

# Package ‘boottol’

March 13, 2015

**Type** Package

**Title** Bootstrap Tolerance Levels for Credit Scoring Validation  
Statistics

**Version** 2.0

**Date** 2015-03-09

**Author** Garrett Schiltgen

**Maintainer** Garrett Schiltgen <garrett.schiltgen@gmail.com>

**Description** Used to create bootstrap tolerance levels for the Kolmogorov-Smirnov (KS) statistic, the area under receiver operator characteristic curve (AUROC) statistic, and the Gini coefficient for each score cutoff. Also provides a bootstrap alternative to the Vasicek test.

**Depends** R (>= 3.1.2), boot, plyr

**License** GPL-2

**NeedsCompilation** no

**Repository** CRAN

**Date/Publication** 2015-03-13 00:18:59

## R topics documented:

boottol . . . . .	2
data . . . . .	2
vasdata . . . . .	3
vastol . . . . .	4

<b>Index</b>	<b>5</b>
--------------	----------

---

boottol *Bootstrap Percentile Confidence Intervals.*

---

### Description

Creates 100(1-alpha) percent bootstrap percentile confidence intervals around the KS, AUROC, and Gini statistics.

### Usage

```
boottol(score, target, bootsamp, lltml, grp, alpha)
```

### Arguments

score	- The score groupings.
target	- The binary target variable.
bootsamp	- How many bootstrap samples to be computed. When bootsamp is too low, a warning will be produced.
lltml	- If the score is rank ordered least likely to most likely then set equal to 1.
grp	- An integer value of how the scores are grouped.
alpha	- Confidence level.

### References

[1] Anderson, R., "The Credit Scoring Toolkit Theory and Practice for Retail Credit Risk Management and Decision Automation," Oxford University Press, Oxford, NY, 2007.

### Examples

```
data("data")
## Not run: tol.level=boottol(score=data$Score,target=data$Target
,bootsamp=2000,lltml=1,grp=10, alpha=0.99)
## End(Not run)
```

---

data *Bootstrap Tolerance Levels for Credit Scoring Validation Statistics:  
Rank Order Statistics*

---

### Description

This data was randomly generated. The Target variable is binary. The Score variable ranges from 0-90 in intervals of 10.

**Usage**

```
data(data)
```

**Format**

A data frame with 5000 observations on the following 3 variables.

Id a numeric vector

Target a numeric vector

Score a numeric vector

**Examples**

```
data("data")
```

---

vasdata

*Bootstrap Tolerance Levels for Credit Scoring Validation Statistics:  
Vasicek Test*

---

**Description**

This data was randomly generated. The Response variable is a response target and is binary. The Segment variable ranges from 0-60 in intervals of 10.

**Usage**

```
data(vasdata)
```

**Format**

A data frame with 7000 observations on the following 2 variables.

segment a numeric vector

response a numeric vector

**Examples**

```
data("vasdata")
```

---

vastol

*Bootstrap Alternative to Vasicek Test.*

---

### Description

Creates 100(1-alpha) percent bootstrap percentile confidence intervals as an alternative to the Vasicek test.

### Usage

```
vastol(segment, target, bootsamp, grp, alpha, lower)
```

### Arguments

segment	- The score groupings.
target	- The binary target variable.
bootsamp	- How many bootstrap samples to be computed. When bootsamp is too low, a warning will be produced.
grp	- An integer value of how the segments are grouped.
alpha	- Confidence level.
lower	- Set equal to 1 if calculating a lower bound.

### References

[1] Glennon, D., "Managing Model Risk in Retail Scoring," Credit Risk Analysis Division Office of the Comptroller of the Currency, September 2012.

### Examples

```
data("vasdata")
vas.level=vastol(segment=vasdata$segment, target=vasdata$response
,bootsamp=500,grp=10,alpha=0.99,lower=1)
```

# Index

\*Topic **datasets**

data, [2](#)

vasdata, [3](#)

boottol, [2](#)

data, [2](#)

vasdata, [3](#)

vastol, [4](#)