

# Package ‘dobson’

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**Type** Package

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**Description** Example datasets from the book “An Introduction to Generalised Linear Models” (Year: 2018, ISBN:9781138741515) by Dobson and Barnett.

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---

achievement

*Achievement data from table 6.15*

---

### Description

Achievement scores after three training methods

### Usage

`data(achievement)`

**Format**

A tibble with 21 observations and the following 3 variables.

method training method (A, B or C)

y achievement scores

x aptitude scores measured before training commenced

**References**

Winer, B. J. (1971). *Statistical Principles in Experimental Design* (2nd ed.).

**Examples**

```
data(achievement)
summary(achievement)
```

---

aids *AIDS data from table 4.5*

---

**Description**

Numbers of cases of AIDS in Australia by date of diagnosis for successive 3-month periods from 1984 to 1988

**Usage**

```
data(aids)
```

**Format**

A tibble with 20 observations and the following 3 variables.

year year

quarter quarter of year

cases number of cases

**Source**

National Centre for HIV Epidemiology and Clinical Research 1994

**Examples**

```
data(aids)
summary(aids)
```

---

anthers

*Embryogenic anthers data from table 7.2*

---

### Description

Numbers of embryogenic anthers of the plant species *Datura innoxia* Mill obtained when anthers were prepared under several different conditions

### Usage

`data(anthers)`

### Format

A tibble with 6 observations and the following 4 variables.

y numbers of embryogenic anthers

n number of anthers

storage storage condition, control or treatment

centrifuge centrifuging force (g)

### References

Sangwan-Norrell, B. S. (1977). Androgenic stimulating factor in the anther and isolated pollen grain culture of *Datura innoxia* mill. *Journal of Experimental Biology* 28, 843–852.

### Examples

```
data(anthers)
summary(anthers)
```

---

balanced

*Balanced data from table 6.12*

---

### Description

Fictitious balanced data for a two-factor ANOVA with equal numbers of observations in each sub-group

### Usage

`data(balanced)`

**Format**

A tibble with 12 observations and the following 3 variables.

factorA factor A

factorB factor B

data dependent data

**Examples**

```
data(balanced)
summary(balanced)
```

---

beetle

*Beetle data from table 7.2*

---

**Description**

Numbers of beetles dead after five hours exposure to gaseous carbon disulphide at various concentrations

**Usage**

```
data(beetle)
```

**Format**

A tibble with 6 observations and the following 3 variables.

x dose (log base 10 CS<sub>2</sub>mg l<sup>-1</sup>)

n number of beetles

y numbers killed

**References**

Bliss, C. I. (1935). The calculation of the dose-mortality curve. *Annals of Applied Biology* 22, 134–167.

**Examples**

```
data(beetle)
summary(beetle)
```

---

birthweight	<i>Birthweight data from table 2.3</i>
-------------	--

---

**Description**

Birthweight and gestational age for twelve boys and girls

**Usage**

```
data(birthweight)
```

**Format**

A tibble with 12 observations and the following 4 variables.

boys gestational age boys gestational age (weeks)

boys weight boys birthweight (grams)

girls gestational age girls gestational age (weeks)

girls weight girls birthweight (grams)

**Examples**

```
data(birthweight)
summary(birthweight)
```

---

carbohydrate	<i>Carbohydrate data from table 6.3</i>
--------------	---

---

**Description**

Percentages of total calories obtained from complex carbohydrates, for twenty male insulin-dependent diabetics who had been on a high-carbohydrate diet for six months.

**Usage**

```
data(carbohydrate)
```

**Format**

A tibble with 20 observations and the following 4 variables.

carbohydrate percent of total calories obtained from complex carbohydrates

age age in years

weight body weight relative to "ideal" weight for height

protein percentage of calories as protein

**Source**

K. Webb

**Examples**

```
data(carbohydrate)
summary(carbohydrate)
```

---

Cars

*Cars data from table 8.1*

---

**Description**

Preferences for air conditioning and power steering in cars by gender and age.

**Usage**

```
data(Cars)
```

**Format**

A tibble with 18 observations and the following 4 variables.

sex sex

age age group

response ordinal response

frequency frequency

**References**

McFadden, M., J. Powers, W. Brown, and M. Walker (2000). Vehicle and driver attributes affecting distance from the steering wheel in motor vehicles. *Human Factors* 42, 676–682.

**Examples**

```
data(Cars)
summary(Cars)
```

---

cholesterol	<i>Cholesterol data from table 6.24</i>
-------------	---

---

**Description**

Cholesterol, age and BMI for thirty women.

