Package 'RSADBE'

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Type Package

Title Data related to the book ``R Statistical Application Development by Example''

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Description The package contains all the data sets related to the book written by the maintainer of the package.

License GPL-2

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Contents

RSADBE-package *Data Sets for the "R Statistical Application Development by Example" Book*

Description

The RSADBE package contains all the data sets used in the book "R Statistical Application Development by Example". Data sets have been collected from various sources and an attempt has been made to ensure that all the right credits are given. If some omissions are there, kindly accept the current work as a compliment for your work.

Details

Package:	RSADBE
Type:	Package
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This package is aimed to complement the book. Any data set required in the book may simply loaded using data(GC) as an example.

Author(s)

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References

Tattar, P.N. (2013). R Statistical Application Development by Example. Packt Publication.

Examples

```
data(GC)
```

Bug_Metrics_Software *Bug Metrics Data*

Description

A data set which reports the 5 different type of bugs for 5 software. The count frequencies are available for pre- and post- release of the data.

Usage

```
data(Bug_Metrics_Software)
```

Format

A three dimensional array on the bug counts of 5 software at 5 severity levels.

Source

http://www.eclipse.org/jdt/core/index.php

Examples

```
data(Bug_Metrics_Software)
```

CART_Dummy *A cooked-data set for illustration of the partitions of CART concept*

Description

Partitions play a very important aspect of CART methodology. This data set has been cooked to translate the intuitions into partitions!

Usage

```
data(CART_Dummy)
```

Format

A data frame with 54 observations on the following 3 variables.

`X1` Input variable 1

`X2` Input variable 2

`Y` category of the output

References

Berk, R. A. (2008). Statistical Learning from a Regression Perspective. Springer.

Examples

```
data(CART_Dummy)
CART_Dummy$Y = as.factor(CART_Dummy$Y)
par(mfrow=c(1,2))
plot(c(0,12),c(0,10),type="n",xlab="X1",ylab="X2")
points(CART_Dummy$X1[CART_Dummy$Y==0],CART_Dummy$X2[CART_Dummy$Y==0],pch=15,col="red")
points(CART_Dummy$X1[CART_Dummy$Y==1],CART_Dummy$X2[CART_Dummy$Y==1],pch=19,col="green")
title(main="A Difficult Classification Problem")
plot(c(0,12),c(0,10),type="n",xlab="X1",ylab="X2")
points(CART_Dummy$X1[CART_Dummy$Y==0],CART_Dummy$X2[CART_Dummy$Y==0],pch=15,col="red")
points(CART_Dummy$X1[CART_Dummy$Y==1],CART_Dummy$X2[CART_Dummy$Y==1],pch=19,col="green")
segments(x0=c(0,0,6,6),y0=c(3.75,6.25,2.25,5),x1=c(6,6,12,12),y1=c(3.75,6.25,2.25,5),lwd=2)
abline(v=6,lwd=2)
title(main="Looks a Solvable Problem Under Partitions")
```

CT *The Cow Temperature Data*

Description

The data set is adapted from Velleman and Hoaglin (1984). The body temperature of a cow is measured at 6:30am on 75 consecutive days. We use this data set with the intent of explaining the concept of "data smooting". The data appears on page 165 where we have 30 days body temperature.

Usage

```
data(CT)
```

Format

A data frame with 30 observations on the following 2 variables.

`Day` day number

`Temperature` temperature at 6:30am

Source

The entire classic book of Velleman and Hoaglin is available at http://dspace.library.cornell.edu/bitstream/1813/78/2/A-B-C_of_EDA_040127.pdf

References

Velleman, P.F., and Hoaglin, D. (1984). Applications, Basics, and Computing of Exploratory Data Analysis.

Examples

```
data(CT)
plot.ts(CT$Temperature,col="red",pch=1)
```

DCD *Understanding Drain Current Vs Ground-to-Source Voltage*

Description

The data pertains to an experiment where the drain current is measured against the ground-to-source voltage. We use this data set for understanding of a simple scatterplot.

Usage

```
data(DCD)
```

Format

A data frame with 10 observations on the following 2 variables.

`GTS_Voltage` The voltage

`Drain_Current` Drain in the current

References

Montgomery, D. C., and Runger, G. C. (2007). Applied Statistics and Probability for Engineers, (With CD). J.Wiley.

