# Package ‘UScensus2010’

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**Type** Package

**Title** US Census 2010 Suite of R Packages

**Version** 0.11

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**Author** Zack W. Almquist <almquist@uci.edu>

**Maintainer** Zack W. Almquist <almquist@uci.edu>

**Description** US Census 2010 shape files and additional demographic data from the SF1 100 percent files. This package contains a number of helper functions for the UScensus2010blk, UScensus2010blkgrp, UScensus2010tract, UScensus2010cdp packages.

**License** GPL (>= 2)

**Depends** R (>= 2.10), maptools, sp, foreign, methods, grDevices, base, stats, utils

**Suggests** rgdal,gpclib

**LazyLoad** yes


**Repository** CRAN

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**NeedsCompilation** no

## R topics documented:

- UScensus2010-package .......................................................... 2
- areaPoly ................................................................. 3
- choropleth ............................................................... 4
- city ..................................................................... 5
- county ................................................................. 7
- countyfips .......................................................... 8
- demographics .......................................................... 9
- install.blk ........................................................... 10
UScensus2010-package

Helper functions for the UScensus2010-suite of packages

Description


Details

<table>
<thead>
<tr>
<th>Package</th>
<th>UScensus2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Package</td>
</tr>
<tr>
<td>Version</td>
<td>0.1</td>
</tr>
<tr>
<td>Date</td>
<td>2011-18-11</td>
</tr>
<tr>
<td>License</td>
<td>GPL Version 2 or newer</td>
</tr>
<tr>
<td>LazyLoad</td>
<td>yes</td>
</tr>
</tbody>
</table>

Note

If you use this package and/or software manual in your work, a citation would be appreciated. References to the current versions are:

Preferred Citation for the Package:


Package Citation:

areaPoly

version 1.00.

Please also cite the original data source and the sp and maptools.

Census 2010 Summary File 1 [name of state 1 or United States]/prepared by the U.S. Census Bureau, 2010.


Author(s)

Zack W Almquist<almquist@uci.edu>
Maintainer: Zack W Almquist <almquist@uci.edu>

| areaPoly         | Area of the polygons in SpatialPolygonsDataFrame |

Description

Calculates the area of each polygon in SpatialPolygonsDataFrame.

Usage

areaPoly(sp.object=NULL)

Arguments

sp.object SpatialPolygonsDataFrame, must be a SpatialPolygonsDataFrame object.

Value

a numeric vector.

Author(s)

Zack W. Almquist

References


Also see: SpatialPolygonsDataFrame
choropleth

Examples

```r
## Not run:
data(oregon.county10)

## Build density using areaPoly()
den0<--oregon.county10$P0010001/areaPoly(oregon.county10)
oregon.county10$den0<--den0

choropleth(oregon.county10, "den0", color = list(fun = "rainbow", attr = list(4)), main="2010 US Counties \n Oregon County Density")

## End(Not run)
```

---

choropleth

Choropleth Mapping

Description

A function geared to making choropleth maps easier to construct for the US Census Data.

Usage

```r
choropleth(sp, dem = "P0010001", cuts = list("quantile", seq(0, 1, 0.25)), color = list(fun = "hsv", a = 0.7), main = "Population Counts", sub = "Oregon County Population")
```

Arguments

- **sp**: SpatialPolygonsDataFrame, must be a SpatialPolygonsDataFrame object.
- **dem**: a character string, this must be the name of one of the data.frame objects contained within the SpatialPolygonsDataFrame (e.g. "P0010001").
- **cuts**: a list containing "quantile" and seq object from 0 to 1.
- **color**: a list containing a function and list of arguments for the function to produce the requested color scheme.
- **main**: a character string, this will be the title of the plot.
- **sub**: a character string, this will be the subtitle on the plot.
- **border**: a character string, this selects the border color of the polygons.
- **legend**: a list containing first where to place the legend and second a title for the legend.
- **type**: a character string, can be either "plot" or "spplot".
- **...**: Only arguments available in `plot`.
city

Details
choropleth is simply a convenient front end for plot and spplot specifically for use in making quick choropleth maps of US Census data.

Value
a plot or lattice object.