**Usage**

```
data(cholesterol)
```

**Format**

A tibble with 30 observations and the following 3 variables.

chol serum cholesterol (millimoles per liter)

age age (years)

bmi body mass index (kg/m<sup>2</sup>)

**Examples**

```
data(cholesterol)
summary(cholesterol)
```

---

chronic	<i>Chronic health data from table 2.7</i>
---------	---

---

**Description**

Numbers of chronic medical conditions reported by samples of women living in large country towns (town group) or in more rural areas (country group) in New South Wales, Australia

**Usage**

```
data(chronic)
```

**Format**

A data frame with 49 observations and the following 2 variables.

place place (town or country)

number number of conditions

**Examples**

```
data(chronic)
summary(chronic)
```



---

cyclones	<i>Cyclone data from table 1.2</i>
----------	------------------------------------

---

**Description**

The number of tropical cyclones during a season from November to April in Northeastern Australia

**Usage**

```
data(cyclones)
```

**Format**

A tibble with 13 observations and the following 3 variables.

```
years season years
```

```
season season number
```

```
number number of cyclones
```

**References**

Dobson AJ and Stewart J (1974). Frequencies of tropical cyclones in the northeastern Australian area. *Australian Meteorological Magazine* 22, 27–36.

**Examples**

```
data(cyclones)
summary(cyclones)
```

---

dobson	<i>dobson: Example datasets from the book "An Introduction to Generalised Linear Models" (4th edition)</i>
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---

**Description**

datasets from our book

---

doctors

*Doctors data from table 9.1*

---

### Description

Data from the famous doctors study of smoking conducted by Sir Richard Doll and colleagues

### Usage

```
data(doctors)
```

### Format

A tibble with 10 observations and the following 4 variables.

age age group

smoking smoker or non-smoker

deaths number of deaths

person-years person years of of observation at the time of the analysis

### References

Breslow, N. E. and N. E. Day (1987). *Statistical Methods in Cancer Research, Volume 2: The Design and Analysis of Cohort Studies*. Lyon: International Agency for Research on Cancer.

### Examples

```
data(doctors)
summary(doctors)
```

---

dogs

*Dogs data from table 11.9*

---

### Description

Measurements of left ventricular volume and parallel conductance volume on five dogs under eight different load conditions

### Usage

```
data(dogs)
```

**Format**

A tibble with 40 observations and the following 4 variables.

dog dog number  
 condition load condition  
 y left ventricular volume  
 x parallel conductance volume

**References**

Boltwood, C. M., R. Appleyard, and S. A. Glantz (1989). Left ventricular volume measurement by conductance catheter in intact dogs: the parallel conductance volume increases with end-systolic volume. *Circulation* 80, 1360–1377.

**Examples**

```
data(dogs)
summary(dogs)
```

---

ear	<i>Ears data from table 11.10</i>
-----	-----------------------------------

---

**Description**

Numbers of ears clear of acute otitis media at 14 days by antibiotic treatment and age of the child. The children had acute otitis media in both ears.

**Usage**

```
data(ear)
```

**Format**

A tibble with 18 observations and the following 4 variables.

age child's age  
 treatment two treatments coded CEF and AMO  
 number clear number of clear ears  
 frequency faculty

**Source**

Rosner, B. (1989). Multivariate methods for clustered binary data with more than one level of nesting. *Journal of the American Statistical Association* 84, 373–380.

**Examples**

```
data(ear)
summary(ear)
```

---

failure	<i>Failure time data from table 4.1</i>
---------	---

---

**Description**

Lifetimes of Kevlar epoxy strand pressure vessels at 70

**Usage**

```
data(failure)
```

**Format**

A tibble with 49 observations and the following variable.

lifetimes time to failure in hours

**References**

Andrews, D. F. and A. M. Herzberg (1985). *Data: A Collection of Problems from Many Fields for the Student and Research Worker*. New York: Springer Verlag.

**Examples**

```
data(failure)
summary(failure)
```

---

graduates	<i>Graduate survival data from tables 7.16 and 7.17</i>
-----------	---

---

**Description**

Survival 50 years after graduation of men and women who graduated each year from 1938 to 1947 from various Faculties of the University of Adelaide.

**Usage**

```
data(graduates)
```

**Format**

A tibble with 60 observations and the following 5 variables.

year year of graduation

survive number of graduates who survived

total total number of graduates

faculty faculty

sex sex

**Source**

J.A. Keats

**Examples**

```
data(graduates)
summary(graduates)
```

---

hepatitis

*Hepatitis data from table 10.5*

---

**Description**

Survival times in months of patients with chronic active hepatitis in a randomized controlled trial of prednisolone versus no treatment

**Usage**

```
data(hepatitis)
```

**Format**

A tibble with 44 observations and the following 3 variables.

```
survival time survival time in months
  censor censored, lost to follow up or died
  group prednisolone or no treatment
```

**References**

Altman DG, Bland JM (1998). Statistical notes: times to event (survival) data. *British Medical Journal* 317, 468–469.

