

Search Costs Field Experiment: Pre-Registration Analysis

Statistical Analysis Report

2025-06-02

Contents

| | | |
|----------|---|-----------|
| 1 | Executive Summary | 3 |
| 2 | Summary Statistics | 4 |
| 2.1 | Overall Summary Statistics | 4 |
| 2.2 | Summary Statistics by Discipline | 4 |
| 2.3 | Summary Statistics by Semester | 4 |
| 3 | Main Effects Analysis | 5 |
| 3.1 | Main Question 1: URM Speaker Representation | 5 |
| 3.2 | Main Question 2a: Total Number of Speakers | 6 |
| 3.3 | Main Question 2c: Non-URM Speakers | 6 |
| 4 | Demographic Subgroup Analysis | 7 |
| 4.1 | Black Speakers | 7 |
| 4.2 | Hispanic Speakers | 7 |
| 4.3 | Female Speakers | 7 |
| 5 | Discipline Subgroup Analysis | 8 |
| 5.0.1 | Chemistry (N=271) | 8 |
| 5.0.2 | Mathematics (N=811) | 8 |
| 5.0.3 | Physics (N=350) | 8 |
| 5.0.4 | Computer Science (N=142) | 9 |
| 5.0.5 | Mechanical Engineering (N=82) | 9 |
| 6 | Semester-Specific Analysis | 10 |
| 6.1 | Fall Semester | 10 |
| 6.2 | Spring Semester | 10 |

| | | |
|----------|--|-----------|
| 7 | Intersectional Analysis | 11 |
| 7.1 | URM <i>times</i> Female | 11 |
| 7.2 | Black Female | 11 |
| 7.3 | Black Male | 11 |
| 7.4 | Hispanic Female | 12 |
| 7.5 | Hispanic Male | 12 |
| 8 | Heterogeneity Analysis | 13 |
| 8.1 | Moderation by Discipline | 13 |
| 8.1.1 | Testing Whether Treatment Effects Vary by Discipline | 13 |
| 8.2 | Moderation by Department URM Representation | 14 |
| 8.3 | Moderation by Department Female Representation | 15 |
| 8.4 | Moderation by Department Ranking | 16 |
| 8.5 | Moderation by Total Faculty Size | 17 |
| 8.6 | Moderation by URM Faculty in Peer Departments | 18 |
| 9 | Summary of All Significant Results | 19 |

1 Executive Summary

This report presents the comprehensive statistical analysis for the search costs field experiment, examining whether providing academic seminar organizers with access to a database of underrepresented racial minority (URM) faculty members increases diversity in seminar speakers. The analysis follows the pre-registered analysis plan and examines treatment effects across multiple dependent variables and subgroups.

Note: A comprehensive overview of all significant results ($p < 0.1$) is provided at the end of this document.

2 Summary Statistics

2.1 Overall Summary Statistics

Table 1: Overall Summary Statistics for Speaker Demographics

| Demographic Group | Mean % | SD % | Mean Count | SD Count | Prop. Has Any | |
|-------------------|--------|-------|------------|----------|---------------|-----------------------------|
| URM | 7.81 | 11.37 | 1.07 | 1.34 | 0.557 | Note: N = 1656 departments. |
| Black | 2.24 | 5.90 | 0.32 | 0.67 | 0.239 | |
| Hispanic | 5.55 | 9.70 | 0.75 | 1.09 | 0.452 | |
| Female | 16.87 | 16.25 | 2.39 | 2.52 | 0.755 | |
| Total Speakers | — | — | 13.99 | 9.95 | — | |

Percentages calculated among speakers with demographic data available.

2.2 Summary Statistics by Discipline

Table 2: Summary Statistics by Discipline: URM Speakers

| Discipline | N | Mean % | SD % | Mean Count | Prop. Has Any |
|------------------------|-----|--------|-------|------------|---------------|
| Chemistry | 271 | 9.13 | 10.47 | 1.32 | 0.653 |
| Computer Science | 142 | 4.86 | 9.01 | 0.61 | 0.380 |
| Mathematics | 811 | 7.37 | 11.02 | 1.00 | 0.513 |
| Mechanical Engineering | 82 | 8.38 | 9.14 | 1.12 | 0.634 |
| Physics | 350 | 8.87 | 13.70 | 1.23 | 0.640 |

Table 3: Summary Statistics by Discipline: Other Demographics

| Discipline | Black | | Hispanic | | Female | |
|------------------------|--------|-----------|----------|-----------|--------|-----------|
| | Mean % | Prop. Any | Mean % | Prop. Any | Mean % | Prop. Any |
| Chemistry | 4.20 | 0.402 | 4.83 | 0.476 | 23.75 | 0.863 |
| Computer Science | 1.46 | 0.169 | 3.41 | 0.275 | 18.88 | 0.789 |
| Mathematics | 1.72 | 0.192 | 5.64 | 0.435 | 13.90 | 0.695 |
| Mechanical Engineering | 3.28 | 0.329 | 5.10 | 0.463 | 19.25 | 0.768 |
| Physics | 1.98 | 0.229 | 6.89 | 0.540 | 17.06 | 0.791 |