Author(s)
Zack W Almquist

References

See Also
spplot, plot

Examples

## Not run:
data(oregon.county10)

###Using plot
choropleth(oregon.county10,"P0010001",color = list(fun = "rainbow", attr = list(4)),main="2010 Counties \n Oregon",border = "transparent")

###Using spplot
choropleth(oregon.county10,"P0010001",main="2010 Counties \n Oregon",border="transparent",type="spplot")

## End(Not run)

---

city Selects one or more CDP(s) from a given state

description

city allows the user to pull out the polygon and metadata of one or more CDPs for any given state by name.

Usage
city(name, state, statefips = FALSE, sp.object = NULL, proj = NULL)
Arguments

name: a character string, takes the value of a string or string vector and has to be the exact name or names of CDP(s). (If you are unsure of the exact name a quick way to find it is to load the library(UScensus2010cdp) and pull out the list of names for the state you are interested in (see example). Note: if statefips=TRUE then this must be a CDP fips code.

state: a character string, can either be the full name (e.g. "oregon"), the abbreviation (e.g. "or"), or the FIPS code (e.g. "41")—note that if you are using the FIPS code you have to change statefips to TRUE.

statefips: logical, by default statefips=FALSE, change to TRUE when providing state with a FIPS code.

sp.object: SpatialPolygonsDataFrame, default NULL, allows the user to provide an sp object in which to perform this operation; primarily for use with demographics.add.

proj: CRS-class, takes a CRS object (e.g. CRS("+proj=utm +zone=10 +datum=NAD83")); This is simply a wrapper for the spTransform function in rgdal. **WARNING requires rgdal package.**

Value

An object of class SpatialPolygonsDataFrame.

Author(s)

Zack W. Almquist <almquist@uci.edu>

References


Examples

```r
## Not run:
# Load oregon.cdp10 data
data(oregon.cdp10)

# Look at the list of oregon CDP names in alphabetic order
oregon.cdp10$name[order(oregon.cdp10$name)]

# Grab the CDP of Portland, OR
portland<-city(name="portland",state="or")
```
county

Selects one or more counties in a given state

Description

county allows the user to pull out the polygon and metadata of one or more county(s) from a given state.

Usage

county(fips = NULL, name = NULL, state, level = c("tract", "blk", "blkgrp"), statefips = FALSE, sp.object = NULL, proj = CRS(NA))

Arguments

fips a character string, takes a string of three characters (i.e. a county FIPS code (e.g. "001").

name a character string, this must be the name of an actual county in the state (e.g. "Baker" county Oregon). This variable is insensitive to case.

state a character string, can either be the full name (e.g. "oregon"), the abbreviation (e.g. "or"), or the FIPS code (e.g. "41")– note that if you are using the FIPS code you have to change statefips to TRUE. This variable is insensitive to case.

level a character string, takes in one of three values: "tract", "blk", or "blkgrp". This defines the geographic level of data for the county.

statefips logical, by default statefips=FALSE, change to TRUE when providing state with a FIPS code.

sp.object SpatialPolygonsDataFrame, default NULL, allows the user to provide an sp object in which to perform this operation; primarily for use with demographics.add.

proj CRS-class, takes a CRS object (e.g. CRS("+proj=utm +zone=10 +datum=NAD83")); This is simply a wrapper for the spTransform function in rgdal. WARNING requires rgdal package.

Value

An object of class SpatialPolygonsDataFrame.

Warning

You must have the packages UScensus2000blkgrp and UScensus2000blk installed to use levels "blkgrp" and "blk" respectively.
Author(s)

Zack W. Almquist <almquist@uci.edu>

References


Census 2010 Summary File 1 [name of state1 or United States]/prepared by the U.S. Census Bureau, 2011.