Examples

```
data(DCD)
plot(DCD)
```

---

employ *A data set used for understanding the very basic steps in R*

Description

The data set is used to simply understand the working of read.table, View, class and sapply R functions

Usage

```
data(employ)
```

Format

A data frame with 60 observations on the following 3 variables.

`Trade` a numeric vector

`Food` a numeric vector

`Metals` a numeric vector

Examples

```
data(employ)
```

`galton` *The famous Galton data set*

Description

Sir Francis Galton used this data set for understanding the (linear) relationship between the height of parent and its effect on the height of child.

Usage

```
data(galton)
```

Format

A data frame with 928 observations on the following 2 variables.

`child` children's height

`parent` parent's height

Details

A scatter plot may be used for preliminary investigation of the kind of relationship between parent's height and their children. A simple linear regression model may also be built for quantifying the relationship.

References

http://en.wikipedia.org/wiki/Francis_Galton

Examples

```
data(galton)
plot(galton)
```

Gasoline *Car Mileage Dataset*

Description

This data set has been used primarily for understanding a multivariate data set. Multiple regression model is also introduced and discussed completely through this example.

Usage

```
data(Gasoline)
```

Format

A data frame with 25 observations on the following 12 variables.

`y` Miles per gallon

`x1` Displacement (cubic inches)

`x2` Horsepower (foot-pounds)

`x3` Torque (foot-pounds)

`x4` Compression ratio

`x5` Rear axle ratio

`x6` Carburetor (barrels)

`x7` Number of transmission speeds

`x8` Overall length (inches)

`x9` Width (inches)

`x10` Weight (pounds)

`x11` Type of transmission (A-automatic, M-manual)

References

Montgomery, D. C., Peck, E.A., and Vining, G.G. (2012). Introduction to linear regression analysis. Wiley.

Examples

```
data(Gasoline)
```

GC *German Credit Screening Data*

Description

Loans are an assest for the banks! However, not all the loans are promptly returned and it is thus important for a bank to build a classification model which can identify the loan defaulters from those who complete the loan tenure.

Usage

```
data(GC)
```

Format

A data frame with 1000 observations on the following 21 variables.

`checking` Status of existing checking account

`duration` Duration in month

`history` Credit history

`purpose` Purpose of loan

`amount` Credit amount

`savings` Savings account or bonds

`employed` Present employment since

`installp` Installment rate in percentage of disposable income

`marital` Personal status and sex

`coapp` Other debtors or guarantors

`resident` Present residence since

`property` Property

`age` Age in years

`other` Other installment plans

`housing` Housing

`existcr` Number of existing credits at this bank

`job` Job

`depends` Number of people being liable to provide maintenance for

`telephon` Telephone

`foreign` foreign worker

`good_bad` Loan Defaulter

Source

http://www.stat.auckland.ac.nz/~reilly/credit-g.arff and http://archive.ics.uci.edu/ml/datasets/Statlog+(German+Credit+Data

References

cran.r-project.org/doc/contrib/Sharma-CreditScoring.pdf

Examples

```
data(GC)
```

IO_Time *CPU Time and IO Processes Relationship*

Description

The CPU is known to depend on the number of active IO processes. This data set will be used for the purposes of understanding scatterplots, resistant lines, and simple linear regression model.

Usage

```
data(IO_Time)
```

Format

A data frame with 10 observations on the following 2 variables.

`No_of_IO` Number of IO Processes

`CPU_Time` The CPU time

Source

http://www.cs.gmu.edu/~menasce/cs700/files/SimpleRegression.pdf

Examples

```
data(IO_Time)
plot(IO_Time)
```

lowbwt *Low Birth Weight*

Description

A consolidation of the concepts learnt the later half of the book is worked trough using this example.

Usage

```
data(lowbwt)
```

Format

A data frame with 189 observations on the following 10 variables.

`LOW` indicator of birth weight less than 2.5kg

`AGE` mother's age in years

`LWT` mother's weight in pounds at last menstrual period

`RACE` mothers race ("white", "black", "other")

`SMOKE` smoking status during pregnancy

`PTL` number of previous premature labours

`HT` history of hypertension

`UI` presence of uterine irritability

`FTV` number of physician visits during the first trimester

`BWT` birth weight in grams

Source

http://www.statlab.uni-heidelberg.de/data/linmod/birthweight.html

References

Hosmer, D.W. and Lemeshow, S. (2001). Applied Logistic Regression. New York: Wiley.

Examples

```
data(lowbwt)
plot(lowbwt)
```

MDR *Male Death Rates*

Description

The problem is to understand the effect of the average amount of tobacco smoked and the cause of death on the male death rates per 1000.

