

Evidence 2023.4.1.6: Evaluation Statistics

Evidence Overview

The Two-Tailed Mann-Whitney U Test was employed to analyze differences in 'Evaluación' across two distinct classifications: gender and school zone. In the gender category, with equal group sizes of seven males and seven females, the test yielded a U value of 31.5 and a z-score of -1.04, resulting in a p-value of .298, which is not significant at the .05 alpha level. Consequently, it was determined that there was no statistical difference in the 'Evaluación' scores between male and female participants, despite males having a slightly higher mean rank. Similarly, when comparing 'Evaluación' scores between rural (R) and urban (U) school zones, with 5 and 9 observations respectively, the test resulted in a U value of 23.5 and a negligible z-score of -0.16, leading to a p-value of .877. This indicates no significant difference in the scores between the two school zones, as they share an identical median score and have nearly equivalent mean ranks. Both sets of results were visually corroborated by boxplots that displayed the rank distributions for each category. In summary, the Mann-Whitney U Test showed that the 'Evaluación' variable's distribution is consistent across both genders and both types of school zones.

CAEP Standards Alignment

Initial

Advanced

4.1

The Evidence

The Mann-Whitney U tests reveal no significant differences in 'Evaluación' scores between genders or school zones, suggesting a similar distribution across these categories.

Two-Tailed Mann-Whitney U Test

Introduction

A two-tailed Mann-Whitney two-sample rank-sum test was conducted to examine whether there were significant differences in Evaluación between the levels of Género. The two-tailed Mann-Whitney two-sample rank-sum test is an alternative to the independent samples t -test, but does not share the same assumptions (Conover & Iman, 1981). There were 7 observations in group M and 7 observations in group F.

Results

The result of the two-tailed Mann-Whitney U test was not significant based on an alpha value of .05, $U = 31.5$, $z = -1.04$, $p = .298$. The mean rank for group M was 8.50 and the mean rank for group F was 6.50. This suggests that the distribution of Evaluación for group M ($Mdn = 4.00$) was not significantly different from the distribution of Evaluación for the F ($Mdn = 3.00$) category. Table 2 presents the result of the two-tailed Mann-Whitney U test. Figure 2 presents a boxplot of the ranks of Evaluación by Género.

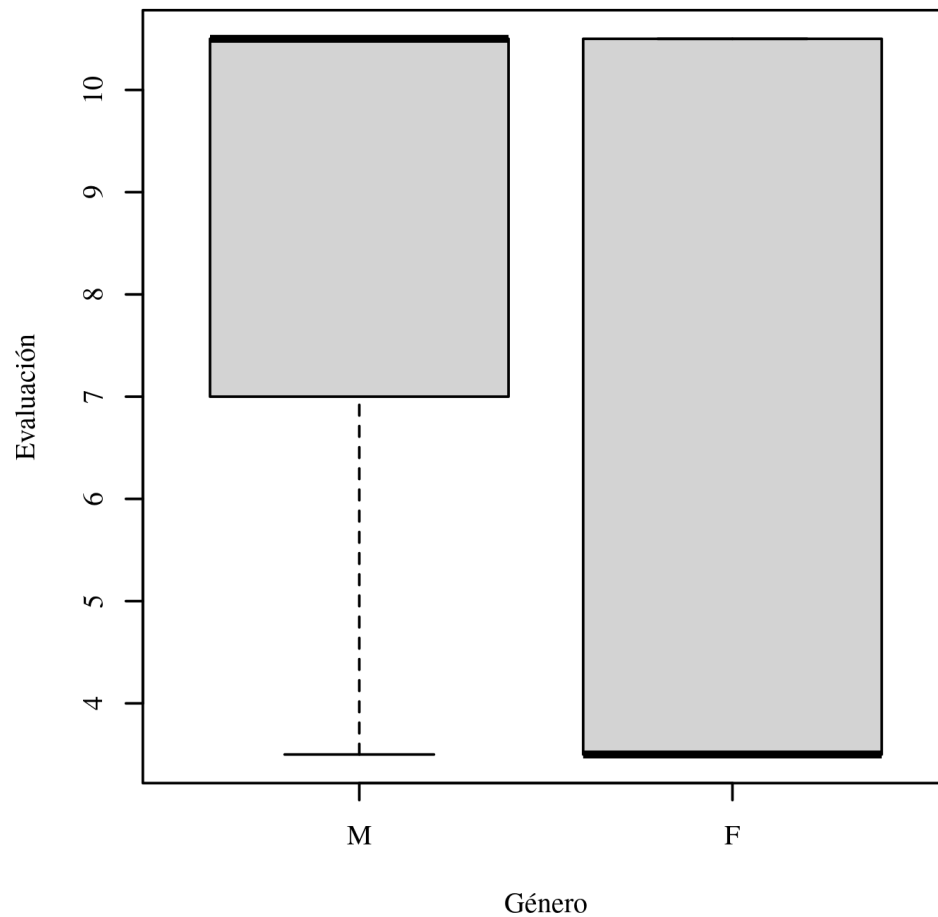
Table 2

Two-Tailed Mann-Whitney Test for Evaluación by Género

	M		F				
Variable	Mean Rank	n	Mean Rank	n	U	z	p
Evaluación	8.50	7	6.50	7	31.50	-1.04	.298

