

## The Effectiveness of Congressional Redistricting Commissions: A Comparative Approach Investigating the Ability of Commissions to Reduce Gerrymandering with the Wilcoxon Signed-Rank Test

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**Abstract :** Voters across the country are transferring the power of redistricting from the state legislatures to commissions to secure “fairer” districts by curbing the influence of gerrymandering on redistricting. Gerrymandering, intentionally drawing distorted districts to achieve political advantage, has become extremely prevalent, generating widespread voter dissatisfaction and resulting in states adopting commissions for redistricting. However, the efficacy of these commissions is dubious, with some arguing that they constitute a panacea for gerrymandering, while others contend that commissions have relatively little effect on gerrymandering. A result showing that commissions are effective would allay these fears, supplying ammunition for activists across the country to advocate for commissions in their state and reducing the influence of gerrymandering across the nation. However, a result against commissions may reaffirm doubts about commissions and pressure lawmakers to make improvements to commissions or even abandon the commission system entirely. Additionally, these commissions are publicly funded: so voters have a financial interest and responsibility to know if these commissions are effective. Currently, nine states place commissions in charge of redistricting, Arizona, California, Colorado, Michigan, Idaho, Montana, Washington, and New Jersey (Hawaii also has a commission but will be excluded for reasons mentioned later). This study compares the degree of gerrymandering in the 2022 election (“after”) to the election in which voters decided to adopt commissions (“before”). The before-election provides a valuable benchmark for assessing the efficacy of commissions since voters in those elections clearly found the districts to be unfair; therefore, comparing the current election to that one is a good way to determine if commissions have improved the situation. At the time Hawaii adopted commissions, it was merely a single at-large district, so it is before metrics could not be calculated, and it was excluded. This study will use three methods to quantify the degree of gerrymandering: the efficiency gap, the percentage of seats and the percentage of votes difference, and the mean-median difference. Each of these metrics has unique advantages and disadvantages, but together, they form a balanced approach to quantifying gerrymandering. The study uses a Wilcoxon Signed-Rank Test with a null hypothesis that the value of the metrics is greater than or equal to after the election than before and an alternative hypothesis that the value of these metrics is greater in the before the election than after using a 0.05 significance level and an expected difference of 0. Accepting the alternative hypothesis would constitute evidence that commissions reduce gerrymandering to a statistically significant degree. However, this study could not conclude that commissions are effective. The p values obtained for all three metrics ( $p=0.42$  for the efficiency gap,  $p=0.94$  for the percentage of seats and percentage of votes difference, and  $p=0.47$  for the mean-median difference) were extremely high and far from the necessary value needed to conclude that commissions are effective. These results halt optimism about commissions and should spur serious discussion about the effectiveness of these commissions and ways to change them moving forward so that they can accomplish their goal of generating fairer districts.

**Keywords :** commissions, elections, gerrymandering, redistricting

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