Examples

```r
## Not run:
### look at the counties of Oregon
data(countyfips)
countyfips[countyfips$statename=="oregon",]

### The county fips code is the last three characters
county.f<"001"
county.n<"deschutes","crook county"

## Pull out these counties
c1<county(fips=county.f,state="or",level="tract")
c2<county(name=county.n,state="or",level="tract")

## Plot counties
oregon.counties<countyfips[countyfips$statename=="oregon",]
col<cbind(c("red","blue"),c("013","017"))
plot(c2,col=col[match(c2$county,col[,]1),border="gray"]
title("Deschutes and Crook counties, OR 2000")
coord<coordinates(c2)
text(coord[c(1,4),],oregon.counties$counturname[oregon.counties$counturname%in%county.n],cex=2)
```

## End(Not run)

countyfips

### County FIPS codes

<table>
<thead>
<tr>
<th>countyfips</th>
<th>County FIPS codes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Description

County names and FIPS codes for use in `county`

Usage

data(countyfips)
demographics

Format

A data frame with 3143 observations on the following 4 variables.

- fips a character vector
- countyname a character vector
- statename a character vector
- acronym a character vector

Details

This file lists all counties and equivalent areas in the United States defined as of 2000. Built from http://www.census.gov/tiger/tms/gazetteer/county2k.txt. This is primarily for use in county.

Source

http://www.census.gov/tiger/tms/gazetteer/county2k.txt

Examples

data(countyfips)

demographics Selects a specified demographic meta-data from the sp objects.

Description

demographics allows the user to pull out one or more demographic variables at several different geographic levels.

Usage

demographics(dem = "P0010001", state, statefips=false, level = c("tract", "blk", "blkgrp", "cdp", "msa", "county"), msaname=NA)

Arguments

dem Character string or vector. Must be the actual name of the demographic variables attached to UScensus2010 objects. Default dem = " P0010001"

state a character string, can either be the full name of a state (e.g. "oregon"), the abbreviation (e.g. "or"), or the FIPS code (e.g. "$41")– note that if you are using the FIPS code you have to change statefips to TRUE. This variable is insensitive to case.

statefips logical, by default statefips=FALSE, set to TRUE if using the state FIPS codes.

level a character string, takes levels tract, blk, blkgrp, cdp, msa or county

msaname logical (optional), if level="msa", allows the use of the verbose MSA place-name (capitalized).
Value

An object of class `matrix`.

Warning

You must have the packages `uscensusRPQPtract`, `uscensusRPQPblkgrp` and `uscensusRPQPblk` installed to use levels "blkgrp" and "blk" respectively.

Author(s)

Zack W. Almquist <almquist@uci.edu>

References


Census 2010 Summary File 1 [name of state1 or United States]/prepared by the U.S. Census Bureau, 2010.

See Also

`county`, `MSA`, `city`

Examples

```r
## Not run:
#County Example
demographics(state="or",level="county")
## End(Not run)
```

install.blk

Installer for the UScensus2000blk package.

Description

Convenient installer for the UScensus2000 package. Warning this installs from the source file for OS X and Linux and can take several minutes. Windows install only available for 2.11+ at this time.

Usage

```r
install.blk(x)
```
Arguments

x  a character string, must be either "osx", "linux" or "windows":

Warning

This is an extremely large file (around 2 gigs) and should only be installed if you have a very good connection. Also it is worth noting that for all systems the install is from source and can take quite a bit of time to install.

Author(s)

Zack W. Almquist

References


Examples

```r
## Not run:
install.blk("osx")

## End(Not run)
```

install.blkgp  Installer for the UScensus2010blkgp package.

Description

Convenient installer for the UScensus2010 package. Warning this installs from the source file for OS X and Linux and can take several minutes. Windows install only available for 2.11+ at this time.

Usage

```r
install.blkgp(x)
```

Arguments

x  a character string, must be either "osx", "linux" or "windows"

Warning

This is an extremely large file (around 300 megabytes) and should only be installed if you have a very good connection. Also it is worth noting that for all systems the install is from source and can take quite a bit of time to install.
Author(s)

Zack W Almquist

References


Examples

```r
## Not run:
install.blkgrp("osx")

## End(Not run)
```

install.cdp Installer for the UScensus2010cdp package.

Description

Convenient installer for the UScensus2010 package. Warning this installs from the source file for OS X and Linux and can take several minutes. Windows install only available for 2.11+ at this time.

Usage

```r
install.cdp(x)
```

Arguments

- `x` a character string, must be either "osx", "linux" or "windows"

Warning

This is an extremely large file (around 180 megabytes) and should only be installed if you have a very good connection. Also it is worth noting that for all systems the install is from source and can take quite a bit of time to install.

