

Exercício 01

- EPI 90 -

Indicadores Pactuados

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```
knitr::opts_chunk$set(echo = TRUE, warning = FALSE)
```

```
library(openxlsx)
library(scales)
library(readxl)
library(WriteXLS)
library(ggthemes)
library(RColorBrewer)
library(lubridate)
```

```
##
## Attaching package: 'lubridate'

## The following objects are masked from 'package:base':
##
##   date, intersect, setdiff, union
```

```
library(caret)
```

```
## Loading required package: lattice
```

```
## Loading required package: ggplot2
```

```
library(tidyverse)
```

```
## -- Attaching packages ----- tidyverse 1.3.0 --
```

```
## v tibble  3.0.3    v dplyr   1.0.2
## v tidyr   1.1.2    v stringr 1.4.0
## v readr   1.3.1    v forcats 0.5.0
## v purrr   0.3.4
```

```
## -- Conflicts ----- tidyverse_conflicts() --
## x lubridate::as.difftime() masks base::as.difftime()
## x readr::col_factor()      masks scales::col_factor()
```

```
## x lubridate::date()          masks base::date()
## x purrr::discard()          masks scales::discard()
## x dplyr::filter()           masks stats::filter()
## x lubridate::intersect()     masks base::intersect()
## x dplyr::lag()              masks stats::lag()
## x purrr::lift()             masks caret::lift()
## x lubridate::setdiff()       masks base::setdiff()
## x lubridate::union()        masks base::union()
```

```
library(here)
```

```
## here() starts at /Users/msrodrigues/Dropbox/Coding/R/mestrado/Epi90/epi90
```

```
library(usethis)
library(googleSheets4)
library(DescTools)
```

```
##
## Attaching package: 'DescTools'
```

```
## The following objects are masked from 'package:caret':
##
##      MAE, RMSE
```

```
library(obAnalytics)
library(collapse)
```

```
## collapse 1.3.2, see ?'collapse-package' or ?'collapse-documentation'
## Note: stats::D -> D.expression, D.call
```

```
##
## Attaching package: 'collapse'
```

```
## The following object is masked from 'package:DescTools':
##
##      Recode
```

```
## The following object is masked from 'package:lubridate':
##
##      is.Date
```

```
## The following object is masked from 'package:stats':
##
##      D
```

```
library(tictoc)
library(ribge)

Sys.setenv(TZ="Brazil/East")
options(tz="Brazil/East")
Sys.getenv("TZ")
```

```
## [1] "Brazil/East"
```

```
options(scipen = 999999)
Sys.setlocale("LC_TIME", "pt_BR")
```

```
## [1] "pt_BR"
```

```
source("~/Dropbox/Coding/R/funs/msrfun.R")
```

```
# Carrega os dados extraídos do TABNET
# Carrega dados do SIM de 2018 salvo em Binário no HD
# Alterar esta pasta para a pasta
```

```
if(!exists("ext_raw")) {
  ext_raw <- loadData("~/Dropbox/Coding/R/mestrado/Epi90/epi90/bin/ext.rds")
}
glimpse(ext_raw)
```

```
## Rows: 3,003,052
```

```
## Columns: 99
```

```
## $ contador    <fct> 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 1...
## $ TIPOBITO    <fct> 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2,...
## $ DTOBITO     <fct> 19011997, 24011997, 19011997, 19011997, 19011997, 190119...
## $ NATURAL     <fct> 851, 811, 811, 811, 850, 811, 811, 811, 811, 811, 811, 8...
## $ DTNASC      <fct> 05011969, 15041985, 11011948, 25081977, 16041977, 270419...
## $ IDADE       <fct> 428, 411, 449, 419, 419, 425, 409, 402, 409, 413, 417, 4...
## $ SEXO        <fct> 1, 1, 1, 2, 2, 2, 2, 1, 1, 2, 1, 1, 2, 1, 1, 2, 1, 1,...
## $ RACACOR     <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, 1, NA, NA, NA, N...
## $ ESTCIV      <fct> 2, 1, 2, 1, 1, 2, 1, 1, 1, 1, 1, 2, 1, 1, 1, 2, 2, 9, 2,...
## $ ESC         <fct> NA, NA, 9, NA, NA, 9, 9, 1, NA, 9, 8, NA, 9, 9, 1, NA, N...
## $ OCUP        <fct> 98500, 00500, 62100, 00600, 00600, 00800, 00600, NA, 006...
## $ CODBAIRES   <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ CODMUNRES   <fct> 1100155, 1100155, 1100155, 1100155, 1100155, 1100155, 11...
## $ LOCOCOR     <fct> 4, 4, 4, 4, 4, 4, 4, 4, 4, 4, 4, 5, 4, 4, 4, 3, 4, 4, 3, 4,...
## $ CODMUNOCOR  <fct> 1100155, 1100155, 1100155, 1100155, 1100155, 1100155, 11...
## $ IDADEMAE    <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ ESCMAE      <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ OCUPMAE     <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ QTDFILVIVO  <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ QTDFILMORT  <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ GRAVIDEZ    <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ GESTACAO    <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ PARTO       <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ OBITOPARTO  <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ PESO        <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ OBITOGRAV   <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ OBITOPUERP  <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ ASSISTMED    <fct> 1, 2, 1, 2, 1, 1, 1, 1, 1, 1, 2, 2, 1, 2, 2, 9, 2, 9, 1,...
## $ EXAME       <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, 2, NA, NA, NA, N...
## $ CIRURGIA    <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, 2, NA, NA, NA, N...
## $ NECROPSIA   <fct> 1, 1, NA, 1, 2, 2, 1, 1, 1, 1, 1, 2, 2, NA, NA, NA, 2, N...
## $ CAUSABAS    <fct> V892, V892, V892, V892, V892, V892, V892, V892, V892, V892, V8...
```

