# Package 'rcssci'

November 7, 2022

**Type** Package

**Title** Visualization of Restricted Cubic Splines

**Version** 0.2.0

**Maintainer** Zhiqiang Nie <niezhiqiang@gdph.org.cn>

**Description** Restricted Cubic Splines were performed to explore the shape of associa-
tion form of ``U, inverted U,
L'' shape and test linearity or non-linearity base on ``Cox,Logistic,linear'' regres-
sion, and auto output Restricted Cubic Splines figures.
The Restricted Cubic Splines method were based on
Suli Huang (2022) <doi:10.1016/j.ecoenv.2022.113183>,Amit Kaura (2019) <doi:10.1136/bmj.l6055>,
and Harrell Jr (2015, ISBN:978-3-319-19424-0 (Print) 978-3-319-19425-7 (Online)).

**Depends** R (>= 4.2.0)

**LazyData** true

**Imports** pacman, rms, ggplot2, survminer, segmented, survival, dplyr,
patchwork, Cairo

**Encoding** UTF-8

**License** Artistic-2.0

**BugReports** https://github.com/popnie/RCSsci/issues

**RoxygenNote** 7.2.1

**NeedsCompilation** no

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Biostatistics-SCI),
JunZhang [ctb],
Chaolei Chen [ctb]

**Repository** CRAN

**Date/Publication** 2022-11-07 14:50:02 UTC

## R topics documented:

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rcssci_cox                *rcssci_cox*

---

## Description

restricted cubic splines (RCS) published in SCI.

## Arguments

| | |
|---|---|
| data | data.frame.Rdata |
| knot | knot=3-7 or automatic calculate by AIC min |
| y | outcome=0,1 |
| time | censor time |
| covs | covariables, univariate analysis without "covs" command, multivariable analysis with "covs" command |
| prob | position parameter,range from 0-1 |
| x | main exposure and X-axis when plotting |
| filepath | path of plots output. |

## Details

Cox models with RCS splines were performed to explore the shape linear or nonlinear(U, inverted U,J,S,L,log,-log,temporary plateau shape)

## Value

message.print PH assumption and other message

## Author(s)

Zhiqiang Nie, <niezhiqiang@gdph.org.cn>

## Examples

```
library(rcssci)
rcssci_cox(data=sbpdata, y = "status",x = "sbp",time = "time",
prob=0.1,filepath=tempdir())
# library(rcssci)
# rcssci_cox(knot=4,data=sbpdata, y = "status",x = "sbp",covs=c("age"),
# time = "time", prob=0.1,filepath="D:/temp")
```

---

 rcssci_linear              *rcssci_linear*

---

## Description

restricted cubic splines (RCS) published in SCI.

## Arguments

| | |
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| data | data.frame.Rdata |
| knot | knot=3-7 or automatic calculate by AIC min |
| y | outcome=0,1 |
| covs | covariables, univariate analysis without "covs" command, multivariable analysis with "covs" command |
| prob | position parameter,range from 0-1 |
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## Details

linear models with RCS splines were performed to explore the shape linear or nonlinear(U, inverted U,J,S,L,log,-log,temporary plateau shape)

## Value

message.print PH assumption and other message

## Author(s)

Zhiqiang Nie, <niezhiqiang@gdph.org.cn>

## Examples

```
library(rcssci)
rcssci_linear(data=sbpdata, y = "sbp",x = "age",
prob=0.1,filepath=tempdir())
# library(rcssci)
# rcssci_linear(knot=4,data=sbpdata, y = "sbp",x = "age",
# covs=c("gender"),prob=0.1,filepath="D:/temp")
```

---

rcssci_logistic                 *rcssci_logistic*

---

## Description

restricted cubic splines (RCS) published in SCI.

## Arguments

| | |
|---|---|
| data | data.frame.Rdata |
| knot | knot=3-7 or automatic calculate by AIC min |
| y | outcome=0,1 |
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## Value

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## Author(s)

Zhiqiang Nie, <niezhiqiang@gdph.org.cn>

## Examples

```
library(rcssci)
rcssci_logistic(data=sbpdata, y = "status",x = "sbp",
prob=0.1,filepath=tempdir())
# library(rcssci)
# rcssci_logistic(knot=4,data=sbpdata, y = "status",x = "sbp",
# covs=c("age","gender"),prob=0.1,filepath="D:/temp")
```

---

rcs_cox.lshap *rcs_cox.lshap*

---

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---

rcs_cox.nshap                    *rcs_cox.nshap*

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# time = "time", prob=0.1,filepath="D:/temp")
```

rcs_cox.prob *rcs_cox.prob*

### Description

restricted cubic splines (RCS) published in SCI.

### Arguments

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| y | outcome=0,1 |
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# time = "time", prob=0.1,filepath="D:/temp")
```

| rcs_cox.ushap | *rcs_cox.ushap* |
|---|---|

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```

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rcs_linear.lshap　　　　*rcs_linear.lshap*

---

### Description

restricted cubic splines (RCS) published in SCI.

### Arguments

| | |
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| data | data.frame.Rdata |
| knot | knot=3-7 or automatic calculate by AIC min |
| y | outcome=0,1 |
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### Details

linear models with RCS splines were performed to explore the shape linear or nonlinear(U, inverted U,J,S,L,log,-log,temporary plateau shape)

### Value

message.print PH assumption and other message

### Author(s)

Zhiqiang Nie, <niezhiqiang@gdph.org.cn>

### Examples

```
library(rcssci)
rcs_linear.lshap(data=sbpdata, y = "sbp",x = "age",
prob=0.1,filepath=tempdir())
# library(rcssci)
# rcs_linear.lshap(knot=4,data=sbpdata, y = "sbp",x = "age",
# covs=c("gender"),prob=0.1,filepath="D:/temp")
```

rcs_linear.nshap          *rcs_linear.nshap*

### Description

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```

---

rcs_linear.prob *rcs_linear.prob*

---

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---

rcs_linear.ushap            *rcs_linear.ushap*

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---

rcs_logistic.lshap          *rcs_logistic.lshap*

---

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# library(rcssci)
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rcs_logistic.nshap          *rcs_logistic.nshap*

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rcs_logistic.prob       *rcs_logistic.prob*

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**Examples**

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library(rcssci)
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# library(rcssci)
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# covs=c("age","gender"),prob=0.1,filepath="D:/temp")
```

---

rcs_logistic.ushap     *rcs_logistic.ushap*

---

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# covs=c("age","gender"),prob=0.1,filepath="D:/temp")
```

---

sbpdata                          *A data on sbp and status.*

---

## Description

A data on sbp and status.

## Usage

```
data(sbpdata)
```

## Format

An object of class `tbl_df` (inherits from `tbl`, `data.frame`) with 3621 rows and 5 columns.

## Examples

```
data(sbpdata)
```

# Index