

# Surgical Case Volume Differences Between Male and Female Otolaryngology Residents

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## Introduction:

Today, active male physicians far outnumber their female counterparts, comprising 63.7% of physicians<sup>1</sup>. Gender disparity is a prevalent issue in medicine. Its presence is well documented in the topics of pay and promotion opportunities for female physicians even after accounting for age, experience, specialty, faculty rank, research productivity and clinical revenue<sup>2</sup>. This gender disparity is further exacerbated in surgical subspecialties such as otolaryngology. Women make up 14.5% of practicing otolaryngologists, currently<sup>3</sup>. There is, however, a growing number of women who are training in the field. Women roughly made-up 35.9% of residents as of 2017, compared to 29.8% in 2008<sup>4</sup>.

Although there is a disparity in the ratio of the genders in Otolaryngologic training, there are very few documented studies pertaining to the quality of training between the male and female residents. Subspecialties such as ophthalmology has noted a significant difference between men and women. In a study which reviewed the case logs of 24 programs over the span of 12 years, female residents performed 7.8 to 22.2 fewer cataract operations and 36.0 to 80.2 fewer total procedures compared with their male counterparts<sup>5</sup>.

The ACGME Program Requirements for Graduate Medical Education in Otolaryngology – Head and Neck Surgery requires programs to ensure that residents must have essentially equivalent distributions of case categories and procedures<sup>6</sup>. The aim of this project was to assess if there is a discrepancy of case volumes between men and women in 2 institutes over the span of 10 years.

## Methods:

This retrospective study analyzed 7765 de-identified case logs pooled from all the graduating residents enrolled in otolaryngology programs at OU and USF from 2012 to 2022. Case log data included resident gender, academic year, residents self-reported case volumes of 3 specific procedures: mastoidectomy, rhinoplasty, neck dissection. Programs provided information regarding parental leave and gender for these de-identified residents.

Microsoft Excel (Microsoft Corporation, Redmond, WA) was used to calculate descriptive statistics and perform Mann-Whitney U tests with a significance level of <0.05. The primary study outcome was differences in mean surgical volume between female and male residents. The Institutional Review Board in connection with the University of South Florida approved this study and did not require informed consent for the use of deidentified data.

## Results:

### Mean Number of Cases Performed Per Resident by Gender

	M	N	R	Total
Male Residents	26.66	55.22	25.19	107.07
Female Residents	21.33	51.93	23.27	96.53
P Value	0.236	0.941	0.757	0.682

Of the 7765 cases of mastoidectomy (M), rhinoplasty (R), and neck dissections (N) performed by 74 total residents (15 female residents and 59 male residents), there was no statistically significant difference between the mean number of cases performed by male and female residents.

