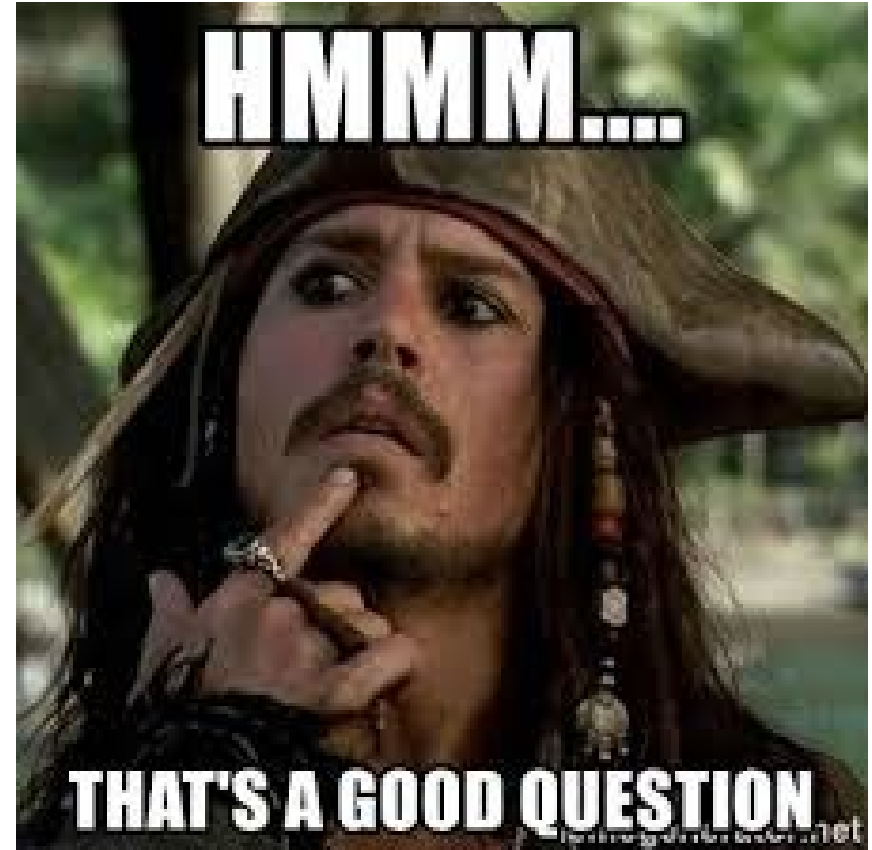
# Why Preference Signaling?

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  - When APPLICANTS overapply and apply to most programs, the value of the application is lost
    - High cost in application fees
    - Not able to indicate most preferred programs
    - Equity issues
  - When PROGRAMS receive applications from most applicants, the value of the application is also lost
    - Burden of reviewing applications
    - Unable to perform holistic review
    - Wasted interview slots on uninterested applicants



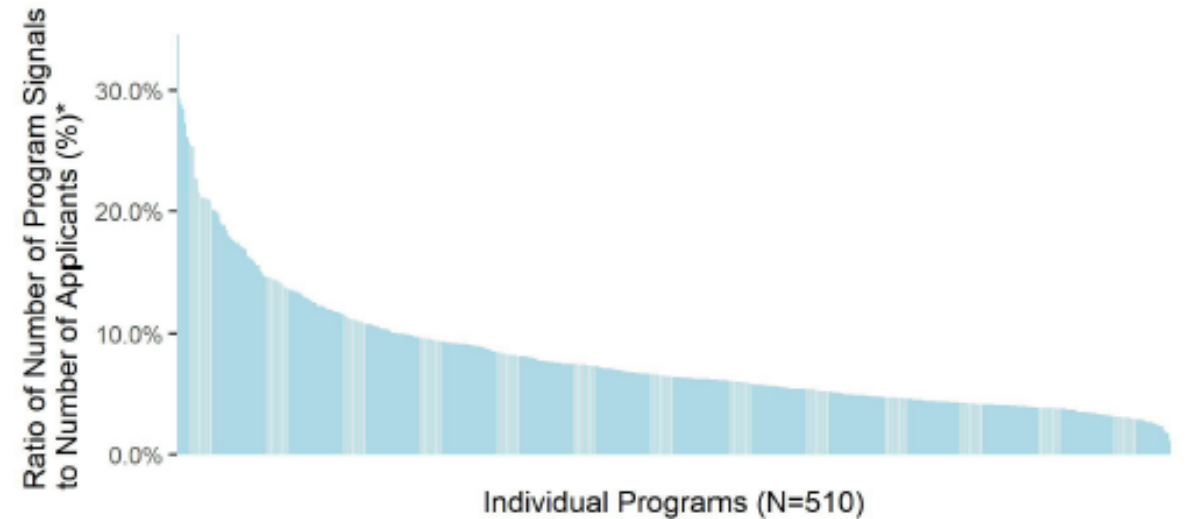
# How Many Signals to Use?

