

The Impact of Mentorship on Academic Productivity: Results from a National Cross-Sectional Survey in Medical Physics

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Purpose

- Mentorship is widely accepted to contribute to academic productivity.
- We aim to develop a national cross-sectional survey study distributed to medical physics residency programs.
- We want to gain insight into the impact of mentorship on academic productivity.
- Update to 2014 ROADMAP Study¹

Methods

Survey Creation

- Survey was created and distributed using the Research Data Capture (REDCap) online platform.

Survey Distribution

- 4514 surveys were e-mailed to members of ACGME- or CAMPEP-accredited radiation oncology or medical physics academic programs.

Bibliometric Data

- h-index was pulled from Scopus in January 2026 using identifiers answered in the survey, including name, institution, and ORCID.
- m-index was calculated using career duration:

$$m-index = \frac{h-index}{years\ since\ career\ duration}$$

Analysis

- The survey assessed categorical measures of mentorship and inclusivity.
- Measures were assessed using Pearson's Chi-square test (ChiSq) against h-index (JMP v18.2.2).

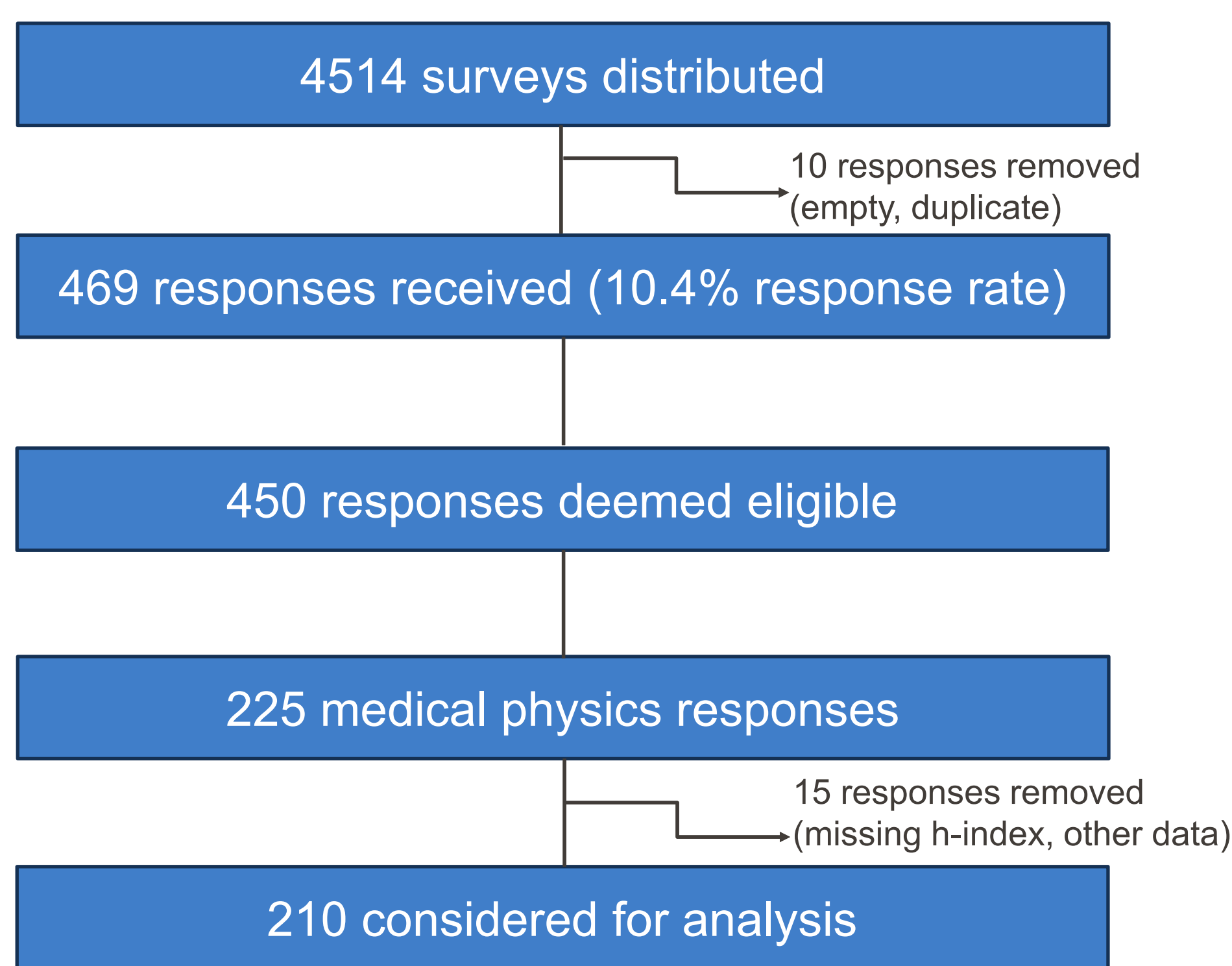


Figure 1: Inclusion/exclusion workflow, detailing the number of surveys distributed, responses received, and those considered for analysis.

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Study Population

Table 1: Distribution (%) of responses received by location (state).

State	Distribution (%)
Texas	20.1
Pennsylvania	8.1
New York	7.6
California	6.7
Illinois	5.2
Washington	5.2
Other	39.0
Not Reported	8.1

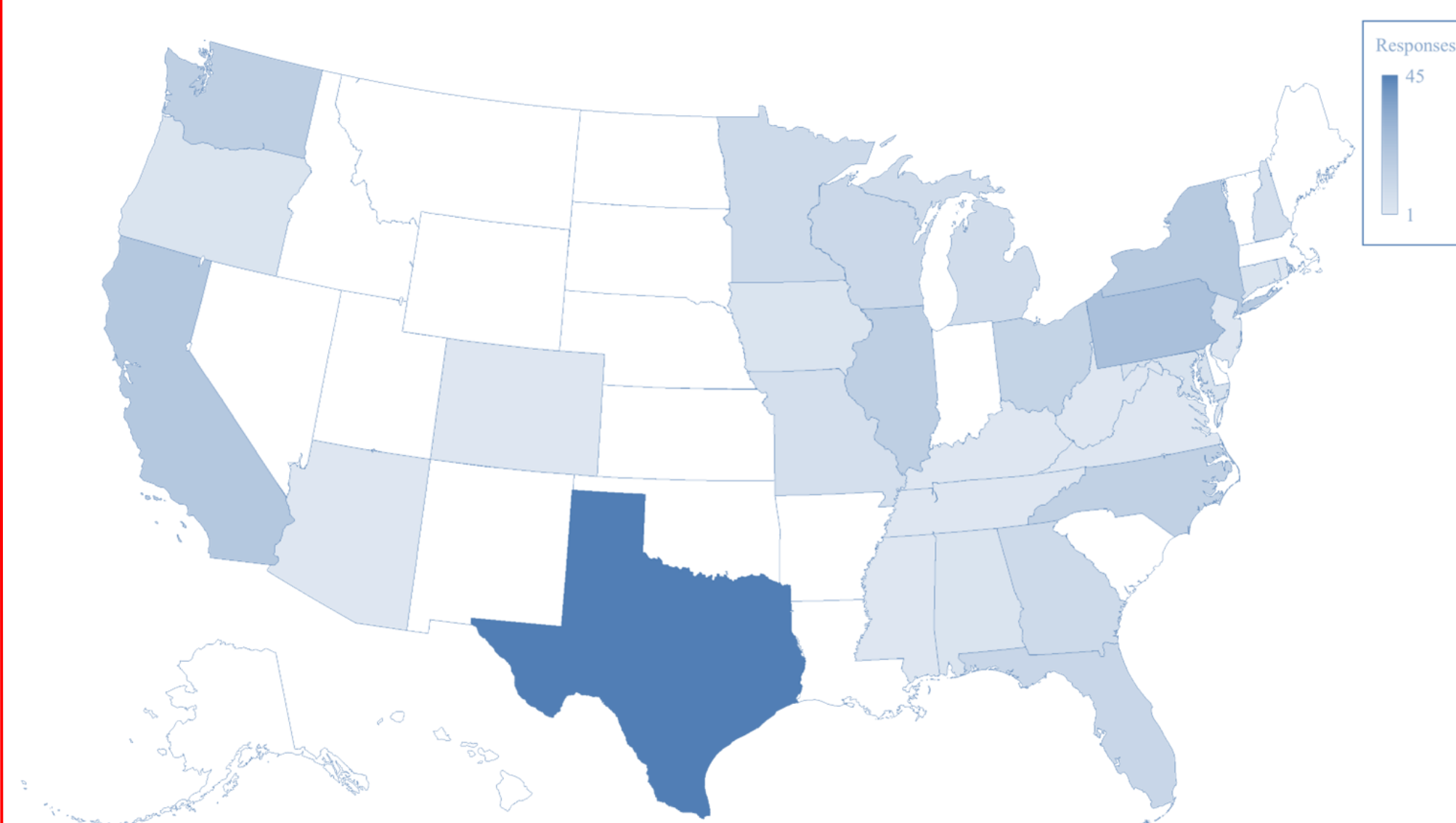


Figure 2: Heatmap representation of location of respondents.

