Package 'uwo4419'

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Type Package

Title UWO POLSCI 4419/9715

Version 0.3.0

Description Supports the course Introduction to Methodology (POLSCI 4419/9715) at the University of Western Ontario.

Depends R (>= 3.5.0)

Imports DescTools, RColorBrewer, gmodels, haven, psych, stats, ggplot2, tibble, tidyr, dplyr, magrittr, rio

License GPL (>= 2)

Encoding UTF-8

LazyData true

NeedsCompilation no

Author Dave Armstrong [aut, cre]

Maintainer Dave Armstrong <dave@quantoid.net>

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R topics documented:

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uwo4419-package *UWO POLSCI 4419/9715*

Description

Supports the course Introduction to Methodology (POLSCI 4419/9715) at the University of Western Ontario.

Details

The DESCRIPTION file:

Package:	uwo4419
Type:	Package
Title:	UWO POLSCI 4419/9715
Version:	0.3.0
Authors@R:	c(person("Dave", "Armstrong", role=c("aut", "cre"), email="dave@quantoid.net"))
Description:	Supports the course Introduction to Methodology (POLSCI 4419/9715) at the University of Western Ontario.
Depends:	R (>= 3.5.0)
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License:	GPL (>=2)
Encoding:	UTF-8
LazyData:	true
Author:	Dave Armstrong [aut, cre]
Maintainer:	Dave Armstrong <dave@quantoid.net>

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Author(s)

NA

Maintainer: NA

`alberta` *Alberta Survey*

Description

Data from the 2013 Alberta Survey administered by the Population Research Lab at the University of Alberta. For complete codebook, see here https://dataverse.library.ualberta.ca/dataset.xhtml?persistentId=doi:10.7939/DVN/10573.

Usage

```
data(alberta)
```

Format

A data frame with 2751 observations on the following 56 variables. Each of the policy statements is coded 1 (strongly disagree), 2 (disagree), 3 (agree), 4 (strongly agree), 8 (don't know)

respnum Respondent number

primary primary

strata Area of the province

sex Gender of respondent

d1 Your current debt/financial situation

d2 Past two years, completely missed a payment/been at least two months late in pay

d3 Past two years, consulted a debt consolidation or credit-counseling firm

d4 Past two years, been denied for a loan or credit card due to your credit rating

d5 Ever declared (filed for) bankruptcy, or a bankruptcy alternative jointly or alo

d6 Currently have a checking or savings account at a bank or credit union

d7 Currently hold or make payments on any student loans in your name

d8 Have any credit cards in your name

d9 Number of credit cards you have

d10 How often do you pay the entire or full monthly balance on all of your credit ca

e1 While growing up, before your 18th birthday: frequently experienced verbal insul

e2 While growing up, before your 18th birthday: ever injured or bruised from physic

e3 While growing up, before your 18th birthday: experienced inappropriate sexual ad

e4 While growing up, before your 18th birthday: ever witnessed your mother or stepm

e5 While growing up, before your 18th birthday: part of a household where someone a

e6 While growing up, before your 18th birthday: part of a household where someone w

e7a While growing up, before your 18th birthday: part of a household where someone w

e8 While growing up, before your 18th birthday: your parents separated or divorced

e9 While growing up, before your 18th birthday: rate your level of stress of your c

e10 Rate your emotional health today

e11 Rate your physical health today

e12 I have family and friends who help me feel safe, secure and happy

e13 I usually expect things to go my way

e14_1 Diagnosed with high blood pressure as an adult

e14_2 Diagnosed with diabetes as an adult

e14_3 Diagnosed with irritable bowel syndrome/Crohn's disease as an adult

e14_4 Diagnosed with chronic pain as an adult

e14_5 Diagnosed with backache as an adult

e14_6 Diagnosed with asthma as an adult

e14_7 Diagnosed with allergies as an adult

e14_8 Diagnosed with chronic fatigue syndrome/ fibromyalgia as an adult

e14_9 Diagnosed with anxiety disorder as an adult

e14_10 Diagnosed with MDD (major depressive disorder) as an adult

e14_11 Diagnosed with alcohol dependency problems as an adult

e14_12 Diagnosed with drug dependency problems as an adult

e14_13 Diagnosed with other health problems as an adult

e14_15 Diagnosed with no health problems as an adult

e14_16 Treatment for high blood pressure

e14_17 Treatment for diabetes

e14_18 Treatment for irritable bowel syndrome/Crohn's disease

e14_19 Treatment for chronic pain

e14_20 Treatment for backache

e14_21 Treatment for asthma

e14_22 Treatment for allergies

e14_23 Treatment for chronic fatique syndrome/fibromyalgia

e14_24 Treatment for anxiety disorder

e14_25 Treatment for MDD (major depressive dsorder)

e14_26 Treatment for alcohol dependency problems

e14_27 Treatment for drug dependency problems

e14_28 Treatment for other specified health problems

ft1 How much do you know about the Temporary Foreign Worker Program?

