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# Application of the *h*-index in Academic Plastic Surgery

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# Introduction

- When determining the performance of an academic physician, patient care, teaching, and research are among the most critical attributes surveyed.

- With regard to research, total number of publications, research grants, and mentorship are important factors.

- The gross number of a physician's publications, however, may produce a skewed picture of his or her academic contributions.

# Introduction

- The *h*-index is an objective measure used to determine how prolific an author is while taking into account the impact of his or her publications.

- The *h*-index of an author is equal to the numbers of papers, *h*, that have been cited at least *h* times.(1)

- The index was initially used mainly outside of the medical literature, but in recent years its applicability in multiple medical fields has been tested and validated.(2-6)

# Objective

- The purpose of this study was to determine whether the *h*-index could be applied to plastic surgery to differentiate between surgeons of different rank, and to determine what other variables may affect scholarly productivity.

# Methods

- A database of all US academic plastic surgeons was created. Characteristics of each surgeon and their plastic surgery program were collected. The Scopus database was queried to determine each surgeon's *h*-index.

- Nonparametric statistical analysis and multivariate analysis was performed.

# Results

| | *h*-index | | | *p* value |
|---|---|---|---|---|
| ***Academic rank*** | ***Mean ± SE*** | ***Median*** | ***Range*** | |
| Assistant Professor (n = 268) | 4.59 ± 0.24 | 4 | 0-24 | < 0.0001* † |
| Associate Professor (n = 141) | 9.10 ± 0.46 | 8 | 0-26 | |
| Professor (n = 183) | 15.30 ± 0.68 | 14 | 1-65 | |
| Chief (n = 60) | 13.60 ± 1.34 | 11 | 2-65 | 0.24 |
| Chairperson (n = 22) | 15.41 ± 2.08 | 14.5 | 5-43 | |
| ***Model of residency training program*** | | | | |
| Integrated (n = 459) | 9.64 ± 0.39 | 8 | 0-65 | < 0.0003* † |
| Traditional (n = 124) | 6.28 ± 0.42 | 5.5 | 0-19 | |
| ***Gender*** | | | | |
| Male (n = 491) | 9.57 ± 0.26 | 8 | 0-65 | < 0.0001* |
| Female (n = 101) | 6.07 ± 0.63 | 5 | 0-40 | |
| ***Size of plastic surgery faculty*** | | | | |
| Less than 6 faculty members (n = 191) | 7.45 ± 0.41 | 7 | 0-31 | 0.0186 † |
| 6 or more faculty members (n = 401) | 9.70 ± 0.43 | 8 | 0-65 | |
| ***Status of plastic surgery section*** | | | | |
| Department (n = 187) | 8.95 ± 0.40 | 7 | 0-65 | 0.65 |
| Division (n = 405) | 9.02 ± 0.54 | 7 | 0-43 | |

Table 1. *h*-index of US academic plastic surgeons by rank, model of residency program, gender, faculty size, and departmental status. (*) = Statistically significant on univariate analysis, and ( † ) = significant on multivariate analysis.

