

Association between leadership commitment and professional development at NASA (2020): unweighted sex-adjusted stratified analysis

DOCUMENT: SAR-2022-011-GJ-v01

From: Felipe Figueiredo To: techsavvy32 (fiverr.com)

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Document version

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01	Initial version

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This analysis was performed using statistical software R version 4.1.2.

4 RESULTS

4.1 Study population and follow up

The raw database contained 10588 surveys, of which 1183 incomplete cases were removed. Of the complete cases 1920 participants did not agree nor disagree with at least one of the survey questions. These did not meet the inclusion criteria and were

also removed from the analysis. After the inclusion and exclusion criteria were applied the final number of surveys in the analysis is 7485. Table 1 shows the characteristics of the surveys included in the final analysis.

Table 1 Characteristics of the study population.

Characteristic	N = 7,485
Sex, n (%)	
Male	4,764 (64%)
Female	2,721 (36%)
I am given a real opportunity to improve my skills in my organization., n (%)	
Strongly disagree	73 (1.0%)
Disagree	166 (2.2%)
Agree	2,948 (39%)
Strongly Agree	4,298 (57%)
Supervisors in my work unit support employee development., n (%)	
Strongly disagree	67 (0.9%)
Disagree	81 (1.1%)
Agree	1,986 (27%)
Strongly Agree	5,351 (71%)

One third of the employees at NASA are women (36.4%, Table 1). Both survey questions addressed in this study showed most NASA employees demonstrated high levels of satisfaction when the survey was conducted. The proportion of employees that agree or strongly agree with the satisfaction question (q1 – I am given a real opportunity to improve my skills in my organization) was 96.8%. The proportion of employees that agree or strongly agree with leadership commitment (q21 – Supervisors in my work unit support employee development) was 98.0%. Figure 1 shows how both sexes answered these questions.

Statistical Analysis Report (SAR)

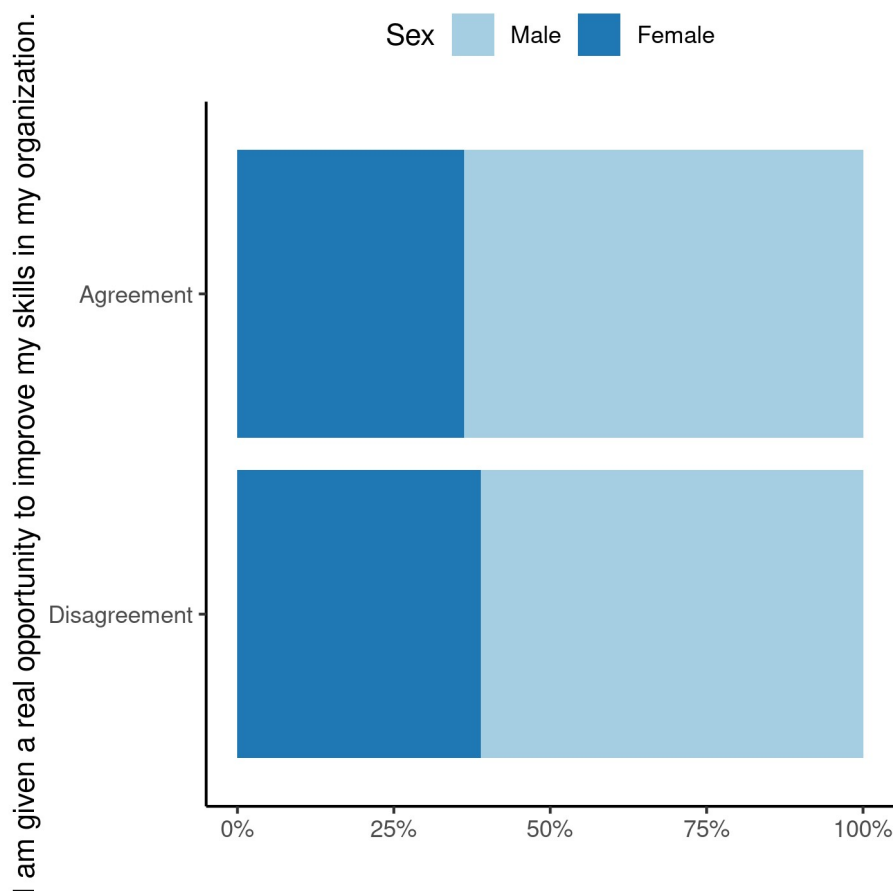


Figure 1 Dichotomized survey responses, by sex.

