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demogmx: An R mexican demographic information package

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Abstract

With information from CONAPO and INEGI we made a new package that brings data about births, migration, population, deaths and aging rate for each mexican state as well as for the entire country.

Keywords: keywords, not capitalized, Java.

1. Introduction

This template demonstrates some of the basic LaTeX that you need to know to create a JSS article.

1.1. Code formatting

In general, don't use Markdown, but use the more precise LaTeX commands instead:

- Java
- **plyr**

One exception is inline code, which can be written inside a pair of backticks (i.e., using the Markdown syntax).

If you want to use LaTeX commands in headers, you need to provide a `short-title` attribute. You can also provide a custom identifier if necessary. See the header of Section 2 for example.

2. R code

Can be inserted in regular R markdown blocks.

```
R> x <- 1:10
R> x

 [1]  1  2  3  4  5  6  7  8  9 10
```

2.1. Features specific to rticles

- Adding short titles to section headers is a feature specific to **rticles** (implemented via a Pandoc Lua filter). This feature is currently not supported by Pandoc and we will update this template if it is officially supported in the future.
- Using the `\AND` syntax in the `author` field to add authors on a new line. This is a specific to the `rticles::jss_article` format.

$$
\begin{aligned}
\frac{dP_{1,j}}{dt} &= b_j(t) - \left(d_{1,j}(t) + \eta_{1,j}(t) + \theta_{1,j}(t) + \mu_{1,j}(t) + \mu^H_{1,j}(t)\right) P_{1,j}, \quad j = male, female \\
\frac{dP_{i,j}}{dt} &= d_{i-1,j}(t) P_{i-1,j} - \left(d_{i,j}(t) + \eta_{i,j}(t) + \theta_{i,j}(t) + \mu_{i,j}(t) + \mu^H_{i,j}(t)\right) P_{i,j}, \quad i = 2, \ldots, n \ ; \ j = male, female \\
\frac{dDOC_{i,j}}{dt} &= \mu_{i,j}(t) P_{i,j}, \quad i = 1, \ldots, n \ \ and \ \ j = male, female \\
\frac{dDH_{i,j}}{dt} &= \mu^H_{i,j}(t) P_{i,j}, \quad i = 1, \ldots, n \ \ and \ \ j = male, female
\end{aligned}
\tag{1}
$$

$$
\begin{aligned}
\frac{dP_{1,j}}{dt} &= b_j(t) - \left(d_{1,j}(t) + \eta_{1,j}(t) + \theta_{1,j}(t) + \mu_{1,j}(t) + \mu^H_{1,j}(t)\right) P_{1,j} \\
\frac{dP_{i,j}}{dt} &= d_{i-1,j}(t) P_{i-1,j} - \left(d_{i,j}(t) + \eta_{i,j}(t) + \theta_{i,j}(t) + \mu_{i,j}(t) + \mu^H_{i,j}(t)\right) P_{1,j} \\
\frac{dDOC_{i,j}}{dt} &= \mu_{i,j}(t) P_{1,j} \\
\frac{dDH_{i,j}}{dt} &= \mu^H_{i,j}(t) P_{1,j}
\end{aligned}
\tag{2}
$$

where $P_{i,j}$ is the population in age group i and sex group j, where $DOC_{i,j}$ is the number of deaths from other causes in age group i and sex group j, $DH_{i,j}$ is the number of homicides in age group i and sex group j, $d_{i,j}(t)$ is the rate of aging from age group i to age group $i+1$, $\mu_{i,j}(t)$ is the background mortality for age group i and sex group j in year t and $\mu^H_{i,j}(t)$ is the homicide rate for age group i and sex group j in year t, $\eta_{i,j}$ represents migration rate for age group i and sex group j, while $\theta_{i,j}$ is the immigration rate for age group i and sex group j.

$$
\frac{dP_{1,j}}{dt} = births_j + (immigration - emmigration - aging_{i,j} - background\ mort) P_{1,j}
$$

$$\frac{dP_{i,j}}{dt} = (aging_{i-1,j})P_{(i-1),j} + (immigration - emmigration - aging_{i,j} - background\ mort)P_{i,j}$$

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