# Results

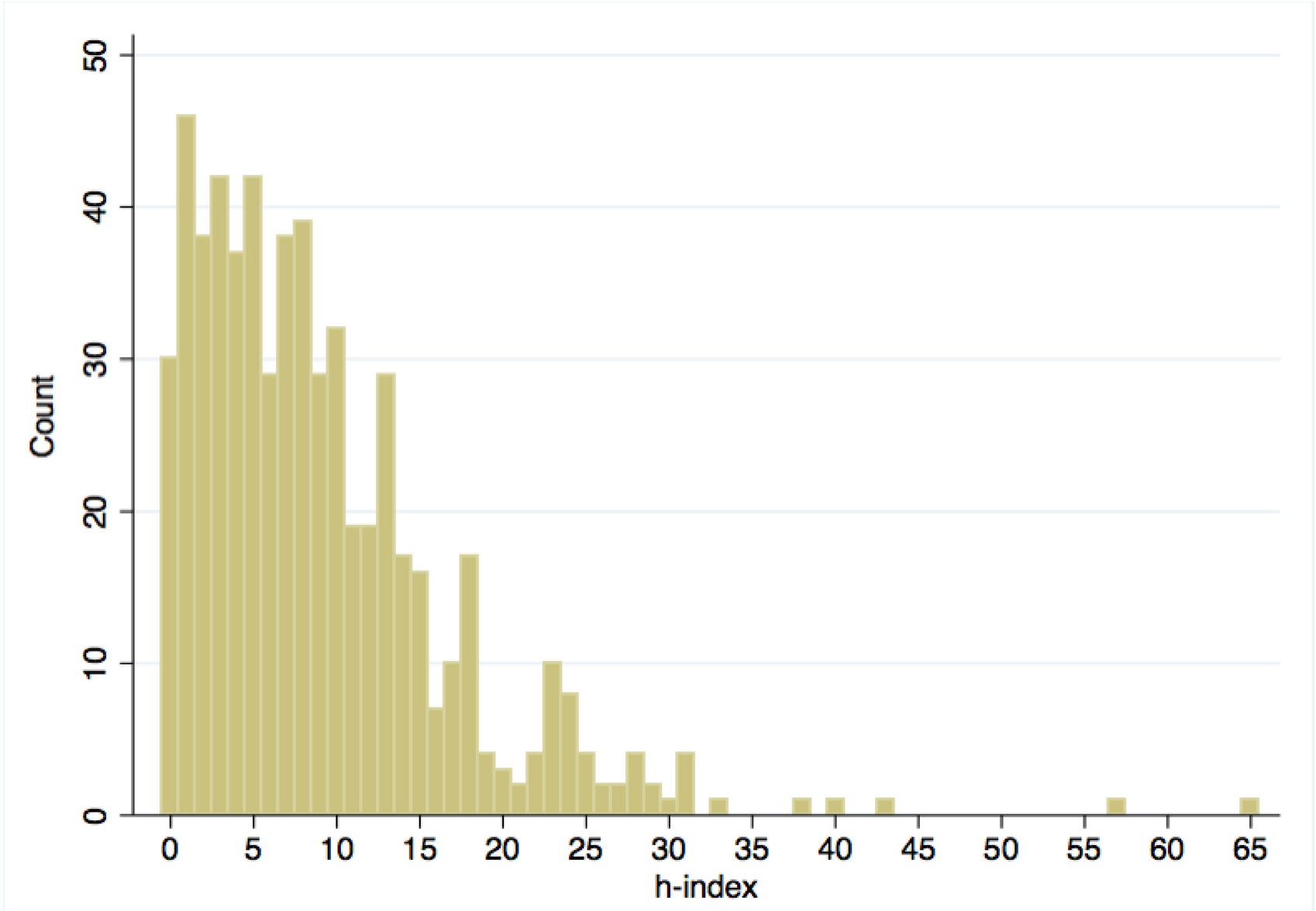


Figure 1. Frequency distribution of the *h*-index for 592 academic plastic surgeons.

