

Package: popmex (via r-universe)

October 24, 2026

Type Package

Title Population Datasets of Mexico at Municipal and Hexagon Resolution

Version 0.2.0

Description Population datasets of Mexico for epidemiological analysis and to calculate rates: census population by municipality, sex and age group (INEGI ITER 2000, 2010 and 2020), municipal population reconstructions and projections 1990-2040 (CONAPO), and population in 400 m H3 hexagons (Kontur, Humanitarian Data Exchange, 2021-2023), with a function to extract the hexagons of urban localities, and a function to download the LandScan Global population raster (1 km) on demand.

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URL <https://github.com/fdzul/popmex>, <https://fdzul.github.io/popmex/>

BugReports <https://github.com/fdzul/popmex/issues>

Encoding UTF-8

LazyData true

Depends R (>= 3.5)

Suggests cowplot, dplyr, ggplot2, ggspatial, gtExtras, knitr, leafsync, mapgl, mapview, patchwork, rmarkdown, terra, testthat (>= 3.0.0), tidyterra, viridis, viridisLite

VignetteBuilder knitr

Imports rgeomex, sf

Remotes fdzul/rgeomex

LazyDataCompression xz

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conapop	<i>Population of the municipalities of Mexico, 1990-2040 (CONAPO)</i>
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Description

Reconstruction (1990-2020) and projections (2021-2040) of the mid-year population of the 2,475 municipalities of Mexico by sex and five-year age group, published by the National Population Council (CONAPO).

Usage

conapop

Format

- A tibble with 252,450 rows (municipality x sex x year) and 24 columns:
- cvegeo** five-digit municipality code of INEGI.
 - nom_ent** name of the state.
 - nom_mun** name of the municipality.
 - sexo** sex: "HOMBRES" (men) or "MUJERES" (women).
 - ano** year, 1990 to 2040.
 - pob_00_04** population aged 0 to 4 years.
 - pob_05_09** population aged 5 to 9 years.

- pob_10_14** population aged 10 to 14 years.
- pob_15_19** population aged 15 to 19 years.
- pob_20_24** population aged 20 to 24 years.
- pob_25_29** population aged 25 to 29 years.
- pob_30_34** population aged 30 to 34 years.
- pob_35_39** population aged 35 to 39 years.
- pob_40_44** population aged 40 to 44 years.
- pob_45_49** population aged 45 to 49 years.
- pob_50_54** population aged 50 to 54 years.
- pob_55_59** population aged 55 to 59 years.
- pob_60_64** population aged 60 to 64 years.
- pob_65_69** population aged 65 to 69 years.
- pob_70_74** population aged 70 to 74 years.
- pob_75_79** population aged 75 to 79 years.
- pob_80_84** population aged 80 to 84 years.
- pob_85_mm** population aged 85 years and over.
- pob_total** total population.

Source

<<https://www.gob.mx/conapo/documentos/reconstruccion-y-proyecciones-de-la-poblacion-de-los-municipios-de-mexico-1990-2040>>

extract_pop	<i>Extract the population of a locality in 400 m H3 hexagons</i>
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Description

Selects the hexagons of the Kontur/HDX population density dataset ('hdx_pop2021', 'hdx_pop2022' or 'hdx_pop2023') that intersect one or several urban localities of a state. The locality boundaries come from the INEGI 2019 localities of the [rgeomex](<https://fdzul.github.io/rgeomex/>) package.

Usage

```
extract_pop(year = 2023, cve_edo, locality)
```

Arguments

- year** year of the population dataset: 2021, 2022 or 2023.
- cve_edo** two-digit state code of INEGI, as text (e.g. "14" for Jalisco, "31" for Yucatán).
- locality** name or names of the target localities. The names do not need to be exact: the most similar name of the state is used (e.g. "Merida" finds "Mérida").

Value

an 'sf' object (EPSG:4326) with the hexagons that intersect the localities and their population ('population').

Author(s)

Felipe Antonio Dzul Manzanilla <felipe.dzul.m@gmail.com>.

See Also

[hdx_pop2023], [hdx_pop2022], [hdx_pop2021], [rgeomex::extract_locality()]

Examples

```
if (requireNamespace("rgeomex", quietly = TRUE)) {
  merida <- extract_pop(year = 2023, cve_edo = "31", locality = "Merida")
  sum(merida$population)
}
```

get_landscan

Download the LandScan population raster of Mexico

Description

Downloads (only the first time) the LandScan population raster of Mexico published as an asset of a GitHub release of popmex, and returns it as a 'SpatRaster'. The file is kept in a local cache, so later calls read it from disk without downloading it again.