- Otolaryngology (OPDO)
  - 2020-21 and 2021-22
  - 5 signals via OPDO website
- ERAS Supplemental Application Pilot 2021-22
  - IM, General Surgery, Dermatology
  - 3-5 signals



# How Many Signals to Use?

- History
  - With 5 or fewer signals, they frequently become aspirational tokens
    - 50% signals to top 25% programs
      - All or Nothing phenomenon
  - “Signal Concentration”



\*Ratio of percentage of total program signals a program received to the total applications a program received.

# How Many Signals to Use?

- Literature Review
  - J Urology Feb 2022 – Simulated Application Cap
    - Asked applicants to rank all programs at the time of application and compared to Match results
    - 84% matched within top 25 of application list
    - Diversity – no effect on match rate of URIM, IMG or DO applicants
    - Least applied-to program – 12 applications per position
    - Majority of applicants favored a hard cap of 25



# How Many Signals to Use?

- Math

- Numbers crunching with historical application and match data

- NRMP – programs need ~ 5 ROL spots per position to fill (14.4 in 2022)

- 5 x 875 positions = 4375 ROL spots at all programs (12,588 in 2022)

- 30 signals x 1727 applicants = 52k total signals

- 52k signals / 875 positions = 60 signals per position

- Compare with 170 apps / position in 2022

# How Many Signals to Use?

- Strategy and Advising
  - Allows for more strategic application
    - For an individual applicant, a given program may be aspirational (Reach), well-suited (Wheelhouse), or less competitive (Safety)
    - Depending on strength of application, applicants can devote more or fewer signals to different tiers (e.g. 10/10/10 vs. 20/5/5 vs. 0/5/25)
  - Allows for specialized strategies
    - Geography (e.g. prefers Midwest but not Chicago)
    - Couples match
    - Coordination with classmates to avoid all signaling the same programs
    - Academic vs. Community
    - Urban vs. Rural

30. Thirty. Three Zero.



How Did It Work?

# Outcomes

- Survey by Council of Orthopaedic Residency Directors (CORD)
  - Do you support continued use of preference signaling in future cycles?
    - 90% programs support
    - 78% applicants support



# Distribution of Preference Signals

**Table 10. Mean Number of Signals and Percentage of Signals Received by Programs Relative to the Number of Applications, by Specialty, 2022-2023**

Specialty	Number of Program Signals Received			Percentage of Signals Received Relative to Applications		
	Mean (Per Program)	Minimum	Maximum	Mean (Per Program)	Minimum	Maximum
Adult Neurology	33.87	2	101	5%	1%	18%
Anesthesiology	104.55	14	278	7%	2%	19%
Dermatology	23.06	3	76	4%	1%	11%
Diagnostic Radiology	63.4	5	206	7%	1%	18%
Interventional Radiology	11.84	1	40	7%	1%	23%
Emergency Medicine	53.05	2	203	8%	1%	22%
General Surgery	65.77	9	230	6%	1%	13%
Internal Medicine - Categorical	211.11	5	1,222	8%	1%	35%
Internal Medicine/Psychiatry	29.69	14	57	20%	11%	34%
Neurological Surgery	28.55	6	85	10%	3%	25%
Obstetrics and Gynecology	150.8	25	440	22%	8%	43%
<b>Orthopedic Surgery</b>	<b>244.33</b>	<b>42</b>	<b>540</b>	<b>37%</b>	<b>17%</b>	<b>67%</b>
Pediatrics	101.29	9	440	9%	3%	25%
Physical Medicine and Rehabilitation	39.10	6	121	8%	2%	20%
Psychiatry	64.13	6	240	7%	1%	19%
Public Health and General Preventive Medicine	9.23	1	20	25%	4%	54%