2.3 Summary Statistics by Semester

Table 4: Summary Statistics by Semester

| Semester (N) | Mean % | URM | | Black | | Hispanic | |
|---------------|--------|------------|-----------|----------------|-----------|----------|-----------|
| | | Mean Count | Prop. Any | Mean % | Prop. Any | Mean % | Prop. Any |
| Fall (1448) | 7.44 | 0.57 | 0.385 | 1.74 | 0.119 | 5.68 | 0.310 |
| Spring (1397) | 7.99 | 0.68 | 0.431 | 2.66 | 0.183 | 5.30 | 0.319 |
| Semester | Mean % | Female | | Total Speakers | | | |
| | | Mean Count | Prop. Any | Mean | SD | | |
| Fall | 16.09 | 1.27 | 0.618 | 7.75 | — | | |
| Spring | 17.69 | 1.52 | 0.637 | 8.56 | — | | |

3 Main Effects Analysis

3.1 Main Question 1: URM Speaker Representation

Table 5: Main Question 1: Effect on URM Speaker Representation

| | % URM | | Count URM | | Any URM | |
|----------------|---------------------|------------------|---------------------|------------------|---------------------|---------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Treatment | 0.754 (0.537) | 0.740 (0.529) | 0.095 (0.070) | 0.076 (0.069) | 0.014 (0.025) | 0.013 (0.025) |
| Constant | 7.325*** (0.909) | 1.686 (1.810) | 1.322*** (0.142) | 0.436 (0.268) | 0.640*** (0.050) | 0.382*** (0.100) |
| Controls | Simple | Extended | Simple | Extended | Simple | Extended |
| N | 1,656 | 1,656 | 1,656 | 1,656 | 1,656 | 1,656 |
| Adjusted R^2 | 0.010 | 0.016 | 0.020 | 0.027 | 0.027 | 0.033 |

Note:

Clustered standard errors at department level in parentheses.

⁺ $p < 0.1$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

3.2 Main Question 2a: Total Number of Speakers

Table 6: Main Question 2a: Effect on Total Number of Speakers

| | (1) | (2) |
|----------------|----------------------|----------------------|
| Treatment | -0.437 (0.569) | -0.404 (0.579) |
| Constant | 16.731*** (1.243) | 15.607*** (2.537) |
| Controls | Simple | Extended |
| N | 1,656 | 1,656 |
| Adjusted R^2 | 0.020 | 0.023 |

Note: Clustered standard errors at department level in parentheses.
⁺ $p < 0.1$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

3.3 Main Question 2c: Non-URM Speakers

Table 7: Main Question 2c: Effect on Non-URM Speakers

| | (1) | (2) |
|----------------|----------------------|----------------------|
| Treatment | -0.513 (0.536) | -0.465 (0.544) |
| Constant | 15.337*** (1.150) | 15.048*** (2.365) |
| Controls | Simple | Extended |
| N | 1,656 | 1,656 |
| Adjusted R^2 | 0.020 | 0.023 |

Note: Clustered standard errors at department level in parentheses.
⁺ $p < 0.1$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

4 Demographic Subgroup Analysis

4.1 Black Speakers

Table 8: Effect on Black Speakers

| | % Black | | Count Black | | Any Black | |
|----------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Treatment | 0.591 ⁺ (0.309) | 0.558 ⁺ (0.292) | 0.068 ⁺ (0.041) | 0.064 ⁺ (0.038) | 0.046 ⁺ (0.024) | 0.047* (0.023) |
| Constant | 3.398*** (0.613) | 0.376 (1.214) | 0.586*** (0.083) | 0.154 (0.157) | 0.389*** (0.048) | 0.170 ⁺ (0.091) |
| Controls | Simple | Extended | Simple | Extended | Simple | Extended |
| N | 1,656 | 1,656 | 1,656 | 1,656 | 1,656 | 1,656 |
| Adjusted R^2 | 0.026 | 0.035 | 0.041 | 0.055 | 0.034 | 0.041 |

Note: Clustered standard errors at department level in parentheses.
⁺ $p < 0.1$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