Usage

```
get_landscan(
  url =
    "https://github.com/fdzul/popmex/releases/download/landscan-data/pop_LandScan.tif",
  refresh = FALSE
)
```

Arguments

url	address of the file. By default, the asset 'pop_LandScan.tif' of the release 'landscan-data' of the popmex repository.
refresh	if 'TRUE', download the file again even if it is cached.

Value

a 'terra::SpatRaster' with the estimated population per cell.

Author(s)

Felipe Antonio Dzul Manzanilla <felipe.dzul.m@gmail.com>.

Source

LandScan Global, Oak Ridge National Laboratory (ORNL), <<https://landscan.ornl.gov>>.

Examples

```
if (requireNamespace("terra", quietly = TRUE)) {
  r <- get_landscan()
  r
}
```

hdx_pop2021

Population in 400 m H3 hexagons of Mexico, 2021 (Kontur / HDX)

Description

Estimated number of inhabitants in each H3 hexagon of resolution 8 (about 400 m across) of Mexico, from the Kontur Population dataset published in the Humanitarian Data Exchange (HDX). Only hexagons with population are included. This edition has no 'h3' column.

Usage

```
hdx_pop2021
```

Format

An 'sf' data frame (EPSG:4326, MULTIPOLYGON geometries) with 362,028 rows:

population estimated number of inhabitants in the hexagon.

geom hexagon geometry.

Source

<<https://data.humdata.org/dataset/kontur-population-mexico>>

See Also

[`extract_pop()`] to extract the hexagons of a locality.

hdx_pop2022

*Population in 400 m H3 hexagons of Mexico, 2022 (Kontur / HDX)***Description**

Estimated number of inhabitants in each H3 hexagon of resolution 8 (about 400 m across) of Mexico, from the Kontur Population dataset published in the Humanitarian Data Exchange (HDX). Only hexagons with population are included.

Usage

hdx_pop2022

Format

An 'sf' data frame (EPSG:4326, POLYGON geometries) with 463,830 rows:

h3 H3 index of the hexagon (resolution 8).

population estimated number of inhabitants in the hexagon.

geom hexagon geometry.

Source

<<https://data.humdata.org/dataset/kontur-population-mexico>>

See Also

[extract_pop()] to extract the hexagons of a locality.

hdx_pop2023

*Population in 400 m H3 hexagons of Mexico, 2023 (Kontur / HDX)***Description**

Estimated number of inhabitants in each H3 hexagon of resolution 8 (about 400 m across) of Mexico, from the Kontur Population dataset published in the Humanitarian Data Exchange (HDX). Only hexagons with population are included.

Usage

hdx_pop2023

Format

An 'sf' data frame (EPSG:4326, POLYGON geometries) with 456,514 rows:

h3 H3 index of the hexagon (resolution 8).

population estimated number of inhabitants in the hexagon.

geom hexagon geometry.

Source

<<https://data.humdata.org/dataset/kontur-population-mexico>>

See Also

[`extract_pop()`] to extract the hexagons of a locality.

pop2000

Population by municipality of Mexico, ITER 2000

Description

Population of each municipality of Mexico by sex and age group, from the territorial indicators (ITER, *Integración Territorial*) of the 2000 Population and Housing Census of INEGI. Useful as denominators to calculate incidence rates.

Usage

pop2000

Format

A tibble with 2,443 rows (municipalities) and 4 columns. All population columns are numeric:

CVEGEO five-digit municipality code of INEGI (state + municipality).

pobtot total population.

pobfem female population.

pobmas male population.

Source

<<https://www.inegi.org.mx/app/scitel/Default?ev=9>>

pop2010

*Population by municipality of Mexico, ITER 2010***Description**

Population of each municipality of Mexico by sex and age group, from the territorial indicators (ITER, *Integración Territorial*) of the 2010 Population and Housing Census of INEGI. Useful as denominators to calculate incidence rates.

