

# Package ‘RcmdrPlugin.IPSUR’

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**Version** 0.2-1

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**Title** An IPSUR Plugin for the R Commander

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**Imports** Rcmdr (>= 2.1-0)

**Suggests** abind, car, distr, distrEx, e1071, effects (>= 1.0-7),foreign, grid, lattice, lmtest, MASS, mgcv, multcomp (>= 0.991-2), nlme, nnet, qcc, relimp, RODBC

**LazyLoad** yes

**LazyData** yes

**Description** This package is an R Commander plugin that accompanies IPSUR, an Introduction to Probability and Statistics Using R.

**License** GPL (>= 2)

**URL** <http://www.r-project.org>, <http://ipsur.org/>

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RcmdrPlugin.IPSUR-package

*An IPSUR Plugin for the R Commander***Description**

This package is an R Commander plugin that accompanies IPSUR, an Introduction to Probability and Statistics Using R.

**Details**

Package: RcmdrPlugin.IPSUR  
 Version: 0.2-1  
 Date: 2014-09-10  
 Imports: Rcmdr (>= 2.1-0)  
 Suggests: abind, car, distr, distrEx, e1071, effects (>= 1.0-7), foreign, grid, lattice, lmtest, MASS, mgcv, multcomp (>= 0.9-999)  
 LazyLoad: yes  
 LazyData: yes  
 License: GPL (>= 2)  
 URL: <http://www.r-project.org>, <http://ipsur.org/>

**Author(s)**

G. Jay Kerns <gkerns@ysu.edu> with contributions by Theophilus Boye and Tyler Drombosky, adapted from the work of John Fox et al.

Maintainer: G. Jay Kerns <gkerns@ysu.edu>

birthday.ipsur

*Probability of coincidences for the IPSUR package***Description**

This is a modified version of the `pbirthday` and `qbirthday` functions in the `stats` package. Computes approximate answers to a generalised “birthday paradox” problem. `pbirthday.ipsur` computes the probability of a coincidence and `qbirthday.ipsur` computes the number of observations needed to have a specified probability of coincidence. The change is that precise answers are given (instead of asymptotics) in the case of exactly two coincidences.

**Usage**

```
qbirthday.ipsur(prob = 0.5, classes = 365, coincident = 2)
pbirthday.ipsur(n, classes = 365, coincident = 2)
```

**Arguments**

classes	How many distinct categories the people could fall into
prob	The desired probability of coincidence
n	The number of people
coincident	The number of people to fall in the same category

**Details**

The birthday paradox is that a very small number of people, 23, suffices to have a 50-50 chance that two of them have the same birthday. This function generalises the calculation to probabilities other than 0.5, numbers of coincident events other than 2, and numbers of classes other than 365.

The formula is approximate, except in the case coincident=2.

**Value**

qbirthday.ipsur	Number of people needed for a probability prob that k of them have the same one out of classes equiprobable labels.
pbirthday.ipsur	Probability of the specified coincidence.

**References**

Diaconis P, Mosteller F, "Methods for studying coincidences". JASA 84:853-861

**Examples**

```
## the standard version
qbirthday.ipsur()
## same 4-digit PIN number
qbirthday.ipsur(classes=10^4)
## 0.9 probability of three coincident birthdays
qbirthday.ipsur(coincident=3, prob=0.9)
## Chance of 4 coincident birthdays in 150 people
pbirthday.ipsur(150,coincident=4)
## 100 coincident birthdays in 1000 people: *very* rare:
pbirthday.ipsur(1000, coincident=100)
```

BloodPressure

*Blood Pressure and Heart Rate Readings*

---

**Description**

These data were collected during from 2004 through 2006 by Taoying Bian.

**Usage**

```
data(BloodPressure)
```

**Format**

A data frame with 202 observations on the following 7 variables:

**year** year. From 2004 through 2006

**month** month of the year. January = 1.

**day** the day of the month.

**hour** the 24-clock hour.

**systolic** systolic blood pressure reading (in mm Hg).

**diastolic** diastolic blood pressure reading (in mm Hg).

**heart.rate** heart rate reading, in beats per minute.

**Details**

From 2004 through 2006, Mrs. Taoying Bian regularly collected data concerning her blood pressure and heart rate.

**Source**

These data were collected by Taoying Bian from 2004 through 2006.

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FeedingTimes

*Feeding Times of a Newborn*

---

**Description**

These data were collected during July and August, 2006 at the request of the pediatrician concerning the feeding habits of Anna Lu Kerns.