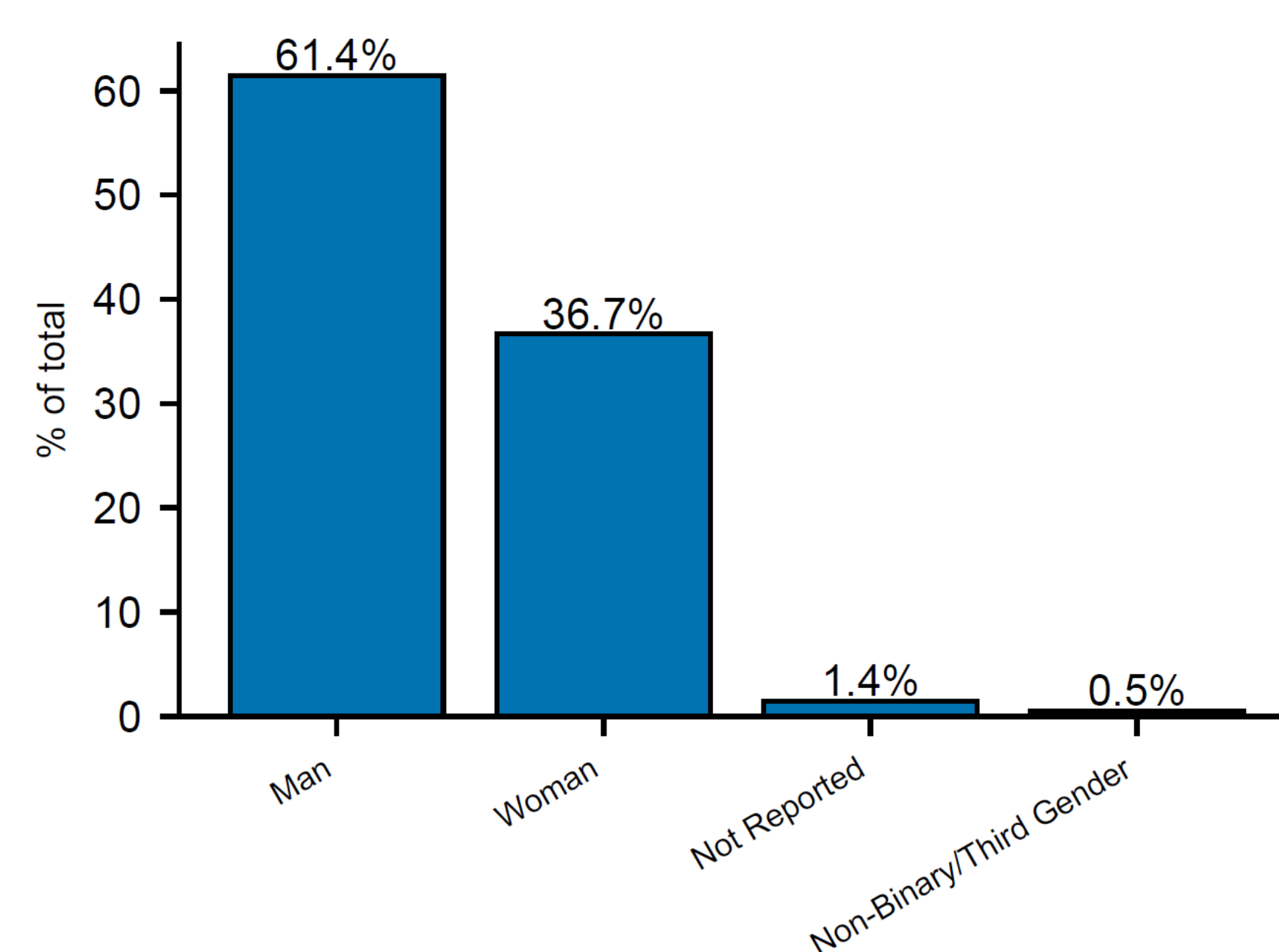


Figure 3: Distribution (%) of respondents by gender.