ft2 Skill and labour shortages in Canada should be met by...

ft3 Employers in Alberta should be able to hire Temporary Foreign Workers for...

ft4 Temporary foreign workers are needed to fill jobs in the Alberta labour market

ft5 Temporary Foreign Workers are taking jobs away from Albertans

ft6 Most Temporary Foreign Workers are members of visible minority groups (non-white

ft7 It is OK for Alberta Workplace laws and standards to be less strict for Temporar

ft8 Temporary Foreign Workers should be given the exact same workplace rights as Can

ft9 It is OK if Temporary Foreign Workers are paid less than Canadian workers perfor

ft10 All Temporary Foreign Workers should have the opportunity to obtain permanent re

g1 Leading cause of death for Albertans under the age of 45

g2 Thinking about the different health problems facing Albertans today, how serious

g3 Injuries are...

g4 Chances that you will visit an emergency room because of an injury in the next y

g5 Chances that you will visit an emergency room because of a motor vehicle collisi

g6a How preventable are poisonings?

g6b How preventable are drownings?

g6c How preventable are falls from ladders?

g6d How preventable are workplace injuries?

g6e How preventable are head injuries from not wearing a helmet while bicycle riding

g6f How preventable are motor vehicle crashes from driving while distracted (e.g., c

g6g How preventable are motor vehicle crashes from falling asleep at the wheel?

g6h How preventable are injuries resulting from jaywalking?

g6i How preventable are burns in the home from fire, flames & hot substances?

g6j How preventable are operating machinery or a motor vehicle while under the influ

g6k How preventable are suicides?

g7 Thinking about the different injury issues, for example, motor vehicle collision

g8 Thinking about the different injury issues, for example, motor vehicle collision

h1 Do you believe that alcohol use contributes to health problems in Alberta?

h2 Do you believe alcohol use contributes to injuries in Alberta?

h3_1 Individuals have a responsibility to reduce alcohol-related injuries

h3_2 Families have a responsibility to reduce alcohol-related injuries

h3_3 Communities have a responsibility to reduce alcohol-related injuries

h3_4 Government has a responsibility to reduce alcohol-related injuries

h3_5 Health care has a responsibility to reduce alcohol-related injuries

h3_6 Police have a responsibility to reduce alcohol-related injuries

h3_7 Workplaces have a responsibility to reduce alcohol-related injuries

h3_8 Alcohol industry/producers have a responsibility to reduce alcohol-related injur

h3_9 Hospitality industry has a responsibility to reduce alcohol-related injuries

h4 Best way for the government to reduce alcohol problems

h5 Had at least one drink of any alcoholic beverage during the past 30 days?

h6 Number of DAYS had at least one drink of any alcoholic beverage during the past

h7 On the days when you drank, number of DRINKS on average during the past 30 days?

h8 Considering all types of alcoholic beverages, number of times during the past 30

k1a Your present employment status

k3a Number of adults (including yourself) living in household

k3b Number of children living in household

k3c Total number of persons in household

age Your age

agex Recoded age in six groups

k5a Current marital status

k6 Highest level of education

k6group Recoded education into three groups

k7 Total years of schooling

k8a Your religion

mrelig Recoded religion into four groups

canb Were you born in Canada?

abb Were you born in Alberta?

cgrp Are you...?

k10 Would you say that you (and your family) are BETTER OFF, just the SAME, or WORSE

k11 A year from now, do think you you (and your family) will be BETTER OFF, just ab

k12a Total Household income for the past year before taxes and deductions

k13 Do you (or your spouse/partner/parents) presently own or rent your residence?

k16a If an election was held today, how would you vote federally?

k16b If an election was held today, how would you vote provincially?

k17 Postal code

wtx Weights from Cansim estimate for 2012

wtx2 Weights by Age (3) and Gender by Area Cansim Estimate

agegroupxx Three agegroups used in weighting variable wtx2

b1 China's increasing economic strength benefits Alberta

b2 Alberta should build stronger ties with China

b3 China is important as an export market for Alberta goods and services

b4 Alberta should decrease its economic reliance on the US market

b5 Alberta should diversify its economy by trading more with Asia

b6 Alberta should support the building of better infrastructure to transport energy

b7 Alberta should welcome Chinese investment in the province

b9 Alberta should welcome Chinese investment in energy and other resource sectors

b10 China will play an increasingly significant role in the future opportunities of

b11 Increased tourism from China is good for Alberta

b12 The ability to speak Chinese will become more important to Albertans

Source

Population Research Laboratory, 2015, "Alberta Survey, 2013", https://doi.org/10.7939/DVN/10573, UAL Dataverse, V3

`all_tTest` *Difference of Means Test*

Description

Produces a more helpful summary of the existing `t.test` function.