4.2 Hispanic Speakers

Table 9: Effect on Hispanic Speakers

| | % Hispanic | | Count Hispanic | | Any Hispanic | |
|----------------|---------------------|------------------|---------------------|------------------|---------------------|---------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Treatment | 0.181 (0.461) | 0.199 (0.468) | 0.028 (0.053) | 0.012 (0.053) | -0.007 (0.025) | -0.008 (0.026) |
| Constant | 3.733*** (0.736) | 1.217 (1.526) | 0.715*** (0.107) | 0.268 (0.202) | 0.481*** (0.049) | 0.326*** (0.098) |
| Controls | Simple | Extended | Simple | Extended | Simple | Extended |
| N | 1,656 | 1,656 | 1,656 | 1,656 | 1,656 | 1,656 |
| Adjusted R^2 | 0.006 | 0.006 | 0.013 | 0.015 | 0.018 | 0.018 |

Note: Clustered standard errors at department level in parentheses.
⁺ $p < 0.1$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

4.3 Female Speakers

Table 10: Effect on Female Speakers

| | % Female | | Count Female | | Any Female | |
|----------------|----------------------|----------------------|---------------------|---------------------|---------------------|---------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Treatment | 0.071 (0.833) | -0.217 (0.829) | -0.064 (0.135) | -0.116 (0.129) | -0.009 (0.022) | -0.010 (0.021) |
| Constant | 22.222*** (1.463) | 16.447*** (3.514) | 3.923*** (0.300) | 3.022*** (0.626) | 0.874*** (0.040) | 0.795*** (0.091) |
| Controls | Simple | Extended | Simple | Extended | Simple | Extended |
| N | 1,656 | 1,656 | 1,656 | 1,656 | 1,656 | 1,656 |
| Adjusted R^2 | 0.050 | 0.057 | 0.071 | 0.081 | 0.018 | 0.019 |

Note: Clustered standard errors at department level in parentheses.
⁺ $p < 0.1$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

5 Discipline Subgroup Analysis

5.0.1 Chemistry (N=271)

Table 11: Chemistry : Effect on URM Speaker Representation

| | % URM | | Count URM | | Any URM | |
|----------------|---------------------|-------------------|---------------------|-------------------|---------------------|-------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Treatment | 0.415 (1.187) | -0.509 (1.208) | -0.169 (0.169) | -0.251 (0.172) | 0.026 (0.055) | 0.004 (0.059) |
| Constant | 9.056*** (1.929) | 2.188 (5.008) | 1.863*** (0.310) | 0.833 (0.768) | 0.765*** (0.096) | 0.473* (0.225) |
| Controls | Simple | Extended | Simple | Extended | Simple | Extended |
| N | 271 | 271 | 271 | 271 | 271 | 271 |
| Adjusted R^2 | -0.021 | -0.008 | 0.095 | 0.096 | 0.049 | 0.056 |

Note: Clustered standard errors at department level in parentheses.
⁺ $p < 0.1$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

5.0.2 Mathematics (N=811)

Table 12: Mathematics : Effect on URM Speaker Representation

| | % URM | | Count URM | | Any URM | |
|----------------|---------------------|-------------------------------|---------------------|-------------------|---------------------|------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Treatment | 1.135 (0.711) | 1.456 ⁺ (0.856) | 0.147 (0.097) | 0.147 (0.116) | 0.021 (0.032) | 0.011 (0.032) |
| Constant | 5.338*** (0.777) | 2.211 (4.400) | 0.873*** (0.119) | -0.083 (0.556) | 0.489*** (0.050) | 0.119 (0.192) |
| Controls | Simple | Extended | Simple | Extended | Simple | Extended |
| N | 811 | 811 | 811 | 811 | 811 | 811 |
| Adjusted R^2 | 0.008 | 0.006 | 0.003 | 0.002 | -0.004 | 0.003 |

Note: Clustered standard errors at department level in parentheses.
⁺ $p < 0.1$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

5.0.3 Physics (N=350)

Table 13: Physics : Effect on URM Speaker Representation

| | % URM | | Count URM | | Any URM | |
|----------------|---------------------|-------------------|---------------------|-------------------------------|---------------------|--------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Treatment | 0.007 (1.298) | 0.201 (1.215) | 0.131 (0.132) | 0.189 (0.137) | -0.028 (0.061) | -0.007 (0.056) |
| Constant | 7.242*** (2.101) | 1.047 (10.013) | 1.146*** (0.211) | 1.966 ⁺ (1.111) | 0.600*** (0.080) | 1.306** (0.410) |
| Controls | Simple | Extended | Simple | Extended | Simple | Extended |
| N | 350 | 350 | 350 | 350 | 350 | 350 |
| Adjusted R^2 | 0.004 | -0.008 | -0.007 | 0.005 | -0.001 | 0.027 |

Note: Clustered standard errors at department level in parentheses.
⁺ $p < 0.1$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

