

Paired Sign Test

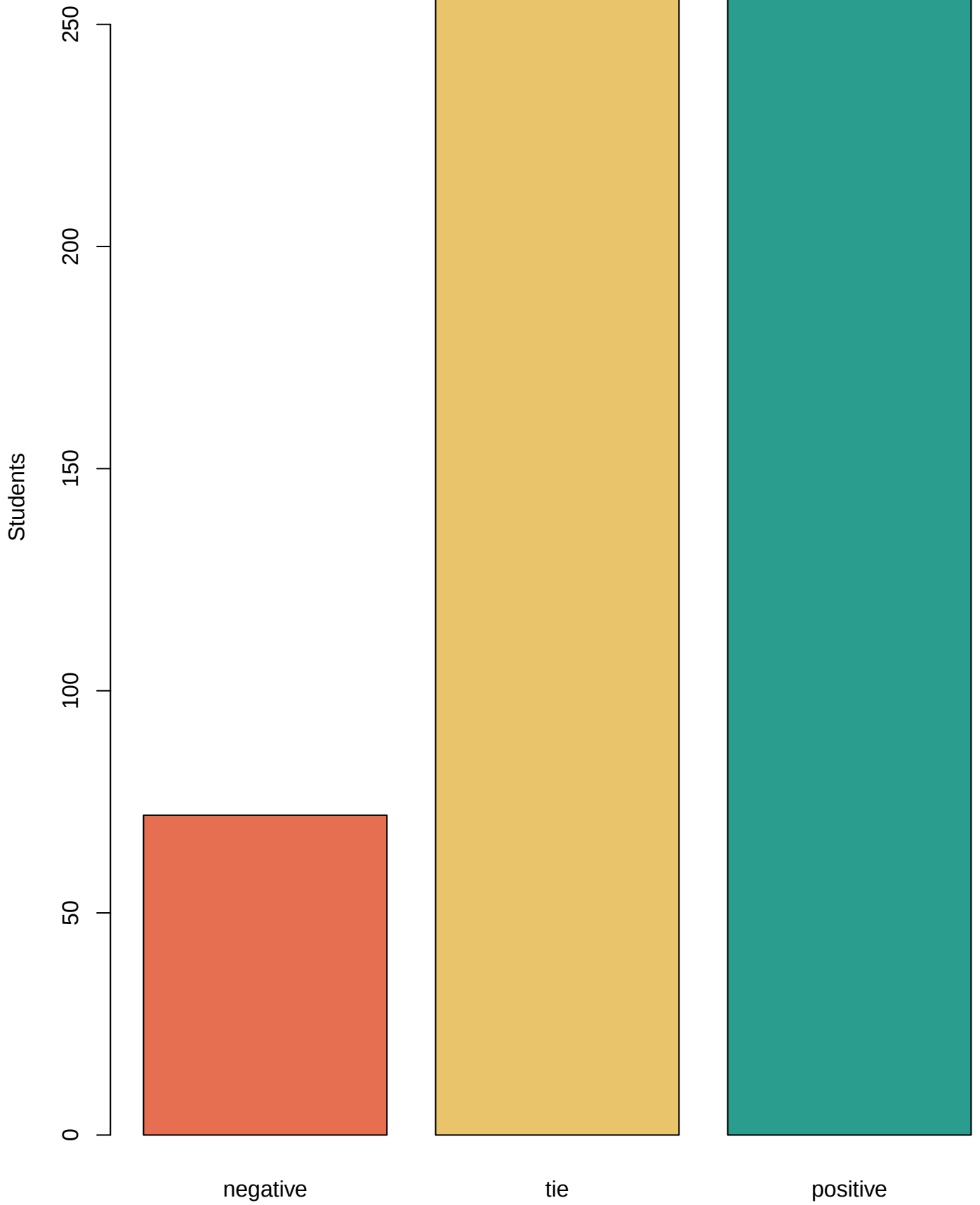
Verified R analysis transcript

The paired sign test uses only the direction of G3-minus-G2 nonzero differences.

