# Z Test

# Hypothesis Testing

**STEP 1:** State the hypothesis (Population)

α

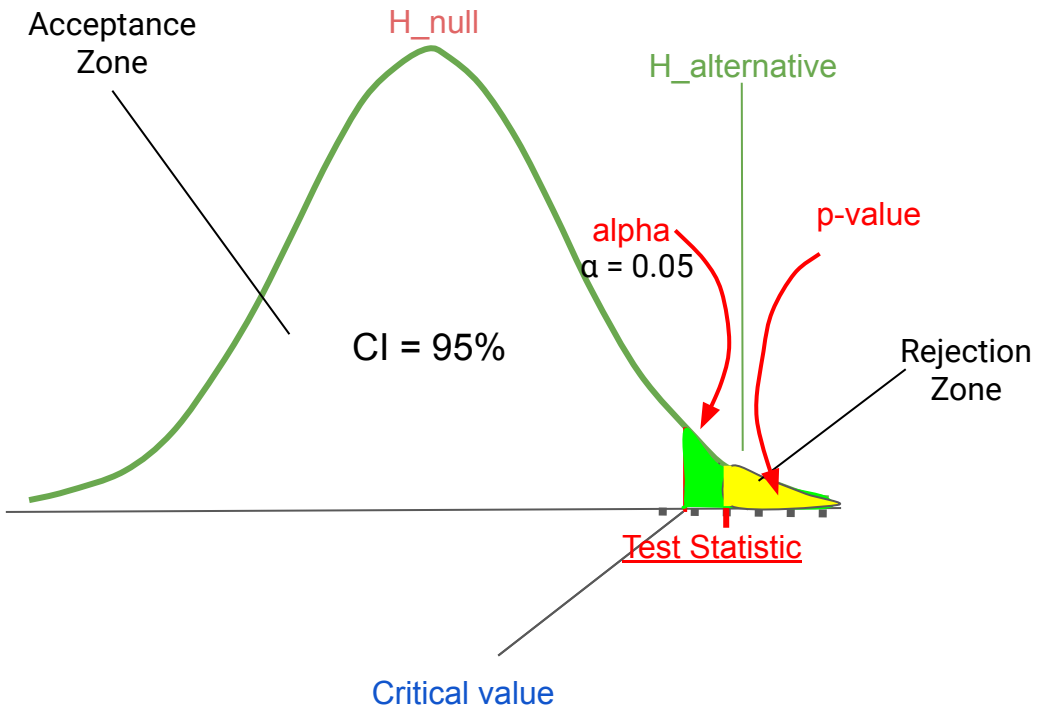
**STEP 2:** Set the level of Significance (Criterion)

**STEP 3:** Compute test Statistics (Sample)

p

**STEP 4:** Make a decision based on p value

# Z-Test




α is the area of critical region

The p-value is the area to the right of the test statistic

**When test statistic in critical region, p-value < α**

Reject $H_0$

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# One Sample Z Test

Large Sample Size

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Known Population Variance

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Girls score more than 600 ?

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Suppose standard deviation for girls score is 100