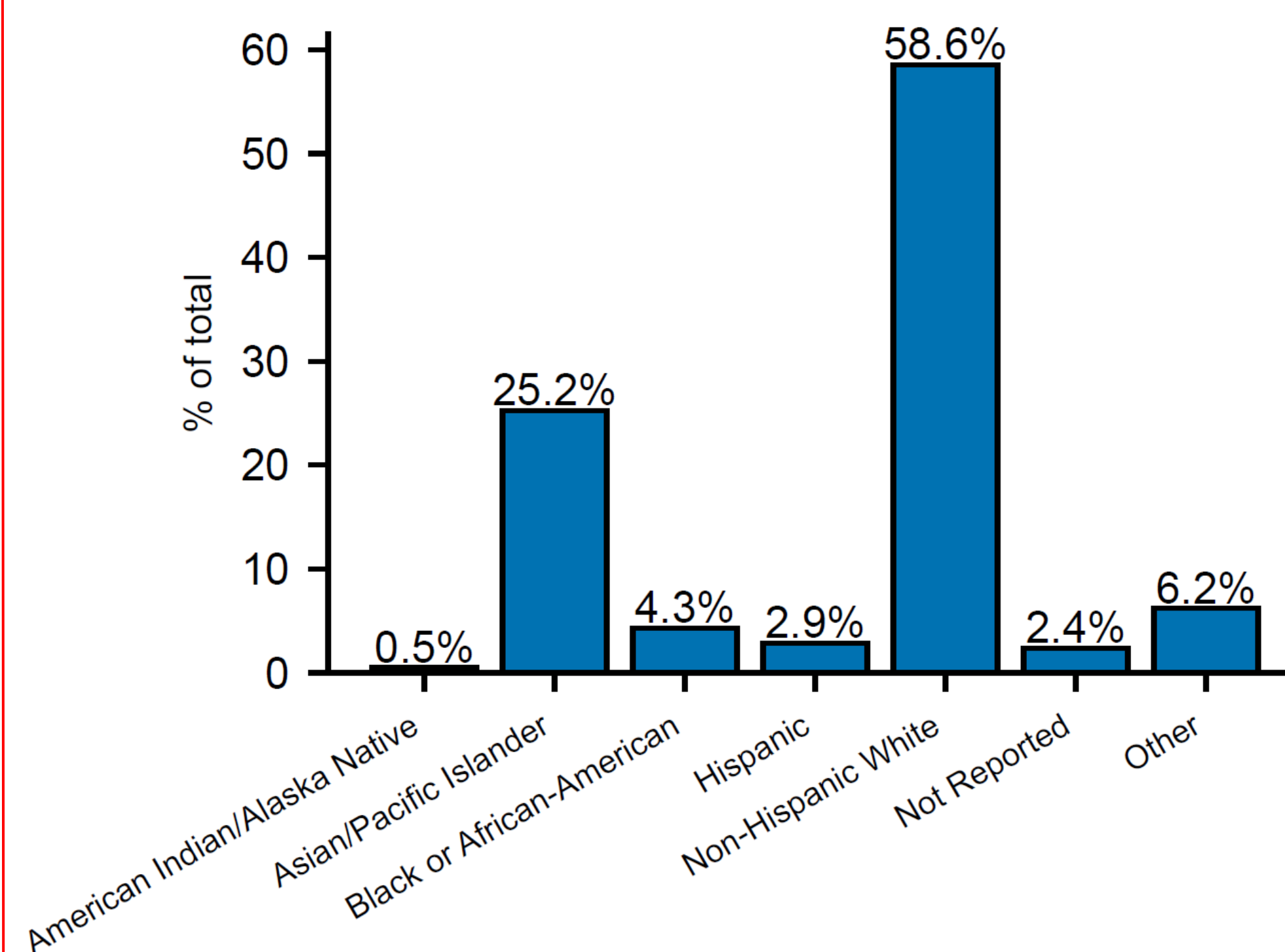


Figure 4: Distribution (%) of respondents by race and ethnicity.

Table 2: Distribution (%) of respondents by current academic rank.