Men and women tended to answer the satisfaction question at the same rates in 2020. Of the 7246 NASA employees that are in agreement with the satisfaction question, 36.3% were women, and of the 239 employees that are in disagreement, women were 38.9% (Figure 1).

4.2 Association between leadership commitment and professional development

Table 2 caption

	I am given a real opportunity to improve my skills in my organization		
	Disagreement	Agreement	Total
Supervisors in my work unit support employee development			
Overall			
Disagreement	113	35	148
Agreement	126	7,211	7,337
Total	239	7,246	7,485
Males			
Disagreement	69	15	84
Agreement	77	4,603	4,680
Total	146	4,618	4,764
Females			
Disagreement	44	20	64
Agreement	49	2,608	2,657
Total	93	2,628	2,721

Odds ratios + chi-square:

- Overall: OR: 183.33, 95% CI: [121.86, 282.44], $p < 0.001$
- Adjusted CMH: OR: 180.62, 95% CI: [118.65, 274.96], $p < 0.001$
- Men: OR: 270.42, 95% CI: [151.84, 505.11], $p < 0.001$
- Women: OR: 115.35, 95% CI: [64.12, 215.70], $p < 0.001$

5 OBSERVATIONS AND LIMITATIONS

6 CONCLUSIONS

One third of NASA employees in this study are women. Both men and women tended to derive satisfaction at the workplace in similar rates in 2020.

7 REFERENCES

- **SAP-2022-011-GJ-v01** – Analytical Plan for Association between leadership commitment and professional development at NASA (2020): unweighted sex-adjusted stratified analysis

8 APPENDIX

8.1 Exploratory data analysis

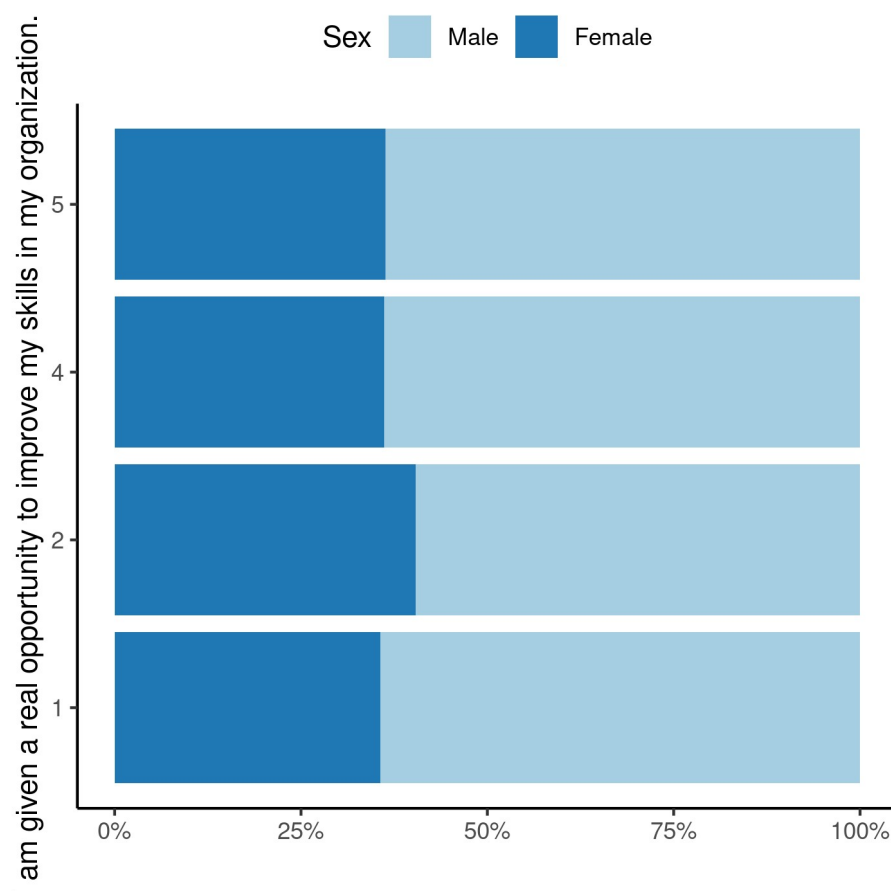


Figure A1 Raw survey responses, by sex.

8.2 Availability

Both this document and the corresponding analytical plan (**SAP-2022-011-GJ-v01**) can be downloaded in the following address:

<https://philsf-biostat.github.io/SAR-2022-011-GJ/>

8.3 Analytical dataset

Due to confidentiality the data-set used in this analysis cannot be shared online in the public version of this report.

Table A1 Analytical dataset structure

id	dsex	dv	iv	dv2	iv2
1					
2					
3					
...					
N					