```

## $ LINHAA <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ LINHAB <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ LINHAC <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ LINHAD <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ LINHAII <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ CIRCOBITO <fct> 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, NA, 1, 1, 1, 1, 1, 3, NA, ...
## $ ACIDTRAB <fct> 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, NA, NA, 2, 1, NA, 1, NA, N...
## $ FONTE <fct> 2, 1, 2, 2, 2, 2, 2, 2, 2, 2, 3, NA, 9, NA, NA, 4, NA, N...
## $ CODESTAB <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ ATESTANTE <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ UFINFORM <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ CONTADOR <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ HORAOBITO <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ CODBAIOCOR <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ TPASSINA <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ DTATESTADO <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ TPPOS <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ DTINVESTIG <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ CAUSABAS_0 <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ DTCADASTRO <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ FONTEINV <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ DTRECEBIM <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ CB_PRE <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ MORTEPARTO <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ TPOBITOCOR <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ ORIGEM <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ DTCADINF <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ DTCADINV <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ COMUNSVOIM <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ DTRECORIG <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ DTRECORIGA <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ CAUSAMAT <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ ESC2010 <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ ESCMAE2010 <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ STDOEPIDEM <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ STDONOVA <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ CODMUNCART <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ CODCART <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ NUMREGCART <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ DTREGCART <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ SERIESCFAL <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ ESCMAEAGR1 <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ ESCFALAGR1 <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ SERIESCMAE <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ SEMAGESTAC <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ TPMORTEOCO <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ EXPDIFDATA <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ DIFDATA <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ DTCONINV <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ DTCONCASO <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ NUDIASOBIN <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ CODMUNNATU <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ ESTABDESCR <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ CRM <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...

```

```
## $ NUMEROLOTE <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ STCODIFICA <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ CODIFICADO <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ VERSAOSIST <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ VERSAOSCB <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ ATESTADO <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ NUDIASOBCO <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ FONTES <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ TPRESGINFO <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ TPNIVELINV <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ NUDIASINF <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ FONTESINF <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ ALTCAUSA <fct> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
```

Ajusta variáveis necessárias para o exercício

```
ext <- ext_raw %>%
  mutate(
    estado_ocorrencia = str_extract(CODMUNOCOR, "^."),
    CODMUNOCOR = as.integer(as.character(CODMUNOCOR)),
    SEXO = recode(SEXO,
                  "0" = "Ignorado",
                  "1" = "Masculino",
                  "2" = "Feminino"),
    CIRCOBITO = recode(CIRCOBITO,
                      "9" = "Ignorado",
                      "1" = "Acidente",
                      "2" = "Suicídio",
                      "3" = "Homicídio"),
    ano = as.numeric(str_sub(DTOBITO, 5, 8))
  )
```

Carrega dados das cidades do IBGE

```
cidades <- ribge::populacao_municipios(ano = 2020)
```

Regiões do Brasil

```
norte <- c(11:17)
nordeste <- c(21:29)
sudeste <- c(31:33, 35)
sul <- c(41:43)
centro_oeste <- c(50:53)
```

Inclui a informação da região a qual a cidade pertence na tabela cidades

```
cidades <- cidades %>%
  mutate(
    regioao = case_when(
      codigo_uf %in% norte ~ "Norte",
      codigo_uf %in% nordeste ~ "Nordeste",
```

```

    codigo_uf %in% sudeste ~ "Sudeste",
    codigo_uf %in% sul ~ "Sul",
    codigo_uf %in% centro_oeste ~ "Centro Oeste",
    TRUE ~ "NULL")
  ) %>%
  group_by(regiao) %>%
  mutate(
    pop_regiao = sum(populacao)
  ) %>% ungroup() %>%
  group_by(uf) %>%
  mutate(
    pop_estado = sum(populacao)
  ) %>%
  ungroup()