**Examples**

```
data(hepatitis)
summary(hepatitis)
```

---

hiroshima

*Hiroshima data from table 7.14*

---

### Description

The number of deaths from leukemia and other cancers among survivors of the Hiroshima atom bomb. The data are for deaths during the period 1950– 1959 among survivors who were aged 25 to 64 years in 1950.

### Usage

```
data(hiroshima)
```

### Format

A tibble with 6 observations and the following 4 variables.

```
radiation radiation dose (rads)
leukemia leukemia deaths
other cancer deaths from other cancers
total cancers total cancer deaths
```

### References

Cox, D. R. and E. J. Snell (1981). *Applied Statistics: Principles and Examples*. London: Chapman & Hall.

Otake, M. (1979). Comparison of time risks based on a multinomial logistic response model in longitudinal studies. Technical Report No. 5, RERF, Hiroshima, Japan.

### Examples

```
data(hiroshima)
summary(hiroshima)
```

---

housing

*Housing data from table 8.5*

---

### Description

Data from an investigation into satisfaction with housing conditions in Copenhagen

### Usage

```
data(housing)
```

**Format**

A tibble with 18 observations and the following 4 variables.

type housing type; tower block, apartment or house  
 satisfaction satisfaction; low, medium or high  
 contact contact with other residents; low or high  
 frequency frequency

**References**

Madsen, M. (1971). Statistical analysis of multiple contingency tables. two examples. *Scandinavian Journal of Statistics* 3, 97–106.

**Examples**

```
data(housing)
summary(housing)
```

---

insurance	<i>Insurance data from table 9.13</i>
-----------	---------------------------------------

---

**Description**

Insurance claim data by car category, age group and district.

**Usage**

```
data(insurance)
```

**Format**

A tibble with 32 observations and the following 5 variables.

car car insurance category  
 age age group  
 district district where policy holder lived; 1=major city, 0=elsewhere  
 y number of claims  
 n number of insurance policies

**References**

Baxter, L. A., S. M. Coutts, and G. A. F. Ross (1980). Applications of linear models in motor insurance. Zurich, pp. 11–29. *Proceedings of the 21st International Congress of Actuaries*.

**Examples**

```
data(insurance)
summary(insurance)
```

---

leukemia	<i>Leukemia data from table 4.6</i>
----------	-------------------------------------

---

**Description**

Survival times and white blood cell count for seventeen patients suffering from leukemia

**Usage**

```
data(leukemia)
```

**Format**

A tibble with 17 observations and the following 2 variables.

```
time time to death in weeks  
wbc log base 10 initial white blood cell count
```

**References**

Cox, D. R. and E. J. Snell (1981). *Applied Statistics: Principles and Examples*. London: Chapman & Hall.

**Examples**

```
data(leukemia)  
summary(leukemia)
```

---

machine	<i>Machine data from table 6.26</i>
---------	-------------------------------------

---

**Description**

Weights of machine components made by workers on different days

**Usage**

```
data(machine)
```

**Format**

A tibble with 44 observations and the following 3 variables.

```
day day number 1 or 2  
worker worker number 1 to 4  
weight weight in grams
```



**Examples**

```
data(machine)
summary(machine)
```

---

melanoma	<i>Melanoma data from table 9.4</i>
----------	-------------------------------------

---

**Description**

A cross-sectional study of patients with a form of skin cancer called malignant melanoma

**Usage**

```
data(melanoma)
```

**Format**

A tibble with 12 observations and the following 3 variables.

```
type tumor type
site site of cancer
frequency frequency
```

**References**

Roberts, G., A. L. Martyn, A. J. Dobson, and W. H. McCarthy (1981). Tumour thickness and histological type in malignant melanoma in New South Wales, Australia, 1970–76. *Pathology* 13, 763–770.

**Examples**

```
data(melanoma)
summary(melanoma)
```

---

mortality	<i>Mortality data from table 3.2</i>
-----------	--------------------------------------

---

**Description**

Numbers of deaths from coronary heart disease and population sizes by 5-year age groups for men in the Hunter region of New South Wales, Australia in 1991.

