

# Package ‘QuantileNPCI’

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**Type** Package

**Title** Nonparametric Confidence Intervals for Quantiles

**Version** 0.9.0

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**Description** Based on Alan D. Hutson (1999) <doi:10.1080/02664769922458>, ``Calculating non-parametric confidence intervals for quantiles using fractional order statistics'', Journal of Applied Statistics, 26:3, 343-353.

**License** GPL-3

**Encoding** UTF-8

**LazyData** true

**Imports**

**Suggests** dplyr, kableExtra, knitr, rmarkdown, testthat (>= 2.1.0)

**Depends** R (>= 2.10)

**RoxygenNote** 6.1.1

**VignetteBuilder** knitr

**NeedsCompilation** no

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**Repository** CRAN

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exactBeta	<i>Calculate lower and upper CI of a given quantile using exact method, based on beta distribution</i>
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**Description**

Calculate lower and upper CI of a given quantile using exact method, based on beta distribution

**Usage**

```
exactBeta(n, q, alpha)
```

**Arguments**

n	sample size
q	quantile
alpha	desired significance level

**Value**

a list of the lower and upper confidence limit of the quantiles. Values are between [0,1]

u1	lower confidence limit of the quantile
u2	upper confidence limit of the quantile

**Examples**

```
QuantileNPCI:::exactBeta(25, 0.5, 0.05)
```

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flood	<i>The flood rate of Feature River and Blackstone River.</i>
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**Description**

A dataset containing the flood rate data, as presented in Hutson 1999 paper. Original source: Pericchi and Rodreiguez-Iturbe (1995)

**Usage**

```
flood
```

**Format**

A data frame with 96 rows and 3 variables:

**loc** River name  
**year** year of the record  
**discharge** flood discharge rate

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quantCI	<i>quantCI</i>
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**Description**

Calculate nonparametric confidence intervals for quantiles using fractional order statistics,

**Usage**

```
quantCI(x, q, alpha, method)
```

**Arguments**

**x** vector of data  
**q** the quantile  
**alpha** the significance level  
**method** the method used for calculate the confidence interval. Options are "exact" or "approximate".

**Value**

returns a list of 5 values:

**u1** the lower confidence limit of the quantile  
**u2** the upper confidence limit of the quantile  
**lower.ci** the estimated x value at u1  
**qx** the estimate x value of at the quantile q  
**upper.ci** the estimated x value at u2

**Author(s)**

Nicholas Hutson

**Examples**

```
x <- c(3.5, 2.4, 2.1, 1.3, 1.2, 2.2, 2.6, 4.2)
quantCI(x, q=0.5, alpha=0.05, method = "exact")
```

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