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$H_0 : \mu \leq 600$

$H_1 : \mu > 600$

$\alpha = 0.05$

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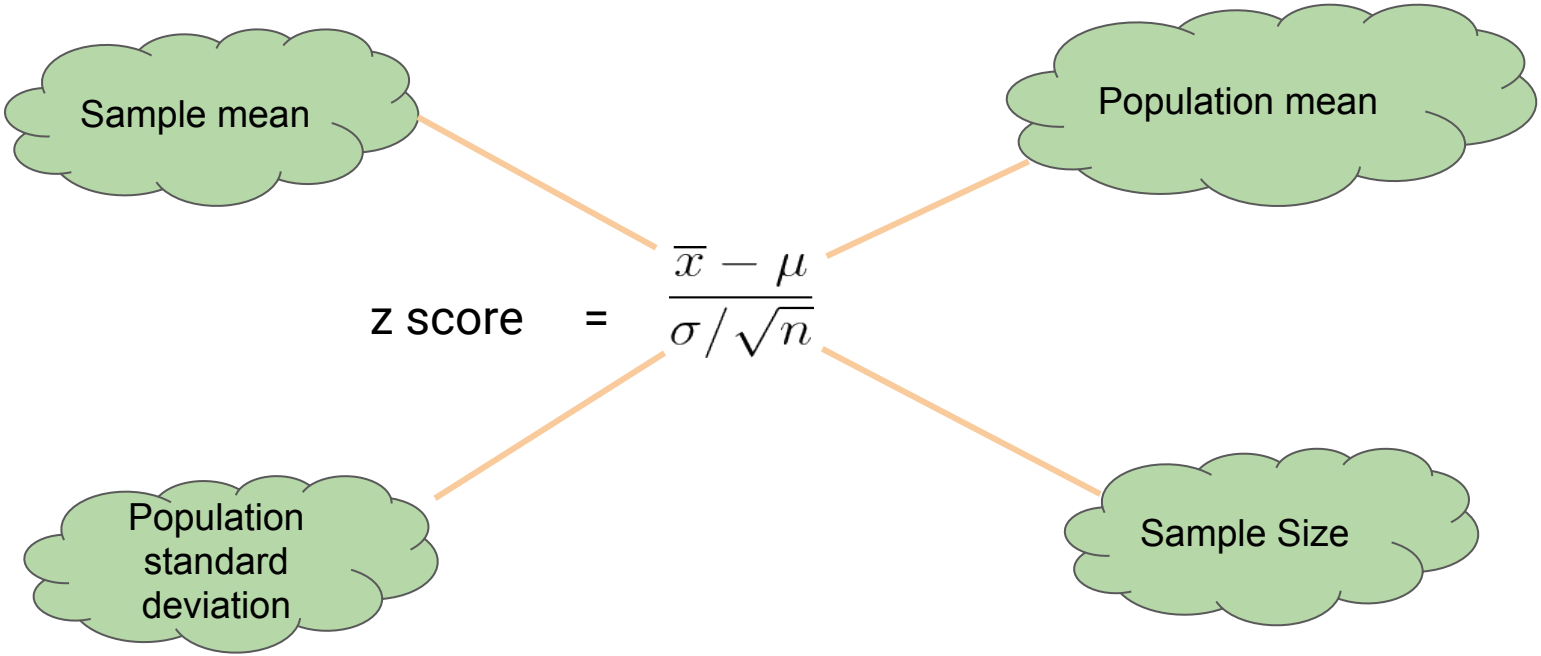
| Score |
|---|
| 574.0 |
| 573.0 |
| 622.0 |
| 663.0 |
| 674.0 |
| 569.0 |
| 623.0 |
| 614.0 |
| 640.0 |
| 619.0 |
| 674.0 |
| 612.0 |
| 606.0 |
| 724.0 |
| 707.0 |
| 667.0 |
| 666.0 |
| 639.0 |
| 630.0 |
| 635.0 |
| 638.0 |
| 593.0 |
| 634.0 |
| 685.0 |
| 658.0 |
| 585.0 |
| 593.0 |
| 716.0 |
| 570.0 |
| 599.0 |

# One Sample Z Test

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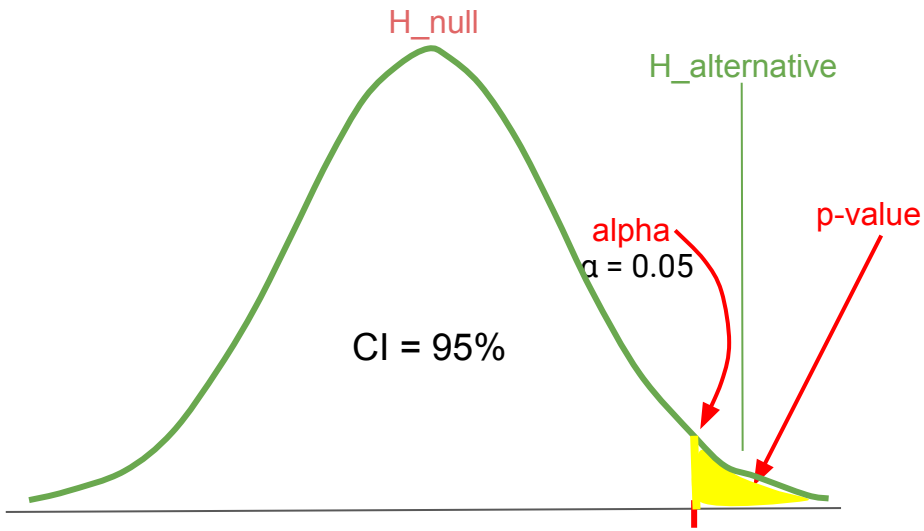
# One Sample Z Test

