

# Package ‘wppExplorer’

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**Title** Explorer of World Population Prospects

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**Depends** R (>= 3.0.0)

**Imports** shiny (>= 0.13.0), shinythemes, shinyjs, plyr, reshape2,  
googleVis, wpp2019, Hmisc, ggplot2, DT

**Suggests** wpp2017, wpp2015, wpp2012, wpp2010, testthat

**Description** Explore data in the 'wpp2019' (or 2017, 2015, ...) package using a 'shiny' interface.

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**NeedsCompilation** no

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## R topics documented:

wppExplorer-package . . . . .	2
iso3166 . . . . .	3
set.wpp.year . . . . .	4
wpp.by.country . . . . .	4
wpp.explore . . . . .	5
wpp.indicator . . . . .	6
<b>Index</b>	<b>9</b>

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wppExplorer-package *Explorer of the World Population Prospects*

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## Description

Allows to interactively explore data from the World Population Prospects, contained in packages **wpp2019**, **wpp2017**, **wpp2015**, **wpp2012** and **wpp2010**. It is based on the **shiny** package.

## Details

Package: wppExplorer  
Version: 2.3-3  
Date: 2020-1-9  
Depends: R (>= 3.0.0)  
License: GPL-3 | file LICENSE

The main function of the package is `wpp.explore` which opens an interactive interface in a web browser. A few helper functions are available for a fast access to the (possibly filtered) data, e.g. `wpp.indicator`.

The interface can be also accessed online: <https://bayespop.shinyapps.io/wpp2019explorer/>

## Author(s)

Hana Sevcikova <hanas@uw.edu>, used code from a Joe Cheng's shiny example

Maintainer: Hana Sevcikova <hanas@uw.edu>

## Source

The underlying datasets are based on estimates and projections of the United Nations, Department of Economic and Social Affairs, Population Division (2011, 2013, 2015, 2017, 2019). The probabilistic projections were produced with the method of Raftery et al. (2012).

## References

World Population Prospects: The 2017 Revision. (<http://esa.un.org/unpd/wpp>) Special Tabulations.

A. E. Raftery, N. Li, H. Sevcikova, P. Gerland, G. K. Heilig (2012). Bayesian probabilistic population projections for all countries. *Proceedings of the National Academy of Sciences* 109:13915-13921.

P. Gerland, A. E. Raftery, H. Sevcikova, N. Li, D. Gu, T. Spoorenberg, L. Alkema, B. K. Fosdick, J. L. Chunn, N. Lalic, G. Bay, T. Buettner, G. K. Heilig, J. Wilmoth (2014). World Population Stabilization Unlikely This Century. *Science* 346:234-237.

**See Also**

[wpp2019](#), [wpp2017](#), [wpp2015](#), [wpp2012](#), [wpp2010](#), [shiny](#), [wpp.explore](#), [wpp.indicator](#)

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iso3166

*ISO 3166 Dataset*

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**Description**

Countries with their alpha-2, alpha-3 and numerical ISO3166-1 code. It includes aggregated regions with user-assigned codes.

**Usage**

```
data(iso3166)
data(iso3166ud)
```

**Format**

A data frame containing 5 variables:

name Country name

charcode alpha-2 code

charcode3 alpha-3 code

uncode UN numeric code

is.country Logical. It is TRUE for all countries included in the official ISO3166-1 dataset and FALSE for user-assigned codes, i.e. aggregations.

**Details**

Dataset iso3166 includes both, countries and aggregations; dataset iso3166ud includes aggregations only.

**References**

[https://www.iso.org/iso/home/standards/country\\_codes.htm](https://www.iso.org/iso/home/standards/country_codes.htm)

**Examples**

```
data(iso3166)
```

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set.wpp.year	<i>Edit/Retrieve WPP Year.</i>
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**Description**

Change/get the WPP year which determines from which **wpp** package data are retrieved.

**Usage**

```
set.wpp.year(wpp.year)
```

```
get.wpp.year()
```

**Arguments**

wpp.year	Possible values are 2019 (default), 2017, 2015, 2012, and 2010.
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**Value**

get.wpp.year returns the wpp year used through out the package.