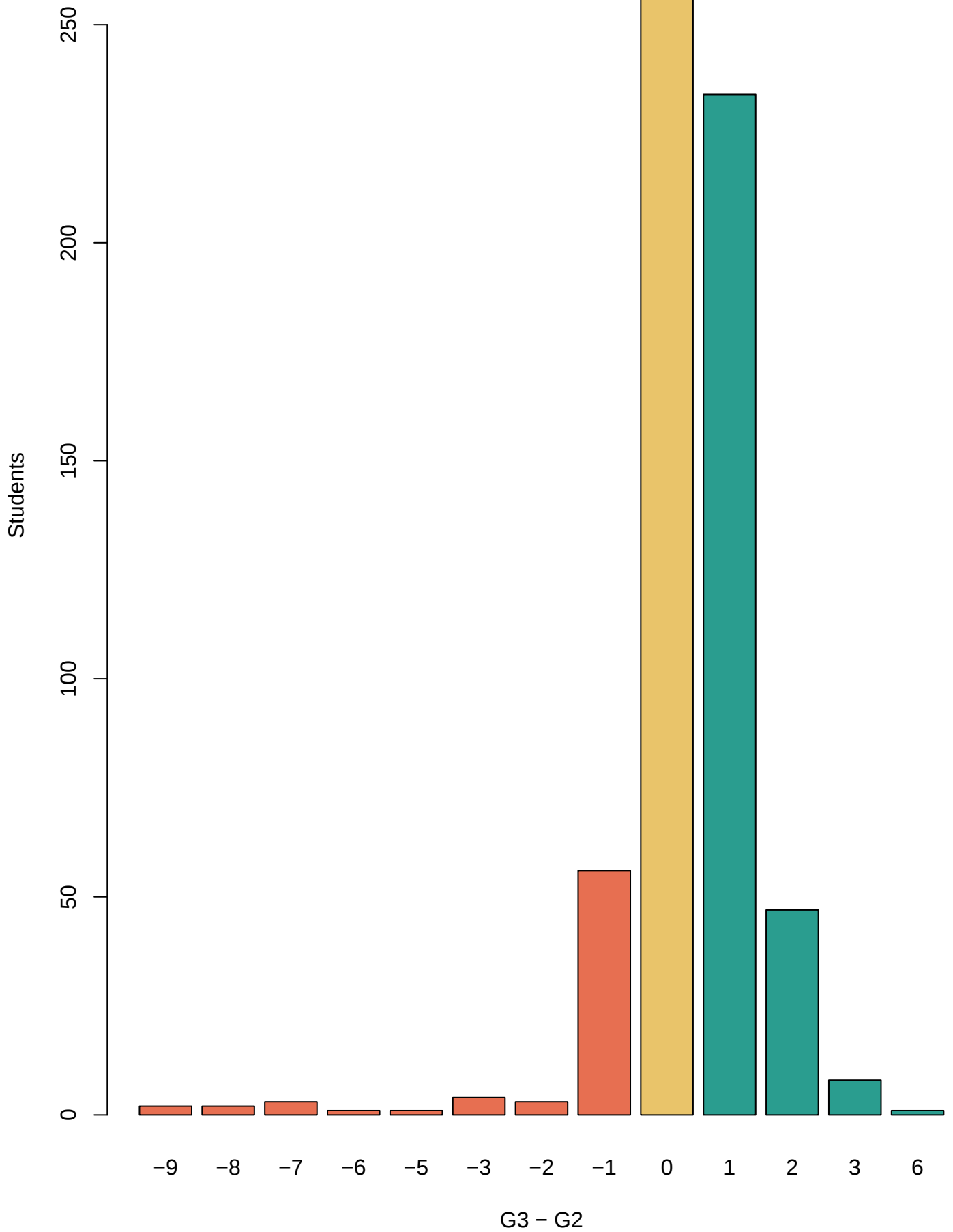
Under the null, positive and negative non-ties are equally likely; ties are documented but excluded from the binomial test.

