

C623678 : MAJOR STATISTICS

KEY WORD:

CONFIDENCE INTERVAL / INTERVAL ESTIMATION / POPULATION PROPORTION /

CONFIDENCE COEFFICIENT

THARINEE KONGKATANET : A COMPARISON ON INTERVAL ESTIMATION METHODS FOR THE DIFFERENCE BETWEEN TWO POPULATION PROPORTIONS

THESIS ADVISOR : ASST. PROF. CAPT. MANOP VARAPHAKDI, M.S. 142 PP

ISBN 974-635-757-3.

The objective of this study is to compare the interval estimation methods for the difference between two populations proportion based on normal distribution by comparing their confidence levels and average confidence interval lengths. The comparison of average confidence interval lengths will be compared in case of the confidence levels are not lower than the given confidence coefficient values. The estimation method having the shortest average confidence interval will be optimum estimation method. The estimation methods under consideration in this study are Classical Method , The estimation method using continuity correction by Yates, The estimation method using continuity correction by Hauck and Anderson, and The estimation method using continuity correction by Peskun. The values of n_1 is equal to n_2 and are 10, 20, 25, 30, 35, 40, 50, 60, 70 and 80, the absolute of difference between two population proportions are ranging from .1 to .8 increasing by .1 and p_1, p_2 are ranging from .1 to .9 increasing by .1 all of which one considered at confidence coefficients 90%, 95% and 99%, respectively. The experimentation data are generated through the Monte Carlo Simulation technique. The experiment is repeated 20,000 times under each case. The conclusions of this study are as follows:

1. Confidence levels.

In most cases, the confidence levels of the estimation methods using continuity correction are not lower than the given confidence levels of 90%, 95% and 99%. The confidence levels of Classical Method is not lower than the given confidence levels of 90%, 95% and 99% when sample sizes of n_1 and n_2 are more than 30.

2. Average confidence interval lengths.

In most cases, average confidence interval lengths of the estimation method using continuity correction by Peskun is shortest when sample sizes n_1, n_2 are small ($n_1, n_2 = 10$) ; the estimation method using continuity correction by Hauck and Anderson is shortest when sample sizes n_1, n_2 are medium ($n_1, n_2 = 20, 25, 30, 35, 40, 50$). Average confidence interval lengths of Classical Method is shortest when sample sizes n_1, n_2 are large ($n_1, n_2 = 60, 70, 80$) and the estimation method using continuity correction by Yates is not shortest in every case.

The average confidence interval length varies directly with confidence level and varies indirectly with the absolute of difference between two population proportions and sample sizes.

ภาควิชา..... สถิติ.....

สาขาวิชา..... สถิติ.....

ปีการศึกษา..... 2539.....

ลายมือชื่อนิสิต..... ธาริณี คงคาชเนต.....

ลายมือชื่ออาจารย์ที่ปรึกษา..... .....

ลายมือชื่ออาจารย์ที่ปรึกษาร่วม.....