$$\text{z score} = \frac{\overline{x} - \mu}{\sigma/\sqrt{n}}$$

$$= \frac{633.4 - 600}{100/\sqrt{30}}$$

$$= 1.83$$

# Z-Test



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|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | .50000 | .50399 | .50798 | .51197 | .51595 | .51994 | .52392 | .52790 | .53188 | .53586 |
| 0.1 | .53983 | .54380 | .54776 | .55172 | .55567 | .55962 | .56356 | .56749 | .57142 | .57535 |
| 0.2 | .57926 | .58317 | .58706 | .59095 | .59483 | .59871 | .60257 | .60642 | .61026 | .61409 |
| 0.3 | .61791 | .62172 | .62552 | .62930 | .63307 | .63683 | .64058 | .64431 | .64803 | .65173 |
| 0.4 | .65542 | .65910 | .66276 | .66640 | .67003 | .67364 | .67724 | .68082 | .68439 | .68793 |
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| 0.6 | .72575 | .72907 | .73237 | .73565 | .73891 | .74215 | .74537 | .74857 | .75175 | .75490 |
| 0.7 | .75804 | .76115 | .76424 | .76730 | .77035 | .77337 | .77637 | .77935 | .78230 | .78524 |
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| 1.7 | .95543 | .95637 | .95728 | .95818 | .95907 | .95994 | .96080 | .96164 | .96246 | .96327 |
| 1.8 | .96407 | .96485 | .96562 | .96638 | .96712 | .96784 | .96856 | .96926 | .96995 | .97062 |
| 1.9 | .97128 | .97193 | .97257 | .97320 | .97381 | .97441 | .97500 | .97558 | .97615 | .97670 |

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1 - this value

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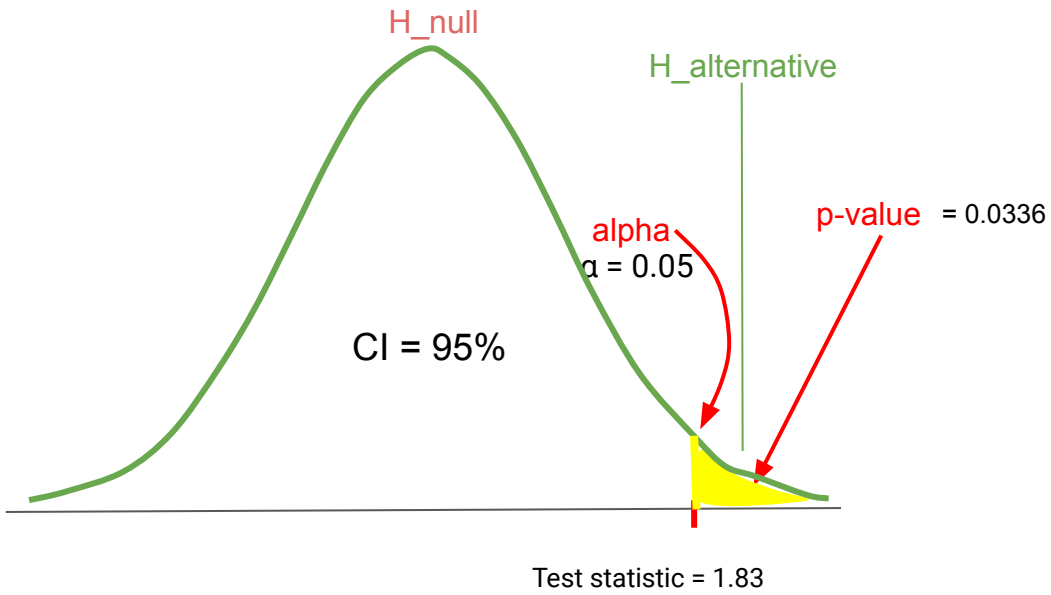