- Mean 37%
  - Compare with 5-8% in large specialties with 5 or fewer signals
- Minimum 17%
  - Compare with 1-3% in large specialties with 5 or fewer signals

# Signal Concentration

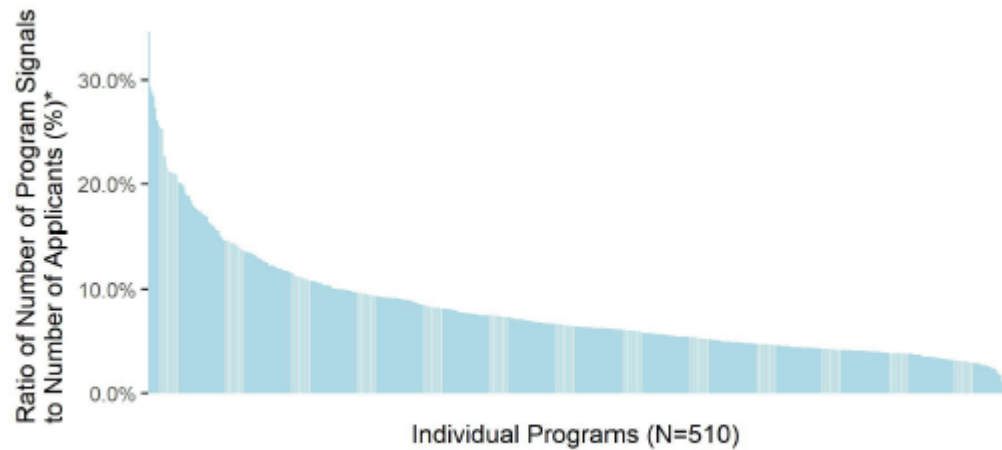
Table 11. Number and Percentage of Signals Sent to 10% of Programs, 2022-2023

Specialty	10% of Participating Programs	Percentage of Signals Received by 10% of Programs	Number of Signals Received by 10% of Programs	Total Number of Signals Received
Adult Neurology	15	22%	1,160	5,250
Anesthesiology	15	21%	3,456	16,100
Dermatology <sup>1</sup>	12	22%	624	2,836
Diagnostic Radiology	19	22%	2,650	11,793
Interventional Radiology	9	28%	278	1,006
Emergency Medicine	26	28%	3,882	13,845
General Surgery <sup>2</sup>	28	28%	5,176	18,546
Internal Medicine – Categorical <sup>3</sup>	51	31%	33,053	107,668
Internal Medicine/Psychiatry	-- <sup>4</sup>	–	--	–
Neurological Surgery	11	24%	759	3,140
Obstetrics and Gynecology	27	21%	8,642	41,168
Orthopedic Surgery	18	17%	7,581	44,468
Pediatrics	20	26%	5,215	20,258
Physical Medicine and Rehabilitation	9	22%	816	3,675
Psychiatry	26	26%	4,258	16,354
Public Health and General Preventive Medicine	–	–	--	–

- Prior years – 50% of signals to 25% of programs
- 17% of top 10% programs
  - Compare with 26-31% for large specialties with 5 or fewer signals