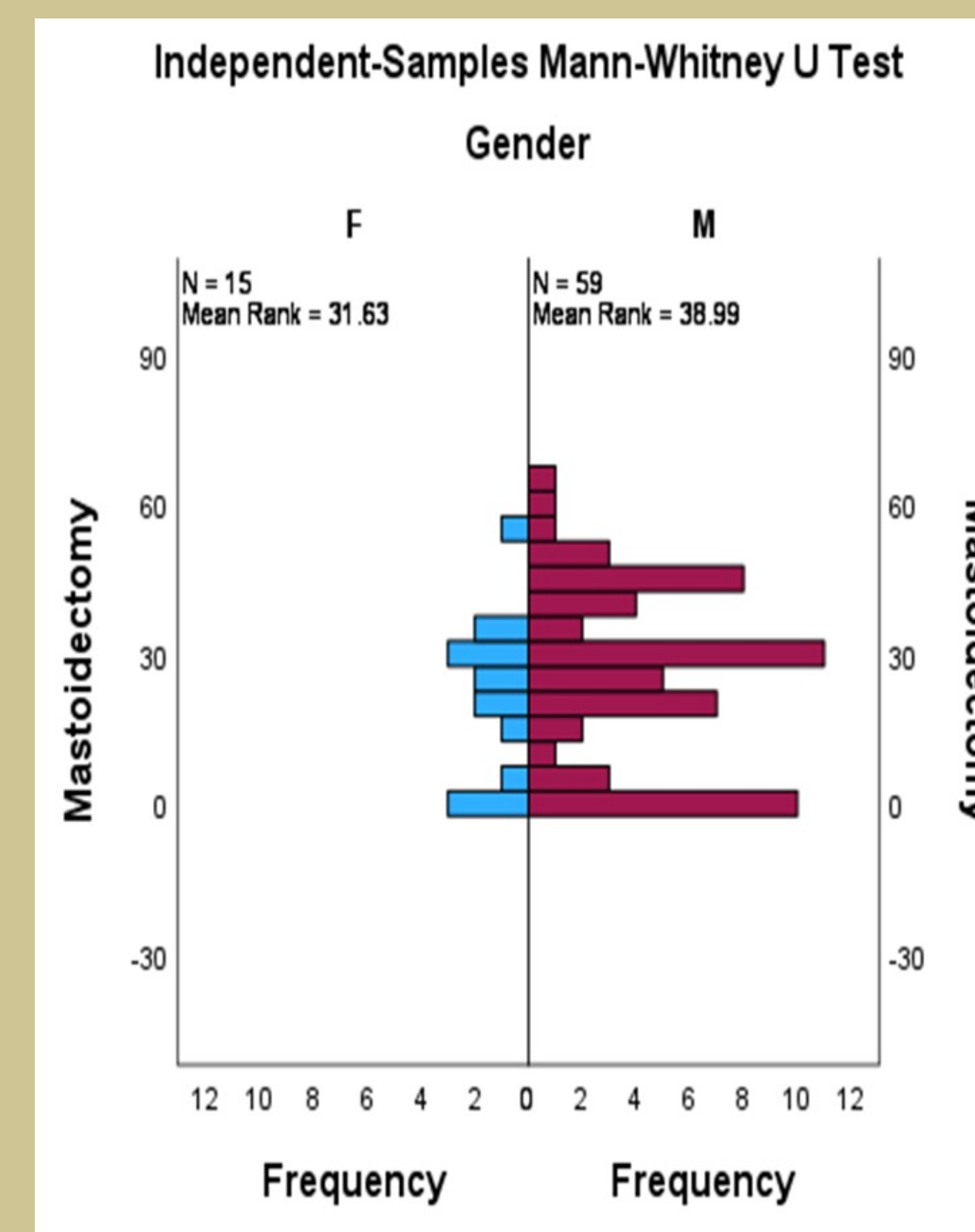


Figure A

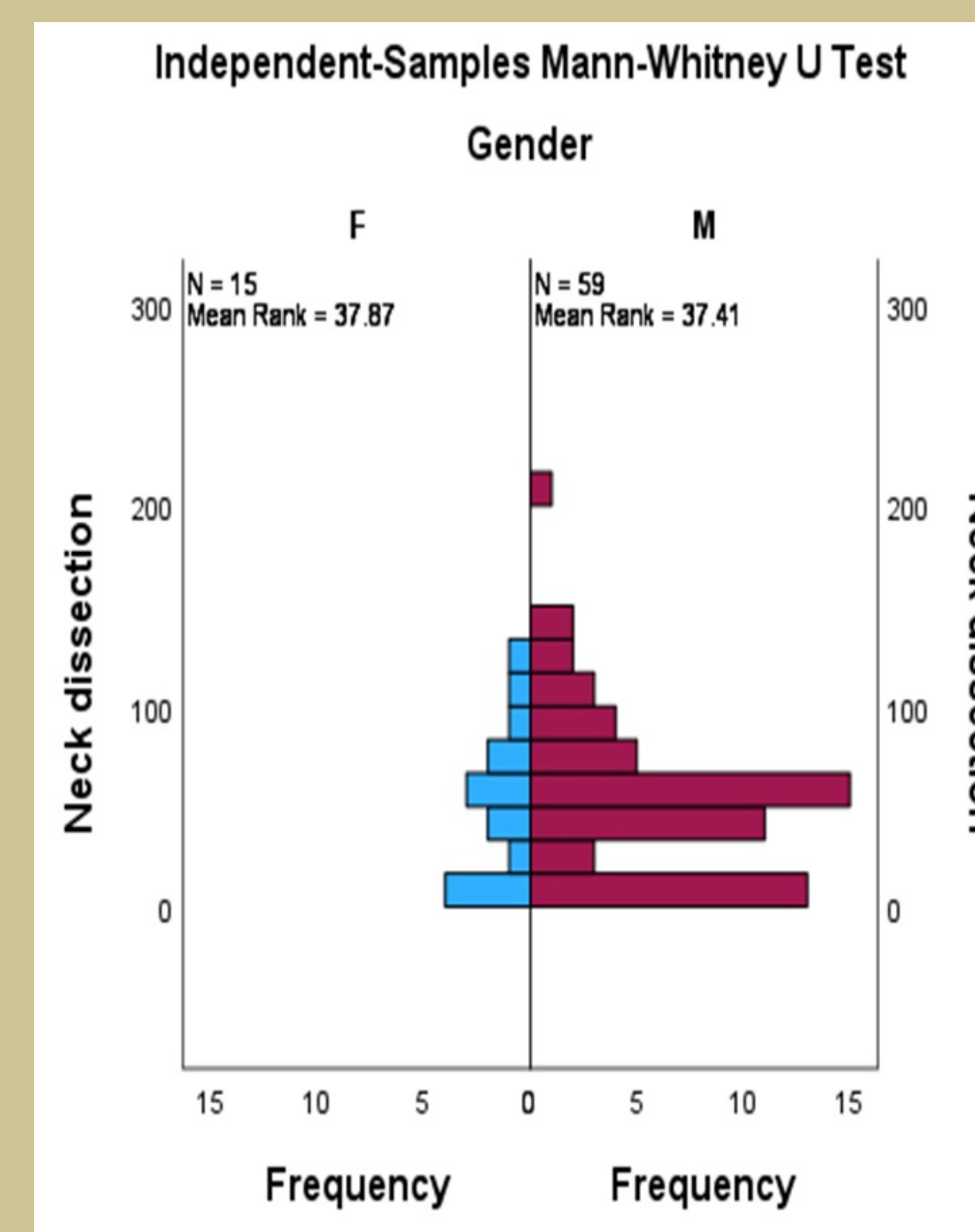


Figure B

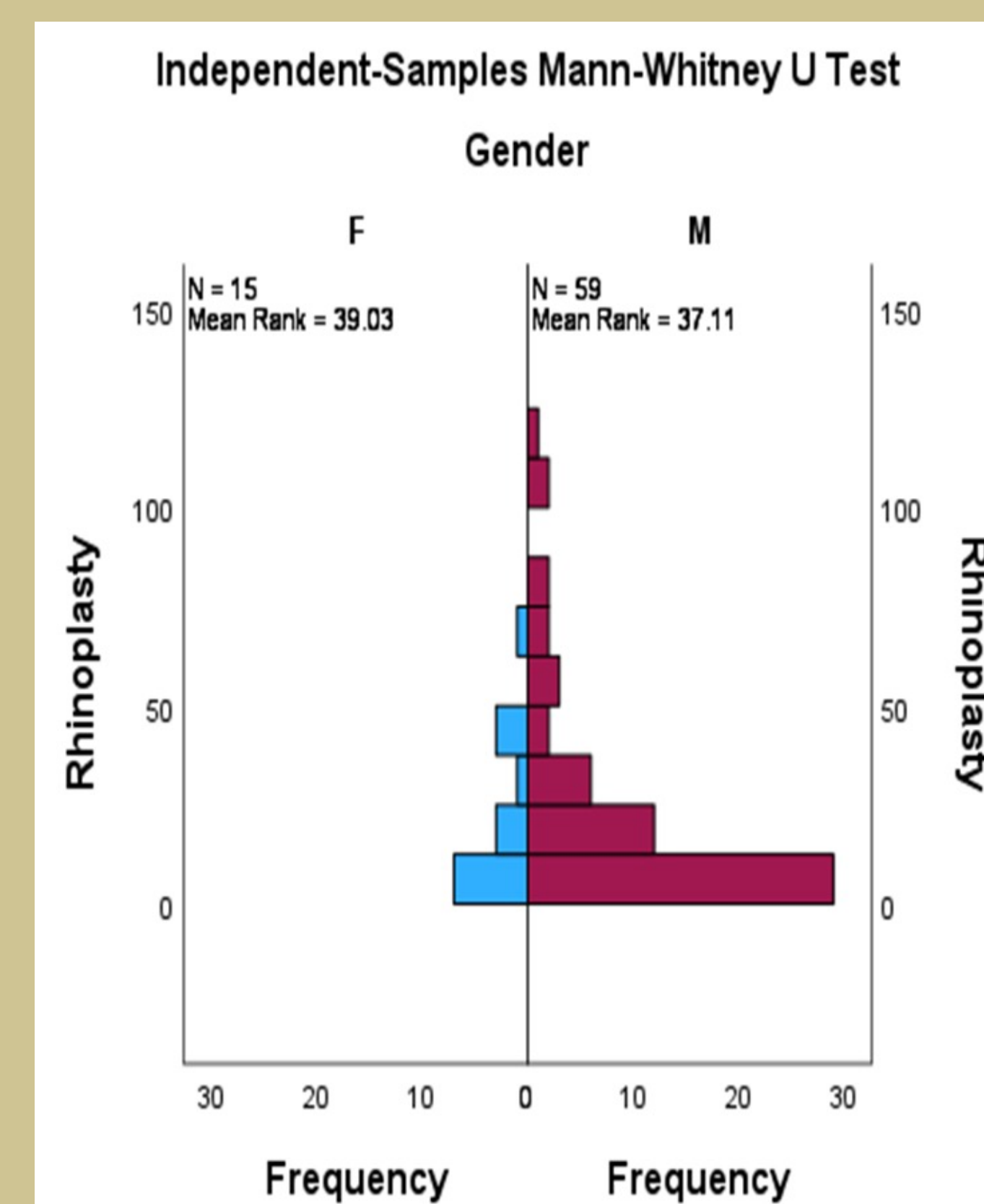


Figure C

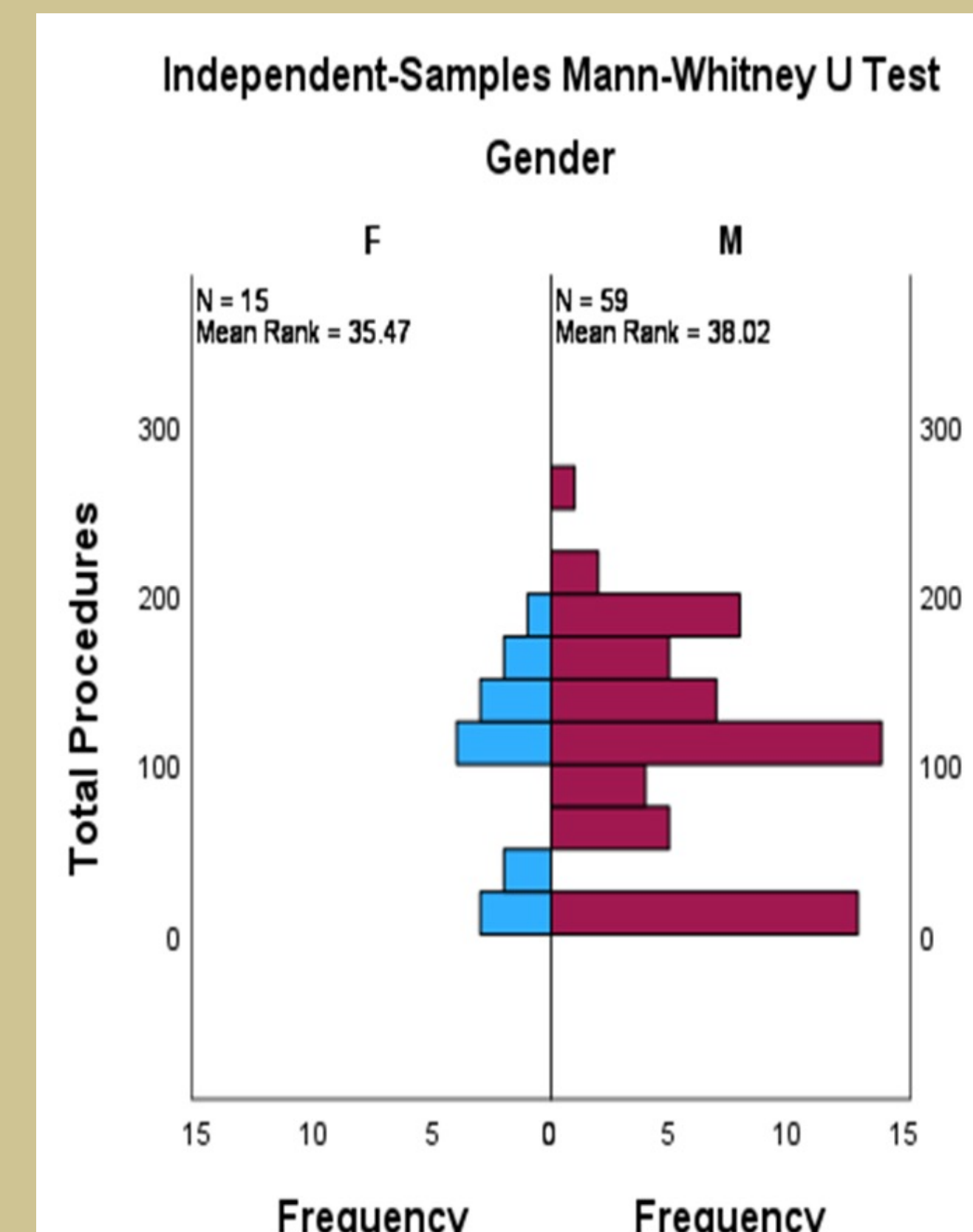


Figure D

Figures A-D shows the Mann-Whitney U tests for each procedure and total procedures.

## Discussion:

While surgical case volumes are not the only means to gauge the quality of training, it does denote the rigor and the breadth of exposure that trainees experience before they practice independently. In this study we have shown that there is not a significant difference in the mean number of total cases and key indicator cases (M,R,N) between male and female residents at USF and OU between the years of 2012-2022.