5.0.4 Computer Science (N=142)

Table 14: Computer Science : Effect on URM Speaker Representation

| | % URM | | Count URM | | Any URM | |
|----------------|-------------------------------|-------------------|--------------------|-------------------|--------------------|---------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Treatment | 2.448 ⁺ (1.339) | 2.646 (1.797) | 0.147 (0.139) | 0.062 (0.198) | 0.109 (0.092) | 0.114 (0.088) |
| Constant | 4.368** (1.519) | 3.349 (13.036) | 0.803** (0.286) | 2.879* (1.221) | 0.407** (0.129) | 2.087*** (0.632) |
| Controls | Simple | Extended | Simple | Extended | Simple | Extended |
| N | 142 | 142 | 142 | 142 | 142 | 142 |
| Adjusted R^2 | 0.081 | 0.105 | 0.120 | 0.101 | 0.111 | 0.134 |

Note: Clustered standard errors at department level in parentheses.
⁺ $p < 0.1$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

5.0.5 Mechanical Engineering (N=82)

Table 15: Mechanical Engineering : Effect on URM Speaker Representation

| | % URM | | Count URM | | Any URM | |
|----------------|-------------------|--------------------|-------------------|-------------------|--------------------|------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Treatment | 2.767 (1.975) | 2.362 (1.909) | 0.598* (0.300) | 0.739* (0.358) | 0.037 (0.110) | 0.039 (0.123) |
| Constant | 5.563* (2.313) | -2.640 (10.400) | 0.850* (0.419) | 1.841 (1.872) | 0.470** (0.160) | 0.132 (0.493) |
| Controls | Simple | Extended | Simple | Extended | Simple | Extended |
| N | 82 | 82 | 82 | 82 | 82 | 82 |
| Adjusted R^2 | -0.007 | -0.046 | -0.040 | 0.032 | 0.030 | 0.048 |

Note: Clustered standard errors at department level in parentheses.
⁺ $p < 0.1$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

6 Semester-Specific Analysis

6.1 Fall Semester

Table 16: Fall Semester: Effect on URM Speakers

| | % URM | | Count URM | | Any URM | |
|----------------|---------------------|--------------------------------|---------------------|-------------------------------|-------------------------------|------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Treatment | 1.133 (0.705) | 1.031 (0.686) | 0.100* (0.047) | 0.080 ⁺ (0.047) | 0.044 ⁺ (0.026) | 0.037 (0.026) |
| Constant | 5.125*** (1.187) | -4.747 ⁺ (2.488) | 0.508*** (0.092) | -0.238 (0.165) | 0.357*** (0.052) | 0.011 (0.095) |
| Controls | Simple | Extended | Simple | Extended | Simple | Extended |
| N | 1,448 | 1,448 | 1,448 | 1,448 | 1,448 | 1,448 |
| Adjusted R^2 | 0.013 | 0.024 | 0.018 | 0.033 | 0.019 | 0.028 |

Note: Clustered standard errors at department level in parentheses.
⁺ $p < 0.1$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

6.2 Spring Semester

Table 17: Spring Semester: Effect on URM Speakers

| | % URM | | Count URM | | Any URM | |
|----------------|---------------------|--------------------|---------------------|---------------------|---------------------|---------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Treatment | 0.426 (0.767) | 0.549 (0.770) | -0.009 (0.057) | -0.007 (0.057) | -0.020 (0.027) | -0.017 (0.027) |
| Constant | 9.357*** (1.392) | 7.954** (2.778) | 1.061*** (0.116) | 0.868*** (0.233) | 0.595*** (0.052) | 0.491*** (0.102) |
| Controls | Simple | Extended | Simple | Extended | Simple | Extended |
| N | 1,397 | 1,397 | 1,397 | 1,397 | 1,397 | 1,397 |
| Adjusted R^2 | 0.002 | 0.001 | 0.019 | 0.017 | 0.022 | 0.023 |

Note: Clustered standard errors at department level in parentheses.
⁺ $p < 0.1$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

7 Intersectional Analysis

7.1 URM times Female

Table 18: Effect on URM Female Speakers

| | % URM Female | | Count URM Female | | Any URM Female | |
|----------------|---------------------|-------------------|---------------------|-------------------|---------------------|-------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Treatment | -0.047 (0.173) | -0.088 (0.186) | 0.015 (0.020) | 0.006 (0.019) | 0.011 (0.018) | 0.004 (0.017) |
| Constant | 2.060*** (0.331) | 0.032 (0.568) | 0.256*** (0.044) | -0.020 (0.084) | 0.236*** (0.039) | -0.017 (0.072) |
| Controls | Simple | Extended | Simple | Extended | Simple | Extended |
| N | 1,656 | 1,656 | 1,656 | 1,656 | 1,656 | 1,656 |
| Adjusted R^2 | 0.012 | 0.019 | 0.036 | 0.057 | 0.037 | 0.057 |