Academic Rank	Distribution (%)
Resident	9.7
Post-Doctoral Fellow	3.9
Instructor	3.9
Assistant Professor	33.8
Associate Professor	17.9
Full Professor	22.2
Chair	0.5

Results

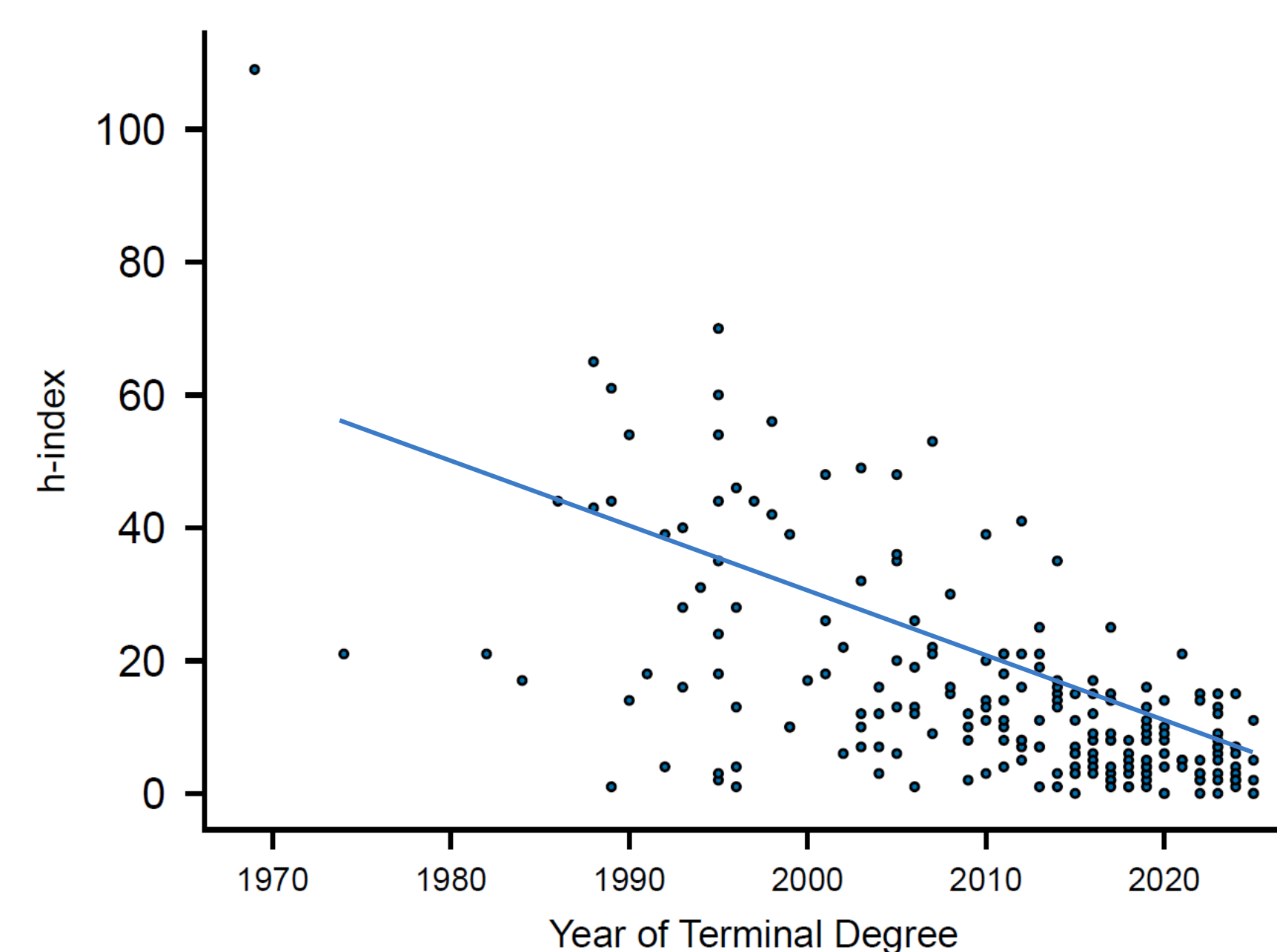


Figure 5: Scatterplot of h-index vs. year of terminal degree.