**Usage**

```
data(mortality)
```

**Format**

A tibble with 8 observations and the following 3 variables.

age group age group (years)

deaths number of deaths

population population size

**Examples**

```
data(mortality)
summary(mortality)
```

---

moths

*Moths data from table 1.4*

---

**Description**

Numbers of females and males in the progeny of 16 female light brown apple moths in Muswellbrook, New South Wales, Australia

**Usage**

```
data(moths)
```

**Format**

A tibble with 16 observations and the following 3 variables.

group progeny group

females number of females

males number of males

**References**

Lewis T (1987). Uneven sex ratios in the light brown apple moth: a problem in outlier allocation. In D. J. Hand and B. S. Everitt (Eds.), *The Statistical Consultant in Action*. Cambridge: Cambridge University Press.

**Examples**

```
data(moths)
summary(moths)
```

---

pasture	<i>Pasture data from table 6.23</i>
---------	-------------------------------------

---

**Description**

Response of a grass and legume pasture system to various quantities of phosphorus fertilizer

**Usage**

```
data(pasture)
```

**Format**

A tibble with 27 observations and the following 2 variables.

K phosphorus levels (kilograms per hectare)

yield total yield of grass and legume together (kilograms per hectare)

**Source**

D. F. Sinclair

**Examples**

```
data(pasture)
summary(pasture)
```

---

plant.dried	<i>Plant data from table 6.9</i>
-------------	----------------------------------

---

**Description**

Dried weights of plants from three different growing conditions in long format

**Usage**

```
data(plant.dried)
```

**Format**

A tibble with 30 observations and the following 2 variables.

group one of three treatment groups

weight dried weight of plants

**Examples**

```
data(plant.dried)
summary(plant.dried)
```

---

plants	<i>Plant weight data from table 2.7</i>
--------	---

---

**Description**

Dried weight of plants grown under two conditions.

**Usage**

```
data(plants)
```

**Format**

A tibble with 20 observations and the following 2 variables.

treatment weights of treatment plants in grams

control weights of control plants in grams

**Examples**

```
data(plants)
summary(plants)
```

---

plasma	<i>Plasma phosphate data from table 6.25</i>
--------	--

---

**Description**

Plasma phosphate levels in obese and control participants one hour after a standard glucose tolerance test.

**Usage**

```
data(plasma)
```

**Format**

A tibble with 31 observations and the following 2 variables.

Group group; H-O=Hyperinsulinemic obese, N-O=Non-hyperinsulinemic obese or C=Control  
phosphate plasma inorganic phosphate level (mg/dl)

**Examples**

```
data(plasma)
summary(plasma)
```

---

PLOS

*PLOS Medicine data from figure 6.7*

---

**Description**

Data from 878 journal articles published in PLOS Medicine between 2011 and 2015

**Usage**

```
data(PLOS)
```

**Format**

A data.frame with 878 observations and the following 2 variables.

nchar title length

authors number of authors, truncated to 30

**Examples**

```
data(PLOS)
summary(PLOS)
```

---

poisson

*Poisson data from table 4.3*

---

**Description**

Artificial data for a Poisson regression example

**Usage**

```
data(poisson)
```

**Format**

A tibble with 9 observations and the following two variables.

x covariate

y dependent counts

**Examples**

```
data(poisson)
summary(poisson)
```

---

remission	<i>Remission data from table 10.1</i>
-----------	---------------------------------------

---

**Description**

Times to remission of leukemia patients

**Usage**

```
data(remission)
```

**Format**

A tibble with 42 observations and the following 3 variables.

time time in weeks

group group; C=control, T=treatment

censored censored; 0=No, 1=Yes

**References**

Gehan, E. A. (1965). A generalized Wilcoxon test for comparing arbitrarily singly-censored samples. *Biometrika* 52, 203–223.

**Examples**

```
data(remission)
summary(remission)
```

---

senility	<i>Senility data from table 7.8</i>
----------	-------------------------------------

---

**Description**

Data from a sample of elderly people given a psychiatric examination to determine whether symptoms of senility were present together with their score on a subset of the Wechsler Adult Intelligent Scale (WAIS).

**Usage**

```
data(senility)
```

**Format**

A tibble with 54 observations and the following 2 variables.

x WAIS score

s symptoms of senility present; 1=yes, 0=no

**Examples**

```
data(senility)
summary(senility)
```

---

stroke.wide	<i>Stroke data from table 11.1</i>
-------------	------------------------------------

---

**Description**

Longitudinal data from an experiment to promote the recovery of stroke patients in wide format. The response variable is the Bartel index with higher scores meaning better outcomes and a maximum score of 100.

**Usage**

```
data(stroke.wide)
```

**Format**

A tibble with 24 observations and the following 10 variables.