Positive = 290; negative = 72; ties = 287; exact p = 3.979598771e-32; median difference = 0.

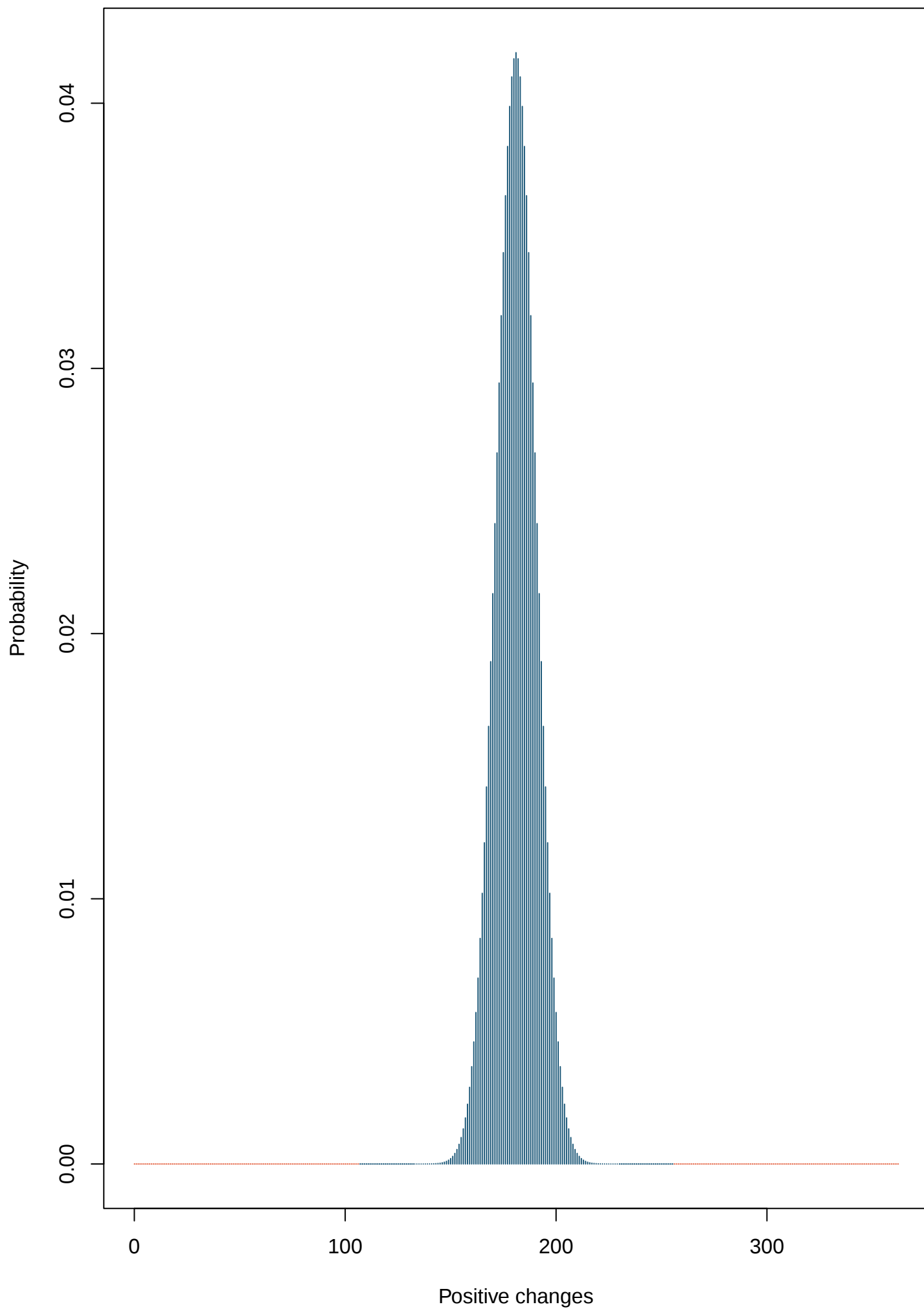