Usage

```
data(MDR)
```

Format

A data frame with 15 observations on the following 5 variables.

`X` Death Causes

`G0` No smoking

`G14` Between 1-14 grams

`G24` Between 15-24 grams

`G25` More than 25 grams

Source

http://dspace.library.cornell.edu/bitstream/1813/78/2/A-B-C_of_EDA_040127.pdf

References

Velleman, Paul F., and David C. Hoaglin. Applications, basics, and computing of exploratory data analysis. Vol. 142. Boston: Duxbury Press, 1981.

Examples

```
data(MDR)
boxplot(MDR)
```

octane *Octane Rating Data set*

Description

An experiment is conducted where the octane rating of gasoline blends can be obtained using two methods. Two samples are available for testing each type of blend, and Snee (1981) obtains 32 different blends over an appropriate spectrum of the target octane ratings.

Usage

```
data(octane)
```

Format

A data frame with 32 observations on the following 2 variables.

`Method_1` Ratings under Method 1

`Method_2` Ratings under Method 2

References

Vining, G.G., and Kowalski, S.M. (2011). Statistical Methods for Engineers, 3e. Brooks/Cole.

Examples

```
data(octane)
par(mfrow=c(1,2))
hist(octane$Method_1)
hist(octane$Method_2)
## maybe str(octane) ; plot(octane) ...
```

OF *Understanding the Overfitting Problem*

Description

This is a data set cooked up by the author to highlight the problem of overfitting. The variables have no physical meaning.

Usage

```
data(OF)
```

Format

A data frame with 10 observations on the following 2 variables.

`X` Just another covariate

`Y` Just another output

Examples

```
data(OF)
plot(OF)
```

`PW_Illus` *A data set for illustrating "Piecewise Linear Regression Model"*

Description

As with the "OF" data set, this data set has been created by the author to build up the ideas leading up to piecewise linear regression model.

Usage

```
data(PW_Illus)
```

Format

A data frame with 100 observations on the following 2 variables.

`X` an input vector

`Y` an output vector

Examples

```
data(PW_Illus)
plot(PW_Illus)
```

resistivity *Resistivity of wires*

Description

The resistivity of wires is known to depend on its manufacturing process. The data set is used primarily to understand the boxplot.

Usage

```
data(resistivity)
```

Format

A data frame with 8 observations on the following 2 variables.

`Process.1` Resistivity of wires under process 1

`Process.2` Resistivity of wires under process 2

References

Gunst, R. F. (2002). Finding confidence in statistical significance. Quality Progress, 35 (10), 107-108.

Examples

```
data(resistivity)
boxplot(resistivity)
```

Samplez *A hypothetical data set*

Description

This data set shows that data may also have skewness inherent in them!

Usage

```
data(Samplez)
```

Format

A data frame with 2000 observations on the following 2 variables.

`Sample_1` a numeric vector

`Sample_2` a numeric vector

Examples

```
data(Samplez)
hist(Samplez$Sample_1)
hist(Samplez$Sample_2)
```

---

sat *SAT-M marks and its impact on the final exams of a course*

Description

The final completion of a stat course is believed to depend on the marks scored by the student during his qualifying SAT-M marks. This data set is used to setup the motivation for binary regression models such as probit and logistic regressino models.

Usage

```
data(sat)
```

Format

A data frame with 30 observations on the following 5 variables.

`Student.No` Student number

`Grade` Grade of the student

`Pass` Pass-Fail indicator in the final exam

`Sat` The SAT-M marks

`GPP` The GPP group

References

Johnson, Valen E., and James H. Albert. Ordinal data modeling. Springer, 1999.

Examples

```
data(sat)
```

SCV *An illustrative data set where the "Response" depends on four variables A-D and a fifth categorical variable*

Description

This data set is primarily used to illustrate some basic R functions.

Usage

```
data(SCV)
```

Format

A data frame with 16 observations on the following 6 variables.

`Response` an output vector

`A` variable A

`B` variable B

`C` Variable C

`D` variable D

`E` a factor with two levels `Modified` `Usual`

Examples

```
data(SCV)
```

SCV_Modified *SCV data set by category "Modified"*

Description

This data set is a part of the SCV dataset.

Usage

```
data(SCV_Modified)
```

Format

A data frame with 8 observations on the following 6 variables.