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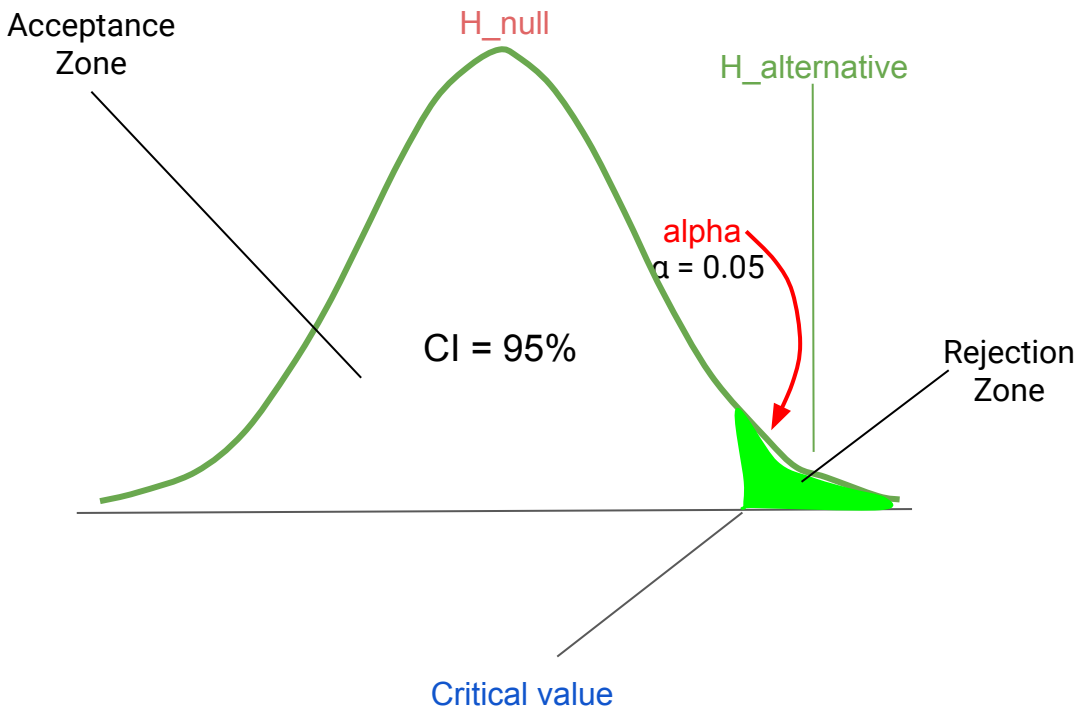