Note: Clustered standard errors at department level in parentheses.
⁺ $p < 0.1$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

7.2 Black Female

Table 19: Effect on Black Female Speakers

| | % Black Female | | Count Black Female | | Any Black Female | |
|----------------|---------------------|------------------|---------------------|------------------|---------------------|------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Treatment | 0.099 (0.073) | 0.104 (0.073) | 0.001 (0.010) | 0.001 (0.010) | 0.003 (0.009) | 0.003 (0.009) |
| Constant | 0.755*** (0.155) | 0.141 (0.281) | 0.087*** (0.023) | 0.010 (0.042) | 0.076*** (0.020) | 0.010 (0.036) |
| Controls | Simple | Extended | Simple | Extended | Simple | Extended |
| N | 1,656 | 1,656 | 1,656 | 1,656 | 1,656 | 1,656 |
| Adjusted R^2 | 0.027 | 0.034 | 0.025 | 0.030 | 0.021 | 0.026 |

Note: Clustered standard errors at department level in parentheses.
⁺ $p < 0.1$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

7.3 Black Male

Table 20: Effect on Black Male Speakers

| | % Black Male | | Count Black Male | | Any Black Male | |
|----------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|---------------------|-------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Treatment | 0.492 ⁺ (0.263) | 0.454 ⁺ (0.247) | 0.066 ⁺ (0.034) | 0.063 ⁺ (0.033) | 0.052* (0.023) | 0.052* (0.023) |
| Constant | 2.643*** (0.523) | 0.235 (1.082) | 0.484*** (0.070) | 0.141 (0.133) | 0.367*** (0.048) | 0.139 (0.090) |
| Controls | Simple | Extended | Simple | Extended | Simple | Extended |
| N | 1,656 | 1,656 | 1,656 | 1,656 | 1,656 | 1,656 |
| Adjusted R^2 | 0.018 | 0.025 | 0.033 | 0.044 | 0.031 | 0.038 |

Note: Clustered standard errors at department level in parentheses.
⁺ $p < 0.1$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

7.4 Hispanic Female

Table 21: Effect on Hispanic Female Speakers

| | % Hispanic Female | | Count Hispanic Female | | Any Hispanic Female | |
|----------------|---------------------|-------------------|-----------------------|-------------------|---------------------|-------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Treatment | -0.148 (0.160) | -0.194 (0.177) | 0.001 (0.013) | -0.007 (0.013) | -0.001 (0.012) | -0.008 (0.012) |
| Constant | 1.289*** (0.303) | -0.119 (0.484) | 0.066* (0.026) | -0.046 (0.053) | 0.067** (0.025) | -0.031 (0.051) |
| Controls | Simple | Extended | Simple | Extended | Simple | Extended |
| N | 1,656 | 1,656 | 1,656 | 1,656 | 1,656 | 1,656 |
| Adjusted R^2 | 0.000 | 0.003 | 0.003 | 0.014 | 0.003 | 0.013 |

Note: Clustered standard errors at department level in parentheses.
⁺ $p < 0.1$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

7.5 Hispanic Male

Table 22: Effect on Hispanic Male Speakers

| | % Hispanic Male | | Count Hispanic Male | | Any Hispanic Male | |
|----------------|---------------------|------------------|---------------------|-------------------------------|---------------------|--------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Treatment | 0.329 (0.389) | 0.394 (0.388) | 0.026 (0.047) | 0.018 (0.047) | -0.006 (0.025) | -0.007 (0.025) |
| Constant | 2.444*** (0.584) | 1.336 (1.253) | 0.645*** (0.094) | 0.311 ⁺ (0.176) | 0.467*** (0.049) | 0.313** (0.097) |
| Controls | Simple | Extended | Simple | Extended | Simple | Extended |
| N | 1,656 | 1,656 | 1,656 | 1,656 | 1,656 | 1,656 |
| Adjusted R^2 | 0.011 | 0.009 | 0.014 | 0.016 | 0.018 | 0.019 |

Note: Clustered standard errors at department level in parentheses.
⁺ $p < 0.1$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

8 Heterogeneity Analysis

8.1 Moderation by Discipline

8.1.1 Testing Whether Treatment Effects Vary by Discipline

Table 23: Joint Test of Discipline Interactions

| Outcome | Model | F-statistic | p-value | |
|-----------|----------|-------------|---------|--|
| % URM | Simple | — | — | |
| % URM | Extended | — | — | |
| Count URM | Simple | — | — | Note: F-statistics test the null hypothesis that all |
| Count URM | Extended | — | — | |
| Any URM | Simple | — | — | |
| Any URM | Extended | — | — | |

discipline-treatment interactions are zero. Chemistry is the reference category.

