Package 'NMMAPSlite'

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Title NMMAPS Data Lite

Depends R (>= 2.9.0), stashR

Suggests utils

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Description Provides remote access to daily mortality, weather, and
air pollution data from the National Morbidity, Mortality, and
Air Pollution Study for 108 U.S. cities (1987--2000); data are
obtained from the Internet-based Health and Air Pollution Surveillance System (iHAPSS)

License GPL (>= 2)

Repository CRAN

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R topics documented:

getMetaData *Utilities for obtaining metadata*

Description

Utilities for getting metadata for NMMAPS city data

Usage

```
listCities()
getMetaData(name = NULL)
```

Arguments

name	character, name of metadata object

Details

If name is NULL for getMetaData, then a character vector is returned containing the names of all the available metadata objects. listCities returns a character vector of the *abbreviated* names for all of the cities. These abbreviated names should be used directly with the readCity function.

Value

listCities returns a character vector. getMetaData returns a character vector or a metadata object.

Author(s)

Roger D. Peng <rpeng@jhsph.edu>

See Also

readCity

Examples

```
## Not run:
initDB()
listCities()
getMetaData()
counties <- getMetaData("counties")
head(counties)

## End(Not run)
```

initDB *Initialize database objects*

Description

Initialize the database objects for the NMMAPS database

Usage

```
initDB(basedir = "NMMAPS")
```

Arguments

basedir	character, the directory where the local version of the NMMAPS database should be stored.

Details

initDB creates a local directory structure for storing a local cache of the NMMAPS database. Internal code makes sure that the local copy is synchronized with the remote version of the database.

Value

Nothing is returned.

Author(s)

Roger D. Peng <rpeng@jhsph.edu>

See Also

readCity

NMMAPS *Overview of NMMAPS database*

Description

The NMMAPS database: Daily mortality, weather, and pollution data for 1987–2000.

The database contains dataframes with air pollution, weather, and mortality data for 108 United States cities. Each city dataframe contains daily time series of mortality counts (for various causes of death), pollution levels, and weather (e.g. temperature and humidity).

The data were assembled from publicly available data sources as part of the National Morbidity, Mortality, and Air Pollution Study (NMMAPS) sponsored by the Health Effects Institute. Daily mortality counts were obtained from the National Center for Health Statistics and classified into

three age categories (< 65; 65-74; >= 75). Accidental deaths (i.e. ICD-9 >= 800) were excluded. Weather data were obtained from the National Climatic Data Center EarthInfo CD-ROM and pollution data were obtained from the Environmental Protection Agency's Aerometric Information Retrieval System (AIRS) and AirData System.

Note that the data included with this package only contain the daily counts of mortality. Morbidity outcomes (e.g. hospital admissions, etc.) are not included with this package.

Format

Note that by default, the `readCity` function returns data frames that have the pollution and weather data replicated 3 times because the mortality counts are split into three age categories. There are only 5114 *days* of observations, but each day has three mortality counts. The dataframes are stored in this format so that they can be used immediately with a regression procedure such as `lm` or `glm`. If age category stratified counts are not needed, one can use the `collapseAge` argument to `readCity` to combine the outcomes across age categories.

Pollution variables have been de-trended and their names all have the suffix *tmean (which stands for "trimmed mean"). Briefly, the pollution value for a particular day in a given city is the 10% trimmed mean of the values from all of the monitors in the given city.

Each pollutant also has variable whose name has the suffix *mtrend. This variable stores the median trend of the pollution monitors for a given city. This roughly the value that is subtracted off the original pollution series to center it around zero. See the `PollutantProcess` vignette for more details.

The iHAPSS website (`http://www.ihapss.jhsph.edu/`) contains detailed information on the different variables included with each city dataframe.

References

Samet JM, Dominici F, Zeger SL, Schwartz J, Dockery DW (2000). *The National Morbidity, Mortality, and Air Pollution Study, Part I: Methods and Methodologic Issues*. Research Report 94, Health Effects Institute, Cambridge MA.

`http://www.healtheffects.org/Pubs/Samet.pdf`

Samet JM, Zeger SL, Dominici F, Curriero F, Coursac I, Dockery DM, Schwartz J, Zanobetti A (2000). *The National Morbidity, Mortality, and Air Pollution Study, Part II: Morbidity and Mortality from Air Pollution in the United States*. Research Report 94, Health Effects Institute, Cambridge MA.

`http://www.healtheffects.org/Pubs/Samet2.pdf`

Dominici F, McDermott A, Daniels M, Zeger SL, Samet JM (2003). "Mortality among residents of 90 cities," in *Revised Analyses of Time-Series Studies of Air Pollution and Health*. Research Report 94, Health Effects Institute, Cambridge MA, pp. 9-24.