# Seleciona variáveis e Join da tabela do SIM
# com a Informação da população da cidade de ocorrência
mort <- ext %>%
  select(estado_ocorrencia, CODMUNOCOR, SEXO, CIRCOBITO, ano) %>%
  left_join(cidades, by = c("CODMUNOCOR" = "cod_munic6")) %>%
  ungroup()

glimpse(mort)

```

```

## Rows: 3,003,052
## Columns: 15
## $ estado_ocorrencia <chr> "11", "11", "11", "11", "11", "11", "11", "11", "...
## $ CODMUNOCOR          <int> 1100155, 1100155, 1100155, 1100155, 1100155, 1100...
## $ SEXO                <fct> Masculino, Masculino, Masculino, Feminino, Femini...
## $ CIRCOBITO           <fct> Acidente, Acidente, Acidente, Acidente, Acidente,...
## $ ano                 <dbl> 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1...
## $ uf                 <chr> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, N...
## $ codigo_uf           <dbl> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, N...
## $ codigo_munic        <chr> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, N...
## $ nome_munic          <chr> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, N...
## $ populacao_str       <chr> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, N...
## $ populacao           <dbl> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, N...
## $ cod_municipio       <chr> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, N...
## $ regiao              <chr> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, N...
## $ pop_regiao          <dbl> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, N...
## $ pop_estado          <dbl> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, N...

```

Exercício 1

Equipes de Atenção Básica

- a) Pergunta 1: Qual a Unidade da Federação com a menor cobertura de equipes de atenção básica entre 2010 e 2015?

Resposta: Distrito federal: 47,63%

```
# Mortalidade por 100k por região do Brasil em 2018
```

```
mort %>%
  filter(!regiao == "NULL") %>%
  filter(CIRCOBITO == "Homicídio") %>%
  group_by(ano) %>%
  summarise(
    suicidios = n(),
    pop_regiao = unique(pop_regiao),
    mort_100k = suicidios / pop_regiao * 105
  )
```

```
## 'summarise()' regrouping output by 'ano' (override with '.groups' argument)
```

```
## # A tibble: 65 x 4
## # Groups:   ano [13]
##   ano suicidios pop_regiao mort_100k
##   <dbl>      <int>      <dbl>    <dbl>
## 1  2006      46241    18672591    248.
## 2  2006      46241    30192315    153.
## 3  2006      46241    16504303    280.
## 4  2006      46241    57374243     80.6
## 5  2006      46241    89012240     51.9
## 6  2007      45632    18672591    244.
## 7  2007      45632    16504303    276.
## 8  2007      45632    57374243     79.5
## 9  2007      45632    30192315    151.
## 10 2007      45632    89012240     51.3
## # ... with 55 more rows
```

Mortalidade por suicídio por unidade da federação

- b) Quais as taxas de suicídio por 100.00 habitantes no Brasil, no ano de 2017, segundo a unidade da federação?

```
# Mortalidade por suicídio por 100k por estado Brasil em 2018
```

```
mortalidade_por_estado <- mort %>%
  filter(!regiao == "NULL") %>%
  filter(ano == 2017) %>%
  filter(CIRCOBITO == "Suicídio") %>%
  group_by(uf) %>%
  summarise(
    suicidios = n(),
    pop_estado = unique(pop_estado),
    mort_100k = suicidios / pop_estado * 105
  )
```

```
## 'summarise()' ungrouping output (override with '.groups' argument)
```

```
mortalidade_por_estado
```

```
## # A tibble: 27 x 4
```

```
##      uf      suicidios pop_estado mort_100k
##      <chr>      <int>      <dbl>      <dbl>
## 1 AC           61      894470      6.82
## 2 AL           98     3351543      2.92
## 3 AM          205     4207714      4.87
## 4 AP           39      861773      4.53
## 5 BA          580    14930634      3.88
## 6 CE          632     9187103      6.88
## 7 DF          174     3055149      5.70
## 8 ES          205     4064052      5.04
## 9 GO          480     7113540      6.75
## 10 MA         277     7114598      3.89
## # ... with 17 more rows
```

Mortalidade por suicídio por 100k habitantes por sexo no Brasil em 2017

c) Quais as taxas de suicídio por 100.00 habitantes no Brasil, no ano de 2017, segundo o sexo?

Segundo IBGE, no censo de 2010 a proporção da população é de 51,03% de mulheres, dado utilizado para calcular a população de 2020, na qual os dados estão baseados. Não foi feita a estimativa da correção desta proporção.

```
# Mortalidade por suicídio por 100k habitantes por sexo no Brasil em 2017
```

```
# População por sexo
```

```
populacao_total <- sum(cidades$populacao)
populacao_F <- populacao_total * 0.5103
```

```
mort %>%
  filter(!regiao == "NULL") %>%
  filter(ano == 2017) %>%
  filter(CIRCOBITO == "Suicídio") %>%
  filter(!SEXO == "Ignorado") %>%
  group_by(SEXO) %>%
  summarise(
    suicidios = n(),
  ) %>%

  mutate(
    pop = c(populacao_total - populacao_F, populacao_F),
    mort_100k = suicidios / pop * 105
  ) %>%
  ungroup()
```

```
## 'summarise()' ungrouping output (override with '.groups' argument)
```

```
## # A tibble: 2 x 4
##   SEXO      suicidios      pop mort_100k
##   <fct>      <int>      <dbl>      <dbl>
## 1 Masculino      9288 103696762.      8.96
## 2 Feminino      2520 108058930.      2.33
```