Table 24: Treatment Effects by Discipline (Chemistry as Reference)

| Discipline | Simple Model | | Extended Model | | Note: Coefficients show the treatment effect within |
|---------------------------|--------------|----------|----------------|----------|---|
| | Coefficient | SE | Coefficient | SE | |
| <i>Panel A: % URM</i> | | | | | |
| Chemistry (ref.) | 0.5790 | (1.2576) | 0.3861 | (1.1861) | |
| Mathematics | 0.8870 | (0.7378) | 0.7892 | (0.7663) | |
| Physics | -0.0683 | (1.3989) | 0.0269 | (1.3751) | |
| Computer Science | 0.6374 | (1.6015) | 1.3046 | (1.7206) | |
| Mech. Engineering | 3.7569 | (1.7783) | 3.4691 | (1.8804) | |
| <i>Panel B: Count URM</i> | | | | | |
| Chemistry (ref.) | -0.1894 | (0.1932) | -0.2023 | (0.1754) | |
| Mathematics | 0.1377 | (0.1023) | 0.1035 | (0.1044) | |
| Physics | 0.1494 | (0.1346) | 0.1373 | (0.1352) | |
| Computer Science | -0.0107 | (0.1870) | 0.0166 | (0.1908) | |
| Mech. Engineering | 0.6010 | (0.2698) | 0.6217 | (0.2811) | |

each discipline. Standard errors (in parentheses) are clustered at the department level and calculated using the delta method.

8.2 Moderation by Department URM Representation

Department URM representation moderation analysis (n = 1656)

Table 25: Moderation by Department URM Faculty Fraction

| | % URM | | Count URM | | Any URM | |
|--|---------------------|-------------------|-------------------------------|-------------------------------|---------------------|---------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Treatment | 0.716 (0.530) | 0.752 (0.530) | 0.090 (0.070) | 0.078 (0.069) | 0.015 (0.025) | 0.014 (0.025) |
| Dept URM Fraction (centered) | -3.702 (9.692) | -2.828 (9.639) | -0.711 (1.179) | -0.882 (1.119) | -0.254 (0.533) | -0.348 (0.502) |
| Treatment × Dept URM Fraction (centered) | 27.266 (14.593) | 23.561 | 3.923 ⁺ (2.178) | 3.781 | 0.231 (0.653) | 0.212 |
| Constant | 7.188*** (0.914) | 2.011 (1.822) | 1.303*** (0.143) | 0.473 ⁺ (0.266) | 0.640*** (0.050) | 0.373*** (0.100) |
| Controls | Simple | Extended | Simple | Extended | Simple | Extended |
| N | 1,656 | 1,656 | 1,656 | 1,656 | 1,656 | 1,656 |
| Adjusted R^2 | 0.012 | 0.017 | 0.023 | 0.029 | 0.026 | 0.033 |

Note:

Clustered standard errors at department level in parentheses.

⁺ $p < 0.1$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

8.3 Moderation by Department Female Representation

Department female representation moderation analysis (n = 1656)

Table 26: Moderation by Department Female Faculty Fraction

| | % URM | | Count URM | | Any URM | |
|---|---------------------|------------------|---------------------|-------------------|---------------------|---------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Treatment | 0.656 (0.533) | 0.744 (0.529) | 0.079 (0.069) | 0.078 (0.069) | 0.010 (0.025) | 0.014 (0.025) |
| Dept Female Fraction (centered) | 5.780 (4.450) | 6.804 (4.375) | 1.170* (0.570) | 1.192* (0.603) | 0.471+ (0.255) | 0.597* (0.240) |
| Treatment × Dept Female Fraction (centered) | −1.779 (6.427) | −3.121 | −0.786 (0.879) | −0.827 | −0.547+ (0.320) | −0.524 |
| Constant | 7.317*** (0.910) | 2.732 (1.691) | 1.326*** (0.140) | 0.600* (0.255) | 0.645*** (0.049) | 0.456*** (0.093) |
| Controls | Simple | Extended | Simple | Extended | Simple | Extended |
| N | 1,656 | 1,656 | 1,656 | 1,656 | 1,656 | 1,656 |
| Adjusted R^2 | 0.010 | 0.016 | 0.022 | 0.027 | 0.029 | 0.035 |

Note:

Clustered standard errors at department level in parentheses.