Usage

pop2010

Format

A tibble with 2,456 rows (municipalities) and 44 columns. All population columns are numeric:

CVEGEO five-digit municipality code of INEGI (state + municipality).

pobtot total population.

pobfem female population.

pobmas male population.

p_0a2 population aged 0 to 2 years.

p_0a2_f female population aged 0 to 2 years.

p_0a2_m male population aged 0 to 2 years.

p_3ymas population aged 3 years and over.

p_3ymas_f female population aged 3 years and over.

p_3ymas_m male population aged 3 years and over.

p_5ymas population aged 5 years and over.

p_5ymas_f female population aged 5 years and over.

p_5ymas_m male population aged 5 years and over.

p_12ymas population aged 12 years and over.

p_12ymas_f female population aged 12 years and over.

p_12ymas_m male population aged 12 years and over.

p_15ymas population aged 15 years and over.

p_15ymas_f female population aged 15 years and over.

p_15ymas_m male population aged 15 years and over.

p_18ymas population aged 18 years and over.

p_18ymas_f female population aged 18 years and over.

p_18ymas_m male population aged 18 years and over.

p_3a5 population aged 3 to 5 years.

p_3a5_f female population aged 3 to 5 years.
p_3a5_m male population aged 3 to 5 years.
p_6a11 population aged 6 to 11 years.
p_6a11_f female population aged 6 to 11 years.
p_6a11_m male population aged 6 to 11 years.
p_8a14 population aged 8 to 14 years.
p_8a14_f female population aged 8 to 14 years.
p_8a14_m male population aged 8 to 14 years.
p_12a14 population aged 12 to 14 years.
p_12a14_f female population aged 12 to 14 years.
p_12a14_m male population aged 12 to 14 years.
p_15a17 population aged 15 to 17 years.
p_15a17_f female population aged 15 to 17 years.
p_15a17_m male population aged 15 to 17 years.
p_18a24 population aged 18 to 24 years.
p_18a24_f female population aged 18 to 24 years.
p_18a24_m male population aged 18 to 24 years.
p_15a49_f female population aged 15 to 49 years.
p_60ymas population aged 60 years and over.
p_60ymas_f female population aged 60 years and over.
p_60ymas_m male population aged 60 years and over.

Source

<<https://www.inegi.org.mx/app/scitel/Default?ev=9>>

pop2020

Population by municipality of Mexico, ITER 2020

Description

Population of each municipality of Mexico by sex and age group, from the territorial indicators (ITER, *Integración Territorial*) of the 2020 Population and Housing Census of INEGI. Useful as denominators to calculate incidence rates.

Usage

pop2020

Format

A tibble with 2,469 rows (municipalities) and 44 columns. All population columns are numeric:

CVEGEO five-digit municipality code of INEGI (state + municipality).

pobtot total population.

pobfem female population.

pobmas male population.

p_0a2 population aged 0 to 2 years.

p_0a2_f female population aged 0 to 2 years.

p_0a2_m male population aged 0 to 2 years.

p_3ymas population aged 3 years and over.

p_3ymas_f female population aged 3 years and over.

p_3ymas_m male population aged 3 years and over.

p_5ymas population aged 5 years and over.

p_5ymas_f female population aged 5 years and over.

p_5ymas_m male population aged 5 years and over.

p_12ymas population aged 12 years and over.

p_12ymas_f female population aged 12 years and over.

p_12ymas_m male population aged 12 years and over.

p_15ymas population aged 15 years and over.

p_15ymas_f female population aged 15 years and over.

p_15ymas_m male population aged 15 years and over.

p_18ymas population aged 18 years and over.

p_18ymas_f female population aged 18 years and over.

p_18ymas_m male population aged 18 years and over.

p_3a5 population aged 3 to 5 years.

p_3a5_f female population aged 3 to 5 years.

p_3a5_m male population aged 3 to 5 years.

p_6a11 population aged 6 to 11 years.

p_6a11_f female population aged 6 to 11 years.

p_6a11_m male population aged 6 to 11 years.

p_8a14 population aged 8 to 14 years.

p_8a14_f female population aged 8 to 14 years.

p_8a14_m male population aged 8 to 14 years.

p_12a14 population aged 12 to 14 years.

p_12a14_f female population aged 12 to 14 years.

p_12a14_m male population aged 12 to 14 years.

p_15a17 population aged 15 to 17 years.

p_15a17_f female population aged 15 to 17 years.
p_15a17_m male population aged 15 to 17 years.
p_18a24 population aged 18 to 24 years.
p_18a24_f female population aged 18 to 24 years.
p_18a24_m male population aged 18 to 24 years.
p_15a49_f female population aged 15 to 49 years.
p_60ymas population aged 60 years and over.
p_60ymas_f female population aged 60 years and over.
p_60ymas_m male population aged 60 years and over.

Source

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