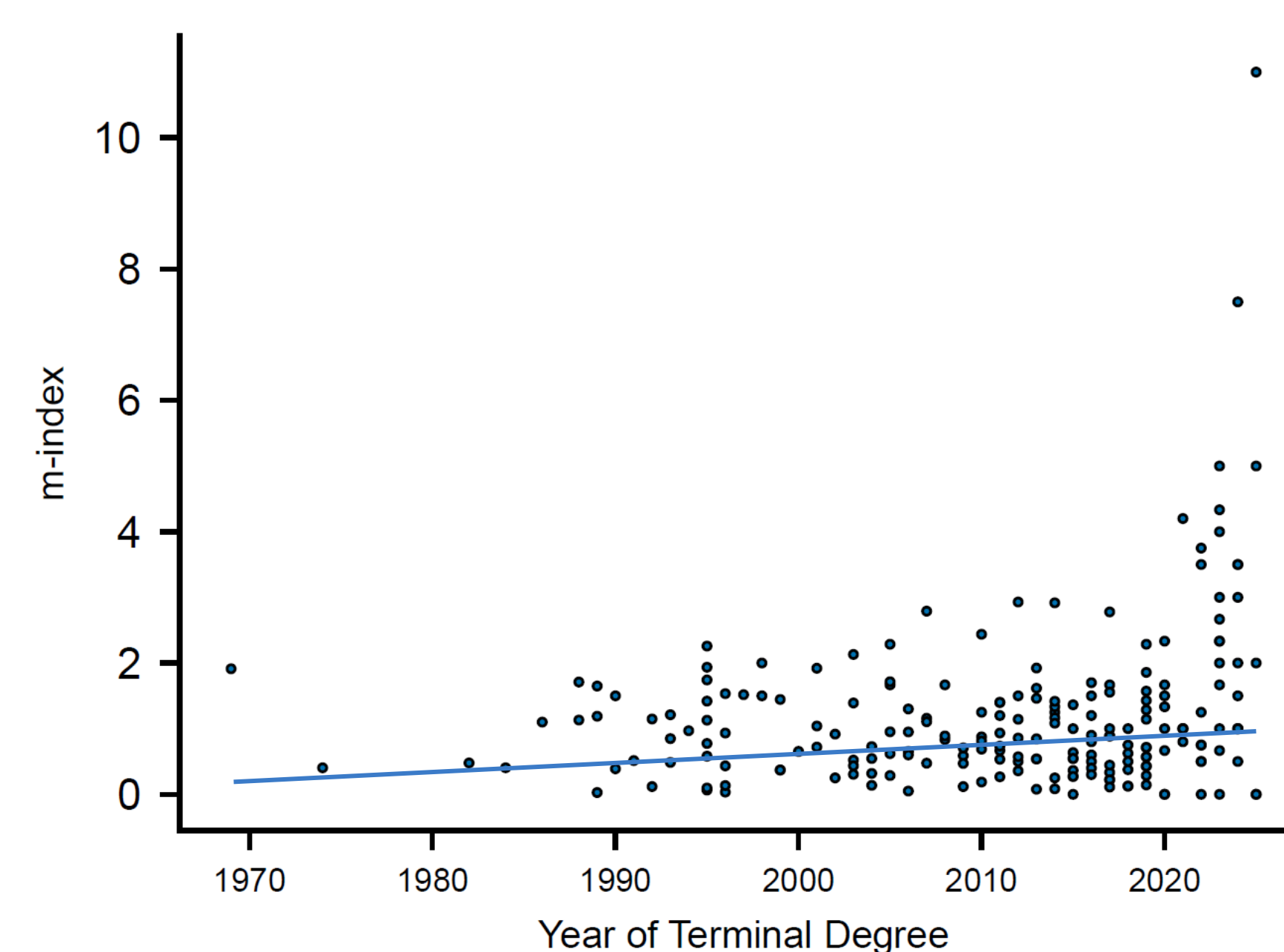


Figure 6: Scatterplot of m-index vs. year of terminal degree.

