

Package ‘pqantimalarials’

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Title web tool for estimating under-five deaths caused by poor-quality antimalarials in sub-Saharan Africa

Description This package allows users to calculate the number of under-five child deaths caused by consumption of poor quality antimalarials across 39 sub-Saharan nations. The package supports one function, that starts an interactive web tool created using the shiny R package. The web tool runs locally on the user's machine. The web tool allows users to set input parameters (prevalence of poor quality antimalarials, case fatality rate of children who take poor quality antimalarials, and sample size) which are then used to perform an uncertainty analysis following the Latin hypercube sampling scheme. Users can download the output figures as PDFs, and the output data as CSVs. Users can also download their input parameters for reference. This package was designed to accompany the analysis presented in:
J. Patrick Renschler, Kelsey Walters, Paul Newton, Ramanan Laxminarayan
“Estimated under-five deaths associated with poor-quality antimalarials in sub-Saharan Africa”, 2014. Paper submitted.

Version 0.2

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antimalarialQualitySurvey
Antimalarial Quality Survey Data

Description

- Country.
- Failed. Number of samples that failed quality testing.
- Tested. Number of tested samples.
- Mean. Proportion of tested samples that failed quality testing.
- Var.
- SE.
- Order. Index number used by webtool().

Format

A data frame with 9 rows and 7 variables

Source

- [US Pharmacopeia. Survey of the Quality of Selected Antimalarial Medicines Circulating in Madagascar, Senegal, and Uganda, 2009](#)
- [World Health Organization. Survey of the Quality of Selected Antimalarial Medicines Circulating in Six Countries of Sub-Saharan Africa, 2011](#)

pquantimalarials	<i>Estimated under-five deaths associated with poor-quality antimalarials in sub-Saharan Africa.</i>
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Description

pquantimalarials provides an interactive web tool that allows users to produce their own estimates of the number of under-five deaths associated with poor-quality antimalarials in sub-Saharan Africa according to the methodology of Renschler et al. (2014). Users can set the input parameters and download the results from uncertainty and sensitivity analyses. The `webtool()` function starts the interactive web tool on the user's machine. You can follow the development of this package at: <https://github.com/reuschler/pquantimalarials>.

References

J. Patrick Renschler, Kelsey Walters, Paul Newton, Ramanan Laxminarayan. "Estimated under-five deaths associated with poor-quality antimalarials in sub-Saharan Africa". 2014.

privateSales	<i>Estimated 2013 private sector antimalarial sales to under-five malaria positive children.</i>
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Description

- Country.
- u5Sales. Median estimated 2013 private sector antimalarial sales to under-five *P. falciparum* positive children (Cohen et al. 2012).
- StDev. Standard deviation of estimated 2013 private sector antimalarial sales to under-five *P. falciparum* positive children. Standard deviation was calculated using the interquartile range provided by Cohen et al. (2012), assuming a normal distribution.

Format

A data frame with 39 rows and 3 variables

Source

J. Cohen, A. Woolsey, O. Sabot, P. Gething, A. Tatem, B. Moonen. "Optimizing Investments in Malaria Treatment and Diagnosis." *Science* 338 (2012): 612-614.

u5deathsWHO2010

WHO estimated 2010 under-five deaths by cause

Description

- Country.
- Malaria. Estimated 2010 under-five deaths attributed to malaria.
- Measles. Estimated 2010 under-five deaths attributed to measles.
- HIV_AIDS. Estimated 2010 under-five deaths attributed to HIV/AIDS.
- Respiratory. Estimated 2010 under-five deaths attributed to acute lower respiratory infections.
- Birth. Estimated 2010 under-five deaths attributed to birth asphyxia and birth trauma.
- Congenital. Estimated 2010 under-five deaths attributed to congenital anomalies.
- Diarrhoeal. Estimated 2010 under-five deaths attributed to diarrhoeal diseases.
- Injuries. Estimated 2010 under-five deaths attributed to injuries.
- Meningitis_Encephalitis. Estimated 2010 under-five deaths attributed to meningitis or encephalitis.
- Other_Communicable. Estimated 2010 under-five deaths attributed to other communicable, perinatal, and nutritional conditions.
- Other_Noncommunicable. Estimated 2010 under-five deaths attributed to other noncommunicable diseases.
- Pertussis. Estimated 2010 under-five deaths attributed to pertussis.
- Prematurity. Estimated 2010 under-five deaths attributed to prematurity.
- Newborn_Sepsis. Estimated 2010 under-five deaths attributed to sepsis and other infectious conditions of the newborn.

Format

A data frame with 39 rows and 15 variables

Source

WHO - Global Health Observatory Data Repository: Mortality by age group and cause: Children aged 0 to 4 years 2010

u5deathsWHO2012

World Health Organization 2012 under-five mortality estimates.

Description

- Country.
- Year.
- Deaths. WHO estimated number of under-five deaths (thousands).
- MortalityRate. WHO estimated probability of dying by age 5 per 1000 live births.

Format

A data frame with 39 rows and 4 variables.

Source

[MDG 4: Child health: Under-five mortality by country](#)

u5malariaDeathsWHO2010

World Health Organization estimated 2010 under-five malaria deaths.

Description

- Year.
- Country.
- Numeric. WHO estimated 2010 under-five malaria deaths.

Format

A data frame with 193 rows and 3 variables.

Source

[WHO - Global Health Observatory Data Repository: Mortality By age group and cause: Children aged 0 to 4 years 2010](#)

`webtool`*Start the pquantimalarials interactive web tool.*

Description

This function starts the interactive web tool which runs locally on the user's machine. If the browser doesn't open automatically, the function provides the url so you can manually open your browser and view the site. This function normally does not return; interrupt R to stop the application (usually by pressing Esc or Ctrl+C).

Usage

```
webtool()
```

Details

Within the web tool, the left panel allows users to set input parameters that are then used to estimate the number of under-five child deaths associated with poor-quality antimalarials in sub-Saharan Africa according to the model presented in Renschler et al. (2014). Users can browse through the site's tabs to explore the outputs from uncertainty and sensitivity analyses that were performed using their input settings. Users can download the output data and visualizations as CSVs and PDFs respectively.

References

J. Patrick Renschler, Kelsey Walters, Paul Newton, Ramanan Laxminarayan. "Estimated under-five deaths associated with poor-quality antimalarials in sub-Saharan Africa". 2014.

See Also

[runApp](#) which this function wraps.

Examples

```
## Not run:  
# Start the web tool  
webtool()  
  
## End(Not run)
```

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