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(2) \[ I = \frac{1}{2} (\mu - \mu') \ln \frac{\mu}{\mu'} \]

Some theory

\[ I = \frac{1}{2} \left( 1 + \left( \frac{1}{n} \right) \left( \frac{\mu}{\mu'} - 1 \right)^2 \right) \]

In consumer preference, we can use the \( I \) to represent the fraction of the

\[ I = \frac{1}{2} \left( 1 + \left( \frac{1}{n} \right) \left( \frac{\mu}{\mu'} - 1 \right)^2 \right) \]

The mean \( I \) is the mean of the \( I \) for each individual in the

\[ I = \frac{1}{2} \left( 1 + \left( \frac{1}{n} \right) \left( \frac{\mu}{\mu'} - 1 \right)^2 \right) \]

where \( I \) is the fraction of the population in the

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The population dynamics are governed by the following equations:

\[ \frac{dM}{dt} = (\lambda M - \mu) \]

where \( M \) is the population size, \( \lambda \) is the birth rate, and \( \mu \) is the death rate. The parameter \( \lambda \) is assumed to be constant and \( \mu \) is assumed to be linearly dependent on the population size.

The population is assumed to be distributed in a continuous manner, with a density function \( f(x) \) representing the probability of finding an individual with a population size between \( x \) and \( x+dx \) at time \( t \).

The expected population size is given by the integral:

\[ E[M(t)] = \int_0^\infty x f(x) dx \]

The variance of the population size can be calculated as:

\[ Var[M(t)] = \int_0^\infty (x - E[M(t)])^2 f(x) dx \]

The probability distribution of the population size can be approximated by a normal distribution with mean \( E[M(t)] \) and variance \( Var[M(t)] \).

The population density function can be approximated by a Gaussian function:

\[ f(x) = \frac{1}{\sqrt{2\pi \sigma^2}} e^{-\frac{(x - \mu)^2}{2\sigma^2}} \]

where \( \mu \) is the mean population size and \( \sigma \) is the standard deviation.