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APPENDICS

APPENDIX A

2 Proportion Test for Defect Comparison

This test is interval estimation of 2 populations that are both normal distribution shape. The span of interval was estimated from +/- 1.96 SE (standard error) that cover 95% confidence interval (equal 99.73% of area under curve). Objective of testing is to verify significant difference of two independent data sets.

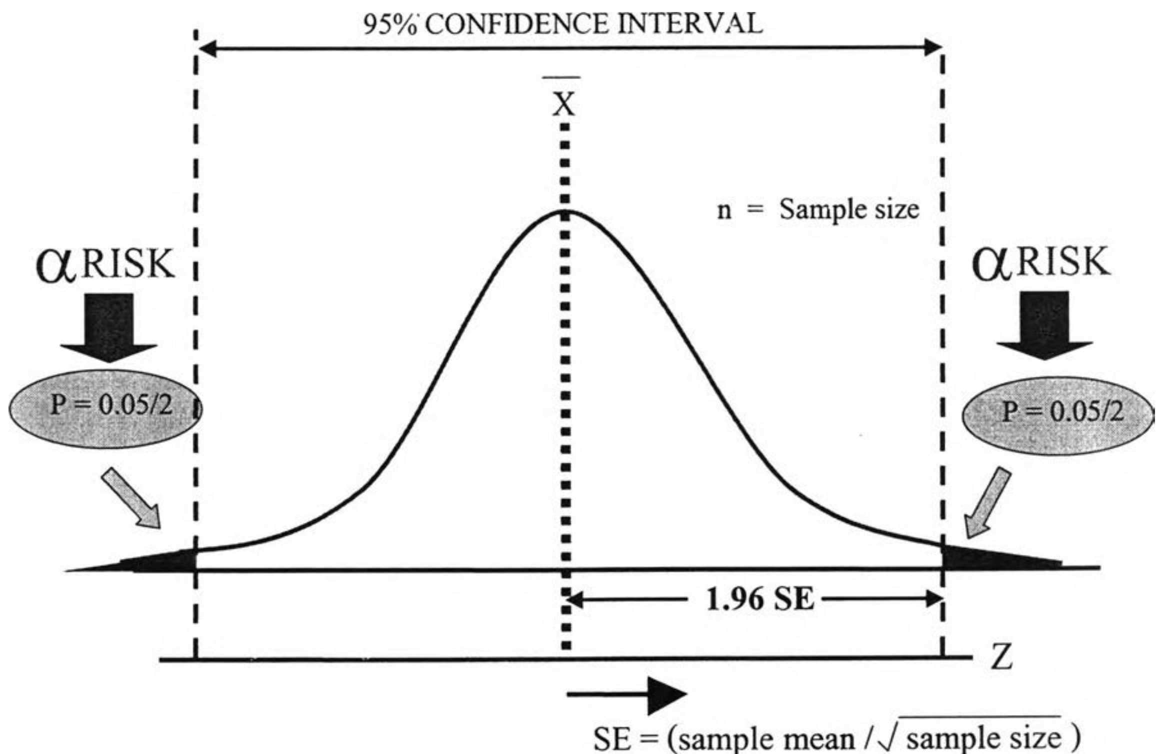


Figure A.1 95% Confidence interval of Z-distribution

The overlap area between these 2 populations would justify potential of probability whether there are similar or difference. If he overlap area is less than 5% of whole distribution will be considered they are significantly different, other than that we would justify that they are from the same population. This significance level is indicated as p-value.