# Results

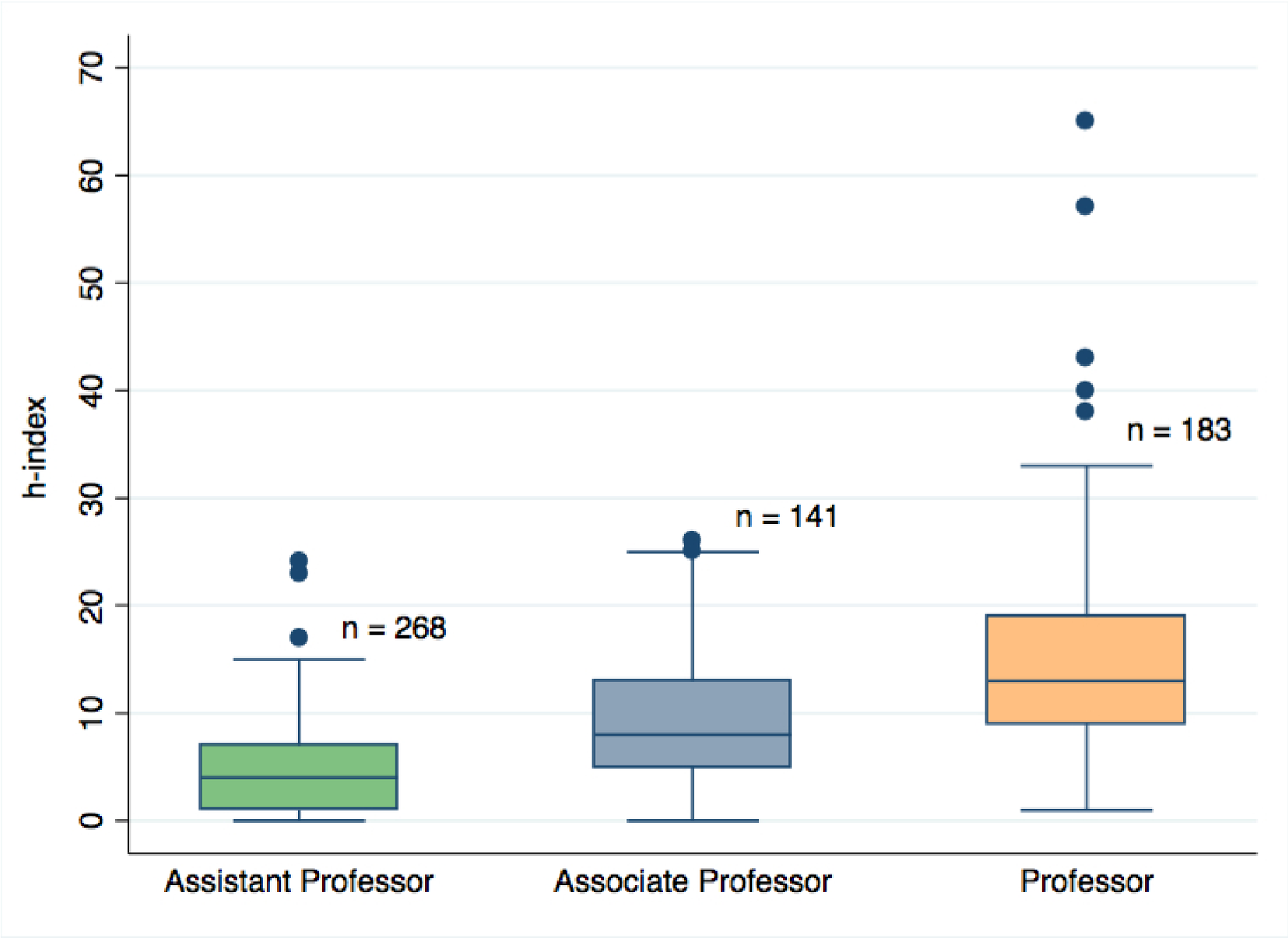


Figure 2. Box-and-whisker plot depicting *h*-index values of plastic surgeons as a function of academic rank ($p < 0.0001$ across all academic ranks).