Author(s)

Zack W Almquist

References

install.county

Examples

```r
## Not run:
install.county("osx")

## End(Not run)
```

install.county  Installer for the UScensus2010county package.

Description

Convenient installer for the UScensus2010 package. Warning this installs from the source file for OS X and Linux and can take several minutes. Windows install only available for 2.11+ at this time.

Usage

```r
install.county(x)
```

Arguments

- `x`  a character string, must be either "osx", "linux" or "windows"

Warning

This is an extremely large file (around 180 megabytes) and should only be installed if you have a very good connection. Also it is worth noting that for all systems the install is from source and can take quite a bit of time to install.

Author(s)

Zack W Almquist

References


Examples

```r
## Not run:
install.county("osx")

## End(Not run)
```
install.tract

Installer for the UScensus2010tract package.

Description

Convenient installer for the UScensus2010 package. Warning this installs from the source file for OS X and Linux and can take several minutes. Windows install only available for 2.11+ at this time.

Usage

install.tract(x)

Arguments

x

a character string, must be either "osx", "linux" or "windows"

Warning

This is an extremely large file (around 180 megabytes) and should only be installed if you have a very good connection. Also it is worth noting that for all systems the install is from source and can take quite a bit of time to install.

Author(s)

Zack W Almquist

References


Examples

## Not run:
install.tract("osx")

## End(Not run)
**MSA**

Selects one MSA from a given state.

**Description**

MSA allows the user to pull out the polygon and metadata of one MSA from any given state for any of three levels: tract, blockgroup, or block.

**Usage**

```
MSA(msafips = NULL, msaname = NULL, state=NULL , statefips=FALSE, level = c("tract", "blk", "blkgrp"),
```

**Arguments**

- `msafips` : a character string, takes a four digit MSA FIPS code (e.g. "0040" of Texas)
- `msaname` : a character string, this can either be in conjunction with the variable `state` or not. Case 1: Full MSA name (state should be left `NULL` in this case) (e.g. "Abilene, TX MSA"); this must be exact. Case 2: takes one of the city names of the MSA and the one of the states which contain the MSA (e.g. `msaname="Albany"` and `state="NY"`).
- `state` : a character string, this takes in a state abbreviation in capitals in conjunction with `msaname`, see above for more details.
- `statefips` : logical, by default `statefips=FALSE`, change to `TRUE` when providing `state` with a FIPS code.
- `level` : a character string, takes in one of three values: "tract", "blk", or "blkgrp". This defines the geographic level of data for the MSA.
- `proj` : CRS-class, takes a CRS object (e.g. `CRS("+proj=utm +zone=10 +datum=NAD83")`); This is simply a wrapper for the `spTransform` function in `rgdal`. **WARNING** requires `rgdal` package.

**Value**

An object of class `SpatialPolygonsDataFrame`.

**Warning**

You must have the packages `UScensus2000blkgrp` and `UScensus2000blk` installed to use levels "blkgrp" and "blk" respectively.

**Author(s)**

Zack W. Almquist <almquist@uci.edu>
References


See Also

county

Examples

## Not run:
## Load the data files for MSA names and MSA FIPS codes
data(MSANames)
data(MSAfips)

## Save the FIPS code for Abilene, TX MSA
df <- MSAfips$msa.cmsa.fips[1]

### Use the MSA FIPS code
Abilene <- MSA(msafips = df, level = "tract")

### Use the MSA full name
Abilene <- MSA(msaname = "Abilene, TX MSA", level = "tract")

### Use the msaname alternative
pdx <- MSA(msaname = "Portland", state = "OR", level = "tract")

## Plot Portland
df <- pdx
plot(df)
title("Portland MSA, OR 2000")

## End(Not run)

### MSAfips

#### MSA FIPS codes

Description

MSA FIPS codes for use in MSA

Usage

data(MSAfips)
Format

A data frame with 1516 observations on the following 7 variables.

- msa.cmsa.fips: a character vector
- pmsa.fips: a character vector
- fips.state: a character vector
- fips.county: a character vector
- central.outlying: a character vector
- place: a character vector
- name: a character vector

Details

Metropolitan areas and components, 1999. Built from http://www.census.gov/population/estimates/metro-city/99mfips.txt. This is primarily for use in MSA.

