

# Package: copulaData (via r-universe)

August 19, 2024

**Version** 0.0-2

**Title** Data Sets for Copula Modeling

**Depends** R (>= 3.1.0)

**Enhances** copula

**Description** Data sets used for copula modeling in addition to those in the R package 'copula'. These include a random subsample from the US National Education Longitudinal Study (NELS) of 1988 and nursing home data from Wisconsin.

**License** GPL (>= 3) | file LICENCE

**NeedsCompilation** no

**Encoding** UTF-8

**URL** <https://copula.r-forge.r-project.org/>

**Repository** <https://r-forge.r-universe.dev>

**RemoteUrl** <https://github.com/r-forge/copula>

**RemoteRef** HEAD

**RemoteSha** 0e796fb0381faa5ce7421fd2423214a2e6a89e2b

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NELS

*National Education Longitudinal Study Data***Description**

Random sample of size 1000 from the US National Education Longitudinal Study (NELS) data containing the mathematics, science and reading scores, together with covariates, of 8th graders in 1988.

**Usage**

```
data("NELS88")
```

**Format**

`data.frame` containing the identification number of the school to which the student belongs (ID), the standardized score of the student on a mathematics achievement test (Math; rescaled by an Item Response Theory (IRT) method where a higher score indicates greater proficiency in mathematics), the standardized score of the student on a science achievement test (Science), the standardized score of the student on a reading achievement test (Reading), a factor indicating whether the student is a member of an ethnic minority group (Minority), a numeric measure of the socio-economic status of the student and family (SES), a factor indicating whether the student is female (Female), a factor indicating whether the school is publicly funded (Public), the size of the student's school (Size), a factor indicating whether the school is located in an urban environment (Urban) and a factor indicating whether the school is located in a rural environment (Rural).

**Source**

Edward W. Frees, 'Student Achievement Data' in <https://sites.google.com/a/wisc.edu/jed-frees/tutorial-multivariate-regression-using-copulas>.

Originally, the National Center for Education Statistics page, <https://nces.ed.gov/surveys/nels88/>

**Examples**

```
data("NELS88")
str(NELS88)
ftable(xtabs(~ Urban+Rural + Public, NELS88))#
## Add more sensible variable, ordered factor rural < agгло < urban
NELS88. <- within(NELS88, {
  UR <- factor(Urban:Rural, labels = c("aggгло", "rural", "urban"))
  Urbanity <- ordered(UR, levels = c("rural", "aggгло", "urban"))
  rm(UR) })
unique(NELS88[, c("Urban", "Rural", "Urbanity")]) # indeed, just 3 combination cases

xtabs(~ Minority+Urbanity, NELS88.) # (_not_ independent)
ftable(xtabs(~ Public+Urbanity+Female+Minority, NELS88.) -> tab.)
summary(tab.) # very very clearly not independent
```

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`nursingHomes`*Wisconsin Nursing Homes Utilization Data*

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**Description**

Data set containing the occupancy rate (utilization) and covariates of 377 nursing homes in Wisconsin between 1995 and 2001.

**Usage**

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

**Format**

`data.frame` containing the nursing home identification number (ID), the occupancy rate (Rate; see Sun et al. (2008, Equation (7)) for how this is computed), the logarithmic number of beds of the nursing home (LnNumBed), the logarithmic net square foot of the nursing home (LnSqrFoot), the cost report year (CRYear), indicators whether the nursing home runs on a for-profit basis (Pro), whether it is tax exempt (TaxExempt), whether it has self funding of insurance (SelfIns), whether it is accredited as Medicare Certified (MCert) and whether it is located in an urban environment (Urban); see Sun et al. (2008, Table 2).

**Source**

Edward W. Frees, Wisconsin Department of Health and Family Services (by now named "Wisconsin Department of Health Services")

**References**

Sun, J., Frees, E. W. and Rosenberg, M. A. (2008) Heavy-tailed longitudinal data modeling using copulas. *Insurance: Mathematics and Economics* **42**, 817–830.

**Examples**

```
data("nursingHomes")
str(nursingHomes)
```

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