Package 'SampleSizeSingleArmSurvival'

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Type Package

Title Calculate Sample Size for Single-Arm Survival Studies

Version 0.1.0

Description Provides methods to calculate sample size for single-arm survival studies using the arcsine transformation, incorporating uniform accrual and exponential survival assumptions. Includes functionality for detailed numerical integration and simulation. This method is based on Nagashima et al. (2021) <doi:10.1002/pst.2090>.

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Encoding UTF-8

RoxygenNote 7.2.3

Imports stats

Suggests testthat (>= 3.0.0), knitr, rmarkdown, devtools

VignetteBuilder knitr

NeedsCompilation no

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Contents

`calcSampleSizeArcsine` *Calculate Sample Size Using Arcsine Transformation*

Description

This function calculates the required sample size for single-arm survival studies based on the arcsine transformation method. It accounts for uniform accrual and exponential survival assumptions, including numeric integration for time points that exceed the follow-up period.

Usage

```
calcSampleSizeArcsine(
  S0,
  S1,
  alpha = 0.05,
  power = 0.8,
  accrual = 24,
  followup = 24,
  timePoint = 18,
  steps = 10000
)
```

Arguments

`S0`	Numeric. Survival probability under the null hypothesis (must be strictly between 0 and 1).
`S1`	Numeric. Survival probability under the alternative hypothesis (must be strictly between 0 and 1).
`alpha`	Numeric. The one-sided Type I error rate. Default is 0.05.
`power`	Numeric. Desired statistical power of the test (1 - beta). Default is 0.80.
`accrual`	Numeric. Duration of the accrual period in months. Default is 24.
`followup`	Numeric. Additional follow-up duration in months after accrual. Default is 24.
`timePoint`	Numeric. Time of interest in months for evaluating survival probabilities. Default is 18.
`steps`	Integer. Number of steps for numeric integration if `timePoint` exceeds follow-up duration. Default is 10,000.

Value

Integer. The required sample size, rounded up to the nearest whole number.

Examples

```
# Calculate sample size for typical survival probabilities
calcSampleSizeArcsine(S0 = 0.90, S1 = 0.96)

# Adjusting for lower survival probabilities and extended accrual
calcSampleSizeArcsine(
  S0 = 0.80,
  S1 = 0.85,
  accrual = 36,
  followup = 12,
  timePoint = 24
)
```

Index