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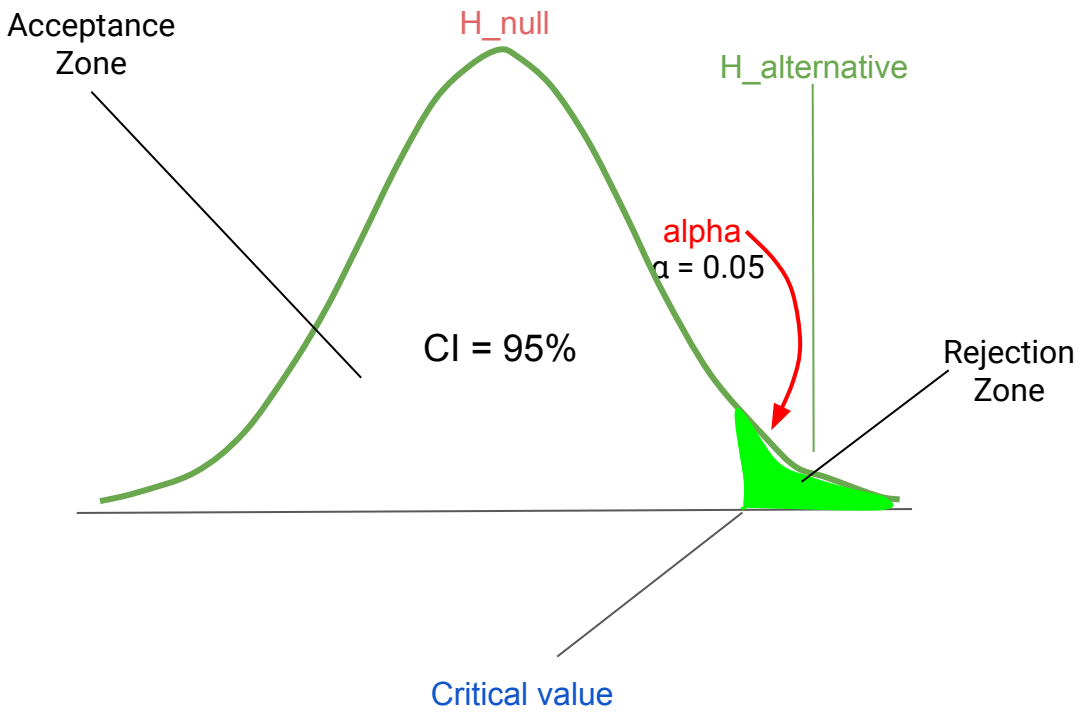


α = 0.05

1- α = 0.95

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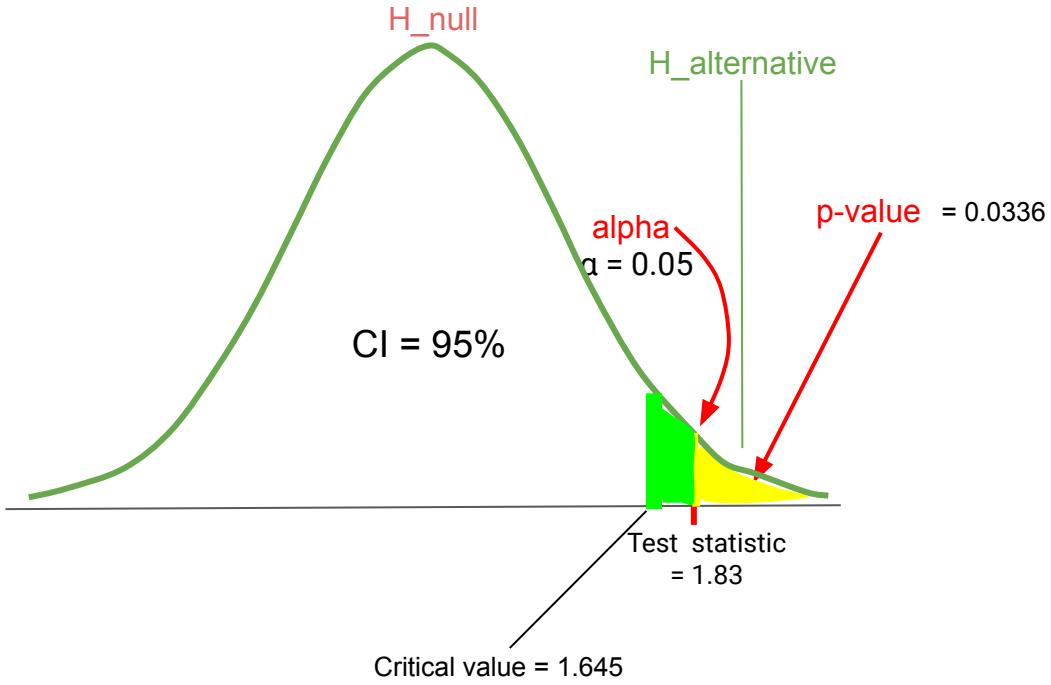


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Thank You!