Usage

```
all_tTest(x, y, data,
  adjust.method= c("none", "holm", "hochberg",
  "hommel", "bonferroni", "BH", "BY", "fdr"), ...)
```

Arguments

`x`	Character string giving name of grouping variable.
`y`	Character string giving name of continuous variable.
`data`	Data where both `x` and `y` can be found.
`adjust.method`	Method to for adjusting p-values for multiple testing. It uses the same set of choices as `p.adjust`.
`...`	Other arguments to be passed down to the `t.test` function.

Value

A list of class `allTT` with one element elements:

sum Means, n, and standard errors for both groups and the difference.

tt The result produced by `t.test`.

Examples

```
data(alberta)
all_tTest("k6group", "k3c", data=alberta)
```

barplotStats *Barplot of Summary Statistics*

Description

Produces a barplot of summary statistics.

Usage

```
barplotStats(x, y, data, stat="sum", includeN=FALSE, ...)
```

Arguments

x	Character string giving the name of the grouping variable.
y	Character string giving the name of the numeric variable to be summarized.
data	Data frame in which x and y can be found.
stat	A string given the statistic that will be used to summarize the data.
includeN	Logical indicating whether the number of observations in the group should be appended to the variable name for plotting purposes.
...	other arguments that will be passed down to stat.

Value

A plot

Examples

```
data(alberta)
barplotStats("k6group", "k3c", alberta, stat="mean")
```

confidenceInterval *Confidence Interval*

Description

Make a confidence interval for the mean of a vector of values.

Usage

```
confidenceInterval(x, confidence = 0.95, na.rm = TRUE, distr = c("normal", "t"))
```

Arguments

x	A vector of values for which the mean and its confidence interval will be calculated.
confidence	Desired level of confidence for the confidence interval. Defaults to 0.95.
na.rm	Logical indicating whether missing observations should be removed. Defaults to TRUE.
distr	Distribution used to find the critical value. Default is "normal".

Value

A vector of values giving the mean, confidence interval and standard error.

Examples

```
data(alberta)
confidenceInterval(alberta$k7)
```

---

freqDist *Frequency Distribution*

Description

Produces a frequency distribution, relative frequency distribution and cumulative distribution from a factor vector.

Usage

```
freqDist(x)
```

Arguments

x	A factor or a numeric variable with relatively few unique vales.

Value

A matrix with the following columns:

Freq The raw frequency count

Percent The relative frequency or percentage of observations in each group

CuPct The cumulative percentage of observations in each group

Examples

```
data(alberta)
freqDist(alberta$k6group)
```

GKGamma *Goodman-Kruskall Gamma*

Description

Calculates Goodman and Kruskall's Gamma along with its confidence interval

Usage

```
GKGamma(x, y = NULL, conf.level = NA, ...)
```

Arguments

x	Either a matrix providing a cross-tabulation of two variables (if y is NULL) or one variable that will be cross-tabulated with y.
y	Either NULL if x is a matrix or a variable that will be cross-tabulated with x.
conf.level	The confidence level of the desired confidence interval. If this is NA (the default), then no confidence intervall will be produced.
...	Other arguments to be passed down to the table function.

Value

A test statistic and optional confidence interval.

Examples

```
data(alberta)
GKGamma(alberta$d2, alberta$k6group)
```

histDiscrete *Create a histogram from a discrete variable*

Description

A histogram for a discrete variable is basically a bar chart with no space between the bars.

Usage

```
histDiscrete(x, data, ...)
```

Arguments

x	A character string giving the name of the variable to be plotted.
data	A data frame in which x can be found.
...	Not implemented

Value

A ggplot.

Examples

```
data(alberta)
alberta$k3c <- ifelse(alberta$k3c > 11, NA, alberta$k3c)
histDiscrete("k3c", alberta)
```

---

histNorm *Histogram with Density Curves Super-imposed*

Description

Histogram with density curves super-imposed

Usage

```
histNorm(x, data, normCurve=TRUE, densCurve=FALSE, bins=30)
```

Arguments

x	Character string giving the name of the variable to be plotted
data	A data frame in which x can be found.
normCurve	Whether or not to impose a normal curve with same mean and SD as plotted variable (solid line).
densCurve	Whether or not to impose a smoothe density estimate of the plotted variable (dashed line).
bins	Number of bins to use in the histogram

Value

A ggplot

Examples

```
data(alberta)
alberta$age <- ifelse(alberta$age > 94, NA, alberta$age)
histNorm("age", alberta)
```

makeStats *Measures of Association*

Description

Calculate measures of association for a pair of `factor` variables.