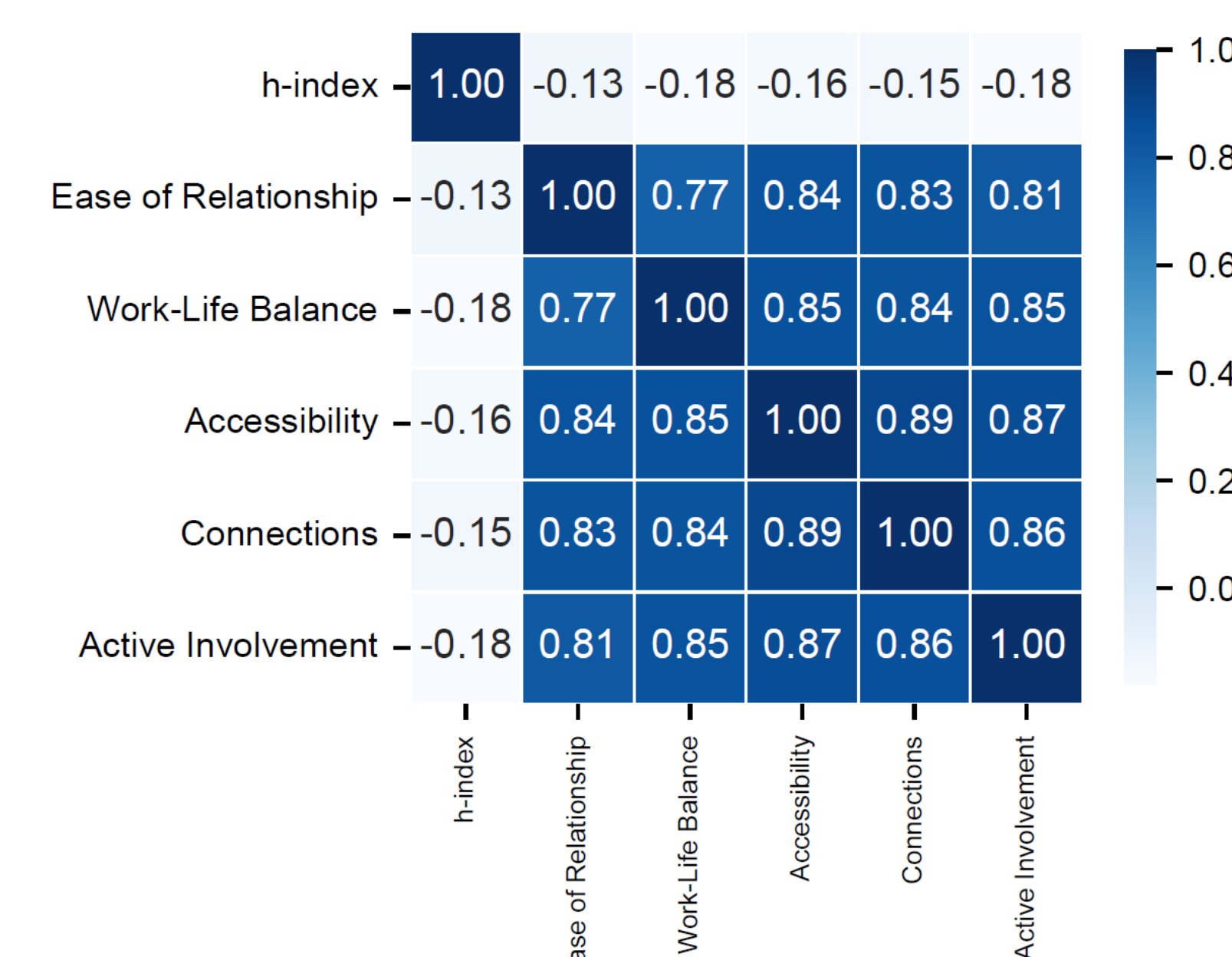


Figure 7: Heatmap demonstrating a slightly negative correlation between h-index and qualities of good mentorship.