# Results

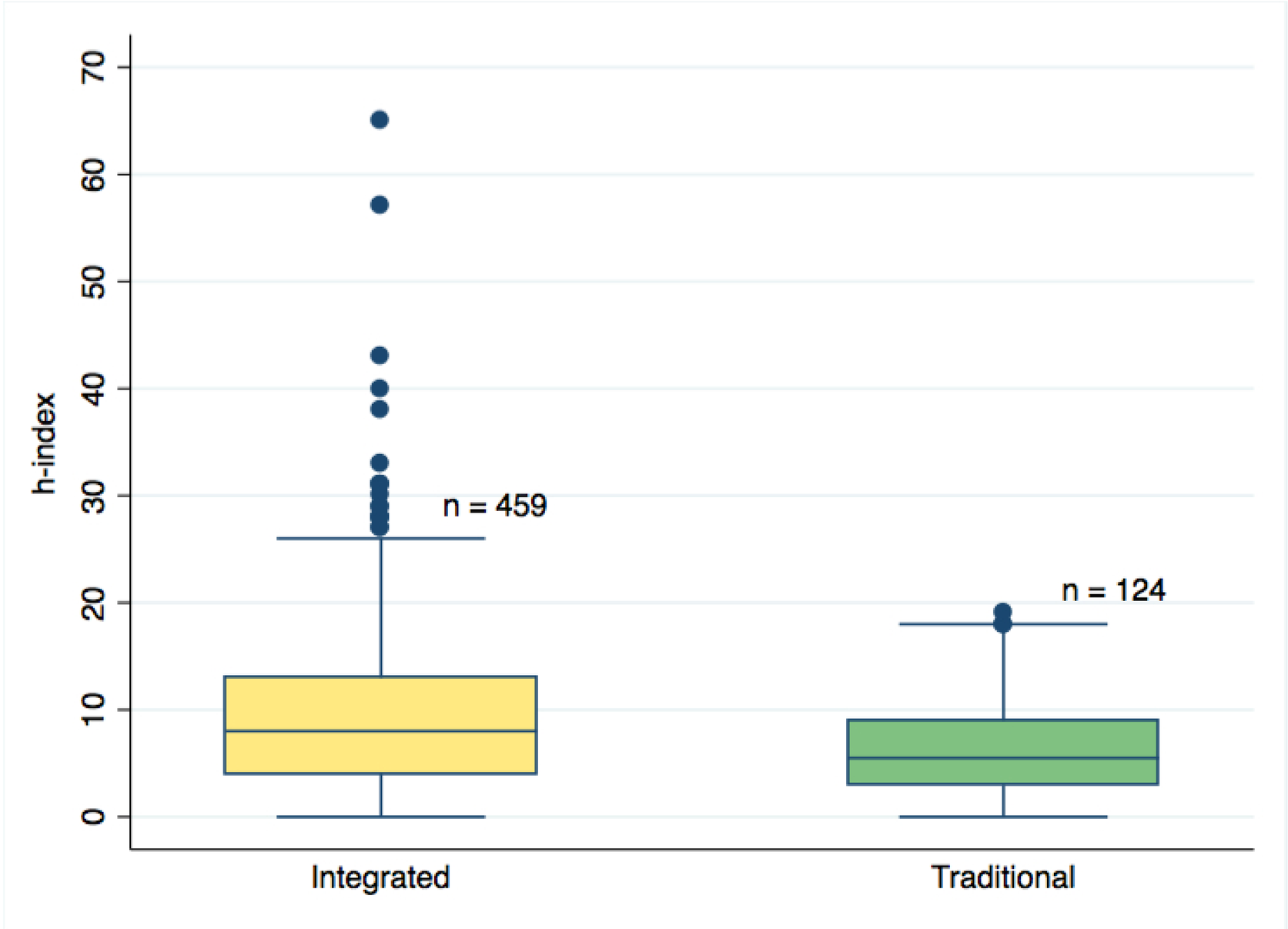


Figure 2. Box-and-whisker plot depicting *h*-index values of plastic surgeons as a function of the residency training model of their institution ($p < 0.0003$).