**Examples**

```
get.wpp.year() # by default the wpp2019 is used
set.wpp.year(2012) # any subsequent operations use the wpp2012 package
```

---

wpp.by.country	<i>Selection by Country and Year</i>
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**Description**

Filtering indicators by given countries and year.

**Usage**

```
wpp.by.country(data, country)
```

```
wpp.by.countries(data, countries)
```

```
wpp.by.year(data, year)
```

**Arguments**

data	Data frame as returned by <a href="#">wpp.indicator</a> .
country	alpha-2 ISO 3166 country code.
countries	Vector of alpha-2 ISO 3166 country codes.
year	Year. For vital rates with 5-years time period, currently it is the end year of the time period.

**Value**

A data frame filtered by the input arguments.

**See Also**

[wpp.indicator](#)

**Examples**

```
tfr <- wpp.indicator("fert")
tfr.germany.2010 <- wpp.by.country(wpp.by.year(tfr, 2010), 'DE')
```

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wpp.explore

*Launching WPP Explorer*


---

**Description**

Main function of the package. It opens an interactive (shiny) interface in a browser. To exit the browser view, hit the Escape key.

**Usage**

```
wpp.explore(wpp.year = NULL, host = NULL, ...)
```

**Arguments**

wpp.year	Determines which <b>wpp</b> package is to be explored. Currently available are 2019 (default), 2017, 2015, 2012, and 2010.
host	Argument passed to <a href="#">runApp</a> . Defaults to the shiny.host option, or "0.0.0.0" if not set.
...	Additional arguments passed to <a href="#">runApp</a> .

**Details**

The time slider in the left pane defines the year or time period for which data are shown. Note that for vital rates indicators, such as fertility, mortality, migration and sex ratio at birth, the time shown on the slider is the end year of the time period of the data shown in the right pane.

The uncertainty selection is only used for indicators and years for which the corresponding lower and upper bounds are available, and for the appropriate visualization types. These are country plots that appear after clicking on the map, table in the "Sortable Data" tab, and "Trends" and "Pyramids". The 80 and 95% intervals are available for the fertility, life expectancy and total population indicators; The +/-1/2child intervals are available for the fertility and population indicators.

The ggplot-based graphs in the Trends and Pyramids tabs are interactive. One can see the data values by mouse hovering or single clicks. One can zoom in by selecting a region. Zooming out is done by a double click.

The interface can be accessed online: <https://bayespop.shinyapps.io/wpp2019explorer/>

**Note**

If you have any troubles to see the data, please check that the **shiny** package is working in your environment. In particular, check that examples in <http://rstudio.github.com/shiny/tutorial> work. On Windows, you might check this: <https://groups.google.com/forum/#!topic/shiny-discuss/tqeURyiPmFI>

**Author(s)**

Hana Sevcikova, based on code from a Joe Cheng's shiny example. Used comments from Patrick Gerland.

**See Also**

[wpp2019](#), [wpp.indicator](#)

**Examples**

```
## Not run:
wpp.explore()
## End(Not run)
```

---

wpp.indicator

*Accessing a WPP Indicator*

---

**Description**

An interface for accessing a WPP indicator, where datasets with observed and predicted data are merged. The resulting data frame is in a "melted" format.

**Usage**

```
wpp.indicator(what, ...)
```

**Arguments**

**what** Name of indicator. Possible values are:

- fert** Total fertility rate. Merges datasets [tfr](#) and [tfrprojMed](#).
- leF** Female life expectancy. Merges datasets [e0F](#) and [e0Fproj](#).
- leM** Male life expectancy. Merges datasets [e0M](#) and [e0Mproj](#).
- tpop** Total population. Uses datasets with age- and sex-specific population counts and aggregates over sexes and ages.
- tpopF** Total female population. Uses datasets [popF](#) and [popFprojMed](#) and aggregates over ages.
- tpopM** Total male population. Uses datasets [popM](#) and [popMprojMed](#) and aggregates over ages.

**mig** Total net migration. For **wpp2019** and **wpp2015**, the dataset **migration** is used. For **wpp2012** and **wpp2010** it aggregates datasets **migrationF** and **migrationM** over ages.