+ $p < 0.1$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

8.4 Moderation by Department Ranking

Department ranking moderation analysis (n = 1656)

Table 27: Moderation by Department Ranking

| | % URM | | Count URM | | Any URM | |
|-------------------------------------|---------------------|-------------------|-------------------------------|--------------------|---------------------|---------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Treatment | 0.702 (0.527) | 0.737 (0.527) | 0.092 (0.069) | 0.073 (0.069) | 0.014 (0.025) | 0.013 (0.025) |
| Dept Ranking (centered) | 0.016 (0.012) | 0.028* (0.012) | -0.001 (0.001) | 0.001 (0.001) | -0.001 (0.001) | 0.0003 (0.001) |
| Treatment × Dept Ranking (centered) | 0.007 (0.017) | 0.004 | 0.004 ⁺ (0.002) | 0.004 | 0.001 (0.001) | 0.001 |
| Constant | 7.263*** (0.898) | 3.172* (1.560) | 1.315*** (0.141) | 0.590** (0.229) | 0.640*** (0.050) | 0.412*** (0.087) |
| Controls | Simple | Extended | Simple | Extended | Simple | Extended |
| N | 1,656 | 1,656 | 1,656 | 1,656 | 1,656 | 1,656 |
| Adjusted R^2 | 0.013 | 0.016 | 0.023 | 0.030 | 0.027 | 0.034 |

Note:

Clustered standard errors at department level in parentheses.

⁺ $p < 0.1$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

8.5 Moderation by Total Faculty Size

Department faculty size moderation analysis (n = 1656)

Table 28: Moderation by Department Faculty Size

| | % URM | | Count URM | | Any URM | |
|--------------------------------------|-------------------------------|-------------------|---------------------|------------------|---------------------|--------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Treatment | 0.938 ⁺ (0.554) | 0.740 (0.530) | 0.089 (0.074) | 0.072 (0.069) | 0.014 (0.026) | 0.013 (0.025) |
| Total Faculty (centered) | -0.027 (0.022) | -0.026 (0.022) | 0.002 (0.002) | 0.001 (0.003) | 0.00003 (0.001) | -0.001 (0.001) |
| Treatment × Total Faculty (centered) | 0.007 (0.026) | 0.0004 | -0.003 (0.003) | -0.004 | -0.0001 (0.001) | -0.0005 |
| Constant | 7.008*** (0.950) | 0.721 (1.939) | 1.331*** (0.147) | 0.383 (0.295) | 0.640*** (0.051) | 0.337** (0.106) |
| Controls | Simple | Extended | Simple | Extended | Simple | Extended |
| N | 1,656 | 1,656 | 1,656 | 1,656 | 1,656 | 1,656 |
| Adjusted R^2 | 0.011 | 0.016 | 0.020 | 0.027 | 0.026 | 0.033 |

Note:

Clustered standard errors at department level in parentheses.

⁺ $p < 0.1$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

8.6 Moderation by URM Faculty in Peer Departments

Peer departments URM faculty moderation analysis ($n = 1656$)

Table 29: Moderation by URM Faculty in Peer Departments

| | % URM | | Count URM | | Any URM | |
|--|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Treatment | 0.750 (0.532) | 0.725 (0.527) | 0.098 (0.069) | 0.076 (0.069) | 0.015 (0.025) | 0.013 (0.025) |
| Peer URM Faculty (centered) | 0.047 (0.053) | 0.140* (0.056) | 0.009+ (0.005) | 0.018** (0.006) | 0.004+ (0.002) | 0.006* (0.003) |
| Treatment \times Peer URM Faculty (centered) | -0.076 (0.074) | -0.062 | -0.002 (0.008) | -0.001 | -0.001 (0.003) | -0.0002 |
| Constant | 7.323*** (0.937) | 5.253*** (1.180) | 1.357*** (0.144) | 1.028*** (0.191) | 0.657*** (0.050) | 0.577*** (0.064) |
| Controls | Simple | Extended | Simple | Extended | Simple | Extended |
| N | 1,656 | 1,656 | 1,656 | 1,656 | 1,656 | 1,656 |
| Adjusted R^2 | 0.010 | 0.016 | 0.022 | 0.027 | 0.030 | 0.033 |

Note:

Clustered standard errors at department level in parentheses.

