

# The Evolution and Impact of Preference Signaling on Orthopaedic Residency After Two Years

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## INTRODUCTION:

Residency programs have begun to offer preference signaling as a method for applicants to demonstrate commitment to programs. Orthopaedic surgery, which began signaling in 2022, allows applicants to use up to 30 signals. Early studies have evaluated the effects of signaling, demonstrating decreased application volume, varying effects on interviews, and high levels of applicant and faculty satisfaction. While the effects of signaling are beginning to be studied, multiple year evaluations are absent from the literature. The purpose of this study was to explore the impacts of signaling on the orthopaedic surgery match over its first two years.

## METHODS:

We performed a retrospective cohort study using a prospectively collected *Texas Seeking Transparency in Application to Residency* database. The database contains survey data from 2017-2024 including applicants' demographics, academic performance, and application data. Applicants were first placed into cohorts comparing pre-signaling and post-signaling data. A second analysis organized applicants into first-year and second-year of signaling. Cohorts were compared using descriptive statistics, chi-square tests, and independent samples T-tests.

## RESULTS:

There were 1786 orthopaedic surgery applicants from 2017-2024. In the first two years of signaling, the mean applications decreased by 23 ( $p < 0.001$ ), interview offers decreased by three ( $p < 0.001$ ), publications increased by one ( $p < 0.001$ ), and volunteer experiences decreased by one ( $p < 0.001$ ). When compared to the first year, the second year of signaling decreased applications by 15 ( $p < 0.001$ ), decreased interviews by one ( $p = 0.030$ ), decreased volunteer experiences by four ( $p < 0.001$ ), and decreased publications by one ( $p = 0.015$ ). There was no significant difference in match rate.

## DISCUSSION AND CONCLUSION:

Orthopaedic surgery preference signaling after two years significantly decreased mean applications, interview opportunities, and extracurricular experiences of applicants without impacting match success. These findings suggest that preference signaling continues to be an effective method at reducing application volume for programs and applicants while creating equitable opportunities for applicants after two years.

Table 1 - Applicant Demographics and Background Information for the Pre- and Post-Signaling Cohorts

Category	Pre-Signaling	Post-Signaling	p-value
Total Applicants	1786	1786	
Female	1021	1021	
Male	765	765	
Age (Mean)	24.5	24.5	
Age (SD)	1.2	1.2	
Year 1	893	893	
Year 2	893	893	
Year 3	893	893	
Year 4	893	893	
Year 5	893	893	
Year 6	893	893	
Year 7	893	893	
Year 8	893	893	
Year 9	893	893	
Year 10	893	893	
Year 11	893	893	
Year 12	893	893	
Year 13	893	893	
Year 14	893	893	
Year 15	893	893	
Year 16	893	893	
Year 17	893	893	
Year 18	893	893	
Year 19	893	893	
Year 20	893	893	
Year 21	893	893	
Year 22	893	893	
Year 23	893	893	
Year 24	893	893	
Year 25	893	893	
Year 26	893	893	
Year 27	893	893	
Year 28	893	893	
Year 29	893	893	
Year 30	893	893	
Year 31	893	893	
Year 32	893	893	
Year 33	893	893	
Year 34	893	893	
Year 35	893	893	
Year 36	893	893	
Year 37	893	893	
Year 38	893	893	
Year 39	893	893	
Year 40	893	893	
Year 41	893	893	
Year 42	893	893	
Year 43	893	893	
Year 44	893	893	
Year 45	893	893	
Year 46	893	893	
Year 47	893	893	
Year 48	893	893	
Year 49	893	893	
Year 50	893	893	
Year 51	893	893	
Year 52	893	893	
Year 53	893	893	
Year 54	893	893	
Year 55	893	893	
Year 56	893	893	
Year 57	893	893	
Year 58	893	893	
Year 59	893	893	
Year 60	893	893	
Year 61	893	893	
Year 62	893	893	
Year 63	893	893	
Year 64	893	893	
Year 65	893	893	
Year 66	893	893	
Year 67	893	893	
Year 68	893	893	
Year 69	893	893	
Year 70	893	893	
Year 71	893	893	
Year 72	893	893	
Year 73	893	893	
Year 74	893	893	
Year 75	893	893	
Year 76	893	893	
Year 77	893	893	
Year 78	893	893	
Year 79	893	893	
Year 80	893	893	
Year 81	893	893	
Year 82	893	893	
Year 83	893	893	
Year 84	893	893	
Year 85	893	893	
Year 86	893	893	
Year 87	893	893	
Year 88	893	893	
Year 89	893	893	
Year 90	893	893	
Year 91	893	893	
Year 92	893	893	
Year 93	893	893	
Year 94	893	893	
Year 95	893	893	
Year 96	893	893	
Year 97	893	893	
Year 98	893	893	
Year 99	893	893	
Year 100	893	893	

Table 2 - Independent Samples T-Test Comparing the Mean Applicant Data Between Pre- and Post-Signaling Cohorts

Category	Mean Difference	t	df	p	Lower 95% CI	Upper 95% CI
Total Applications	-23.02	-0.53	1784	<0.001**	-26.91	-0.17
Interview Offers	-0.68	-0.13	1784	<0.001**	-0.98	-0.37
Interviews Offered	-0.53	-0.10	1784	<0.001**	-0.86	-0.20
Step 1 Score	-0.03	-0.01	1784	<0.001**	-0.04	0.00
Step 2 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 3 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 4 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 5 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 6 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 7 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 8 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 9 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 10 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 11 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 12 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 13 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 14 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 15 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 16 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 17 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 18 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 19 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 20 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 21 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 22 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 23 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 24 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 25 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 26 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 27 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 28 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 29 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 30 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 31 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 32 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 33 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 34 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 35 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 36 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 37 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 38 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 39 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 40 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 41 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 42 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 43 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 44 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 45 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 46 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 47 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 48 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 49 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 50 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 51 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 52 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 53 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 54 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 55 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 56 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 57 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 58 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 59 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 60 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 61 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 62 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 63 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 64 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 65 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 66 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 67 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 68 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 69 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 70 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 71 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 72 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 73 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 74 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 75 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 76 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 77 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 78 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 79 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 80 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 81 Score	0.05	0.01	1784	<0.001**	0.00	0.10
Step 82 Score	0.05	0.01	1784	<0.001**	0.00	0.10