Figure 2

Ranks of Evaluación by Género



Two-Tailed Mann-Whitney *U* Test

Introduction

A two-tailed Mann-Whitney two-sample rank-sum test was conducted to examine whether there were significant differences in Evaluación between the levels of zona_escolar. The two-tailed Mann-Whitney two-sample rank-sum test is an alternative to the independent samples *t*-test, but does not share the same assumptions (Conover & Iman, 1981). There were 5 observations in group R and 9 observations in group U.

Results

The result of the two-tailed Mann-Whitney *U* test was not significant based on an alpha value of .05, $U = 23.5$, $z = -0.16$, $p = .877$. The mean rank for group R was 7.70

and the mean rank for group U was 7.39. This suggests that the distribution of Evaluación for group R ($Mdn = 4.00$) was not significantly different from the distribution of Evaluación for the U ($Mdn = 4.00$) category. Table 4 presents the result of the two-tailed Mann-Whitney U test. Figure 4 presents a boxplot of the ranks of Evaluación by zona_escolar.

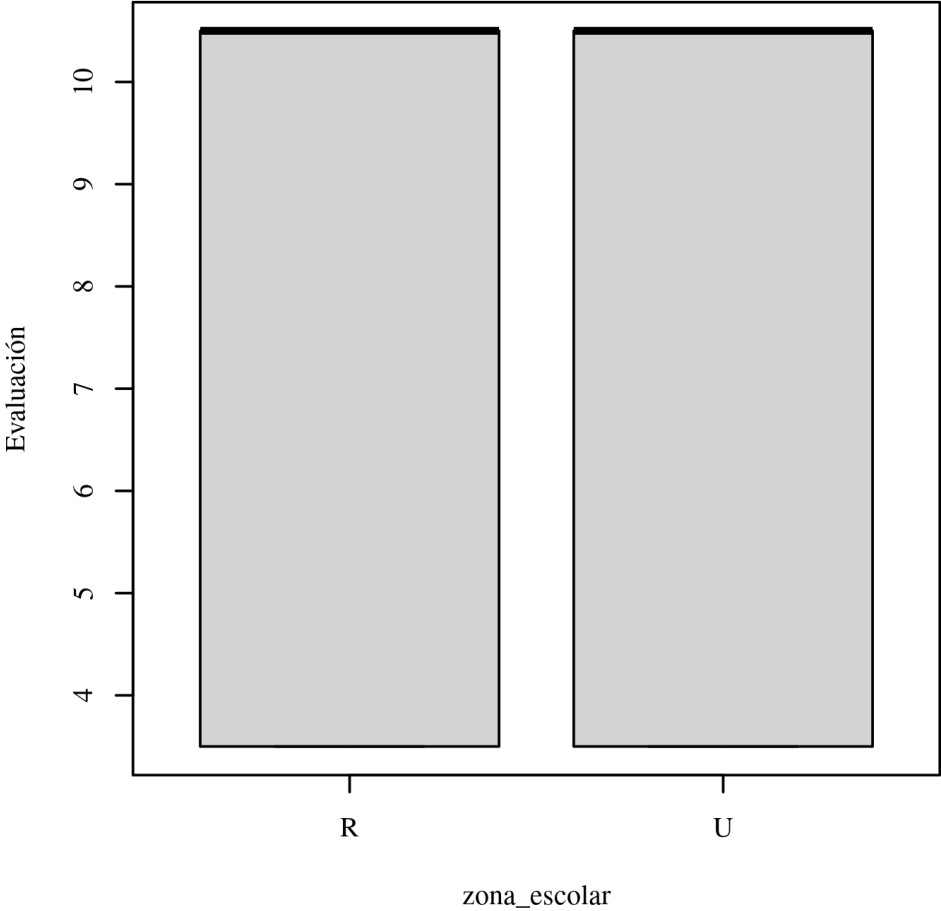
Table 4

Two-Tailed Mann-Whitney Test for Evaluación by zona_escolar

	R		U				
Variable	Mean Rank	n	Mean Rank	n	U	z	p
Evaluación	7.70	5	7.39	9	23.50	-0.16	.877

Figure 4

Ranks of Evaluación



by zona_escol