+ $p < 0.1$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

9 Summary of All Significant Results

Table 30: All Significant Results ($p < 0.1$) from All Analyses

| Analysis | Outcome | Variable | Model | Coef. | SE | t-stat | p-value | Sig. |
|------------------------------------|------------------|---|----------|---------|---------|--------|---------|------|
| Discipline Moderation | Count URM | Treatment \times Mech. Engineering | Extended | 0.8241 | 0.3286 | 2.508 | 0.0122 | * |
| Discipline Moderation | Count URM | Treatment \times Mech. Engineering | Simple | 0.7904 | 0.3330 | 2.374 | 0.0177 | * |
| Intersectional | Any Black Male | Treatment | Extended | 0.0518 | 0.0226 | 2.292 | 0.0220 | * |
| Intersectional | Any Black Male | Treatment | Simple | 0.0515 | 0.0233 | 2.216 | 0.0268 | * |
| Fall Semester | Count URM | Treatment | Simple | 0.1004 | 0.0474 | 2.117 | 0.0344 | * |
| Ranking Moderation | Count URM | Treatment \times Dept Ranking | Extended | 0.0039 | 0.0019 | 2.078 | 0.0378 | * |
| Demographic Subgroup | Any Black | Treatment | Extended | 0.0466 | 0.0229 | 2.036 | 0.0419 | * |
| Discipline: Mechanical Engineering | Count URM | Treatment | Extended | 0.7390 | 0.3584 | 2.062 | 0.0436 | * |
| Discipline: Mechanical Engineering | Count URM | Treatment | Simple | 0.5978 | 0.3002 | 1.991 | 0.0506 | + |
| Ranking Moderation | Count URM | Treatment \times Dept Ranking | Simple | 0.0040 | 0.0020 | 1.946 | 0.0518 | + |
| Demographic Subgroup | Any Black | Treatment | Simple | 0.0457 | 0.0236 | 1.940 | 0.0525 | + |
| Intersectional | Count Black Male | Treatment | Extended | 0.0632 | 0.0328 | 1.928 | 0.0540 | + |
| Intersectional | Count Black Male | Treatment | Simple | 0.0659 | 0.0344 | 1.916 | 0.0556 | + |
| Demographic Subgroup | % Black | Treatment | Extended | 0.5578 | 0.2920 | 1.910 | 0.0563 | + |
| Demographic Subgroup | % Black | Treatment | Simple | 0.5909 | 0.3093 | 1.910 | 0.0563 | + |
| Intersectional | % Black Male | Treatment | Simple | 0.4920 | 0.2630 | 1.871 | 0.0615 | + |
| URM Faculty Moderation | % URM | Treatment \times Dept URM Fraction | Simple | 27.2655 | 14.5929 | 1.868 | 0.0619 | + |
| Intersectional | % Black Male | Treatment | Extended | 0.4542 | 0.2471 | 1.838 | 0.0663 | + |
| Discipline: Computer Science | % URM | Treatment | Simple | 2.4478 | 1.3392 | 1.828 | 0.0699 | + |
| URM Faculty Moderation | Count URM | Treatment \times Dept URM Fraction | Extended | 3.7814 | 2.0952 | 1.805 | 0.0713 | + |
| URM Faculty Moderation | Count URM | Treatment \times Dept URM Fraction | Simple | 3.9231 | 2.1781 | 1.801 | 0.0719 | + |
| Female Faculty Moderation | Any URM | Treatment \times Dept Female Fraction | Extended | -0.5242 | 0.3036 | -1.727 | 0.0844 | + |
| Female Faculty Moderation | Any URM | Treatment \times Dept Female Fraction | Simple | -0.5466 | 0.3201 | -1.707 | 0.0879 | + |
| Fall Semester | Any URM | Treatment | Simple | 0.0442 | 0.0259 | 1.704 | 0.0886 | + |
| Fall Semester | Count URM | Treatment | Extended | 0.0800 | 0.0470 | 1.703 | 0.0888 | + |
| Discipline: Mathematics | % URM | Treatment | Extended | 1.4557 | 0.8564 | 1.700 | 0.0896 | + |
| Faculty Size Moderation | % URM | Treatment | Simple | 0.9376 | 0.5539 | 1.693 | 0.0907 | + |
| Demographic Subgroup | Count Black | Treatment | Simple | 0.0679 | 0.0406 | 1.673 | 0.0945 | + |
| Demographic Subgroup | Count Black | Treatment | Extended | 0.0642 | 0.0384 | 1.672 | 0.0948 | + |
| URM Faculty Moderation | % URM | Treatment \times Dept URM Fraction | Extended | 23.5607 | 14.1639 | 1.663 | 0.0964 | + |

Note: Results

sorted by p-value. Significance levels: + $p < 0.1$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$. SE = Clustered standard errors at department level. This table includes all treatment effects and interaction terms from main effects, demographic subgroup, semester-specific, intersectional, and moderation analyses.

Table 31: Summary of Significant Results by Analysis Type

| Analysis Type | Total Significant | Significant at 5% |
|------------------------------------|-------------------|-------------------|
| Demographic Subgroup | 6 | 1 |
| Discipline Moderation | 2 | 2 |
| Discipline: Computer Science | 1 | 0 |
| Discipline: Mathematics | 1 | 0 |
| Discipline: Mechanical Engineering | 2 | 1 |
| Faculty Size Moderation | 1 | 0 |
| Fall Semester | 3 | 1 |
| Female Faculty Moderation | 2 | 0 |
| Intersectional | 6 | 2 |
| Ranking Moderation | 2 | 1 |
| URM Faculty Moderation | 4 | 0 |
| Total | 30 | 8 |