Although there is very limited data on this specific topic in otolaryngology, our study conflicts with Gurgel et al who noted a large discrepancy in their review of ACGME logs of key indicator cases from the years of 2009-2017<sup>7</sup>. Their study of 2533 residents resulted in a total average number of key indicator cases of 778.8 for female residents and 813.6 for male residents (P < .001)<sup>7</sup>. There was a greater disparity in the residents' reported role. Male residents more frequently assigned themselves as resident surgeon/resident supervisor compared to their female counterparts<sup>7</sup>.

There are multiple factors that contribute to gender disparities which may include unequal mentorship opportunities and unconscious bias which may lead to differences in psychological well-being, burnout, and confidence among male and female residents<sup>8</sup>. In the case of reported roles, female residents may feel like they have less autonomy or may view their role differently than their male colleagues<sup>8</sup>. There is no data at this time regarding the effects of maternity leave on case volume difference between male and female resident. In our data set, USF was able to provide leave statuses of their residents in the 10 year span. Once analyzed, the difference in total and indicator procedures between the two groups was not significant.

Limiting factors of this study includes the number of participating institutions. Of the institutes included, there may be different trends than the programs that did not submit their data, resulting in selection bias. Parental leave was only documented at one of the institutes.

## Conclusion:

Female residents at 2 programs evaluated from 2012 to 2022 performed about the same number of mastoidectomies, rhinoplasties and neck dissection operations and total procedures during training compared with male residents irrespective of parental leave status. Given the limited number of programs providing data based on voluntary participation in this study in addition to our inability to verify the accuracy of submitted case log data and parental leave, these conclusions represent preliminary findings that serve as the basis for replication and validation in larger cohorts in future investigations.

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