# Results

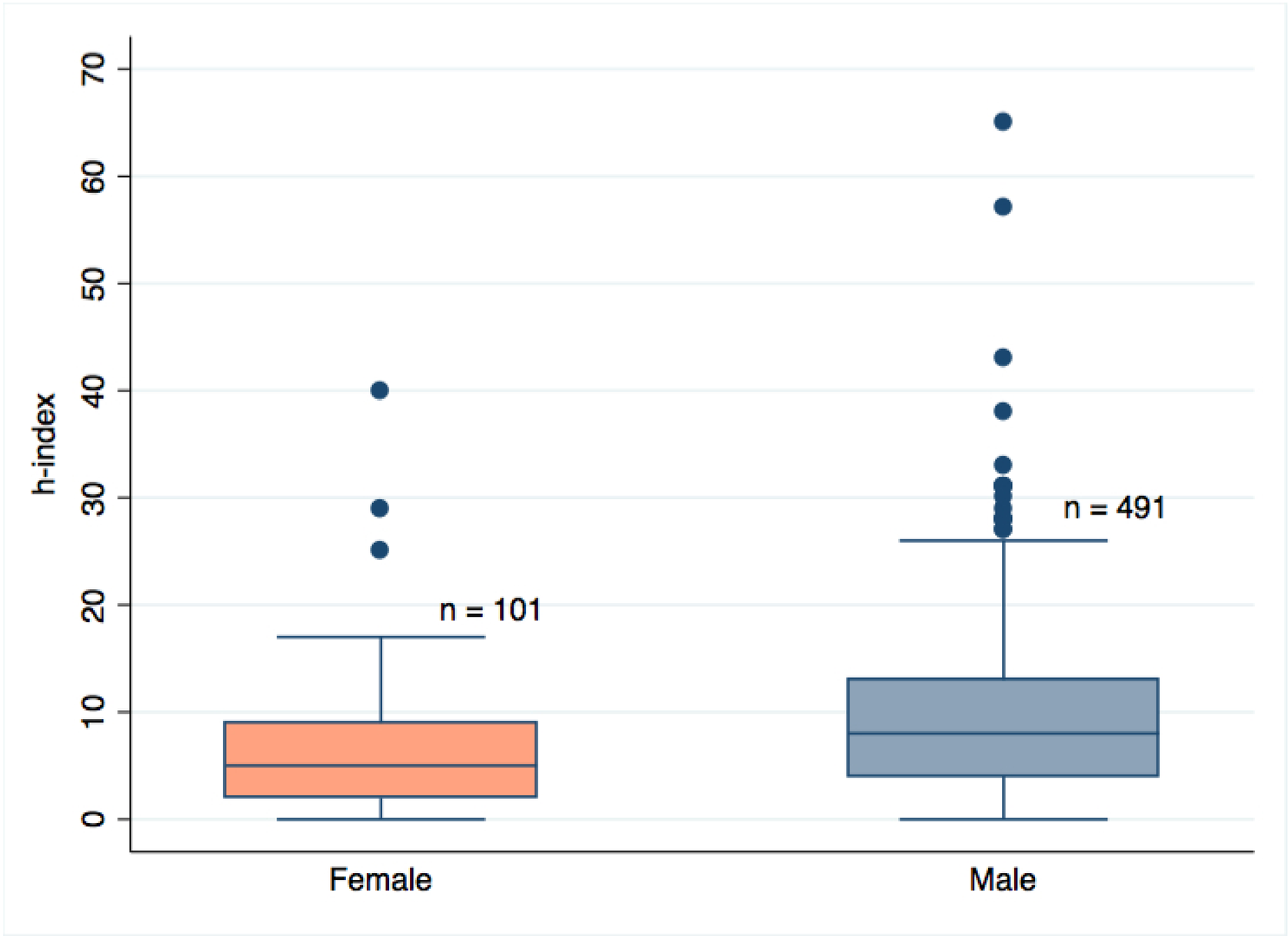


Figure 3. Box-and-whisker plot depicting *h*-index values of plastic surgeons as a function of gender ($p < 0.0001$). Not significant on multivariate analysis.