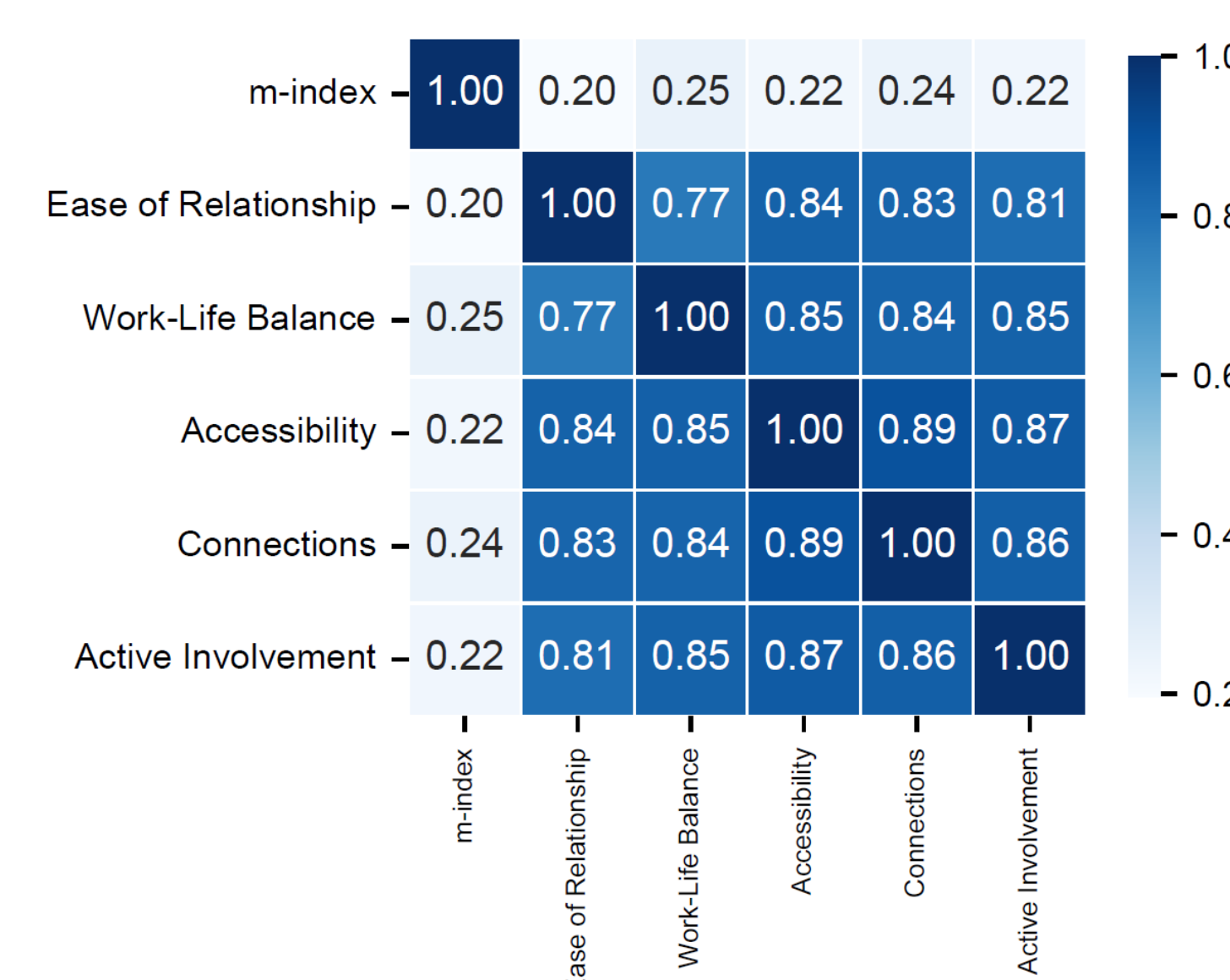


Figure 8: Heatmap demonstrating a slightly positive correlation between m-index and qualities of good mentorship.

References

- Holliday et al. *Int J Radiat Oncol Biol Phys.* 2013;88,18-24.

Table 3: Distribution (%) of respondents identifying with various components of positive mentorship.

Mentorship Characteristic	Distribution (%)
Accessible mentor	51.4
Comfortable to approach mentor with questions	58.5
Mentor has a leadership role in professional society	36.7
Mentor with similar identity	15.7
Colleague to help navigate career choices	73.3

Table 4: Distribution (%) of respondents identifying with various characteristics related to diversity and inclusion.

Diversity and Inclusion Characteristic	Distribution (%)
First of your identity in your department	22.4
Comfortable being your authentic self	84.8
Acceptance by colleagues in department	72.4
Transparent leadership	61.4

Discussion

- h-index displays a linear relationship with career duration.
- Due to its nature, m-index displays almost no relationship with career duration.
- Bibliometric measures that account for career duration may be a better representation of academic productivity.

Conclusion

- Medical physicists reported positive mentorship and training experiences.
- Improved association with m-index than h-index
- Future work: improved bibliometric measures (Q-Factor)

Significance

- Key step in connecting mentorship with academic productivity
- To our knowledge, this is the largest national survey on mentorship in medical physics.

Acknowledgements

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