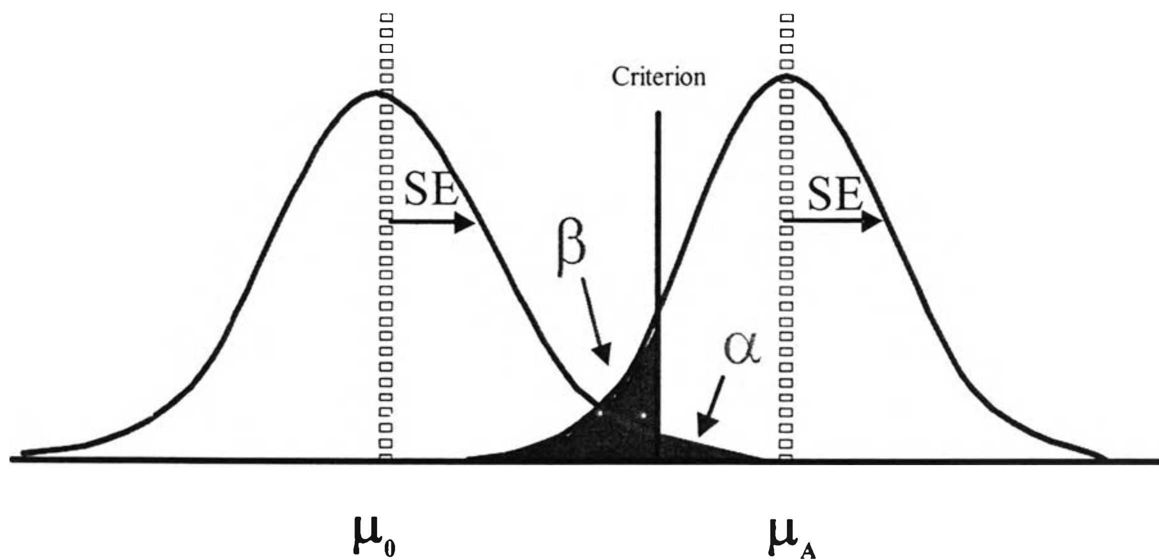
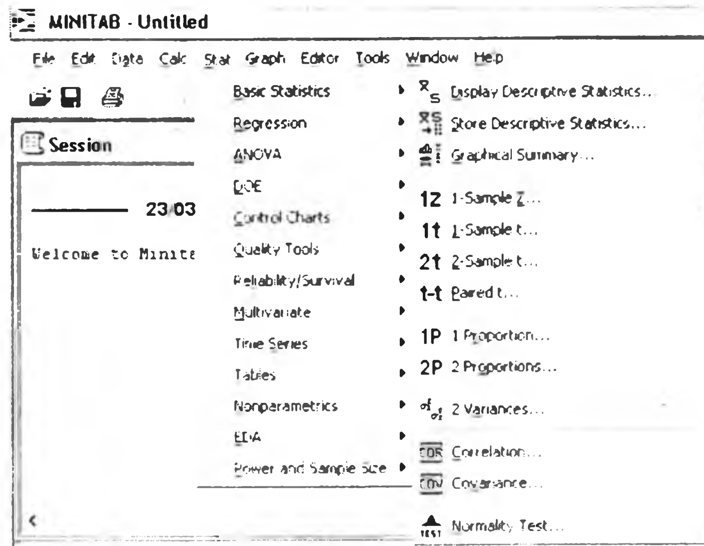


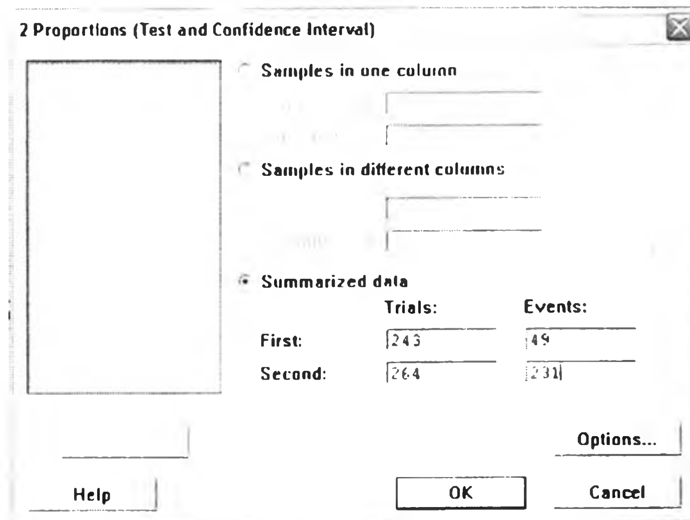
Figure A.2 Overlap area under curve of 2 populations

2 Proportion Test by Minitab

Open Minitab program and go to Stat >> Basic Statistics >> 2 Proportions.



Choose 'Summarized data' button in 2 Proportions (Test and Confidence Interval). Key sample size in 'Trials' and defect quantity in 'Events' then click OK.



The analyzed data will show in session window. P-value in this session is the overlap area that indicates the difference of both populations. As below example can be concluded that there is a significant difference between sample no.1 & 2 or the defect of sample no.1 is significantly lower than sample no.2.

Session

Test and CI for Two Proportions

```
Sample    X    N  Sample p
1        49  243  0.201646
2       231  264  0.875000


Difference = p (1) - p (2)
Estimate for difference:  -0.673354
95% CI for difference:  (-0.737669, -0.609039)
Test for difference = 0 (vs not = 0):  Z = -20.52  P-Value = 0.000
```

VITA

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