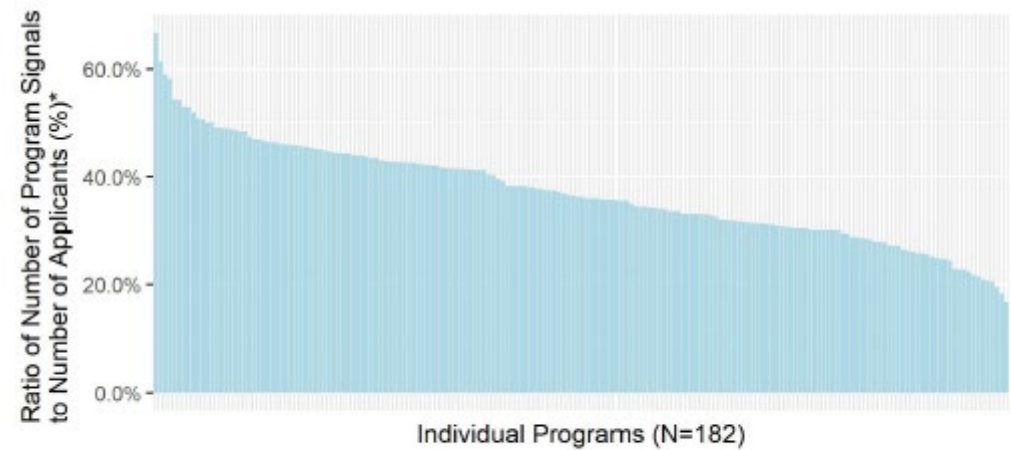
# Signal Concentration

## Unnamed Specialty with 5 signals



\*Ratio of percentage of total program signals a program received to the total applications a program received.

## Orthopaedic Surgery



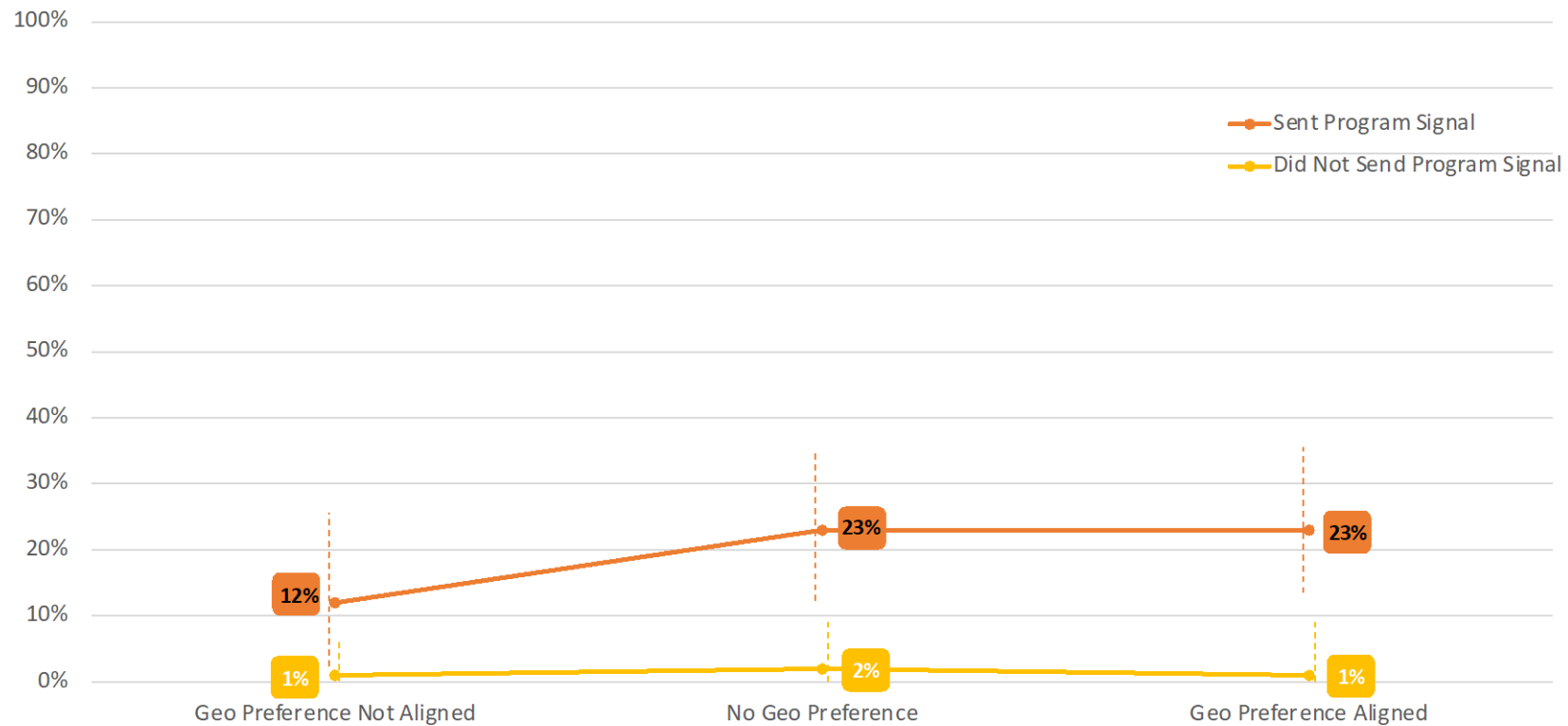
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# Interview Rate

