

Paired Sign Test – Hypotheses

For each of the following tests, state the H_0 and H_1 that should be used

The UK requires all students in Year 6 to take an Assessment. An educational psychologist is interested in the difference in performance in this test between students who have autumn birthdays and those who have summer birthdays. Nine pairs of siblings, where one sibling has an autumn birthday and the other a summer birthday, are selected.

Carry out a sign test, at the 10% significance level, to investigate whether, on average, students with autumn birthdays gain higher Assessment scores than those with summer birthdays.

H_0 : _____

H_1 : _____

An investigation was carried out into the incidence and level of hearing loss in flight attendants with more than five years' service. Each of eleven randomly selected flight attendants was paired by age, sex and general health, with a server who had more than five years' service in a busy restaurant.

The level of hearing, in decibels (dB), was measured for each person in the investigation. Carry out a sign test, at the 10% level of significance, to investigate whether flight attendants suffer, on average, a different amount of hearing loss than servers in busy restaurants

H_0 : _____

H_1 : _____

Information was recorded about football teams in a competition. Part of this information included, for each team, the number of shots at goal that were on target and the number of shots at goal that were off target.

Carry out a sign test, at the 5% significance level, to investigate whether, on average, teams have more shots on target than off target. Interpret your conclusion in context.

H_0 : _____

H_1 : _____

The effectiveness of the social competence training (SCT) offered at the clinic was also investigated. A sample of 12 patients undertaking SCT was selected.

Each patient was assigned a social competence score before the training and again after the training.

Carry out a sign test, at the 5% level of significance, to investigate whether a patient's social competence score increases, on average, following SCT.

H_0 : _____

H_1 : _____

A study was carried out into mortality ratios at hospitals. Hospital standardised mortality ratios were obtained for weekdays and weekends during 2004.

Carry out a sign test, using the 10% level of significance, to investigate whether major teaching hospitals, on average, have a higher standardised mortality ratio during weekends than during weekdays

H_0 : _____

H_1 : _____