The Lisp-Stat Reference Manual

A statistical computing environment for Common Lisp, version 2.0

Steve Nunez `<steve@symbolics.tech>`

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1 Systems

The main system appears first, followed by any subsystem dependency.

1.1 `lisp-stat`

Author   Steve Nunez `<steve@symbolics.tech>`

License   MS-PL

Description
    A statistical computing environment for Common Lisp

Version   2.0

Dependencies
- `alexandria`
- `array-operations`
- `data-frame`
- `dfio`
- `num-utils`
- `select`
- `dexador`
- `split-sequence`

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- [`license`], page 8, (file)
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- [`rdata.lisp`], page 5, (file)

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- [`variables`], page 23, (function)

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- [`*variables*`], page 24, (special variable)
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- [`ability.cov`], page 13, (special variable)
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Internal Definitions

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Nickname   ls

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- num-utils.elementwise
- num-utils.statistics
- num-utils.arithmetic
- dfio
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- array-operations/all
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- common-lisp

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    Package   [rdata], page 9,

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   Package   [rdata], page 9,

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    Student Admissions at UC Berkeley

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ukdriverdeaths   [Special Variable]

    Road Casualties in Great Britain 1969-84

    Package   [rdata], page 9,

    Source   [rdata.lisp], page 5, (file)

ukgas   [Special Variable]

    UK Quarterly Gas Consumption

    Package   [rdata], page 9,

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usaccdeaths   [Special Variable]

    Accidental Deaths in the US 1973-1978

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usarrests   [Special Variable]

    Violent Crime Rates by US State

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usjudgeratings   [Special Variable]

    Lawyers' Ratings of State Judges in the US Superior Court

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uspersonalexpenditure   [Special Variable]

    Personal Expenditure Data

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uspop   [Special Variable]

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    Death Rates in Virginia (1940)

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volcano   [Special Variable]
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worldphones   [Special Variable]
    The World's Telephones

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wwwusage   [Special Variable]
    Internet Usage per Minute

    Package   [`rdata`], page 9,

    Source   [`rdata.lisp`], page 5, (file)

5.1.2 Macros

def *NAME VALUE* **&optional** *DOCUMENTATION*   [Macro]
    Define a data variable
    VALUE is not evaluated and must be a symbol. Assigns the value of FORM to VALUE and
    adds VALUE to the list *VARIABLES* of def'ed variables. Returns VALUE. If VALUE is
    already bound and the global variable *ASK-ON-REDEFINE* is not nil then you are asked
    if you want to redefine the variable.

    Package   [`lisp-stat`], page 9,

    Source   [`variables.lisp`], page 5, (file)

5.1.3 Functions

fivenum *X*   [Function]
    Returns the five number summary (min, 1st quartile, median, 3rd quartile, max) of the
    elements X.
    Note this is not Tukey's fivenum summary, which R returns. The results will differ when X
    contains an even number of elements. See:
    https://www.icalcu.com/stat/fivenum.html https://math.stackexchange.com/questions/398077/question-
    on-five-number-summary-quantile

    Package   [`lisp-stat`], page 9,

    Source   [`stats.lisp`], page 8, (file)

get-r-data ()   [Function]

    Package   [`rdata`], page 9,

    Source   [`rdata.lisp`], page 5, (file)

interquartile-range *X*   [Function]
    Returns the interquartile range of the elements of X.

    Package   [`lisp-stat`], page 9,

    Source   [`stats.lisp`], page 8, (file)

load-r-default-datasets ()   [Function]
    Load the data sets included in base R

    Package   [`rdata`], page 9,

    Source   [`rdata.lisp`], page 5, (file)

load-r-metadata ()   [Function]
    Loads the master R data set index as a data frame

    This allows you to slice & dice the 1500+ data sets to find what you need

    Package   [`rdata`], page 9,

    Source   [`rdata.lisp`], page 5, (file)

save-r-default-datasets ()   [Function]
    Save the data sets included in base R

    Package   [`rdata`], page 9,

    Source   [`rdata.lisp`], page 5, (file)

savevar *VARS FILE* **&optional** *SUFFIX*   [Function]
    VARS is a symbol or a list of symbols. FILE is a string (or a symbol whose print name
    is used) not ending in SUFFIX (defaults to ".lisp"). The VARS and their current values
    are written to the file FILE.lisp in a form suitable for use with the load command. NOTE:
    Ensure VARS doesn't contain CLOS objects that don't have a SAVE-OBJ method. Example
    (savevar 'urban "urban")

    Package   [`lisp-stat`], page 9,

    Source   [`variables.lisp`], page 5, (file)

variables ()   [Function]
    Returns a list of the names of all def'ed variables.

    Package   [`lisp-stat`], page 9,

    Source   [`variables.lisp`], page 5, (file)

5.2 Internal definitions

5.2.1 Special variables

ask-on-redefine   [Special Variable]

   Package   [lisp-stat], page 9,

   Source   [variables.lisp], page 5, (file)

default-datasets   [Special Variable]
   Data sets loaded as part of personal Lisp-Stat initialisation. Available in every session.

   Package   [ls-user], page 12,

   Source   /Users/nunez/ls-init.lisp

r-default-dataframes   [Special Variable]
   Data frames corresponding to the default R datasets

   Package   [rdata], page 9,

   Source   [rdata.lisp], page 5, (file)

variables   [Special Variable]

   Package   [lisp-stat], page 9,

   Source   [variables.lisp], page 5, (file)

iris   [Special Variable]
   Edgar Anderson's Iris Data

   Package   [ls-user], page 12,

   Source   /Users/nunez/ls-init.lisp

plantgrowth   [Special Variable]
   Results from an Experiment on Plant Growth

   Package   [ls-user], page 12,

   Source   /Users/nunez/ls-init.lisp

student-sleep   [Special Variable]
   Student's Sleep Data

   Package   [rdata], page 9,

   Source   [rdata.lisp], page 5, (file)

toothgrowth   [Special Variable]
   The Effect of Vitamin C on Tooth Growth in Guinea Pigs

   Package   [ls-user], page 12,

   Source   /Users/nunez/ls-init.lisp

usarrests   [Special Variable]
   Violent Crime Rates by US State

   Package   [ls-user], page 12,

   Source   /Users/nunez/ls-init.lisp

5.2.2 Functions

`setup-ls-translations ()`   [Function]

    Package   [`lisp-stat`], page 9,

    Source   [`ls-init.lisp`], page 8, (file)

5.2.3 Generic functions

`save-obj` *DATA*   [Generic Function]
    Save data object

    Package   [`lisp-stat`], page 9,

    Source   [`variables.lisp`], page 5, (file)

`save-variable` *DATA*   [Generic Function]
    Save the data.

    Package   [`lisp-stat`], page 9,

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Appendix A Indexes

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A.2 Functions

A.3 Variables

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A.4 Data types