**Usage**

```
data(FeedingTimes)
```

**Format**

A data frame with 42 observations on the following 7 variables:

**age.days** age in days. July 1, 2006 = 1.

**clock.hours** the 24-clock hour.

**clock.min** the clock minute.

**type** type of food eaten, being direct breast milk, formula, pumped breast milk, or no food (rest)

**amount.oz** amount of food eaten, in ounces.

**duration.min** duration of feeding time.

**time.hours** sequential time in hours. Time = 0 corresponds to 8 AM, July 9th, 2006.

**Details**

During July and August 2006 the author collected data concerning the feeding habits of his newborn daughter, Anna Lu Kerns. The time of feeding was recorded, along with the type of food eaten. The amount of food eaten (in oz.) was recorded except when Anna was breastfeeding, in which case the duration of feeding was recorded. Some other durations were missing and others were calculated from the clock times.

**Source**

These data were collected by the author during July and August 2006 during observation of his newborn daughter.

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IP SUR.Utilities

*IP SUR Utility Functions*

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**Description**

These functions support writing additions to the IP SUR package, and were patterned after their Rcmdr equivalents. Additional R code can be placed in files with file type .R in the etc subdirectory of the package. Add menus, submenus, and menu items by editing the file menus.txt in the same directory.

**Usage**

```
checkMultiLevelFactors(n=1)
listMultiLevelFactors(dataSet=ActiveDataSet())
MultiLevelFactors(names)
multiLevelFactorsP(n=1)
```

**Arguments**

**dataSet** the quoted name of a data frame in memory.

**names** optional names to be stored.

**n** number of variables to check for.

## Details

There are several groups of functions exported by the Rcmdr package and documented briefly here. To see how these functions work, it is simplest to examine the dialog-generating functions in the Rcmdr package.

*Checking for errors:* The function `checkMultiLevelFactors` checks for the existence of objects and writes an error message to the log if it is absent (or insufficiently numerous, in the case of different kinds of variables).

*Information:* The following function returns vectors of object names: `listMultiLevelFactors`

## Author(s)

G. Jay Kerns <gkerns@ysu.edu>

## References

T. Lumley (2001) Programmer's niche: Macros in R. *R News*, **1(3)**, 11–13.

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numSummaryIPSUR	<i>Mean, Standard Deviation, Skewness, Kurtosis, and Quantiles for Numeric Variables</i>
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## Description

`numSummary` creates neatly formatted tables of means, standard deviations, skewness, kurtosis, and quantiles of numeric variables. Note that the `e1071` package must be installed to compute skewness or kurtosis.

## Usage

```
numSummaryIPSUR(data, statistics=c("mean", "sd", "skewness", "kurtosis", "quantiles"),
  quantiles=c(0, .25, .5, .75, 1), groups)

## S3 method for class 'numSummaryIPSUR'
print(x, ...)
```

## Arguments

<code>data</code>	a numeric vector, matrix, or data frame.
<code>statistics</code>	any of "mean", "sd", "skewness", "kurtosis", or "quantiles", defaulting to the first four.
<code>quantiles</code>	quantiles to report; default is <code>c(0, 0.25, 0.5, 0.75, 1)</code> .
<code>groups</code>	optional variable, typically a factor, to be used to partition the data.
<code>x</code>	object of class "numSummaryIPSUR" to print.
<code>...</code>	arguments to pass down from the print method.

**Value**

numSummaryIPSUR returns an object of class "numSummaryIPSUR" containing the table of statistics to be reported along with information on missing data, if there are any.

**Author(s)**

John Fox <jfox@mcmaster.ca>, with skewness and kurtosis added by G. Jay Kerns <gkerns@ysu.edu>

**See Also**

[mean](#), [sd](#), [skewness](#), [kurtosis](#), [quantile](#).

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RcmdrTestDrive

*Test-driving the R Commander*

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**Description**

These are simulated data specifically designed to allow the inexperienced user to browse the capabilities of the R Commander.

**Usage**

```
data(RcmdrTestDrive)
```

**Format**

A data frame with 168 observations on the following 9 variables:

**order** sequential order  
**smoking** smoking status  
**gender** gender of victim  
**race** race of victim  
**before** life expectancy before exposure  
**after** life expectancy after exposure  
**salary** salary at retirement  
**reduction** potential salary reduction  
**parking** number of unpaid parking tickets

**Details**

The R Commander has extensive functionality, but many options are unavailable unless the correct types of data are loaded in the Active Data Set. This data set was randomly generated so that, when loaded, essentially all R Commander options would be available for the student to investigate. These data are entirely fictional. For an amusing contributed story tying these variables together, please visit <http://www.cc.ysu.edu/~gjkerns/IPSUR/package>.

**Source**

These data were randomly generated using the IPSUR probability menu for the R Commander.



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