TESTING A ONE POPULATION PROPORTION

RESEARCH QUESTION:

Will NHSE achieve the national target **proportion of 0.76 (76%)** 4-hour performance in March 2024 of **A&E attendances that are admitted, transferred or discharged from A&E within 4-hours of arrival**? **Has being in Tier 3 impacted performance?**

STATE THE NULL (H0) AND ALTERNATIVE (H1) HYPOTHESIS (TRUST-LEVEL + ICBS)

- Null Hypothesis: NHSE will achieve an A&E performance of at least **76%** in March 2024 ($H0: p0 = 0.76$).

- Alternative Hypothesis: NHSE will achieve an A&E performance of less than **76%** in March 2024 ($H1: p \ll 0.76$).

Set significant level

For a **95%** confidence level the significance level is alpha is **5%** ($\alpha = 0.05$).

RESULTS (TRUST-LEVEL)

- test Statistic (z-value) = -41.372

- p-value = 0.0000

- Significant outcome! Reject the null hypothesis which states that: NHSE will achieve an A&E performance of at least 76% in March 2024 (H0: p = 0.76).

RESULTS (ICBS)

- test Statistic (z-value) = -14.461

- p-value = 0.0000

- Significant outcome! Reject the null hypothesis which states that: NHSE will achieve an A&E performance of at least 76% in March 2024 for Tier 3.

CONCLUSIONS

Rejecting the null hypothesis means that the observed result (from sample data) of **20.8%** and **25.3%** are not due to random chance but due to underlying population characteristics!

The test statistic = -41.372 and -14.461 are negative suggesting that the proportion of A&E attendances that are admitted, transferred or discharged from within 4-hours of arrival at Trust level and at ICBs is **less than 76%**!

Interpretation of the results (Trust Level):
With **95%** confidence, the proportion of A&E attendances that are admitted, transferred or discharged from A&E within 4 hours of arrival is estimated to be between **18.16%** and **23.40%**.
The center of this interval is the best estimate of 20.8% of the population parameter.

CONCLUSIONS

Interpretation of the results (ICBs):

With **95%** confidence, the proportion of Tier 3 (ICBs) A&E attendances that are admitted, transferred or discharged from A&E within 4 hours of arrival is estimated to be between **18.46%** and **32.19%**.

The center of this interval is the best estimate of 25.3% of the population parameter.

- ❑ No significant being in Tier 3
- ❑ No noticeable difference in impact between trust-level and ICB-level
- ❑ Hard to say whether the tiering system targeted the right ICBs. Subject matter knowledge is highly needed before making any conclusions.
- ❑ Subject matter knowledge is highly needed to figure out how to proceed with the tiering system