**migrate** Annual migration rate per thousand population. The denominator is approximated with the average population  $((P_t + P_{t-1})/2)$ .

**popagesex** Population by sex and age. Uses datasets **popM** and **popMprojMed**. It requires two arguments in ..., namely **sexm=c("F", "M")** and **agem=c("0-4", "5-9", ..., "95-99", "100+")**. The function aggregates population counts over the given sex and age groups.

**mortagesex** Mortality by sex and age. Uses datasets **mxF** and **mxM**. It requires two arguments in ..., namely **sex** which is either "F" or "M", and **age** which is one of ("0", "1", "5", "10", "15", "20", ... "95", "100+").

**fertage** Age-specific fertility rate. Uses datasets **tfr** and **tfrprojMed** which are merged together and dataset **percentASFR** to derive age-specific rates. It requires one argument in ..., namely **age** which is one of ("15-19", "20-24", ..., "45-49").

**pfertage** Percent age-specific fertility. Corresponds to the dataset **percentASFR**. Argument **agem** as defined above giving one or more age categories is required.

**sexratio** Sex ratio at birth. Corresponds to the dataset **sexRatio**.

**medage** Median age.

**meanagechbear** Mean age at childbearing.

**meanageinchbearage** Mean age of women in childbearing ages.

**tdratio** Total dependency ratio. Ratio of population of age 0 to 14 and 65+ to population of age 15-64.

**chdratio** Child dependency ratio. Ratio of population of age 0 to 14 to population of age 15-64.

**oadratio** Old-age dependency ratio. Ratio of population of age 65+ to population of age 15-64.

**psratio** Potential support ratio. Inverse of old-age dependency ratio.

**popgrowth** Average annual population growth  $(\log(P_t/P_{t-1})/5)$ .

**fert.ci**, **leF.ci**, **leM.ci**, **tpop.ci**, **popagesex.ci** Lower or upper bound of the corresponding indicator. Requires argument **which.pi** which is one of "80", "95", "half.child", and an argument bound which is either "low" or "high". Arguments **sexm** and **agem** (as defined above, but of length one) are required for **popagesex.ci**.

... Arguments passed to the underlying functions as described above.

### Value

Data frame with columns **charcode** (alpha-2 ISO 3166 country code), **Year**, and **value**.

### Author(s)

Hana Sevcikova

**See Also**

[wpp.by.country](#), [wpp.by.year](#)

**Examples**

```
tfr <- wpp.indicator("fert")
## Not run:
# Histogram of TFR
print(qplot(value, data=tfr) + facet_wrap(~ Year))
## End(Not run)
## Not run:
mxM01 <- wpp.indicator("mortagesex", sex="M", age="0")
# Plot map
plot(gvisGeoMap(tfr, locationvar='charcode', numvar='value'))
## End(Not run)
```



# Index

## \*Topic **datasets**

iso3166, 3

## \*Topic **manip**

set.wpp.year, 4

wpp.by.country, 4

wpp.indicator, 6

## \*Topic **package**

wppExplorer-package, 2

## \*Topic **programming**

wpp.explore, 5

e0F, 6

e0Fproj, 6

e0M, 6

e0Mproj, 6

get.wpp.year (set.wpp.year), 4

iso3166, 3

iso3166ud (iso3166), 3

migration, 7

migrationF, 7

migrationM, 7

mxF, 7

mxM, 7

percentASFR, 7

popF, 6

popFprojMed, 6

popM, 6, 7

popMprojMed, 6, 7

runApp, 5

set.wpp.year, 4

sexRatio, 7

shiny, 3, 6

tfr, 6, 7

tfrprojMed, 6, 7

wpp.by.countries (wpp.by.country), 4

wpp.by.country, 4, 8

wpp.by.year, 8

wpp.by.year (wpp.by.country), 4

wpp.explore, 2, 3, 5

wpp.indicator, 2–6, 6

wpp2010, 3

wpp2012, 3

wpp2015, 3

wpp2017, 3

wpp2019, 3, 6

wppExplorer (wppExplorer-package), 2

wppExplorer-package, 2