`http://www.healtheffects.org/Pubs/TimeSeries.pdf`

Daniels MJ, Dominici F, Zeger SL, Samet JM (2004). *The National Morbidity, Mortality, and Air Pollution Study, Part III: Concentration-Response Curves and Thresholds for the 20 Largest US Cities*. Health Effects Institute, Cambridge MA.

`http://www.healtheffects.org/Pubs/Daniels94-3.pdf`

Internet-based Health and Air Pollution Surveillance System (iHAPSS):

http://www.ihapss.jhsph.edu/

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readCity *Read data for a city*

Description

Read/download weather, air pollution, and mortality data for a given city in the NMMAPS database

Usage

```
readCity(name, collapseAge = FALSE, asDataFrame = TRUE)
```

Arguments

name	character, abbreviated name of a city
collapseAge	logical, should age categories be collapsed?
asDataFrame	logical, should a data frame be returned?

Details

If asDataFrame is FALSE, then a list with two data frames named "exposure" and "outcome" is returned. Otherwise, a single data frame with all the data merged together is returned.

Value

A data frame or a list with "exposure" and "outcome" data frames.

Author(s)

Roger D. Peng <rpeng@jhsph.edu>

Examples

```
## Not run:
initDB()
data <- readCity("akr")  ## Read/download Akron, OH data
data1 <- readCity("akr", collapseAge = TRUE)  ## Read from cache
nrow(data)
nrow(data1)

## End(Not run)
```

`variables` *U.S. Cities Variable Descriptions*

Description

Descriptions of pollutant, meteorology, and mortality variables for U.S. cities (1987–2000).

Details

The following information (and more) can be found by loading the `variables` table (i.e. via `getMetaData("variables")`)

Each city dataframe contains variables on:

city abbreviated city name

date Date

dow Day of week

agecat 3 age categories

accident Accidental Deaths

copd Chronic Obstructive Pulmonary Disease

cvd Cardiovascular Deaths

death All cause mortality excluding accident

inf Influenza

pneinf Pneumonia and Influenza

pneu Pneumonia

resp Respiratory Deaths

tmpd Mean temperature

tmax Maximum temperature

tmin Minimum temperature

tmean 24 hourly mean temperature

dptp Dew point temperature

rhum Mean relative humidity

mxrh Maximum relative humidity

mnrh Minimum relative humidity

pm10mean PM10 Mean

pm10n No. non-missing

pm10median PM10 Median

pm10max1 Maximum Hourly PM10

pm10max2 2nd Maximum Hourly PM10

pm10max3 3rd Maximum Hourly PM10

pm10max4 4th Maximum Hourly PM10

pm10max5 5th Maximum Hourly PM10

pm10trend Daily mean of 1-year trends

pm10mtrend Daily median of 1-year trends

pm10grandmean Grand Mean

pm10tmean PM10 Trimmed Mean

pm10meanmax Mean of maximum PM10

pm25mean Mean PM2.5

pm25n No. non-missing

pm25median Median PM2.5

pm25max1 Maximum Hourly PM2.5

pm25max2 2nd Maximum Hourly PM2.5

pm25max3 3rd Maximum Hourly PM2.5

pm25max4 4th Maximum Hourly PM2.5

pm25max5 5th Maximum Hourly PM2.5

pm25trend Daily mean of 1-year trends

pm25mtrend Daily median of 1-year trends

pm25grandmean Grand Mean

pm25tmean Trimmed Mean PM2.5

pm25meanmax Mean of maximum PM2.5

o3mean Mean O3

o3n No. non-missing

o3median Median O3

o3h0 0 hour mean

o3h1 1 hour mean

o3h2 2 hour mean

o3h3 3 hour mean

o3h4 4 hour mean

o3h5 5 hour mean

o3h6 6 hour mean

o3h7 7 hour mean

o3h8 8 hour mean

o3h9 9 hour mean

o3h10 10 hour mean

o3h11 11 hour mean

o3h12 12 hour mean

o3h13 13 hour mean

o3h14 14 hour mean

o3h15 15 hour mean

o3h16 16 hour mean

o3h17 17 hour mean

o3h18 18 hour mean

o3h19 19 hour mean

o3h20 20 hour mean

o3h21 21 hour mean

o3h22 22 hour mean

o3h23 23 hour mean

o3max1 Maximum Hourly O3

o3max2 2nd Maximum Hourly O3

o3max3 3rd Maximum Hourly O3

o3max4 4th Maximum Hourly O3

o3max5 5th Maximum Hourly O3

o3trend Daily mean of 1-year trends

o3mtrend Daily median of 1-year trends

o3grandmean Grand Mean

o3tmean Trimmed Mean O3

o3meanmax Mean of maximum O3

so2mean Mean SO2

so2n No. non-missing

so2median Median SO2

so2h0 0 hour mean

so2h1 1 hour mean

so2h2 2 hour mean

so2h3 3 hour mean

so2h4 4 hour mean

so2h5 5 hour mean

so2h6 6 hour mean

so2h7 7 hour mean

so2h8 8 hour mean

so2h9 9 hour mean

so2h10 10 hour mean

so2h11 11 hour mean

so2h12 12 hour mean

so2h13 13 hour mean

so2h14 14 hour mean
so2h15 15 hour mean
so2h16 16 hour mean
so2h17 17 hour mean
so2h18 18 hour mean
so2h19 19 hour mean
so2h20 20 hour mean
so2h21 21 hour mean
so2h22 22 hour mean
so2h23 23 hour mean
so2max1 Maximum Hourly SO2
so2max2 2nd Maximum Hourly SO2
so2max3 3rd Maximum Hourly SO2
so2max4 4th Maximum Hourly SO2
so2max5 5th Maximum Hourly SO2
so2trend Daily mean of 1-year trends
so2mtrend Daily median of 1-year trends
so2grandmean Grand Mean
so2tmean Trimmed Mean SO2
so2meanmax Mean of maximum SO2
no2mean Mean NO2
no2n No. non-missing
no2median Median NO2
no2h0 0 hour mean
no2h1 1 hour mean
no2h2 2 hour mean
no2h3 3 hour mean
no2h4 4 hour mean
no2h5 5 hour mean
no2h6 6 hour mean
no2h7 7 hour mean
no2h8 8 hour mean
no2h9 9 hour mean
no2h10 10 hour mean
no2h11 11 hour mean
no2h12 12 hour mean
no2h13 13 hour mean

no2h14 14 hour mean

no2h15 15 hour mean

no2h16 16 hour mean

no2h17 17 hour mean

no2h18 18 hour mean

no2h19 19 hour mean

no2h20 20 hour mean

no2h21 21 hour mean

no2h22 22 hour mean

no2h23 23 hour mean

no2max1 Maximum Hourly NO2

no2max2 2nd Maximum Hourly NO2

no2max3 3rd Maximum Hourly NO2

no2max4 4th Maximum Hourly NO2

no2max5 5th Maximum Hourly NO2

no2trend Daily mean of 1-year trends

no2mtrend Daily median of 1-year trends

no2grandmean Grand Mean

no2tmean Trimmed Mean NO2

no2meanmax Mean of maximum NO2

comean Mean CO

con No. non-missing

comedian Median CO

coh0 0 hour mean

coh1 1 hour mean

coh2 2 hour mean

coh3 3 hour mean

coh4 4 hour mean

coh5 5 hour mean

coh6 6 hour mean

coh7 7 hour mean

coh8 8 hour mean

coh9 9 hour mean

coh10 10 hour mean

coh11 11 hour mean

coh12 12 hour mean

coh13 13 hour mean

coh14 14 hour mean

coh15 15 hour mean

coh16 16 hour mean

coh17 17 hour mean

coh18 18 hour mean

coh19 19 hour mean

coh20 20 hour mean

coh21 21 hour mean

coh22 22 hour mean

coh23 23 hour mean

comax1 Maximum Hourly CO

comax2 2nd Maximum Hourly CO

comax3 3rd Maximum Hourly CO

comax4 4th Maximum Hourly CO

comax5 5th Maximum Hourly CO

cotrend Daily mean of 1-year trends

comtrend Daily median of 1-year trends

cograndmean Grand Mean

cotmean Trimmed Mean CO

comeanmax Mean of maximum CO

rmtmpd Adjusted 3-day lag temperature

rmdptp Adjusted 3-day lag Dew point temperature

markaccident Exclusions for Accidental Deaths

markcopd Exclusions for COPD

markcvd Exclusions for Cardiovascular Deaths

markdeath Exclusions for death

markinf Exclusions for Influenza

markpneinf Exclusions for Pneumonia and Influenza

markpneu Exclusions for Pneumonia

markresp Exclusions for Respiratory Deaths

l1pm10tmean Lag 1 PM10 trimmed mean

l1pm25tmean Lag 1 PM25 trimmed mean

l1cotmean Lag 1 CO trimmed mean

l1no2tmean Lag 1 NO2 trimmed mean

l1so2tmean Lag 1 SO2 trimmed mean

l1o3tmean Lag 1 O3 trimmed mean

l2pm10tmean Lag 2 PM10 trimmed mean

l2pm25tmean Lag 2 PM25 trimmed mean

l2cotmean Lag 2 CO trimmed mean

l2no2tmean Lag 2 NO2 trimmed mean

l2so2tmean Lag 2 SO2 trimmed mean

l2o3tmean Lag 2 O3 trimmed mean

See Also

`readCity`, `listCities`

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