Subject subject number

Group group; A=new occupational therapy intervention, B = existing stroke rehabilitation program in the same hospital as A, C = usual care in a different hospital

week1 Bartel index in week 1

week2 Bartel index in week 2

week3 Bartel index in week 3

week4 Bartel index in week 4

week5 Bartel index in week 5

week6 Bartel index in week 6

week7 Bartel index in week 7

week8 Bartel index in week 8

**Source**

C. Cropper, University of Queensland

**Examples**

```
data(stroke.wide)
summary(stroke.wide)

# To transform data from wide to long format use
## Not run:
library(reshape2)
stroke = melt(data=stroke.wide, id.vars=c('Subject','Group'),
  value.name='ability', variable.name='week')
stroke$time = as.numeric(gsub('week', '', stroke$week))

## End(Not run)
```

---

sugar

*Sugar data from table 6.22*

---

**Description**

Average apparent per capita consumption of sugar (in kg per year) in Australia, as refined sugar and in manufactured foods

**Usage**

```
data(sugar)
```

**Format**

A tibble with 6 observations and the following 3 variables.

period period in years

refined refined sugar

manufactured Sugar in manufactured food

**Source**

Australian Bureau of Statistics 1998

**Examples**

```
data(sugar)
summary(sugar)
```



---

survival	<i>Survival data from table 10.1</i>
----------	--------------------------------------

---

**Description**

Survival times for leukemia patients

**Usage**

```
data(survival)
```

**Format**

A tibble with 33 observations and the following 3 variables.

survival time survival time in weeks

WBC white blood cell count

AG test result; +=positive, -=negative

**References**

Feigl, P. and M. Zelen (1965). Estimation of exponential probabilities with concomitant information. *Biometrics* 21, 826–838.

**Examples**

```
data(survival)
summary(survival)
```

---

tumor	<i>Tumor data from table 8.6</i>
-------	----------------------------------

---

**Description**

Tumor responses of male and female patients receiving treatment for small-cell lung cancer

**Usage**

```
data(tumor)
```

**Format**

A tibble with 16 observations and the following 4 variables.

treatment treatment; sequential or alternating

sex sex

response four category ordinal response

frequency frequency

## References

Holtbrugger, W. and M. Schumacher (1991). A comparison of regression models for the analysis of ordered categorical data. *Applied Statistics* 40, 249–259.

## Examples

```
data(tumor)
summary(tumor)
```

---

ulcer

*Ulcer data from table 9.7*

---

## Description

Data from a retrospective case-control study. A group of ulcer patients was compared with a group of control patients not known to have peptic ulcer, but who were similar to the ulcer patients with respect to age, sex and socioeconomic status.

## Usage

```
data(ulcer)
```

## Format

A tibble with 8 observations and the following 4 variables.

```
ulcer type of ulcer
case-control case or control
aspirin aspirin user
frequency frequency
```

## References

Duggan, J. M., A. J. Dobson, H. Johnson, and P. P. Fahey (1986). Peptic ulcer and non-steroidal anti-inflammatory agents. *Gut* 27, 929–933.

## Examples

```
data(ulcer)
summary(ulcer)
```

---

unbalanced	<i>Unbalanced data from table 6.27</i>
------------	--

---

**Description**

Unbalanced data from a fictitious two-factor experiment

**Usage**

```
data(unbalanced)
```

**Format**

A tibble with 10 observations and the following 3 variables.

```
factorA factor A
factorB factor B
data dependent data
```

**Examples**

```
data(unbalanced)
summary(unbalanced)
```

---

vaccine	<i>Vaccine data from table 9.6</i>
---------	------------------------------------

---

**Description**

Data from a vaccine trial.

**Usage**

```
data(vaccine)
```

**Format**

A tibble with 6 observations and the following 3 variables.

```
treatment treatment group
response response to treatment
frequency frequency
```

**Source**

R.S. Gillett

**Examples**

```
data(vaccine)
summary(vaccine)
```

---

waist	<i>Waist loss data from table 2.8</i>
-------	---------------------------------------

---

**Description**

The weights, in kilograms, of twenty men before and after participation in a "waist loss" program

**Usage**

```
data(waist)
```

**Format**

A tibble with 20 observations and the following 3 variables.

```
man  man number
before weight before in kgs
after  weight after in kgs
```

**References**

Egger, G., G. Fisher, S. Piers, K. Bedford, G. Morseau, S. Sabasio, B. Taipim, G. Bani, M. Assan, and P. Mills (1999). Abdominal obesity reduction in Indigenous men. *International Journal of Obesity* 23, 564–569.

**Examples**

```
data(waist)
summary(waist)
```

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