Source

http://www.census.gov/population/estimates/metro-city/99mfips.txt

Examples

data(MSAfips)

MSAnames

<table>
<thead>
<tr>
<th>MSAnames</th>
<th>MSA Names and FIPS codes</th>
</tr>
</thead>
</table>

Description

MSA names and FIPS codes for use in MSA

Usage

data(MSAnames)

Format

A data frame with 356 observations on the following 3 variables.

- msa.cmsa.fips: a character vector
- pmsa.fips: a character vector
- name: a character vector
Details

Metropolitan areas and components, 1999. Built from http://www.census.gov/population/estimates/metro-city/99mfips.txt. This is primarily for use in MSA.

Source

http://www.census.gov/population/estimates/metro-city/99mfips.txt

Examples

data(MSAnames)

nameTofips

\[ \text{nameTofips} \]

\[ \text{name} \]

\[ \text{County or MSA name to FIPS code(s).} \]

Description

Takes the name of a county or msa and returns the associated fip(s) codes.

Usage

nameTofips(name, state, type = c("county", "msa"), statefips = FALSE)

Arguments

- **name**: a character string, should be either a name of a county or msa.
- **state**: a character string, can either be the full name (e.g. "oregon"), the abbreviation (e.g. "or"), or the FIPS code (e.g. "41")—note that if you are using the FIPS code you have to change statefips to TRUE.
- **type**: a character string, should be either "county" or "msa"
- **statefips**: logical, by default statefips=FALSE, change to TRUE when providing state with a FIPS code.

Value

Returns a character string.

Author(s)

Zack W. Almquist <almquist@uci.edu>
states.names

References


Examples

```r
## Not run:
## SF MSA FIPS Code
nametofips("san francisco","ca","msa")

## Orange County FIPS
nametofips("orange","ca","county")

## End(Not run)
```

<table>
<thead>
<tr>
<th>states.names</th>
<th>States Names</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Description

A list of all the states available in UScensus2010

Usage

data(states.names)

Format

The format is: chr [1:49] "alabama" "arizona" "arkansas" "california" "colorado" ...

Details

For use in the functions of UScensus2010.

Examples

data(states.names)
Description

A list of all the states available in UScensus2010

Usage

data(states.names.cap)

Format

The format is: chr [1:49] "Alabama" "Arizona" "Arkansas" "California" "Colorado" ...

Details

For use in the functions of UScensus2010.

Examples

data(states.names.cap)
Index

*Topic CDP
city, 5
*Topic \textasciitilde kwd1
areaPoly, 3
install.blk, 10
nameToFips, 18
*Topic \textasciitilde kwd2
areaPoly, 3
install.blk, 10
nameToFips, 18
*Topic census
city, 5
demographics, 9
*Topic choropleth
choropleth, 4
*Topic county
county, 7
*Topic datasets
countyfips, 8
MSAfips, 16
MSAnames, 17
states.names, 19
states.names.cap, 20
*Topic demographics
demographics, 9
*Topic demography
city, 5
county, 7
MSA, 15
*Topic install
install.blkgrp, 11
install.cdp, 12
install.county, 13
install.tract, 14
*Topic msa
MSA, 15
*Topic shapefiles
city, 5
county, 7
MSA, 15
*Topic usUScensus2010
UScensus2010-package, 2
*Topic uscensus
city, 5
demographics, 9
areaPoly, 3
choropleth, 4
city, 5, 10
county, 7, 8–10, 16
countyfips, 8
demographics, 9
install.blk, 10
install.blkgrp, 11
install.cdp, 12
install.county, 13
install.tract, 14
matrix, 10
MSA, 10, 15, 16–18
MSAfips, 16
MSAnames, 17
nameToFips, 18
plot, 4, 5
rgdal, 6, 7, 15
sp, 3
SpatialPolygonsDataFrame, 3, 6, 7, 15
spplot, 5
states.names, 19
states.names.cap, 20
USCensus2010 (UScensus2010-package), 2
UScensus2010-package, 2