# Results

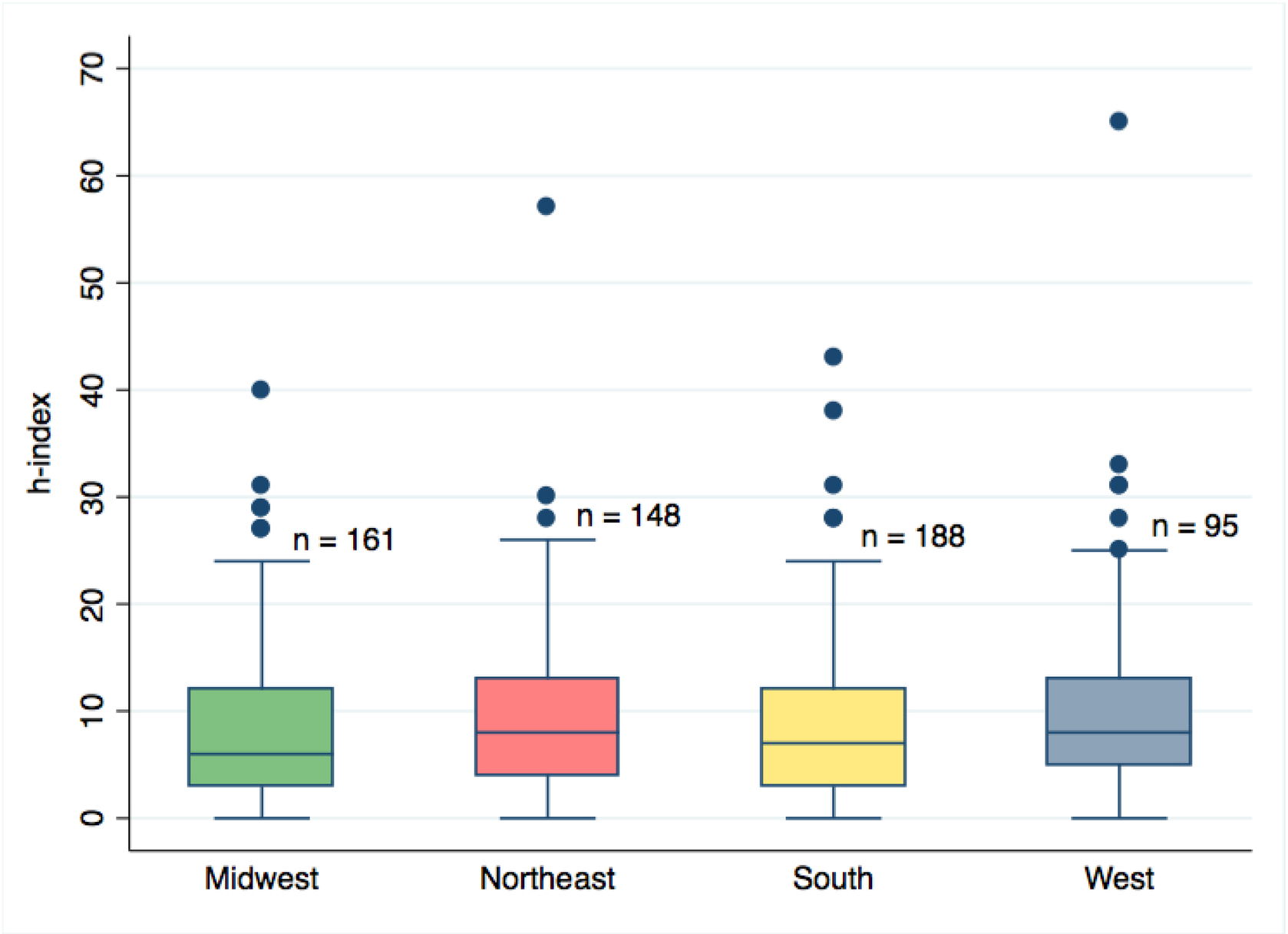


Figure 2. Box-and-whisker plot depicting *h*-index values of plastic surgeons as a function of region ($p$ = 0.12).

# Conclusions

- The *h*-index of plastic surgeons appears to correlate with academic rank and can measure academic productivity within plastic surgery.

- Plastic surgeons on faculty in integrated plastic surgery programs tend to have higher *h*-indices.

- Male plastic surgeons tend to have higher *h*-indices, although this is a result of the small number of females at higher academic ranks.

- There does not appear to be a regional difference with regard to *h*-indices.

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