Direction of G3-minus-G2 changes



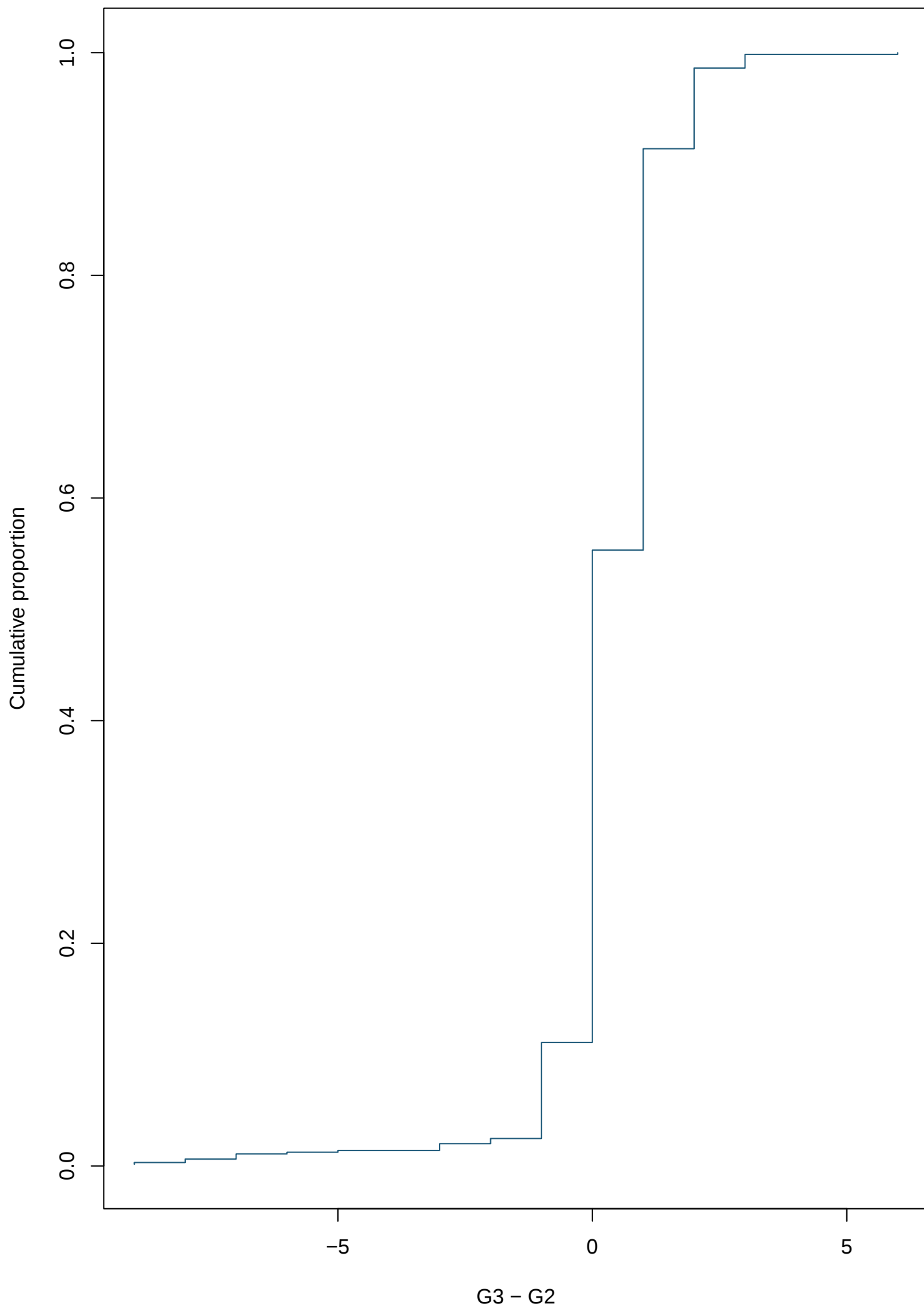
Paired grade differences



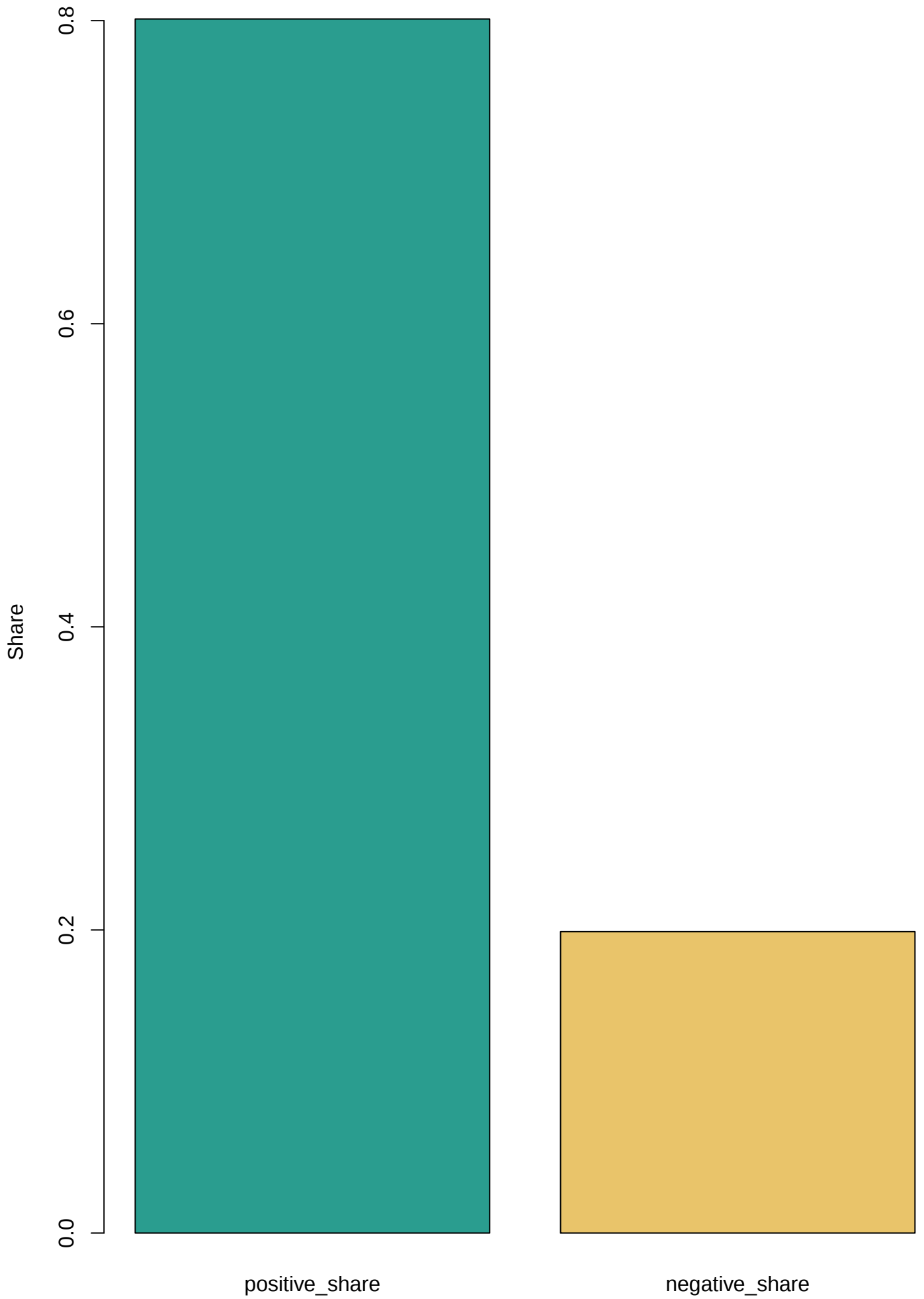
Exact sign-test null distribution



Empirical distribution of paired differences



Direction shares after removing ties



Paired Sign Test key results

