

# Citadel\_NigeriaPopulation

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Problem statement:  
What is the population in Nigeria, can you give me a 95% confidence interval?

Category	Sizing															
Formula	<div>Confidence interval (CI):</div> <div><math display="block">CI = \bar{x} \pm z \frac{s}{\sqrt{n}}</math><p><i>CI</i> = confidence interval <i><math>\bar{x}</math></i> = sample mean <i>z</i> = confidence level value <i>s</i> = sample standard deviation <i>n</i> = sample size</p></div> <div><div><b>Confidence levels to Z-score</b></div><table><tr><td>90%</td><td>—————&gt;</td><td>1.645</td></tr><tr><td>95%</td><td>—————&gt;</td><td>1.96</td></tr><tr><td>99%</td><td>—————&gt;</td><td>2.575</td></tr><tr><td>99.5%</td><td>—————&gt;</td><td>2.81</td></tr><tr><td>99.9%</td><td>—————&gt;</td><td>3.29</td></tr></table></div> <div>For 95% confidence interval, z-score = 1.96</div>	90%	—————>	1.645	95%	—————>	1.96	99%	—————>	2.575	99.5%	—————>	2.81	99.9%	—————>	3.29
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Solution	<div>Assume the population = 200 million (approx)</div> <div>Standard error =</div> <div><math display="block">\frac{s}{\sqrt{n}}</math></div> <div>Lets assume standard error = 0.5 million</div> <div>Thus, C.I. = 200 +- (1.65 x 0.5)</div> <div>i.e. 200 + (1.65 x 0.5) = 200.825,</div> <div>200 - (1.65 x 0.5) = 199.175</div>															
Population	Thus the population ranges between [199.175, 200.825] million															