## ORTHOPEDIC SURGERY

**Model 1: Median Predicted Interview Invitation Probability by Program Signal & Geographic Preference**  
(Program n=158; Unique applicants n = 1,599)



= Dotted lines represent the 10th percentile and 90th percentile of predicted probabilities across programs.

# Interview Rate

- Historically ~5% chance of interview with application in orthopaedics
- In 2022-23
  - Signaled applicants had 23% chance of interview
  - Unsignaled applicants had ~1% chance of interview
    - May actually be less than 1% due to not signaling home and away rotation programs
- Adding value – applicants had 4-5x increased chance of interview by signaling programs compared to prior years without signaling

# Creating Value

- Matching the right people to the right programs
  - More applicants getting interviews and matching *at most preferred programs*
  - More holistic review by programs
  - Fewer wasted interview slots

# Potential harm?

- Will signaling negatively affect applicants' chance of matching?
  - Match rate is unchanged with signaling
    - # applicants / # positions
- Will signaling create inequity?
  - Hopefully decrease financial burden of overapplication
  - Programs identify interested applicants that they otherwise would have overlooked
- Will signaling create a *de facto* application cap?
  - Maybe?
  - Several studies show applicants favor a cap

# Lesson Learned - Communication is Key

- Home and Away signaling
  - Signal all programs of interest INCLUDING home programs and away rotations
    - CORD website
    - AAMC / ERAS website
    - AAMC / ERAS Supplemental Application Guide
    - CORD webinar
    - CORD email to all programs
  - 42% of programs in some way told applicants not to signal home and/or away programs
    - Majority of applicants (94%) did not heed this advice and did follow the recommendations of CORD and AAMC to signal all programs of interest.

# Summary Findings from CORD and AAMC Surveys

- 2022-23 application cycle in orthopaedic surgery saw a 12% decrease in average applications sent per applicant. Applicants reported applying to 12.5% fewer programs due solely to preference signaling.
- Preference signaling was received quite positively by both programs and applicants with 90% of programs and 78% of applicants supporting continued use of preference signaling in the future. There is broad support for a high signal number with most supporting 30, although there is a minority of enthusiastic opponents preferring fewer.
- The use of a high signal number (30) helped to prevent the phenomenon of signal concentration with only 17% of signals going to the top 10% of programs. Programs averaged 37% signaled applicants with a minimum of 17%.

# Summary Findings from CORD and AAMC Surveys

- Approximately 2/3 of applicants believe that preference signaling will help them match at one of their most preferred programs. Similarly, 70% of programs reported that preference signaling helped identify applicants who they would have otherwise overlooked.
- Program directors intended to utilize preference signaling to help in holistic application review and in making interview selections but not for ranking decisions.
- Geographic signaling had low utility

Thanks