Usage

```
makeStats(x, y, chisq = FALSE, phi = FALSE, cramersV = FALSE, lambda = FALSE,
  gamma = FALSE, d = FALSE, taub = FALSE, rho = FALSE, n = 1000)
```

Arguments

`x`	Either a matrix providing a cross-tabulation of two variables (if `y` is `NULL`) or one variable that will be cross-tabulated with `y`.
`y`	Either `NULL` if `x` is a matrix or a variable that will be cross-tabulated with `x`.
`chisq`	Logical indicating whether Chi-squared should be calculated.
`phi`	Logical indicating whether phi should be calculated.
`cramersV`	Logical indicating whether Cramer's Vshould be calculated.
`lambda`	Logical indicating whether Lambda should be calculated.
`gamma`	Logical indicating whether Gamma should be calculated.
`d`	Logical indicating whether Somer's D should be calculated.
`taub`	Logical indicating whether Kendall's Tau b should be calculated.
`rho`	Logical indicating whether Spearman's Rho should be calculated.
`n`	Number of simulated values used to calculate the p-value

Value

A matrix of statistics and simulated p-values.

Examples

```
data(alberta)
makeStats(alberta$k6group, alberta$d2, chisq=TRUE, taub=TRUE)
```

plotCIgroup *Plot Confidence Intervals by Groups*

Description

Plot confidence intervals by group.

Usage

```
plotCIgroup(form, data, includeOverall = TRUE, ...)
```

Arguments

form	Formula giving dependent variable and grouping variable.
data	Data used to calculate confidence intervals
includeOverall	Logical indicating whether the overall mean and confidence interval for all observations should be included.
...	Other arguments to be passed down to confidenceInterval.

Value

A ggplot.

Examples

```
data(alberta)
alberta$k6group <- factor(alberta$k6group,
   labels = attr(attr(alberta$k6group, "labels"), "names"))
plotCIgroup(k3c ~ k6group, data=alberta)
```

plotStdRes *Plot Standardized Residuals from a Cross-tabulation*

Description

Uses ggplot2 to visualize the standardized residuals from a cross-tabulation

Usage

```
plotStdRes(x)
```

Arguments

x	A cross-tabulation of two variables

Value

A ggplot

Examples

```
alberta$k6group <- rio::factorize(alberta$k6group)
alberta$d2 <- rio::factorize(alberta$d2)
tab <- with(alberta, table(k6group, d2))
plotStdRes(tab)
```

---

propci *Approximate and Exact Confidence Intervals for Proportions*

Description

Produces confidence intervals for proportions through normal approximation and using exact methods based on the Beta distribution.

Usage

```
propci(x, n=NULL, conf.level=.95)
```

Arguments

x	An integer value representing the number of ones (successes) or a variable with only zeros, ones and (potentially) NAs.
n	If x is an integer, then n is the total number of observations from which the number of successes comes. Otherwise, n will be disregarded.
conf.level	Level of confidence for the interval

Value

A matrix giving the normal approximation and exact confidence intervals.

Examples

```
data(alberta)
propci(alberta$sex-1)
```

tTest *Difference of Means Test*

Description

Produces a more helpful summary of the existing `t.test` function.

Usage

```
tTest(x, y, data, ...)
```

Arguments

`x`	Character string giving name of grouping variable.
`y`	Character string giving name of continuous variable.
`data`	Data where both `x` and `y` can be found.
`...`	Other arguments to be passed down to the `t.test` function.

Value

A list of class `tTest` with two elements:

sum Means, n, and standard errors for both groups and the difference.

tt The result produced by `t.test`.

Examples

```
data(alberta)
alberta$sex <- rio::factorize(alberta$sex)
tTest("sex", "k7", data=alberta)
```

unalike *Unalikability*

Description

Unalikability is a measure of variation for categorical variables. It essentially measures the probability of drawing two non-equal values at random.

Usage

```
unalike(x)
```

Arguments

`x`	A factor or other variable with relatively few levels

Value

The unalikability score.

References

Gary D. Kader and Mike Perry (2007) 'Variability for Categorical Variables' Journal of Statistics Education Volume 15, Number 2. http://jse.amstat.org/v15n2/kader.html

Examples

```
data(Alberta)
unalike(alberta$k6group)
```

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