`Response` an output vector

`A` variable A

`B` variable B

`C` Variable C

`D` variable D

`E` a factor with two levels `Modified`

Examples

```
data(SCV_Modified)
```

`SCV_Usual` *SCV data set with caterogy "Usual"*

Description

This data set is part of the SCV data set.

Usage

```
data(SCV_Usual)
```

Format

A data frame with 8 observations on the following 6 variables.

`Response` an output vector

`A` variable A

`B` variable B

`C` Variable C

`D` variable D

`E` a factor with two levels `Usual`

Examples

```
data(SCV_Usual)
```

Severity_Counts *Severity counts for the JDT software*

Description

The software system Eclipse JDT Core has 997 different class environments related to the development. The bug identified on each occasion is classified by its severity as Bugs, NonTrivial, Major, Critical, and High. We need to understand the bug counts before- and after- software release.

Usage

```
data(Severity_Counts)
```

Format

Before and after release bug counts at five severity levels for the JDT software.

Source

http://www.eclipse.org/jdt/core/index.php

Examples

```
data(Severity_Counts)
barplot(Severity_Counts,xlab="Bug Count",xlim=c(0,12000), col=rep(c(2,3),5))
```

simpledata *A simulated data set for illustrating the ROC concept*

Description

ROC is an important tool for comparing different models for the same classification problem. This data set comes with barebones infrastructure and is simply complementary in nature towards setting up a clear understanding the ROC construction.

Usage

```
data(simpledata)
```

Format

A data frame with 200 observations on the following 2 variables.

`Predictions` Predicted probabilities

`Label` True class of the observations

Examples

```
data(simpledata)
```

SPD *The supervisor performance data*

Description

This data is used to check your understanding of the multiple linear regression model.

Usage

```
data(SPD)
```

Format

A data frame with 30 observations on the following 7 variables.

`Y` Supervisors performance

`X1` Aspect 1

`X2` Aspect 2

`X3` Aspect 3

`X4` Aspect 4

`X5` Aspect 5

`X6` Aspect 6

References

"Regression analysis by example" by Samprit Chatterjee and Ali S. Hadi, Wiley

Examples

```
data(SPD)
pairs(SPD)
```

SQ *Sample Questionnaire Data*

Description

The sample questionnaire data is simply used to familiarize the reader with data and statistical terminologies.

Usage

```
data(SQ)
```

Format

A data frame with 20 observations on the following 12 variables.

`Customer_ID` Customer ID

`Questionnaire_ID` Questionnaire ID

`Name` Customers Name

`Gender` Customers gender `Female` `Male`

`Age` Age of the customer

`Car_Model` Car Model's name

`Car_Manufacture_Year` Month and year of car's manufacturing

`Minor_Problems` Minor problems were fixed by the workshop center indicator `No` `Yes`

`Major_Problems` Major problems were fixed by the workshop center indicator `No` `Yes` `Yes`

`Mileage` The overall mileage of the car (kms/litre)

`Odometer` The overall kilometers travelled by the car

`Satisfaction_Rating` How satisfied was the customer `Very Poor` < `Poor` < `Average` < `Good` < `Very Good`

Examples

```
data(SQ)
```

TheWALL *Test centuries of Rahul Dravid*

Description

Rahul Dravid has been a modern arthictet of Indian test cricket team. His resilent centuries and holding the wicket at one end of the cricket pitch has earned him the name "The Wall". We analyze his centuries at "Home" and "Away" test matches.

Usage

```
data(TheWALL)
```

Format

A data frame with 36 observations on the following 11 variables.

`Sl_No` An indicator

`Score` The century scores

`Not_Out_Indicator` Indicates whether Dravid remained unbeaten at the end of the team innings

`Against` The teams against whom Dravid scored the century

`Position` Dravid's batting position, out of 11

`Innings` An indicator of the first to fourth innings

`Test` Test number

`Venue` Venue of the test match

`HA_Ind` Match was in home country or away

`Date` Date on the which the test began

`Result` Did India won the match?

Examples

```
data(TheWALL)
```

`VD` *Voltage Drop Dataset*

Description

The voltage is known to drop in a guided missile after a certain time. The data has been to illustrate certain cubic spline models.

Usage

```
data(VD)
```

Format

A data frame with 41 observations on the following 2 variables.

`Time` Time of missile

`Voltage_Drop` Drop in the voltage

References

Montgomery, Douglas C., Elizabeth A. Peck, and G. Geoffrey Vining. Introduction to linear regression analysis. Wiley, 2012.

Examples

```
data(VD)
```

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